Safeway Redevelopment Project
Broadway at Pleasant Valley Avenue

Draft Environmental Impact Report

SCH No. 2009062097

Prepared for:

City of Oakland
250 Frank H. Ogawa Plaza
Oakland, Ca 94612

January, 2013

LAMPHIER - GREGORY
Urban Planning, Environmental Analysis & Project Management

CITY OF OAKLAND

Department of Planning, Building & Neighborhood Preservation
Planning & Zoning Division
250 Frank H. Ogawa Plaza, Suite 3315, Oakland, California, 94612-2032

COMBINED NOTICE OF RELEASE AND AVAILABILITY OF THE DRAFT ENVIRONMENTAL IMPACT REPORT AND NOTICE OF PUBLIC HEARING FOR THE SAFEWAY REDEVELOPMENT PROJECT (BROADWAY @ PLEASANT VALLEY AVENUE)

PROJECT TITLE:	**Safeway Redevelopment Project**
PROJECT SPONSOR:	**Property Development Centers, Inc. (an affiliate of Safeway, Inc.)**
PROJECT LOCATION:	**5050-5100 Broadway, Oakland, CA (APN 014-1242-002-03 & 014-1242-005-07)**
CASE NO.	**CMDV09-135; CP09-090; ER09-007**

DESCRIPTION OF PROJECT: The Project involves the redevelopment of the existing Rockridge Shopping Center, including the demolition of all 185,500 square feet of existing buildings on the site and the construction of a new Safeway store and other retail, office, and restaurant space, totaling approximately 322,500 square feet of commercial space (293,200 square feet of gross leasable floor area and an additional 29,300 square feet of common space). A total of approximately 967 off-street parking spaces are proposed. Parking would be located in surface parking lots, on the rooftop of the new Safeway store, and in a three-level parking garage located above commercial space. Also proposed are modifications to streets in the project vicinity including changes to the Broadway/51st Street/Pleasant Valley Avenue, Pleasant Valley Avenue/Gilbert Street, Broadway/Coronado Avenue, and Broadway/College Avenue intersections. The project site is not listed on the Cortese List of hazardous materials sites.

ENVIRONMENTAL REVIEW: A Draft Environmental Impact Report (DEIR) has been prepared for the Project under the requirements of the California Environmental Quality Act (CEQA) pursuant Public Resources Code Section 21000 *et. seq.* The DEIR analyzes potentially significant environmental impacts in the following environmental categories: Aesthetics; Agricultural Resources; Air Quality; Biological Resources; Cultural Resources; Geology and Soils; Greenhouse Gas Emission; Hazards and Hazardous Materials; Hydrology and Water Quality; Land Use, Plans and Policies; Mineral Resources; Noise and Vibration; Population and Housing; Recreation; Transportation, Circulation and Parking; and Utilities and Public Services. The Draft EIR identifies significant unavoidable environmental impacts related to Transportation, Circulation and Parking. Copies of the DEIR are available for review or distribution to interested parties at no charge at the Department of Planning, Building and Neighborhood Preservation, Planning and Zoning Division, 250 Frank H. Ogawa Plaza, 2nd Floor Zoning Counter, Oakland, CA, 94612, Monday through Friday, 8:00 a.m. to 4:00 p.m. (Wednesday 9:30 a.m. to 4:00 p.m.). The DEIR may also be reviewed at the following website: http://www2.oaklandnet.com/Government/o/PBN/OurServices/Application/DOWD009157.

PUBLIC HEARING:
The City Planning Commission will conduct a public hearing on the DEIR and the project on **February 20, 2013**, at **6:00 p.m.** in the Sgt. Mark Dunakin Hearing Room (Hearing Room 1), City Hall, 1 Frank H. Ogawa Plaza, Oakland, CA.

The City of Oakland is hereby releasing the DEIR, finding it to be accurate and complete and ready for public review. Members of the public are invited to comment on the DEIR and the project. There is no fee for commenting, and all comments received will be considered by the City prior to finalizing the EIR and making a decision on the project. Comments on the DEIR should focus on the sufficiency of the EIR in discussing possible impacts on the physical environment, ways in which potential adverse effects might be minimized, and alternatives to the project in light of the EIR's purpose to provide useful and accurate information about such factors. Comments may be made at the public hearing described above or in writing. Please address all written comments to Darin Ranelletti, Planner III, City of Oakland, Department of Planning, Building and Neighborhood Preservation, Planning and Zoning Division, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, CA, 94612; (510) 238-6538 (fax); or e-mailed to dranelletti@oaklandnet.com. Comments should be received no later than **4:00 p.m.** on **February 25, 2013**. Please reference case number ER09-007 in all correspondence. If you challenge the environmental document or project in court, you may be limited to raising only those issues raised at the Planning Commission public hearing described above, or in written correspondence received by the Department of Planning, Building and Neighborhood Preservation on or prior to **4:00 p.m.** on **February 25, 2013**. After all comments are received, a Final EIR will be prepared and the Planning Commission will consider certification of the Final EIR and render a decision on the project at a later meeting date to be scheduled. For further information, please contact Darin Ranelletti, Planner III, at (510) 238-3663 or dranelletti@oaklandnet.com.

January 11, 2013

SCOTT MILLER
Interim Planning and Zoning Director
Environmental Review Officer

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Appendices

(Technical appendices are included on a Compact Disk included in the back cover of the Draft EIR document.)

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Introduction

Purpose of EIR

In compliance with the California Environmental Quality Act (CEQA), this Draft Environmental Impact Report (EIR) is a public information document that identifies and evaluates the environmental consequences of the proposed Safeway Redevelopment Project located at Broadway and Pleasant Valley Avenue (Project). This EIR is designed to inform City staff, the Planning Commission, City Council, other interested agencies, and the general public of:

- the proposed Project and the potential environmental consequences of the Project,
- standard conditions of approval and mitigation measures recommended to lessen or avoid significant adverse impacts, and
- a reasonable range of feasible alternatives to the Project.

The information contained in the EIR will be reviewed and considered by public agencies prior to making a decision to approve, reject, or modify the proposed Project. The City of Oakland (City) is the lead agency for environmental review of the proposed Project.

Proposed Project

Site

The 15.40-acre Project site is located on the northeast corner of the intersection of Pleasant Valley Avenue and Broadway in the City of Oakland, Alameda County, California (See **Figure 1-1**). The site is comprised of two Assessor's Parcels; Number 14-1242-5-7 and 14-1242-2-3. The Project site is generally bounded by Broadway (west); Pleasant Valley Avenue (south); the California College of Arts, the Claremont Country Club (north); Claremont Pond and an American Automobile Association (AAA) office (east).

Existing Context

In 1964 and 1965, the six buildings that now make up the existing shopping center (called the Rockridge Shopping Center) were constructed (See **Figure 1-2**). Five of the shopping center's six existing buildings are generally located along the site's northerly boundary set back from Pleasant Valley Avenue, and one building is a free-standing structure situated directly at the northeast corner of Pleasant Valley Avenue and Broadway. Existing tenants include Safeway, CVS Pharmacy, Dress Barn, Starbucks and others totaling approximately 185,462 square feet of commercial space, supported by 615 off-street parking spaces.

Figure 1-1
Project Site Location

Source: Google Earth

Figure 1-2
Existing Project Site

Source: PD Centers

Project Description

The proposed Project consists of the phased demolition and redevelopment of the Rockridge Shopping Center.[1] The Project generally consists of two key phases: 1) demolition of the existing CVS Pharmacy building and construction of a new Safeway supermarket; and 2) demolition of the remainder of the existing shopping center and its replacement with a new shopping center. At buildout, the Project will have resulted in demolition of all 185,500 square feet of currently existing commercial-retail space, redeveloped with approximately 322,500 square feet of new commercial building space (293,200 square feet of gross leasable floor area and an additional 29,300 square feet of common space), as shown on **Figure 1-3**. The Project includes new landscaping, streetscape features and pedestrian plaza areas; and a re-configuration of the parking area and circulation layout.

Environmental Review Process

Initiating the Environmental Review Process

Subsequent to receiving the application for environmental review, the City of Oakland Department of Planning, Building and Neighborhood Preservation determined that the proposed Project was subject to CEQA, and decided that an EIR would be required for the environmental review.

EIR Scope

The City of Oakland circulated a Notice of Preparation (NOP) on June 25, 2009 (see **Appendix 1A**). The public comment period for the scope of the EIR lasted from June 25, 2009 through July 25, 2009. The NOP was sent to adjacent property owners and was posted at the Project site. The NOP was also sent to responsible agencies, organizations and interested individuals. Additionally, the NOP was sent to the State Clearinghouse.

A scoping session before the City Planning Commission was held for the Project on July 15, 2009. Both written and oral comments received by the City on the NOP were taken into account during the preparation of the EIR. The written comments received prior to the close of the public comment period on July 15, 2009 are included in **Appendix 1B**. The City also received written comments after the close of the public comment period; for informational purposes, these comments are also included in Appendix 1B.

The following environmental topics are addressed in this EIR:

Chapter 4.1: Aesthetics

Chapter 4.2: Air Quality

Chapter 4.3: Biological Resources

[1] As a separate, independent project, Safeway, Inc. also proposes to replace an existing Safeway supermarket and closed gasoline service station with a new two-story building housing a larger Safeway supermarket, seven separate ground-floor retail shops and a restaurant, at 6320 College Avenue, at the northeast corner of College and Claremont Avenues, in Oakland. A Draft EIR for the Safeway Shopping Center – College and Claremont Avenues project (State Clearinghouse # 2009112008 and 2009102100) was made available for public review on July 1, 2011 through August 15, 2011. That separate project is still being considered for approval by the City of Oakland. At the time this EIR was prepared, that project was scheduled for decision at the City Council on December 18, 2012. Although they are separate projects, each of these projects is considered in the cumulative analysis of the other project's EIR.

Figure 1-3
Proposed Project - Artist's Rendering

Source: Benner Strange Architects

Chapter 4.4: Cultural Resources

Chapter 4.5: Geology and Soils

Chapter 4.6: Greenhouse Gas Emissions

Chapter 4.7: Hazards and Hazardous Materials

Chapter 4.8: Hydrology and Water Quality

Chapter 4.9: Land Use, Plans and Policies

Chapter 4.10: Noise and Vibration

Chapter 4.11: Transportation, Circulation and Parking

Chapter 4.12: Utilities and Public Services

Chapter 4.13: Other Less-than–Significant Effects

Report Organization

The EIR is organized into the following chapters:

- *Chapter 1 – Introduction*: Discusses the overall EIR purpose; provides a summary of the proposed Project; describes the EIR scope; and summarizes the organization of the EIR.
- *Chapter 2 – Summary*: Provides a summary of the significant environmental impacts that would result from implementation of the proposed Project, and describes Standard Conditions of Approval and mitigation measures recommended to avoid or reduce significant impacts.
- *Chapter 3 – Project Description*: Provides a description of the Project objectives, Project site, site development history, the proposed development, and required approval process.
- *Chapter 4 – Setting, Impacts, Standard Conditions of Approval, and Mitigation Measures*: Describes the following for each environmental technical topic: existing physical setting, applicable regulatory setting including relevant City of Oakland Standard Conditions of Approval; thresholds of significance; potential environmental impacts and their level of significance; Standard Conditions of Approval relied upon to ensure significant impacts would not occur; mitigation measures recommended when necessary to mitigate identified impacts; and resulting level of significance following implementation of mitigation measures, when necessary. Cumulative impacts are also discussed in each technical topic section.

  Potential impacts are identified by level of significance, as follows:

  - (**LTS**) - less-than-significant impact
  - (**LTS with SCA**) - less-than-significant impact with implementation of uniformly applied development standards or Standard Conditions of Approval
  - (**S**) - significant impact
  - (**SU**) - significant and unavoidable impact

  The significance level is identified for each impact before and after implementation of recommended mitigation measure(s), where necessary.
- *Chapter 5 – Alternatives*: Evaluates a reasonable range of alternatives to the proposed Project and identifies an environmentally superior alternative.

- *Chapter 6 – CEQA-Required Assessment Conclusions*: Provides the required analysis of growth-inducing impacts, significant irreversible changes, effects found not to be significant and significant unavoidable impacts.
- *Chapter 7 – Report Preparation*: Identifies preparers of the EIR, references used, and the persons and organizations contacted.
- *Appendices*: The appendices contain the NOP and written comments submitted on the NOP, as well as other technical studies and reports relied upon in the EIR.

Public Review

This Draft EIR is available for public review and comment during the period identified on the Notice of Release / Availability of a Draft EIR accompanying this document. This Draft EIR and all supporting technical documents and the reference documents are available for public review at the City of Oakland Department of Planning, Building and Neighborhood Preservation, Planning Division, under case ER #09-007.

During this time, written comments on the Draft EIR may be submitted to the City of Oakland Department of Planning, Building and Neighborhood Preservation Planning Division at the address indicated on the notice. Oral comments on the Draft EIR may be stated at the public hearing which shall be held as indicated on the notice.

Following the public review and comment period, the City will prepare responses to all comments received on the environmental analysis in this Draft EIR during the specified review period. The responses and any other revisions to the Draft EIR will be prepared as a Response to Comments document. The Draft EIR and its appendices, together with the Response to Comments document, will constitute the Final EIR for the Project.

Use of the EIR

Pursuant to CEQA, this EIR is a public information document for use by governmental agencies and the public to identify and evaluate potential environmental consequences of the Project, to evaluate and recommend mitigation measures that would substantially lessen or eliminate adverse impacts, and to examine a range of feasible alternatives to the Project. The information contained in this EIR is subject to review and consideration by the City of Oakland (see Project Review and Approval, below) prior to the City's decision to approve, reject or modify the proposed Project. The EIR will be used by the City and any other responsible agencies in connection with all discretionary approvals necessary for the Project.

The City must ultimately certify that it has reviewed and considered the information in the EIR and that the EIR has been completed in conformity with the requirements of CEQA before making any decision of the proposed Project. This EIR identifies significant effects that would result from the proposed Project. Therefore, pursuant to CEQA Guidelines Section 15091, the City cannot approve the Project unless it makes one or more of the following findings:

- That changes or alternations have been required in, or incorporated into the Project which avoid or substantially lessen the significant environmental effects as identified in the EIR.
- That such changes or alterations are within the responsibility and jurisdiction of another public agency (not the City of Oakland), and that such changes have been adopted by such other public agency, or can and should be adopted by such other agency.
- Specified economic, legal, social, technological or other considerations make infeasible the mitigation measures or Project alternatives identified in the EIR.

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Executive Summary

Project Overview

Property Development Centers, Inc. (an affiliate of Safeway, Inc.), proposes to redevelop the existing Rockridge Shopping Center, including the demolition of all 185,500 square feet of existing buildings on the site. Removed buildings would be replaced with construction of a new "Lifestyle"[1] Safeway store along with other retail, office and restaurant space, resulting in a total of approximately 322,500 square feet of new commercial building space (293,200 square feet of gross leasable floor area and an additional 29,300 square feet of common space). This represents an increase of approximately 137,000 square feet over existing development on the site. The applicant also proposes modifications to the adjacent streets and public rights-of-way to improve access and circulation for all travel modes and to provide new signalized left-turn access onto Broadway.

In early 2009, Property Development Centers, Inc. submitted an application to the City of Oakland for environmental review of the Project. On June 25, 2009 the City of Oakland issued a Notice of Preparation, determining that a project-level EIR would be the appropriate document to analyze the potential environmental effects of the proposed Project under CEQA. This EIR addresses environmental topics pertaining to Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology and Soils; Greenhouse Gas Emissions; Hazards and Hazardous Materials; Hydrology and Water Quality; Land Use, Plans and Policies; Noise and Vibration; Transportation, Circulation and Parking; Utilities and Public Services; and other environmental effects found to be less than significant.

Site Location

The 15.4-acre Project site is located on the northeast corner of the intersection of Pleasant Valley Avenue and Broadway in the City of Oakland, Alameda County, California.

The Project site is currently designated on the General Plan Land Use and Transportation Element (LUTE) Diagram as Community Commercial. The Project is consistent with this Oakland General Plan land use designation.

The effective zoning designation of the Project site is split into three different zoning districts.[2] The southwestern comer of the site, roughly equal to the location of the Chase Bank building, has an effective zoning of C-40 Community Thoroughfare Commercial. The central portion of the site has an effective

[1] The "Lifestyle" Safeway store is part of a corporate branding campaign intended to differentiate these stores from competitors as a more upscale shopping experience. Generally, these types of stores are designed with a more inviting decor with warm ambiance and subdued lighting, and containing special elements such as sushi and olive bars and the addition of in-store coffee kiosks. Many Safeway store locations are being converted to the "Lifestyle" format.

[2] The applicable zoning for the Project is the zoning that was in effect at the time the Project application was deemed complete in 2010.

zoning of C-30 District Thoroughfare Commercial. The eastern portion of the site has an effective zoning of R-50 Medium Density Residential.

Key Components of the Project

The Project would be constructed in two phases over approximately 20 months. Construction is anticipated to begin in July 2013 and end in March 2015. Project phasing is intended to enable the shopping center to remain operational and economically viable throughout the construction period, to capitalize on the current opportunity to move the Safeway grocery store into the current CVS Pharmacy site soon after the current CVS lease expires, and to match future phase development to meet both current and expected future retail market demands.

Buildings

At completion, the Project would include demolition of the entire 185,500 square feet of the existing 1 story shopping center. The shopping center would be replaced by an approximately 322,500 square-foot[3] new shopping center anchored by an approximately 65,000 square-foot new Safeway store. The new buildings would range in height from 1 to 4 stories. The new Safeway would be a single story building, but with high ceilings it would appear to be 2 stories in height.

Parking

The Project proposes a total of 967 off-street parking spaces, including 851 standard spaces, 30 designated handicap spaces and 86 designated compact spaces. Parking would be located in surface parking lots and along drive aisles throughout the site, on a rooftop parking lot over the Safeway store and adjacent buildings, and in a centralized parking garage with three levels of parking over ground floor retail space.

Pedestrian and Bicycle Access

The Project proposes a substantially expanded pedestrian and bicycle network for the site, including:

- A continuous sidewalk that connects with small plazas ringing the entire site, separated only at the two vehicle entry points,
- Separated pedestrian and vehicle access provided at each of the entry points into the site, as well as a new pedestrian connection on Broadway near the Pleasant Valley Avenue/Broadway intersection,
- A number of routes leading pedestrians to the new Safeway store from Pleasant Valley Avenue, and
- Two routes that would lead pedestrians into the site from the Broadway/Coronado Avenue intersection.

The pedestrian and bicycle routes would interconnect a number of plazas. The two main plazas would be located along Broadway at the Pleasant Valley Avenue intersection and just north of the intersection, connecting through the buildings at this location. The internal street would also have a number of smaller plazas and wider sidewalks for outdoor cafes and public seating. The landscaped edge near the quarry pond would have two smaller plazas which serve as scenic outlooks over the pond.

[3] Of the total 322,536 square feet within the proposed new shopping center, 293,233 square feet would be gross leasable floor area and approximately 29,303 square feet would be common space (e.g., stairs and loading corridors)

Vehicle Access

The current shopping center has three vehicle access points along Broadway. Under the proposed Project, the two most southerly vehicle access points would be eliminated, and the intersection at Coronado Avenue would be converted to a signalized intersection providing full turning movements with 1 inbound and 2 outbound lanes. The current shopping center also has two vehicle access points along Pleasant Valley Avenue. These access points would remain where they currently exist, but the main entry would be realigned and re-striped to provide 3 inbound lanes and 2 outbound lanes.

Off-Site Roadway Modifications

The Project also proposes a number of roadway modifications on Broadway and 51st Street/Pleasant Valley Avenue to generally improve access and circulation for all travel modes and to specifically provide signalized left-turn access on Broadway to and from the Project site. Off-site roadway modifications proposed as part of the Project include the following.

- Broadway would be reduced from three through lanes to two through lanes in each direction between College Avenue and 49th Street.
- Class 2 bicycle lanes would be provided on both sides of Broadway between College Avenue and just south of 51st Street/Pleasant Valley Avenue.
- The Project driveway on Broadway opposite Coronado Avenue would be signalized to provide left turns in and out of the Project site. The proposed signal would be coordinated with the existing signals on Broadway at 45th Street, 51st Street/Pleasant Valley Avenue, College Avenue, and Broadway Terrace. The intersection would provide an exclusive left-turn lane from southbound Broadway to the Project site. The proposed signal would also provide a protected pedestrian crossing connecting the residential neighborhood west of Broadway to the Project site.
- The provision for the southbound left-turn lane from Broadway into the Project site would require the elimination of the existing median break that provides access to Wendy's Restaurant from northbound Broadway. As such, the northbound left-turn lane on Broadway at College Avenue would be modified to provide left-turn access into the existing Wendy's Restaurant on the opposite side of Broadway from the Project site.
- The Broadway/51st Street/Pleasant Valley Avenue intersection would be modified to increase vehicle capacity, to provide a six-foot wide median pedestrian refuge island, and to provide more efficient and safer signal operations.
- The Gilbert Street/Project Driveway/Pleasant Valley Avenue intersection would also be modified to provide additional turn lanes and the intersection signal equipment would be upgraded to provide protected phasing for the westbound Pleasant Valley Avenue left-turn movement.
- The locations of several bus stops would be moved from the near side to the far side of (i.e., from before to after) the intersection at northbound Broadway and Pleasant Valley Avenue, at eastbound 51st Street/Pleasant Valley Avenue at Broadway, and at eastbound Pleasant Valley Avenue at Gilbert Street.

The proposed modifications along Broadway can be accommodated within the existing curb-to-curb right-of-way. Providing a second left-turn lane from eastbound Pleasant Valley Avenue into the Project site would require widening Pleasant Valley Avenue by an additional 1 to 4 feet along the Project frontage.

Public Agency Approvals

This EIR is intended to cover all approvals necessary to implement the Project. These approvals include, but are not limited to the following.

City of Oakland

- Approval of an Interim Conditional Use Permit to allow for commercial use in the R-50 Medium Density Residential Zone pursuant to Chapter 17.01 of the Oakland Planning Code;
- Design Review pursuant to Chapter 17.136 of the Oakland Planning Code;
- Zoning variances (if required);
- Approval of a Category IV Creek Protection Permit for exterior development and work that may include earthwork, landscape walls, fences, patios, decks, private drainage improvements, irrigation systems and trenching conducted within the 20 foot setback from the top of bank of the adjacent watercourse (the quarry pond) pursuant to Chapter 13.16 of the Oakland Municipal Code;
- Approval of a Conditional Use Permit (for any drive-through facilities or alcohol sales);
- Approval of a Subdivision Map (or lot line adjustment);
- Tree removal permits pursuant to the City's Protected Trees Ordinance (Chapter 12.36 of the Oakland Municipal Code);
- Encroachment permits for work within and close to public rights-of-way (Chapter 12.08 of the Oakland Municipal Code); and
- Demolition permits, grading permits, and building permits.

Other Agencies Whose Approval May be Required

- Bay Area Air Quality Management District (BAAQMD) – Granting of permits for stationary source air emissions and compliance with Regulation 2, Rule 1 for all portable construction equipment subject to that rule.
- East Bay Municipal Utilities District (EBMUD) – Granting new water service connections and meters.
- State Water Resources Control Board (SWRCB) – Acceptance of Notice of Intent to obtain coverage under the General Construction Activity Storm Water Permit.
- San Francisco Bay Regional Water Quality Control Board (RWQCB) – Water quality certification under Section 401 of the Clean Water Act may be necessary for landscaping adjacent to the quarry pond.
- California Department of Fish and Game (CDFG) – A Streambed Alteration Agreement pursuant to California Fish and Game Code Sections 1600–1616 may be necessary for landscaping adjacent to the quarry pond.

Summary of Impacts and Mitigation Measures

The following **Table 2-1**: Summary of Impacts and Mitigation Measures provides a summary of potential environmental impacts, applicable Standard Conditions of Approval, recommended mitigation measures, and the resulting level of significance after implementation of all mitigation measures. For a more complete discussion of potential impacts and recommended mitigation measures, please refer to the specific discussions in the respective individual chapters of this Draft EIR.

Significant and Unavoidable Impacts

For purposes of this EIR, the following impacts are considered significant and unavoidable. Although mitigation measures consisting of physical modifications to intersection operations have been identified, such modifications would adversely affect other travel modes and conflict with City policy concerning pedestrian and bicyclist safety and comfort, therefore resulting in secondary impacts. Traffic operations at these intersections could be further improved by providing additional automobile travel lanes. However, such modifications cannot be accommodated within the existing automobile right-of-way and would require additional right-of-way and/or loss of bicycle lanes, on-street parking, or medians, and are therefore considered to be infeasible.

Broadway/51st Street/Pleasant Valley Avenue (Intersection #7)

- **Impact Trans-5:** The Project would degrade intersection operations from LOS D to LOS E during the weekday PM peak hour at the Broadway/51st Street/Pleasant Valley Avenue (#7) intersection under 2015 Conditions. The proposed Project would also add traffic that would increase delay for the critical eastbound through movement by more than six seconds during the Saturday midday peak hour, which the intersection would operate at LOS E regardless of the proposed Project.
- **Impact Trans-10**: The Project would increase the volume-to-capacity (v/c) ratio for the intersection by 0.01 or more, and the critical movement v/c ratio for the eastbound left, eastbound through, westbound left, northbound through, and the southbound left movements by 0.02 or more during the weekday PM peak hour, and it would increase v/c ratio for the intersection by 0.01 or more and the critical movement v/c ratio for the eastbound left, eastbound through, and, northbound through movements by 0.02 or more during the Saturday midday peak hour at the Broadway/51st Street/Pleasant Valley Avenue (#7) intersection under 2035 Conditions, which would operate at LOS F regardless of the Project.

Howe Street/Pleasant Valley Avenue Intersection (Intersection #19)

- **Impact Trans-3, -8 and -13**: The proposed Project would add more than 10 trips to the Howe Street/Pleasant Valley Avenue intersection during the weekday PM and Saturday midday peak hours under Existing plus Project conditions, 2015 Plus Project conditions, and 2035 Plus Project conditions. The intersection would meet the peak hour signal warrant during both time periods.

Piedmont Avenue/Pleasant Valley Avenue (Intersection #20)

- **Impact Trans-14**: The Project would increase the volume-to-capacity (v/c) ratio for the intersection by 0.01 or more, and the critical movement v/c ratio for the eastbound, westbound, and northbound movements by 0.02 or more during the weekday PM, Saturday midday, and Saturday PM peak hours at the Piedmont Avenue/Pleasant Valley Avenue (#20) intersection under 2035 Conditions, which would operate at LOS F regardless of the Project.

Recommended Conditions of Approval

Although not required by CEQA, certain “recommendations” are included in this EIR, and summarized in **Table 2-2**. These recommendations are not necessary to address or mitigate any significant environmental impacts of the Project under CEQA, but are recommended by City staff to address effects of the Project. These recommendations will be considered by decision makers during the course of Project review and may be imposed as Project-Specific Conditions of Approval.

It is not yet known which of these recommendations may be implemented and if so whether it would be as part of the Project or independent of the Project. The environmental consequences of each recommendation have been considered and none of the recommendations would result in any significant impacts under CEQA.

Alternatives

Chapter 5 presents an analysis of a range of reasonable alternatives to the Project. The following alternatives were analyzed:

- Alternative 1: No Project
- Alternative 2: Safeway Relocation
- Alternative 3: Reduced Project
- Alternative 4: Concept with Commercial Emphasis (RCPC Plan)
- Alternative 5: Concept with Residential Emphasis (ULTRA Plan)

As required by the CEQA Guidelines, an alternative site location was considered but eliminated from further evaluation in this EIR because it would not meet the basic project objectives and would likely result in similar traffic impacts at intersections in the vicinity of any alternative site.

Alternative 1: No Project would be the environmentally superior alternative. Alternative 5: Concept with Residential Emphasis (ULTRA Plan) would be considered environmentally superior in the absence of the No Project alternative. This alternative would generate fewer vehicle trips as compared to all other alternatives (other than “no project” alternatives) as evaluated in this EIR. However, Alternative 5 would also not achieve many of the basic Project objectives.

Areas of Public Concern

The following topics were raised in comments received in response to the June 25, 2009 Notice of Preparation (NOP) of this EIR and at the July 15, 2009 EIR scoping session held before the City’s Planning Commission. Each of these topics is addressed in this EIR. Issues of concern (including some non-CEQA issues) include, but are not limited to, the following:

- Aesthetics
  - Overall visual character of site
  - Street frontage character on Broadway and Pleasant Valley Avenue
  - Auto-centric nature of proposed site layout
  - Opportunity for enhancement of quarry pond as site and community amenity
  - Blight and urban decay
- Air Quality
  - Construction period dust
  - Human health risks
- Biological Resources
  - Wildlife habitat in quarry pond
- Geology and Soils
  - Stability of slope at rear of site
- Greenhouse Gas Emissions

- Hydrology and Water Quality
  - Water quality of quarry pond
- Land Use, Plans and Policies
  - Proposed development density, mix of uses and site layout may not be sufficiently urban in character, integrated with surrounding neighborhoods, or supportive of alternative modes of travel
  - Socioeconomic impacts
- Transportation, Circulation and Parking
  - Auto-centric nature of proposed site design
  - Need for safer and more convenient pedestrian and bicycle access
  - Adequacy and appropriateness of parking supply
  - Local and regional traffic congestion
- Utilities and Public Services
  - Demand on public services
- Alternatives
  - Community amenities
  - Mixed-use development
  - Housing
  - Continued street grid

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
Aesthetics		
Impact Aesth-1: Views from the Project site have not been identified as scenic vistas or important visual resources in the Oakland General Plan or by a regulatory agency with jurisdiction over the site. As a result, development of the Project would not significantly alter scenic vistas.	None needed	No impact
Impact Aesth-2: No scenic resources have been formally identified at the Project site, and development of the Project would have no adverse effects on any formally-identified scenic resources.	None needed SCA Aesth-2: Tree Removal Permit and SCA Aesth-3: Tree Replacement Plantings	Less than Significant
Impact Aesth-3: The visual character of the Project site and its surroundings would change as a result of the Project, but the general character of the site would remain as a commercial shopping center. The Project would not substantially degrade but rather would improve the existing visual character and quality of the site and its surroundings.	None needed	No Impact
Impact Aesth-4: Lighting at the site would be modified as part of the proposed Project, but stores and parking areas at the site would still be illuminated in a manner similar to what is currently observed at the site.	None needed SCA Aesth-1: *Lighting Plan*	Less than Significant
Impact Aesth-5: No structures or landscape improvement proposed by the Project would at any time create substantial shadows beyond the Project site and thus would not interfere with any off-site solar collectors or generate shadows that would fall on any public space.	None required	No Impact
Impact Aesth-6: Structures proposed at the	None required	No Impact

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
Project site would not generate shadows that would fall on any historic resources.		
Impact Aesth-7: The Project would not fundamentally conflict with any policies or regulations of the General Plan, Planning Code or Uniform Building Code that address appropriate provisions of adequate light for various types of land uses.	None required	Less than Significant
Impact Aesth-8: Given the limited height of proposed structures at the Project site and the site's location, wind modeling is not necessary and there would be no wind-related impacts associated with the proposed Project.	None required	No Impact
Impact Aesth-9: Considering market conditions, retail sales leakage, existing regulatory controls that address blight, and diverted sales due to the Project, the Project would not cause business closures, long term vacancies and physical deterioration of properties. Therefore, the Project would not result in significant urban decay impacts.	None required	Less than Significant
Cumulative Impact Aesth-10: Implementation of the Project, combined with other past, present, existing, pending and reasonably foreseeable projects that would be visible in the vicinity of the Project site would not result in significant adverse changes to existing visual character, views, light and glare or shadow.	None required	Less than Significant
Air Quality		
Impact Air-1: During construction, the proposed Project would generate fugitive dust from demolition, grading, hauling and construction activities.	None required SCA Air-1: Construction-Related Air Pollution Controls (Dust and Equipment Emissions) SCA Air-2: Asbestos Removal in Structures	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
Impact Air-2: During construction, the proposed Project would generate regional ozone precursor emissions and regional particulate matter emissions from construction equipment exhaust. However, Project-related construction emissions would not generate emissions of criteria air pollutants that would exceed the City's thresholds of significance.	None required SCA Air-1: Construction-Related Air Pollution Controls	Less than Significant
Impact Air-3: The proposed Project's construction-related emissions would not result in the estimated cancer risk, chronic health index, acute health index or annual average $PM_{2.5}$ concentration levels exceeding the individual source significance threshold.	None required SCA Air-1: Construction-Related Air Pollution Controls	Less than Significant
Impact Air-4: Once complete and occupied, the proposed Project would generate emissions of criteria pollutants (ROG, NO_x and PM_{10}), primarily as a result of increased motor vehicle traffic and also from area source emissions. Project-related traffic emissions, combined with anticipated area source emissions, would not generate emissions of criteria air pollutants that would exceed the City's thresholds of significance.	None required SCA Trans-1: Parking and Traffic Management Plan	Less than Significant
Impact Air-5: The Project would include a back-up generator that would emit small amounts of toxic emissions.	None needed	Less than Significant
Impact Air-6: New vehicle trips associated with the proposed Project would add to carbon monoxide concentrations near streets that provide access to the Project site. The carbon monoxide emission levels associated with the Project's vehicle trips would not exceed the City's thresholds of significance.	None needed	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
Impact Air-7: The proposed Project would not frequently create substantial objectionable odors affecting a substantial number of people.	None needed	Less than Significant
Cumulative Impact Air-8: Since the Project would not result in a significant air quality impact, the Project would not result in a considerable contribution to a significant cumulative impact to air quality, and the cumulative impact would be considered less than significant.	None needed	Less than Significant
Cumulative Impact Air-9: The proposed Project's construction-related emissions and operation emissions would not lead to a cumulatively significant risk for cancer, chronic health, acute health or annual average $PM_{2.5}$ concentrations that would exceed the cumulative source significance thresholds.	None needed	Less than Significant
Biological Resources		
Impact Bio-1: Large trees and buildings within the Project site and its immediate vicinity provide potential nesting habitat for birds and roosting habitat for bats which could be disturbed during construction. The quarry pond adjacent to the Project site provides marginally suitable aquatic habitat for the western pond turtle and if present, pond turtles could be adversely affected by construction activities.	SCA Bio-1: Tree Removal During Breeding Season **SCA Bio-1 Implementation: Roosting Bat Survey.** A pre-construction survey for roosting bats should be performed by a qualified biologist within 30 days prior to any removal of trees or structures on the Project site. If no active roosts are found, then no further action would be warranted. If either a maternity roost or hibernacula (structures used by bats for hibernation) is present, the following minimization measures shall be implemented: a) If active maternity roosts or hibernacula are found in trees or structures which will be removed as part of Project construction, the Project should be redesigned to avoid the loss of the tree or structure occupied by the roost to the extent feasible. If an active maternity roost is located and the Project cannot be redesigned to avoid removal of the occupied tree or structure, demolition can commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). Disturbance-free buffer zones as determined by a qualified biologist in coordination with CDFG shall be observed during the maternity roost season (March 1 through July 31). b) If a non-breeding bat hibernacula is found in a tree or structure scheduled for removal, the	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
	individuals should be safely evicted, under the direction of a qualified biologist (as determined by a memorandum of understanding [MOU] with CDFG), by opening the roosting area to allow air flow through the cavity. Demolition can then follow at least one night after initial disturbance for airflow. This action should allow bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees or structures with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours. **Mitigation Measure Bio-1b: Western Pond Turtle Surveys**: A western pond turtle survey should be conducted by a qualified biologist within two weeks prior to any disturbance or removal of upland vegetation around the quarry pond. If a turtle is found , it should be relocated out of harm's way in coordination with CDFG. a) If any turtles are encountered within the construction zone during construction, all work shall halt until the qualified biologist has determined whether it is a western pond turtle or some other species. If it is not a western pond turtle, work may continue. b) If a western pond turtle is found, the CDFG shall be notified regarding the presence of the western pond turtle and all work shall stop until additional exclusion measures have been defined and authorization to proceed is obtained from the CDFG. No person shall handle or otherwise harass any individual western pond turtle encountered during construction, with the exception of handling by the qualified biologist. A plan shall be developed in consultation with the CDFG to relocate the western pond turtle individuals to the nearest protected habitat outside the construction zone and to provide necessary on-site construction avoidance measures to prevent inadvertent take of this species. **Mitigation Measure Bio-1c: Contractor Awareness**. Contractor education should be conducted to make workers aware of measures being taken to protect resources on the site and to contribute to increased vigilance during their work. Before initiation of construction activities within close proximity to the quarry pond, all construction workers shall be trained by the qualified biologist regarding the potential presence of western pond turtle and the fact that this species is to be avoided, and if any turtles are seen, the job foreman must be notified and construction shall be halted until appropriate measures have been taken.	
Impact Bio-2: No wetlands or sensitive natural communities are present at the Project site such that they would be disturbed by Project construction or operation. However, landscape improvements at the edge of the Project site have the potential to adversely affect off-site wetland, riparian and sensitive natural communities.	None required SCA Bio-2: Creek Protection Plan SCA Bio-3: Regulatory Permits and Authorizations SCA Bio-4: Creek Monitoring SCA Bio-5: Creek Landscaping Plan	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
Impact Bio-3: Redevelopment of the Project site as proposed would not adversely affect wildlife movement or nursery sites.	None required	No Impact
Impact Bio-5: Redevelopment of the Project site as proposed would result in removal of four (4) "protected trees" to accommodate new buildings, five (5) protected trees within roadway medians, and two (2) non-protected Monterey pines for improved access to the adjacent quarry pond.	None required SCA Aesth-2: Tree Removal Permit, SCA Aesth-3: Tree Replacement Plantings, and SCA Aesth-4: Tree Protection During Construction	Less than Significant
Impact Bio-6: Although the proposed Project would be subject to the provisions of the City of Oakland Creek Protection Ordinance, there is nothing about the Project that would fundamentally conflict with elements of the ordinance intended to protect biological resources. The Project would not discharge a substantial amount of pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it adversely impact a riparian corridor by significantly altering vegetation or wildlife habitat.	None required SCA Bio-2: Creek Protection Plan, SCA Bio-3: Regulatory Permits and Authorizations SCA Bio-4: Creek Monitoring SCA Bio-5: Creek Landscaping Plan	Less than Significant
Cumulative Impact Bio-7: The Project would not result in a significant cumulative impact on biological resources.	None required	Less than Significant
Cultural Resources		
Impact Cultural-1: The Project would not directly result in a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5.	None needed	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
Impact Cultural-2: The Project would not cause a substantial adverse change in the significance of a known archaeological resource, nor would it directly or indirectly destroy a known unique paleontological resource or site, or unique geologic feature. It is possible that currently unknown archaeological or paleontological resources could be damaged during site grading and construction.	None required SCA Cultural-1: Archaeological Resources SCA Cultural-2: Paleontological Resources SCA Cultural-3: *Human Remains* SCA Cultural-5: Archaeological Resources – Sensitive Areas	Less than Significant
Cumulative Impact Cultural-3: Implementation of the Project would not adversely affect historic or cultural resources, thus it would similarly not combine with other past, present, existing, pending and reasonably foreseeable projects that may have cultural resource impacts.	None required	No Impact
Geology and Soils		
Impact Geo-1: The Project site is located in an area that would be subject to very strong ground shaking and potential liquefaction in a major seismic event.	None required SCA Geo-2: Soils Report	Less than Significant
Impact Geo-2: The cut slope at the Project site's northerly boundary shows evidence of erosion and fallen debris, and could potentially be susceptible to slides.	None required SCA Geo-2: Soils Report **SCA Implementation: Catchment Structures.** Pursuant to recommendations from the 2007 Kleinfelder Geotechnical Investigation, the Project applicant shall reconstruct the on-site catchment structures at the toe of the cut slope along the northerly site boundary. Detailed catchment structure designs shall be included in the required soils report.	Less than Significant
Impact Geo-3: Portions of the easterly side of the Project site near the quarry pond contain clayey soil with variable gravel content, potentially unsuitable as a sub-grade soil for building foundations.	None required SCA Geo-2: Soils Report **SCA Implementation: Excavation of Unsuitable Soils.** Pursuant to recommendations from the 2007 Kleinfelder Geotechnical Investigation, in the event that unsuitable soil is encountered during the construction phase, such soils should be excavated to a firm bottom and the resulting hole should	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
	be backfilled with engineered fill or lean mix concrete.	
Impact Geo-4: Site preparation and construction activity associated with the Project could result in soil erosion as the surface is disrupted.	None required SCA Geo-2: Soils Report	Less than Significant
Impact Geo-5: Soils samples taken at the Project site indicate that near-surface soils are considered to have a low potential for expansion.	None required SCA Geo-2: Soils Report	Less than Significant
Impact Geo-6: The Project site has been previously developed and there are no known wells, pits, swamps, mounds, tank vaults or unmarked sewer lines located below the surface of the site that would be disturbed as a result of the proposed redevelopment.	None needed	Less than Significant
Impact Geo-7: The Project site has been previously developed and there is no evidence to suggest that the site has been previously used as a landfill. Redevelopment of the Project site as proposed would not result in the placement of any structures above landfills.	None needed	No impact
Impact Geo-8: The Project site is currently served by municipal sewage systems, and redevelopment as proposed would continue to be served by these systems. The use of septic systems is not anticipated.	None needed	No Impact
Cumulative Impact Geo-9: Portions of Oakland are underlain by unstable geology and soil conditions, and cumulative development under these conditions could expose people or structures to substantial adverse effects. However, with required implementation of City of Oakland Standard Conditions of Approval, as	None needed SCA Geo-2: Soils Report	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
well as other applicable local and State laws and regulations, cumulative impacts related to unstable geology and soil conditions would remain less than significant.		
Greenhouse Gas Emissions		
Impact GHG-1: Construction and operation of the Project would not result in GHG emissions that exceed City thresholds of significance. Therefore, the Project would result in a less-than-considerable contribution to cumulative global climate change, and thus a less-than-significant impact.	None needed	Less than Significant
Impact GHG-2: Because the estimated GHG emissions of the Project would not exceed the City's numeric significance threshold as analyzed under Impact GHG-1, development and implementation of the Project would also comply with applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions.	None needed	Less than Significant
Hazards and Hazardous Materials		
Impact Haz-1: No portion of the Project site is included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Environmental Site Assessments prepared for the Project site do not indicate the presence of on-site soil or groundwater contamination at significant levels, and do not indicate that off-site contamination of soil or groundwater presents a concern to construction or operation of the Project. On-site building assessments do indicate that asbestos-containing materials are present in older portions of the shopping center.	None required SCA Haz-2: Environmental Site Assessment Reports/Remediation **SCA Implementation: Soil Sampling.** a. Soil and grab-groundwater samples shall be sought from along the sanitary sewer line further west, behind the existing Safeway store and toward Broadway. Based on the presence of groundwater within approximately 15 feet in depth at the former gas station at 5175 Broadway, it appears that field conditions may be more favorable for encountering groundwater closer to Broadway. Also, additional attempts to collect grab-groundwater samples could be made west of Boring SB-1. If grab-groundwater samples are successfully collected, then the laboratory results will also aid in evaluating the significance of the benzene detection at SB-2.	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
	b. Additional sampling activities for evidence of PCE impacts could be focused on the interior of the dry cleaning lease space. Further sampling across the site was not recommended because of the lack of laterally continuous groundwater, the lack of PCE in groundwater at SB-2 and SB-9, and the limited access along the sanitary sewer line behind the lessee spaces. c. These investigations shall be documented in a report which shall make recommendations for remedial action if appropriate and necessary, and shall be signed by a Registered Environmental Assessor, Professional Geologist, or Professional Engineer. SCA Haz-3: Radon or Vapor Intrusion from Soil or Groundwater Sources SCA Haz-10: Lead-Based Paint Remediation SCA Air-2: Asbestos Removal in Structures	
Impact Haz-2: Construction workers, future commercial tenants and shoppers at the Project site may be exposed to hazardous materials during site demolition and construction phases.	None required SCA Haz-7: Other Materials Classified as Hazardous Waste SCA Haz-10: Lead-Based Paint Remediation SCA Air-2: Asbestos Removal in Structures **SCA Implementation: Asbestos Removal.** a. The floor tile and mastic materials that were positive must be removed using floor abatement practices for asbestos in areas scheduled for renovation. All of the original and older floor tiles are considered asbestos containing material (ACM) due to the difficulty of separating and/or removing the asbestos containing mastic component. Any removal shall be performed using Wet methods, following all applicable regulatory guidelines. During the removal of any carpet floorings, areas of black mastic shall be treated as containing asbestos. b. The drywall materials that were positive must be removed using abatement practices for > 1% asbestos, in areas scheduled for renovation. All of the original or older gypsum board assemblies are considered asbestos containing construction material (ACCM), requiring the use of contractors, registered for asbestos-related work. Any removal shall be performed using Wet methods, following all applicable regulatory guidelines. c. The roofing materials that were positive must be removed using roofing abatement practices for asbestos, in areas scheduled for renovation. All of the roof cements are considered as asbestos containing material (ACM), due to the difficulty of separating and/or removing the asbestos containing mastic component. Any removal shall be performed using Wet methods, following all applicable regulatory guidelines.	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
	d. Renovation or demolition work in areas that are not specifically covered by this report shall be re-inspected prior to any disturbance of suspect materials.	
Impact Haz-3: The Project site is located within one-quarter mile of Oakland Technical High School and Emerson Elementary School.	None required SCA Haz-1: Phase I and/or Phase II Reports SCA Haz-2: Environmental Site Assessment Reports/Remediation	Less than Significant
Impact Haz-4: The project site is not located near any public airport, within an airport plan area or near a private airstrip.	None needed	No Impact
Impact Haz-5: With implementation of SCA Trans-2, the requirement to obtain an encroachment permit for work within street rights-of-way, and standard construction period notification requirements to first responders, potential Project impact related to interference with an emergency response plan or emergency evacuation plan would be less than significant.	None required SCA Trans-2: Construction Traffic and Parking	Less than Significant
Impact Haz-6: The Project site is located within a heavily urbanized portion of Oakland. There are no wild lands at the Project site and adjacent areas have been developed (e.g., as a college campus, a golf course and cemeteries) and would not pose a risk of wildland fires.	None needed	No Impact
Cumulative Impact Haz-7: Hazards and hazardous materials impacts are generally site-specific and/or have limited mobility. Thus, the Project would not be expected to have cumulatively considerable effects.	None needed	Less than Significant
Hydrology and Water Quality		
Impact Hydro-1: The Project site is already fully developed and/or paved, and is served with	None needed	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
water from the East Bay Municipal Utility District. Redevelopment of the Project site as proposed would not result in any change in existing groundwater recharge, and would not deplete groundwater resources.		
Impact Hydro-2: The Project site is not subject to potential flooding, and redevelopment of the Project site as proposed would not subject off-site areas to increased flood potential.	None needed	No Impact
Impact Hydro-3: The Project site currently has very little pervious surface and is almost entirely covered by buildings and paved areas. Redevelopment of the site as proposed would not substantially increase impervious surface area and thus would not increase stormwater runoff.	None needed	Less than Significant
Impact Hydro-4: Site preparation and construction activity associated with the proposed Project could result in soil erosion, which could have adverse effects on water quality. During site preparation and construction activity at the site, potentially significant soil erosion impacts could occur.	None required SCA Geo-1: Erosion and Sedimentation Control Plan	Less than Significant
Impact Hydro-5: Site preparation and construction activity associated with the proposed Project site could result in degradation of stormwater quality.	None required SCA Hydro-1: Stormwater Pollution Prevention Plan	Less than Significant
Impact Hydro-6: Operational activities such as vehicular use, landscaping maintenance and other operational activities could potentially introduce pollutants into stormwater runoff, resulting in degradation of downstream water quality.	None required SCA Hydro-2: Post-construction Stormwater Pollution Management Plan SCA Hydro-3: Maintenance Agreement for Stormwater Treatment Measures SCA Hydro-4: Erosion, Sedimentation, and Debris Control Measures	Less than Significant
Impact Hydro-7: Although the proposed Project would be subject to the provisions of the City of	None required	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
Oakland Creek Protection Ordinance, there is nothing about the Project that would fundamentally conflict with elements of the ordinance intended to protect hydrologic resources. The Project would not discharge a substantial amount of pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it substantially endanger public or private property or threaten public health or safety.	SCA Bio-2: Creek Protection Plan SCA Bio-3: Regulatory Permits and Authorizations SCA Bio-4: Creek Monitoring SCA Bio-5: Creek Landscaping Plan	
Cumulative Impact Hydro-8: Implementation of the Project, combined with other past, present, existing, pending and reasonably foreseeable projects would not result in significant adverse changes to hydrology and/or water quality.	None needed	Less than Significant
Land Use		
Impact Land Use-1: The Project would redevelop the existing shopping center with a new shopping center, and would not result in the physical division of an existing community.	None needed	No Impact
Impact Land Use-2: The Project would not be incompatible with surrounding land uses.	None needed	Less than Significant
Impact Land Use-3: The Project would not result in a fundamental conflict with any applicable habitat conservation plan or natural community conservation plan.	None needed	No Impact
Noise		
Impact Noise-1: Noise generated by construction activities at the site would not be expected to	None required	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
violate the City of Oakland Noise Ordinance or violate the City of Oakland Noise Ordinance regarding nuisance of persistent construction-related noise, provided that standard construction noise controls are implemented at the site.	SCA Noise-1: Days/Hours of Construction Operation SCA Noise-2: Noise Control SCA Noise-3: Noise Complaint Procedures SCA Noise-5: Pile Driving and Other Extreme Noise Generators	
Impact Noise-2: The Project would not result in a substantial increase in the permanent outdoor ambient noise levels in the Project vicinity above levels existing without the Project.	None needed	No Impact
Impact Noise-3: The Project would not result in a conflict with land use compatibility guidelines used to determine the acceptability of noise for a commercial land use.	None needed	Less than Significant
Impact Noise-4: The Project's operation will not result in new or exacerbated operational noise levels that would exceed the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise.	None needed	Less than Significant
Impact Noise-5: Temporary project construction activities would not expose adjacent residences to groundborne vibration at levels that could cause cosmetic or structural damage to structures or improvements, and Project occupancy and operation would not generate groundborne vibration at levels that would be perceptible beyond the property boundaries.	None required SCA Noise-1: Days/Hours of Construction Operation SCA Noise-3: Noise Complaint Procedures SCA Noise-5: Pile Driving and Other Extreme Noise Generators	Less than Significant
Cumulative Impact Noise-6: Cumulative increases in noise within the vicinity of the Project area would not result in a 5 dBA L_{dn} permanent increase in ambient noise levels above noise levels without the Project, and the Project's contribution to the cumulative increase in noise would not result in a 3 dBA L_{dn} permanent	None needed	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
increase attributable to the Project.		
Traffic		
Existing plus Project **Impact Trans-1**: The proposed Project would degrade intersection operations from LOS D to LOS E during the Saturday PM peak hour at the signalized Shattuck Avenue/52nd Street intersection (#12).	**Mitigation Measure Trans-1**: Implement the following measures at the Shattuck Avenue/52nd Street intersection: a) Optimize signal timing parameters (i.e., adjust the allocation of green time for each intersection approach). b) Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.	Less than Significant
Impact Trans-2: The signalized Telegraph Avenue/51st Street intersection currently operates at LOS E, even without increased traffic from the Project. The proposed Project would add traffic that would increase delay for the critical southbound left-turn movements by more than six seconds during the weekday PM peak hour.	**Mitigation Measure Trans-2**: Implement the following measures at the Telegraph Avenue/51st Street intersection: a) Optimize signal timing parameters (i.e., adjust the allocation of green time for each intersection approach). b) Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.	Less than Significant
Impact Trans-3: The proposed Project would add more than 10 trips to the Howe Street/Pleasant Valley Avenue intersection during the weekday PM and Saturday midday peak hours under Existing plus Project conditions. The intersection would meet the peak hour signal warrant during both time periods.	**Mitigation Measure Trans-3:** Implementing one of the following measures at the Howe Street/ Pleasant Valley Avenue intersection would reduce the impact to a less than significant level: a) Signalize the intersection, providing actuated operation with permitted left turns and coordinate the signal timings with the adjacent intersections that would be in the same signal coordination group. b) Prohibit on-street parking for about 80 feet along northbound Howe Street just south of Pleasant Valley Avenue to allow right-turning vehicles to bypass the queued left-turning vehicles. c) Prohibit the left-turn movement from Howe Street to westbound Pleasant Valley Avenue during the peak commute periods.	Because of secondary significant impacts associated with each of the identified mitigation measures, these measures are considered infeasible. Significant and Unavoidable
Impact Trans-4: The signalized Piedmont Avenue/Pleasant Valley Avenue intersection currently operates at LOS E, even without increased traffic from the Project. The proposed Project would add traffic that would increase average delay at this intersection by more than	**Mitigation Measure Trans-4**: Implement the following measures at the Piedmont Avenue/Pleasant Valley Avenue intersection: a) Convert signal control equipment from pre-timed to actuated-coordinated operations b) Optimize signal timing parameters (i.e., adjust the allocation of green time for each intersection approach)	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
four seconds during the weekday PM peak hour.	c) Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.	
2015 Intersection Impacts **Impact Trans-5:** The proposed Project would degrade intersection operations from LOS D to LOS E during the weekday PM peak hour at the Broadway/51st Street/Pleasant Valley Avenue (#7) intersection under 2015 Conditions. The proposed Project would also add traffic that would increase delay for the critical eastbound through movement by more than six seconds during the Saturday midday peak hour, which the intersection would operate at LOS E regardless of the proposed Project	**Mitigation Measure Trans-5:** Implementation of the following measures at the Broadway/51st Street/Pleasant Valley Avenue intersection would reduce the impact to a less-than-significant level: a) Install a left-turn lane on the westbound Pleasant Valley Avenue approach. b) Install a left-turn lane on the eastbound 51st Street approach.	These modifications would conflict with City policy concerning pedestrian safety and comfort, therefore resulting in secondary impacts. For these reasons the mitigation is considered infeasible. Significant and Unavoidable
Impact Trans-6: The Shattuck Avenue/52nd Street intersection is projected to operate at LOS E under 2015 Conditions, even without increased traffic from the Project. The proposed Project would add traffic that would increase delay for the critical southbound through movement by more than six seconds during the Saturday PM peak hour, exceeding the City's threshold of significance.	**Mitigation Measure Trans-6**: Implement Mitigation Measure Trans-1.	Less than Significant
Impact Trans-7: The Telegraph Avenue/51st Street intersection is projected to operate at LOS E under 2015 Conditions, even without increased traffic from the Project. The proposed Project would add traffic that would increase delay for the critical southbound left-turn movement by more than six seconds during the weekday PM peak hour.	**Mitigation Measure Trans-7**: Implement Mitigation Measure Trans-2.	Less than Significant
Impact Trans-8: The proposed Project would add more than 10 trips to the Howe Street/Pleasant Valley Avenue (#19) intersection	**Mitigation Measure Trans-8:** Implement Mitigation Measure Trans-3	Because of secondary significant impacts associated with each of

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
during the weekday PM and Saturday midday peak hours under 2015 Plus Project conditions. The intersection would meet the peak hour signal warrant during both time periods.		the identified mitigation measures, these measures are considered infeasible Significant and Unavoidable
Impact Trans-9: The proposed Project would degrade intersection operations from LOS E to LOS F during the weekday PM peak hour at the Piedmont Avenue/Pleasant Valley Avenue (#20) intersection under 2015 Conditions; the Project would also degrade the intersection operations during the Saturday midday and PM peak hour from LOS D to LOS E.	**Mitigation Measure Trans-9:** Implement Mitigation Measure Trans-4.	Less than Significant
2035 Intersection Impacts **Impact Trans-10**: The proposed Project would increase volume-to-capacity (v/c) ratio for the intersection by 0.01 or more, and the critical movement v/c ratio for the eastbound left, eastbound through, westbound left, northbound through, and the southbound left movements by 0.02 or more during the weekday PM peak hour, and it would increase v/c ratio for the intersection by 0.01 or more and the critical movement v/c ratio for the eastbound left, eastbound through, and, northbound through movements by 0.02 or more during the Saturday midday peak hour at the Broadway/51st Street/Pleasant Valley Avenue (#7) intersection under 2035 Conditions, which would operate at LOS F regardless of the Project.	**Mitigation Measure Trans-10** Implement Mitigation Measure Trans-5.	Even with implementation of this mitigation measure, the impact would remain significant and unavoidable. In addition, these modifications would conflict with City policy concerning pedestrian safety and comfort, therefore resulting in secondary impacts. For these reasons the mitigation is considered infeasible. Significant and Unavoidable
Impact Trans-11: The proposed Project would increase intersection volume-to-capacity (v/c) ratio by 0.01 or more during the Saturday PM peak hour at the Shattuck Avenue/52nd Street (#12) intersection under 2035 Conditions, which would operate at LOS F regardless of the Project.	**Mitigation Measure Trans-11:** Implement Mitigation Measure Trans-1.	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
Impact Trans-12: The proposed Project would increase delay for the critical southbound left-turn movement by more than six seconds during the weekday PM peak hour at the Telegraph Avenue/51st Street (#15) intersection under 2035 Conditions, which would operate at LOS E regardless of the Project; the Project would also increase delay for the critical westbound and southbound movements by more than six seconds during the Saturday midday peak hour; the Project would also degrade the intersection during the Saturday PM peak hour from LOS D to LOS E.	**Mitigation Measure Trans-12**: Implement Mitigation Measure Trans-2.	Less than Significant
Impact Trans-13: The proposed Project would add more than 10 trips to the Howe Street/ Pleasant Valley Avenue (#19) during the weekday PM, Saturday midday, and Saturday PM peak hours under 2035 Plus Project conditions. The intersection would meet the peak hour signal warrant during the three time periods.	**Mitigation Measure Trans-13:** Implement Mitigation Measure Trans-3	Because of secondary significant impacts associated with each of the identified mitigation measures, these measures are considered infeasible. Significant and Unavoidable
Impact Trans-14: The proposed Project would increase volume-to-capacity (v/c) ratio for the intersection by 0.01 or more, and the critical movement v/c ratio for the eastbound, westbound, and northbound movements by 0.02 or more during the weekday PM, Saturday midday, and Saturday PM peak hours at the Piedmont Avenue/Pleasant Valley Avenue (#20) intersection under 2035 Conditions, which would operate at LOS F regardless of the Project.	**Mitigation Measure Trans-11**: Implement the following measures at the Piedmont Avenue/Pleasant Valley Avenue intersection: a) Mitigation Measure Trans-4. b) Modify signal control equipment to provide lagging protected phasing in the northbound direction.	After implementation of this measure, the intersection impact would remain significant and unavoidable. No other feasible mitigation measures are available within the existing automobile right-of-way. Significant and Unavoidable
Impact Trans-15: The proposed Project would degrade intersection operations from LOS E to LOS F during the weekday PM peak hour at the Hudson Street/Manila Avenue/College Avenue	**Mitigation Measure Trans-15**: Implement the following measures at the Hudson Street/Manila Avenue/College Avenue intersection: a) Optimize signal timing parameters (i.e., adjust the allocation of green time for each intersection	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
(#24) intersection under 2035 Conditions.	approach). b) Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.	
Impact Trans-16: The proposed Project would not cause congestion of regional significance on a roadway segment on the Congestion Management Program (CMP) and/or the Metropolitan Transportation System (MTS) evaluated per the requirements of the Land Use Analysis Program of the CMP.	None needed	Less than Significant
Impact Trans-17: The proposed Project would not substantially increased travel times for AC Transit buses.	None needed	Less than Significant
Impact Trans-18: The proposed Project would not directly or indirectly cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard due to a new or existing physical design feature or incompatible uses.	None needed	Less than Significant
Impact Trans-19: The proposed Project would not generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard.	None needed	Less than Significant
Impact Trans-20: The proposed Project would not directly or indirectly result in a permanent substantial decrease in pedestrian safety.	None needed	Less than Significant
Impact Trans-21: The proposed Project would not directly or indirectly result in a permanent substantial decrease in bus rider safety.	None needed	Less than Significant
Impact Trans-22: The proposed Project would	None needed	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
not directly or indirectly result in a permanent substantial decrease in bicyclist safety.		
Impact Trans-23: The proposed Project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.	None needed	Less than Significant
Impact Trans-24: The proposed Project would not fundamentally conflict with adopted City policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities adopted for the purpose of avoiding or mitigating an environmental effect and actually result in a physical change in the environment.	None needed	Less than Significant
Impact Trans-25: The proposed Project would result in a substantial, though temporary adverse effect on the circulation system during construction.	None required SCA Trans-1: Construction Traffic Management Plan **SCA Implementation: Construction Traffic Management.** The Construction Traffic Management Plan developed for the Project shall include the following: a) A set of comprehensive traffic control measures for motor vehicles, transit, bicycle, and pedestrian access and circulation during each phase of construction. b) A construction period parking management plan to ensure that parking demands for construction workers, site employees, and customers are accommodated during each phase of construction.	Less than Significant
Impact Trans-26: Neighborhood traffic intrusion would not exceed the capacity of affected residential streets, and would not result in a significant impact.	None needed	Less than Significant
Utilities and Public Services		
Impact Util-1: Although the Project will result in the construction of new storm water drainage facilities, the construction of these facilities would not cause significant environmental	None required SCA Util-2: Stormwater and Sewer SCA Air-1: Best Management Practices	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
effects.	SCA Geo-1: Erosion and Sedimentation Control Plan SCA Noise-1: Days/Hours of Construction Operation SCA Noise-2: *Noise Control* SCA Trans-1: Construction Traffic Management Plan	
Impact Util-2: The Project would not generate wastewater flows that would exceed the capacity of existing wastewater treatment facilities or necessitate the expansion of existing wastewater treatment facilities.	None needed	Less than Significant
Impact Util-3: Although the Project will result in the construction of new on-site wastewater collection infrastructure, the construction of such infrastructure would not cause significant environmental effects.	None required SCA Util-2: Stormwater and Sewer SCA Air-1: Best Management Practices SCA Geo-1: Erosion and Sedimentation Control Plan SCA Noise-1: Days/Hours of Construction Operation SCA Noise-2: *Noise Control* SCA Trans-1: Construction Traffic Management Plan	Less than Significant
Impact Util-4: The Project would not exceed water supplies available from existing entitlements and resources.	None needed	Less than Significant
Impact Util-5: Although the Project would result in the construction of certain new on-site water supply infrastructure, the construction of such infrastructure would not cause significant environmental effects.	None required SCA Air-1: Best Management Practices SCA Geo-1: Erosion and Sedimentation Control Plan SCA Noise-1: Days/Hours of Construction Operation SCA Noise-2: Noise Control SCA Trans-1: Construction Traffic Management Plan	Less than Significant
Impact Util-6: The amount of solid waste	None required	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
generated by the proposed Project would not exceed the capacity of the Davis Street Transfer Station or the Altamont Landfill and would not require the construction or expansion of landfill facilities.	SCA Util-1: Waste Reduction and Recycling	
Cumulative Impact Util-7: The Project, in combination with other known past, present, planned or reasonably anticipated future projects would not exceed existing or projected utility capacities.	None needed	Less than Significant
Other Less Than Significant Effects		
Impact Ag-1: The Project would not convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the Cal. Resources Agency to non-agricultural use.	None needed	No Impact
Impact Ag -2: The Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract.	None needed	No Impact
Impact Ag-3: The Project would not involve any changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use.	None needed	No Impact
Impact Min-1: The Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.	None needed	No Impact
Impact Min-2: The Project would not result in loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.	None needed	No Impact

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
Impact Pop-1: The Project would not induce substantial population growth in a manner not contemplated in the General Plan, either directly or indirectly.	None needed	No Impact
Impact Pop-2: The Project would not displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element.	None needed	No Impact
Impact Pub Serv-1: The Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities in order to maintain acceptable service ratios, response times or other fire protection service performance objectives.	None required SCA Pub Serv-1: Fire Safety Phasing Plan	Less than Significant
Impact Pub Serv-2: The Project could result in an increase in calls for police protection services, but would not result in substantial adverse physical impacts associated with the provision of new or physically altered police facilities or the need for new or physically altered police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other Oakland Police Department performance objectives	None needed	Less than Significant
Impact Pub Serv-3: The Project could result in new students for local schools, but would not require new or physically altered school facilities to maintain acceptable performance objectives.	None needed	No Impact
Impact Rec-1: The Project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that	None needed	Less than Significant

Table 2-1: Summary of Project Impacts, Standard Conditions of Approval, Mitigation Measures and Residual Impacts: Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue

Potential Environmental Impacts	Mitigation Measures / Standard Conditions of Approval (SCA)	Resulting Level of Significance
substantial physical deterioration of the facility would occur or be accelerated.		
Impact Rec-2: The Project does not include recreational facilities nor does it require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	None needed	No Impact

Table 2-2: Summary of Non-CEQA Recommendations

Potential Effects	Recommendation
Vehicle, Pedestrian and Bicycle Safety *Broadway/College Avenue Intersection* The Project would generate additional automobiles, bicycles, and pedestrians at the Broadway/ College Avenue intersection, which currently does not provide a crosswalk on the south approach. In addition, vehicles on southbound College Avenue turn right into Broadway at high speeds due to the angle that College Avenue intersects Broadway. These vehicles may conflict with pedestrians crossing College Avenue or vehicles turning left from northbound Broadway into Wendy's Restaurant.	**Recommendation Trans-15a:** Modify the Broadway/College Avenue intersection so that College Avenue would intersect Broadway at a right angle.
Internal Pedestrian Improvements The internal street in the western portion of the site provides a continuous commercial frontage and is intended as a pedestrian oriented street. The loading berths at Building "M" disrupt the pedestrian flow along the internal street and may result in potential conflicts when trucks are backing into and leaving the loading dock.	**Recommendation Trans-17:** Implement the following in order to improve pedestrian access, circulation, and safety: a) Use different materials and/or striping patterns at all crosswalks within the site, including mid-block crossings, parking aisle crossings, and parking structure driveways. Also, consider using raised speed tables at crosswalks to reduce automobile speeds. b) Ensure adequate sight distance is provided at all crosswalks, especially at midblock and parking structure driveways. c) Potential options to improve pedestrian circulation and safety along the internal street near the loading berths at Building "M" include: • Allow trucks to load/unload along the internal street during non-peak periods. • Provide a pull-out on Pleasant Valley Avenue that would allow trucks to parallel park without interfering with automobile or bicycle flow along Pleasant Valley Avenue. This strategy would also require direct access between the uses on the south side of the internal street and Pleasant Valley Avenue. • Enlarge the existing loading berth adjacent to Building "J." This strategy would require material to be manually delivered to the uses south of the internal street. • Implement a loading management program at Building "M" loading berths to minimize disruptions to pedestrian activity. d) Ensure that all pedestrian paths and sidewalks within the Project site have a minimum width of six feet (10 feet preferred). e) Ensure that all pedestrian facilities provide pedestrian scale lighting.
Bus Rider Safety	**Recommendation Trans-18:** Provide a bus shelter at the bus stops on northbound and southbound Broadway north of Pleasant Valley Avenue/51st Street and on westbound Pleasant Valley Avenue west of Project driveway.

Table 2-2: Summary of Non-CEQA Recommendations

Bicycle Parking	**Recommendation Trans-23**: Implement the following improvements to bicycle parking: a) Locate long-term bicycle parking in the parking structures. b) Ensure the short-term bicycle parking on sidewalks do not block pedestrian circulation. c) Ensure that some short-term bicycle parking spaces can accommodate bicycles with trailers. d) Monitor the usage of long-term and short-term bicycle parking spaces and if necessary provide additional parking spaces. e) Provide shower and locker facilities in a central location that can be accessed by all site employees.
Parking Supply	**Recommendation Trans-24**: Implement the following strategies to reduce overall parking demand for the Project site and better manage the available parking supply: a) Implement a Transportation Demand Management (TDM) plan to encourage more Project employees to use other travel modes than driving as required by SCA Trans-1. b) Encourage employees to use the least convenient parking spaces such as parking spaces on the top deck of the parking structures and behind the buildings. c) Install an automated parking counting system including variable message signs to inform motorists of the number of parking spaces available in the structured parking facilities and reduce potential traffic circulation. d) Implement strategies to manage parking demand and supply during the peak December periods: • Provide attendant parking for employees and/or customers. Automobiles can park in the drive aisles with attendant parking and increase the overall parking capacity of the site. • Provide remote parking for site employees.
Truck Access and Circulation	**Recommendation Trans-25:** Implement a loading management program to ensure that truck deliveries for all Project buildings can be accommodated with minimal disruptions to pedestrian, bicycle, and automobile access, circulation and parking throughout the site. The loading management program should identify loading areas for all Project buildings and truck waiting areas when truck loading areas are occupied.

3

Project Description

Property Development Centers, Inc., an affiliate of Safeway, Inc., is proposing the redevelopment of the existing Rockridge Shopping Center located at Broadway and Pleasant Valley Avenue, including the demolition of all existing buildings on the site and construction of a new Safeway store along with other retail, office and restaurant space. This chapter describes the proposed Safeway Redevelopment Project (Project) which is evaluated in this Environmental Impact Report (EIR). The chapter begins with a description of the Project site, planning context and a discussion of relevant Project background, followed by a detailed description of the proposed Project, Project objectives and a discussion of the intended uses of the EIR for required Project approvals and entitlements.

Project Site

Location

The 15.4-acre Project site is located on the northeast corner of the intersection of Pleasant Valley Avenue and Broadway in the City of Oakland, Alameda County, California (see **Figure 3-1**). The site is under a single ownership and is composed of two parcels: Assessor's Parcel Number (APN) 14-1242-5-7 and APN 14-1242-2-3. The site has approximately 850 feet of frontage along Pleasant Valley Avenue and 480 feet of frontage along Broadway.

The Project site is generally bounded by Broadway (west); Pleasant Valley Avenue (south); the California College of Arts, the Claremont Country Club (north); and Claremont Pond and an American Automobile Association (AAA) office (east).

Existing Site Characteristics

Between the 1870s and the 1950s, the Project site and much of its immediate surroundings were part of a rock quarry last operated by Oliver DeSilva Construction Company. The quarry was permanently closed in 1957.

The Project site's topography is generally flat, but its northern boundary is characterized by a nearly vertical cut slope ranging an average of 35-60 feet above the site, created as a result of the prior quarry operations. Bordering the Project site to the east is a pond that was left after the quarry operations ceased.

The site is about 5 to 8 feet higher than street grade along both Broadway and Pleasant Valley Avenue, probably the result of the placement of fill in this area.

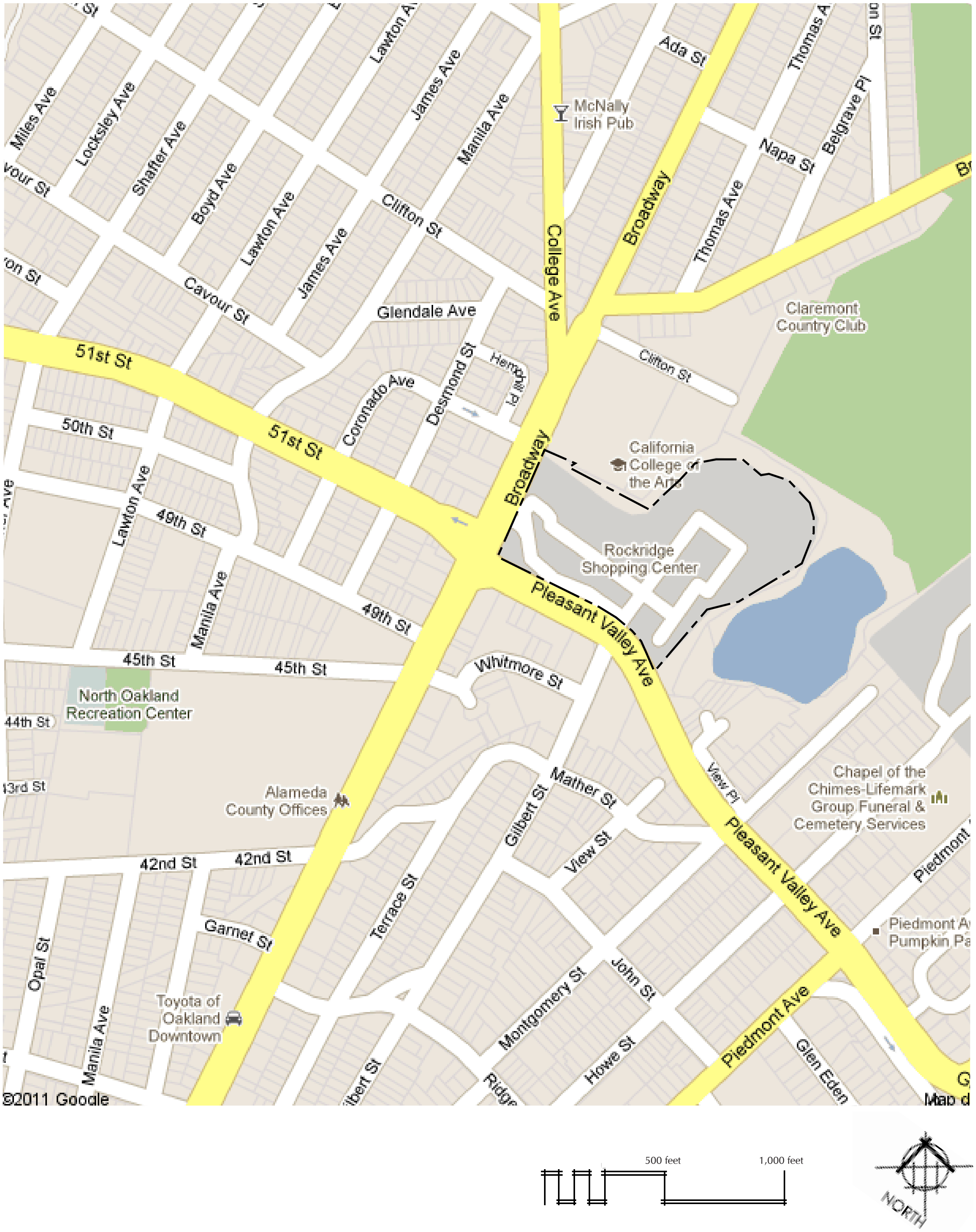

Figure 3-1
Project Site Location

Source: Google Maps

Retail Use

In 1964 and 1965, six buildings were constructed on the Project site that now make up the existing Rockridge Shopping Center (see **Figure 3-2**). Five of the shopping center's six existing buildings are generally located along the site's northerly boundary set back from Pleasant Valley Avenue, and one building is a free-standing structure situated directly at the northeast corner of Pleasant Valley Avenue and Broadway.

The current tenants at the shopping center, by building, include the following:

- Building 1: 18,000 square feet – Chase Bank (see **Figure 3-3**)
- Building 2: 14,906 square feet – Boston Market restaurant, Bank of America and Pet Food Express (see also Figure 3-3)
- Building 3: 47,975 square feet – Safeway (see **Figure 3-4**)
- Building 4: 6,605 square feet – Starbucks, Dress Barn and Ritz Camera (see also Figure 3-4)
- Building 5: 10,756 square feet – PayLess Shoes, Jamba Juice, Game Stop, 1st Title Credit Union, Rockridge Cleaners, Health Foods, and Great Clips (see **Figure 3-5**)
- Building 6: 87,200 square feet – CVS Pharmacy (formerly Longs Drugs - see also Figure 3-5)

In total, the Project site currently contains approximately 185,465 square feet of commercial building space.

Access and Circulation

Access to the Project site is currently provided at two points along Pleasant Valley Avenue and three points along Broadway. Along Pleasant Valley Avenue the primary access is at the signalized intersection of Pleasant Valley Avenue and Gilbert Street. A second access is provided from Pleasant Valley Avenue near the Project site's southeastern boundary, approximately 210 feet east of the primary access. Along Broadway, the first driveway provides two-way, right-in / right-out unsignalized access to the Project site's main parking lot. Approximately 100 feet further to the north, a second unsignalized right-in / right-out driveway also provides access to the Project site's main parking lot and to the drive aisle along the retail frontages. Approximately 150 feet further to the north at the northwestern corner of the Project site, a third unsignalized driveway provides two-way access to the service road that runs eastward along the site's northern boundary behind the shopping center's buildings. This service road provides access to the service entrances and loading docks, and continues southward along the site's eastern perimeter, eventually leading to the secondary access driveway at Pleasant Valley Avenue.

Existing circulation is typical of similar shopping centers. Rows of diagonal parking spaces are separated by travel aisles, and overall circulation is provided via a two-way perimeter travel lane. Parking stalls are oriented at a forty-five degree angle to the travel aisles.

The majority of the Project site is dedicated to surface parking with 615 off-street parking spaces. The existing parking ratio is 0.3 spaces per 1,000 square feet of building area.

SITE DATA :

SITE AREA :	15.40 ACRES		670,824 S.F.
EXISITNG BLDG '1' 3 STORY			18,000 S.F.
EXISITNG BLDG '2'			14,906 S.F.
EXISITNG BLDG '3'			47,975 S.F.
EXISITNG BLDG '4'			6,605 S.F.
EXISITNG BLDG '5'			10,756 S.F.
EXISITNG BLDG '6'			87,220 S.F.
TOTAL BUILDING AREA :			185,462 S.F.
STANDARD PARKING PROVIDED :			650 SPACE
COMPACT PARKING PROVIDED :		0%	0 SPACE
* HANDICAP PARKING PROVIDED :			17 SPACE
TOTAL PARKING PROVIDED :			667 SPACE
PARKING RATIO :			3.60 SPACES / 1000 S.F.
SITE COVERAGE :			28%

Figure 3-2
Existing Project Site, Current Buildings

Source: Benner Stange Architects

Photo 1: Chase Bank, Building 1

Photo 2:West Wing - Building 2

Figure 3-3
Project Site Photos 1 and 2: Existing Center

Source: PD Centers

Photo 3: Existing Safeway, Building 3

Photo 4: Central Building, Buildings 4

Figure 3-4
Project Site Photos 3 and 4: Existing Center

Source: PD Centers

Photo 5: Central Building, Building 5

Photo 6: Existing CVS Phamacy. Building 6 (was Long's Drug)

Figure 3-5
Project Site Photos 5 and 6: Existing Center

Source: PD Centers

Surrounding Land Uses

Bordering the Project site to the east is a pond that was left after the quarry operations stopped. The Claremont Pond (also known as Old Quarry Pond) is owned by the Claremont Country Club and serves mainly as a water storage facility that supplies the country club's irrigation needs for the golf course. The water surface of the pond is about 20 feet below the shopping center grade, and the top of the bank is about 30 feet from the existing CVS Pharmacy building (asphalt parking and driveway are located between the building and the top of bank of the pond). The banks surrounding the pond are in rock and nearly vertical. On the opposite side of the pond is an extremely steep cut slope (nearly vertical) that is about 80 to 100 feet high.

Other adjacent land uses are mainly institutional (California College of the Arts), recreational (Claremont Country Club) and commercial (AAA office). Commercial uses are also located across Broadway to the west of the site, and residential uses are located across Pleasant Valley Avenue to the south of the site.

Northwest of the Project site is the eastern terminus of College Avenue, a popular business district extending between the cities of Oakland and Berkeley characterized by cafes, boutiques, antique stores, bookstores and professional offices.

Access to State Route 24 is located approximately ¾ mile west of the Project site along 51st Street.

Existing General Plan and Zoning Designations

General Plan

The Project site is currently designated on the General Plan Land Use and Transportation Element (LUTE) Diagram as Community Commercial. The Community Commercial classification is intended to "identify, create, maintain and enhance areas suitable for a wide variety of commercial and institutional operations along the City's major corridors and in shopping districts or centers." Community commercial uses may include neighborhood center uses and larger scale retail and commercial uses, and can be complemented by the addition of urban residential development and compatible mixed-use development. The maximum floor area ratio (FAR) for this land use classification is 5.0.

Zoning

The zoning applicable to the Project site at the time the Project application was deemed complete (December 17, 2010) determines the zoning regulations applied to the Project. At that time, the site was split into three different zoning districts. The southwestern corner of the site, roughly equal to the location of the Chase Bank building, was located in the C-40 Community Thoroughfare Commercial zone. The central portion of the site was located in the C-30 District Thoroughfare Commercial zone. The eastern portion of the site was located in the R-50 Medium Density Residential zone. The entire site was also covered with the S-4 Design Review Combining zone. The S-4 zone is an overlay zone that requires design review for the construction and alteration of buildings. All new construction in the S-4 zone is subject to the City's Design Review procedures.

A new zoning map and accompanying new zoning regulations for the City's residential and commercial areas became effective as of April 14, 2011. Under the new zoning map, the Project site is zoned CC-2 Community Commercial-2. The new zoning is not applicable to the Project because the Project application was deemed complete prior to the new zoning becoming effective.

Pursuant to the R-50 zoning regulations applicable to the eastern portion of the Project site, commercial uses such as those that currently exist and that are proposed under the Project are not considered to be permitted uses. However, the R-50 zoning district conflicts with the Community Commercial General Plan land use designation for the site. In such situations, the City's Guidelines for Determining Project

Conformity with the General Plan and Zoning Regulations indicate that an interim conditional use permit is required to apply the policies of the General Plan to those sites with conflicting zoning. In May 2009, the City made a similar determination for the Project site in conjunction with review of a proposal to remodel the adjacent Emil Villa's restaurant building. In that case, the City applied the standards of the C-30/S-4 zone as the "best-fit" zone for this area. This determination concluded that the C-30/S-4 zone contained the most appropriate zoning standards to use when reviewing that project because the standards best implement the policies of the Community Commercial General Plan designation at the site.

The applicable General Plan land use designations and zoning for the Project site are shown in **Figure 3-6**.

Project Description

Background

On June 1, 2009 Property Development Centers, Inc. (PD Centers, an affiliate of Safeway, Inc.) submitted an application to the City of Oakland for environmental review of their proposed Project. A Notice of Preparation (NOP) for that project was issued on June 24, 2009. At that time, the applicant was proposing a plan for redevelopment of the site that would primarily reconfigure existing building space to support development of a new Safeway store, add new shop space, create additional on-site parking space and add a second story to existing buildings on some portions of the site (see **Figure 3-7**).

A public hearing was held before the City of Oakland Planning Commission on July 15, 2009 to gather comments on that project and to scope the requirements of this EIR. At that hearing, a number of speakers and Commissioners expressed their desire for the applicant to consider a substantially different site plan than what was then proposed to better address a number of issues including urban versus suburban development styles and densities; the mix of proposed land uses; and improved pedestrian, bicycle and transit access.

In response to those comments and other considerations, the Project applicant has reconsidered its plans for the site and has submitted a revised application described below.

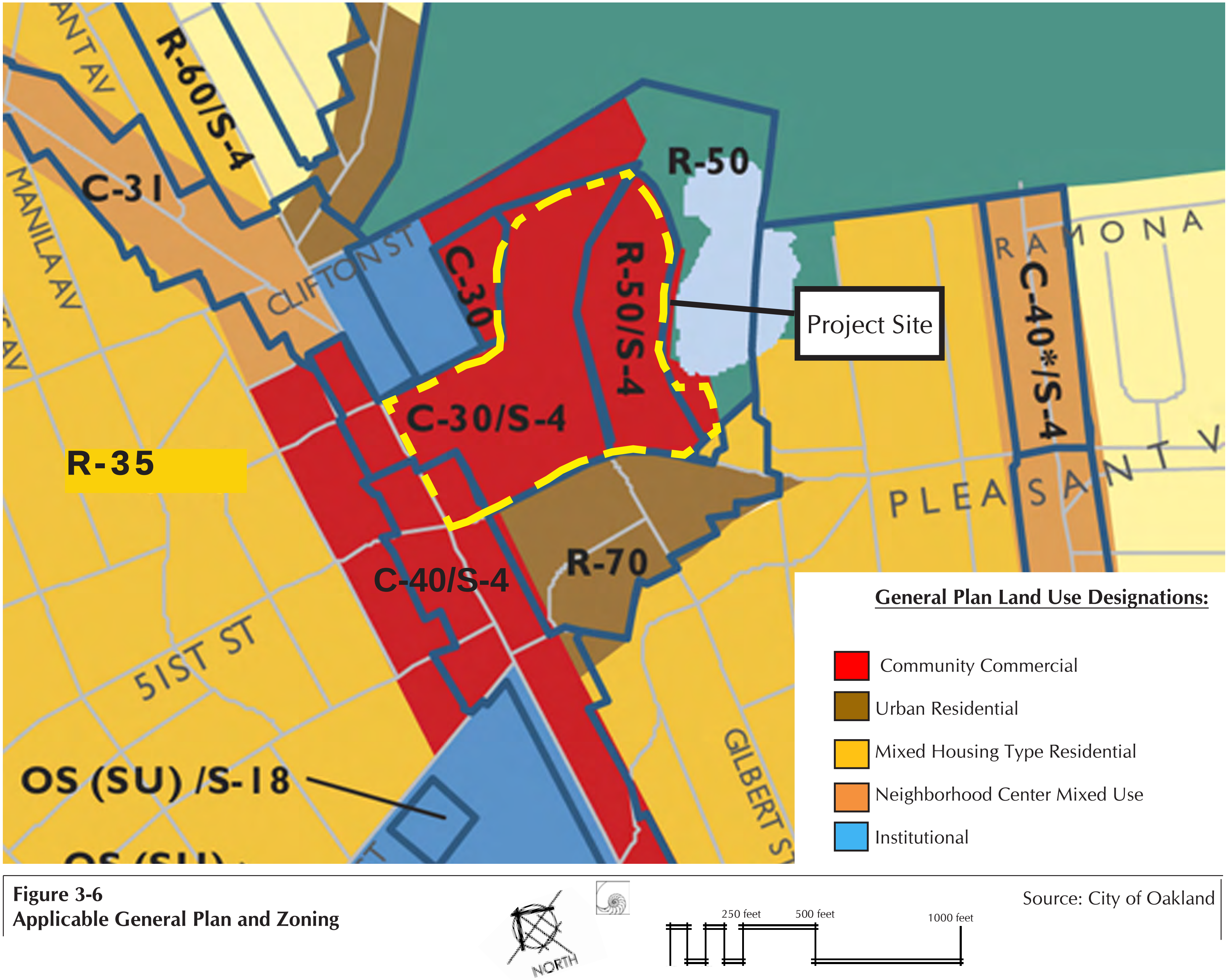

Figure 3-6
Applicable General Plan and Zoning

Source: City of Oakland

Figure 3-7
Original (2009) Project - per NOP

Source: Benner Stange Architects

Current Project Description

Overview

The currently proposed Project (Project) would redevelop the existing Rockridge Shopping Center, including the demolition of all 185,500 square feet of existing buildings on the site. Removed buildings would be replaced with construction of an approximately 65,000-square foot new “Lifestyle”[1] Safeway store along with other retail, office and restaurant space, resulting in a total of approximately 322,500 square feet of new commercial space.[2] This represents an increase of approximately 137,000 square feet over existing development on the site (see **Figure 3-8** and **Table 3-1**).

The Project would be constructed in phases over approximately 20 months. Initially, the existing CVS Pharmacy building and the adjacent retail building would be demolished and replaced by a new Safeway store. The existing Safeway store would continue to operate during the construction of the new Safeway. Once the existing Safeway relocates to the new building, the existing Safeway and all of the other existing buildings on the site would be demolished and replaced with new 2- to 3-story buildings containing retail and restaurant uses on the ground floor and office and retail uses on the second floor.

A total of approximately 967 off-street parking spaces are proposed. Parking would be located in surface parking lots and along drive aisles throughout the site, on a rooftop parking lot over the new Safeway store and adjacent new commercial buildings, along a new internal “shopping street,” and in a three level parking garage located over retail space. The applicant also proposes modifications to the adjacent streets and public rights-of-way to improve access and circulation for all travel modes, and to provide new signalized left-turn access onto and from Broadway, and a new building identified for a restaurant use would be located adjacent to Claremont Pond, with an outdoor patio overlooking the pond.

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[1] The “Lifestyle” Safeway store is part of a corporate branding campaign intended to differentiate these stores from competitors as a more upscale shopping experience. Generally, these types of stores are designed with a more inviting decor with warm ambiance and subdued lighting, and containing special elements such as sushi and olive bars and the addition of in-store coffee kiosks. Lifestyle stores have a strong emphasis on providing quality perishables, such as produce, meats, delicatessen items, baked goods, prepared foods, and flowers. Lifestyle stores also include unique merchandising fixtures and a variety of island displays with specialty items. Many Safeway store locations are being converted to the "Lifestyle" format.

[2] Of the total approximately 322,500 square feet, approximately 293,200 square feet would be gross leasable floor area and approximately 29,300 square feet would be common space (e.g., stairs and loading corridors).

Figure 3-8
Currently Proposed Project, Site Plan

Source: Benner Stange Arcitects

Table 3-1: Proposed Buildings and Uses (square feet)

Building # (see Figure 3-8)	Grocery (Safeway)	Major Retail	Retail	Restaurant	Office	Bank/ Finance	Total Building Area
A	65,013						65,013
B1			8,179				8,179
B2			4,998				4,998
C1a			6,867				6,867
C1b			10,687				10,687
C2					8,835		8,835
D						8,426	8,426
E				4,695[2]			4,695
F				2,913			2,913
G		10,494					10,494
G2		9,944					9,944
H			14,310				14,310
J			16,331				16,331
K			10,682	2,330			13,012
L0			27,900				27,900
L1a			9,483[3]				9,483
L1b			10,800				10,800
L1c			6,684				6,684
L2a			21,650				21,650
L2b			14,830				14,830
N		7,577					7,577
N2		7,405					7,405
O			2,200				2,200
Subtotal	**65,013**	**35,420**	**165,601**	**9,938**	**8,835**	**8,426**	**293,233**
Common Space[4]							29,303
Total							**322,536**

[1]0 = street level; 1 = ground level; 2 = second story.

[2]Includes 1,800 square foot patio.

[3]Includes 2,701 square foot patio.

[4]Includes common receiving area 'M'. Of the total 322,536 square feet, 293,233 square feet would be gross leasable floor area and approximately 29,303 square feet would be common space (e.g., stairs and loading corridors).

Site Design

The existing shopping center is designed as a traditional suburban shopping center with shops placed to the back of the parcel and parking toward the front along the main street frontage. The 2009 plan would have generally been configured similar to the existing shopping center, but with new two-story additions onto existing shop space. That design was considered by many who commented on the NOP as not taking full advantage of the site's urban setting, and not contributing in a positive manner to the urban design character of the area. In response to those comments, the current Project (the "Project') has a different layout than the 2009 plan (see **Figures 3-9 and 3-10**).

The new Safeway store with roof-top parking would be located in virtually the same location as the CVS Pharmacy. Adjacent shops would be 2-story buildings with ground floor retail, and office space and roof-top parking at the second level.

New retail, office and restaurant space would be located along the street edge of both Broadway and Pleasant Valley Avenue, fronting a pedestrian-oriented internal street (see **Figure 3-11**). Parking would be located behind these new buildings and generally not visible from the street. Additional parking would be provided in a parking garage with three levels of parking over ground floor retail space, in a surface parking lot in front of the proposed Safeway building and in a rooftop parking lot above the Safeway store and adjacent shops. New buildings would frame the main Project entry off of Pleasant Valley Avenue,

Internal Street / Circulation Plan

Vehicular circulation within the current shopping center is arranged as a series of drive aisles separated by angled parking bays, generally marked by paint on the pavement. The drive aisles do not have any apparent hierarchy that would establish a preferred path of travel, and motorists tend to drive through the parking lot in whatever manner most suits their destination.. The current Project proposes a different circulation system for the site. Each of the Project's two main vehicle entry points at Pleasant Valley Avenue/Gilbert Street, and at Broadway/Coronado Avenue (see **Figure 3-12**) are designed as internal roadways with clear directional options for various destinations marked by curbs, islands and intersection crosswalks.

- Vehicles entering from Pleasant Valley/Gilbert Street (a currently signalized intersection) have the choice of making a right turn toward an outer ring road that leads to the upper Safeway parking lot, staying straight to access the main parking lot, or making a left turn onto an interior street which is lined on both sides with new storefronts.
- Vehicles entering from Broadway/Coronado Avenue (a proposed new signalized intersection) can either stay straight on a new northerly boundary road leading straight to and through the main parking lot and the upper level Safeway parking lot, or can turn right onto the new interior street.

The only other proposed vehicle access point would be the existing secondary access driveway at Pleasant Valley Avenue east of Gilbert Street. This driveway provides access to the adjacent parcel (the site of the AAA building – not a part of the Project) and the proposed building on the east side of the main entry. The other two existing curb cuts along Broadway (south of Coronado Avenue) would be removed.

The western portion of the property is redesigned from its current configuration to establish the new internal roadway. It would function much like an urban street, with storefronts along the street edge separated from the travel-way by sidewalks and perpendicular parking. All parking spaces within the Project would be designed perpendicular to the drive aisles, as opposed to the current 45-degree angled parking bays.

Figure 3-9
Project Site Plan, 2nd Level

Source: Benner Stange Arcitects

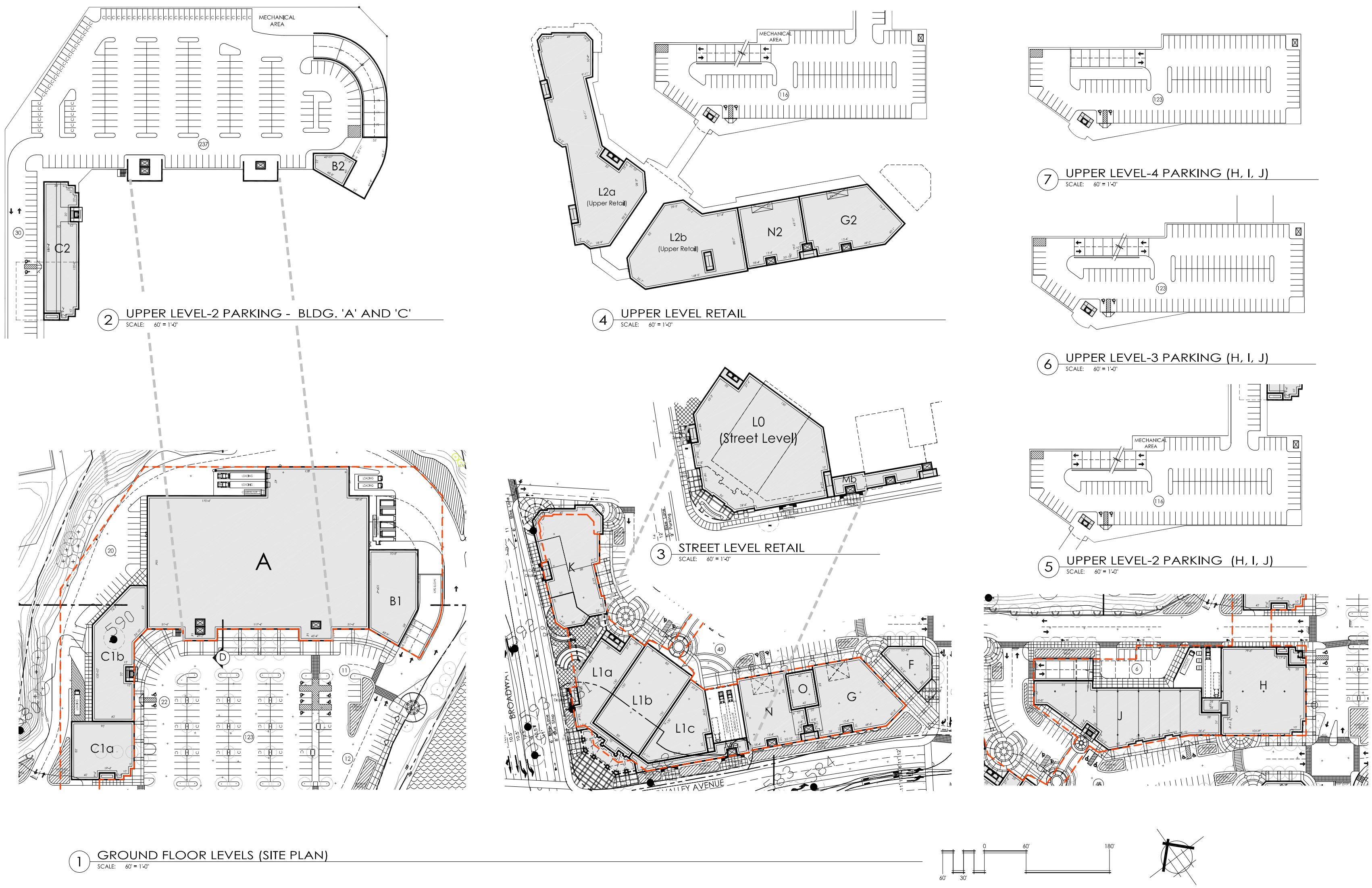


Figure 3-10
Project Site Plan, Upper Level Stacking Plans

Source: Benner Stange Arcitects

Figure 3-11
Proposed Project - Urban Street Edge

Source: Benner Stange Arcitects

Main Pleasant Valley Avenue Entrance

Broadway Entrance and Internal Street

Figure 3-12
Proposed Primary Access Points

Source: Benner Stange Architects

Pedestrian Access

Current pedestrian and bicycle access to the site is not pronounced, with sidewalks along both Pleasant Valley Avenue and Broadway but no distinct pedestrian or bicycle routes leading from those fronting sidewalks into the shopping center. Pedestrians and bicyclists generally share the drive aisles and parking fields with vehicles, with no separately designated routes. Public comments on the NOP suggested that the Project should better address alternative modes of travel, particularly pedestrian and bicycle access at the site. The current Project responds to those comments with a substantially expanded pedestrian and bicycle network (see **Figure 3-13**) for the site:

- A continuous sidewalk that connects with small plazas would ring the entire site, separated only at the two vehicle entry points.
- Separated pedestrian and vehicle access would be provided at each of the entry points into the site, as well as via a new pedestrian connection on Broadway near the Pleasant Valley Avenue/Broadway intersection.
- A number of routes would lead pedestrians to the new Safeway store from Pleasant Valley Avenue: a westerly route along the new storefronts, a raised sidewalk through the parking lot, and an easterly sidewalk/bicycle path with overlooks along the landscaped bank of the adjacent quarry pond.
- Two routes would lead pedestrians into the site from the Broadway/Coronado Avenue intersection: a sidewalk/bicycle path along the northerly boundary road, and raised sidewalks on both sides of the new internal street.

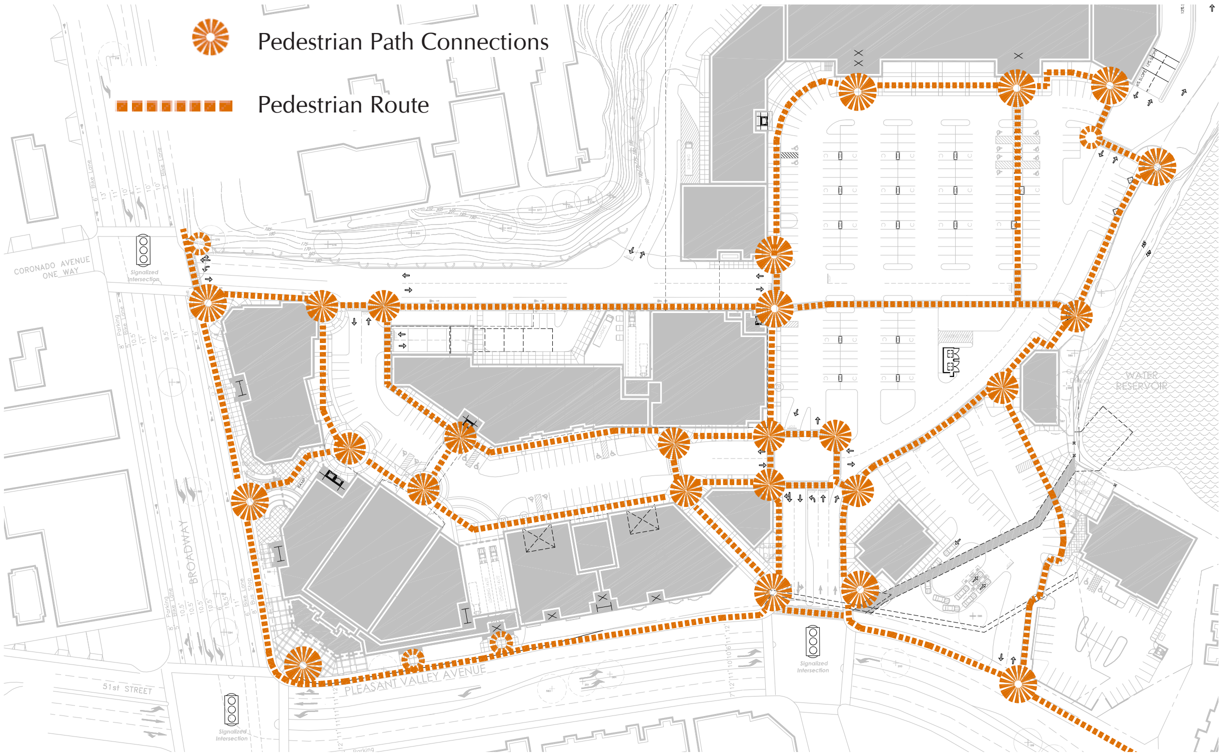
These on-site pedestrian and bicycle routes would interconnect a number of plazas. The two main plazas would be located along Broadway at the Pleasant Valley Avenue intersection and just north of the intersection, connecting through the buildings at this location. The internal street would also have a number of smaller plazas and wider sidewalks for outdoor cafes and public seating. The landscaped edge near the quarry pond would have two smaller plazas which serve as scenic outlooks over the pond.

Architecture

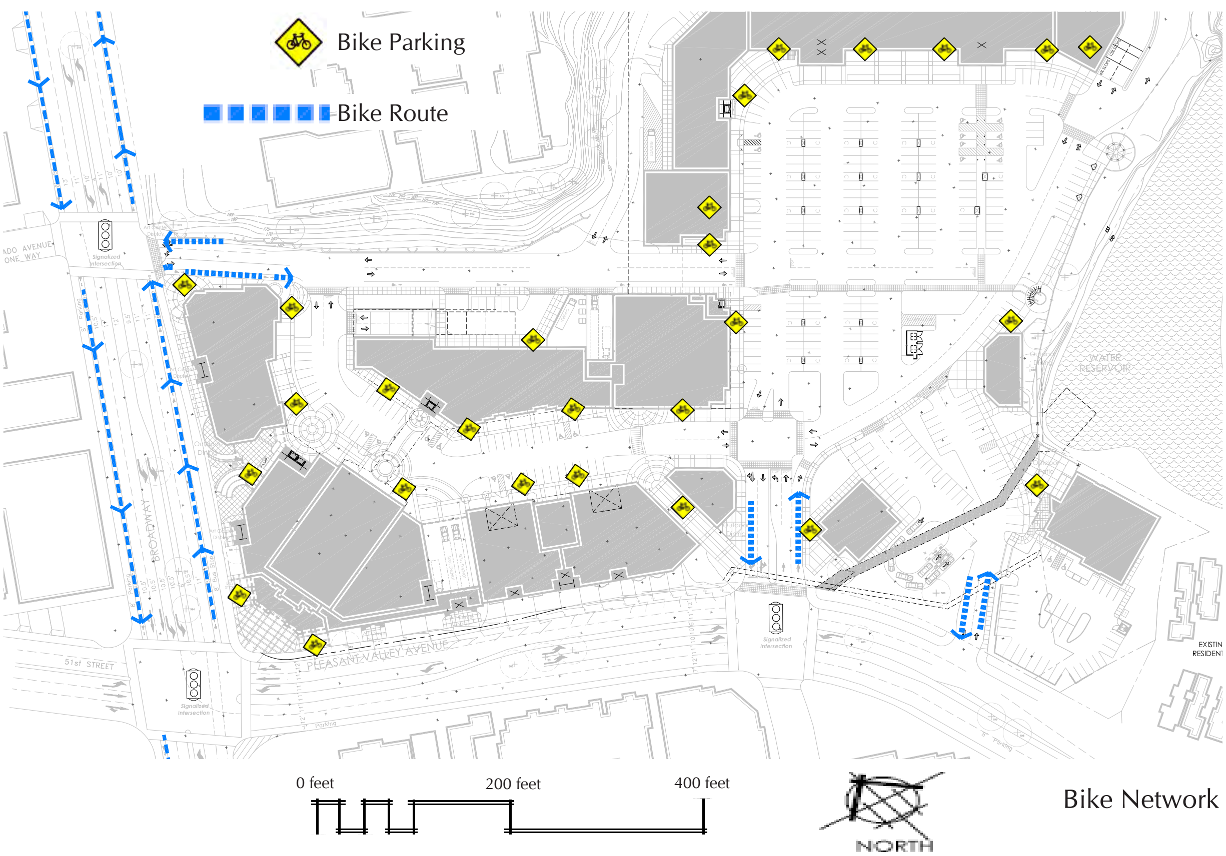
The architectural style of the proposed new buildings would be contemporary commercial architecture with numerous horizontal and vertical planes designed to provide variety and interest, to break up the look of the multi-tenant storefronts and to create diverse character for individual retail tenants. The building footprints would be placed up to the pedestrian way to provide windows to the retail space and encourage a walkable environment. Multi-level floor areas would increase the density of development and increase the urban versus suburban form. The materials proposed for the exterior are a combination of concrete masonry or stucco (both smooth and split-faced finishes); natural stone; masonry (brick); metal canopies, railings, trellises and awnings; and glass storefronts. The colors are neutral to natural color schemes including tan, grey, brown and red hues. Elevations showing the proposed architectural styles are shown on **Figures 3-14 and 3-15**.

Vehicle Access

As discussed above, the current shopping center has three vehicle access points along Broadway; the two most southerly of these access points are limited to right-in/right-out turns only, and the third access is an unsignalized intersection at Coronado Avenue which leads to the rear service drive. Under the proposed Project, the two most southerly vehicle access points would be eliminated, and the intersection at Coronado Avenue would be converted to a signalized intersection providing full turning movements with 1 inbound and 2 outbound lanes.



Pedestrian Network

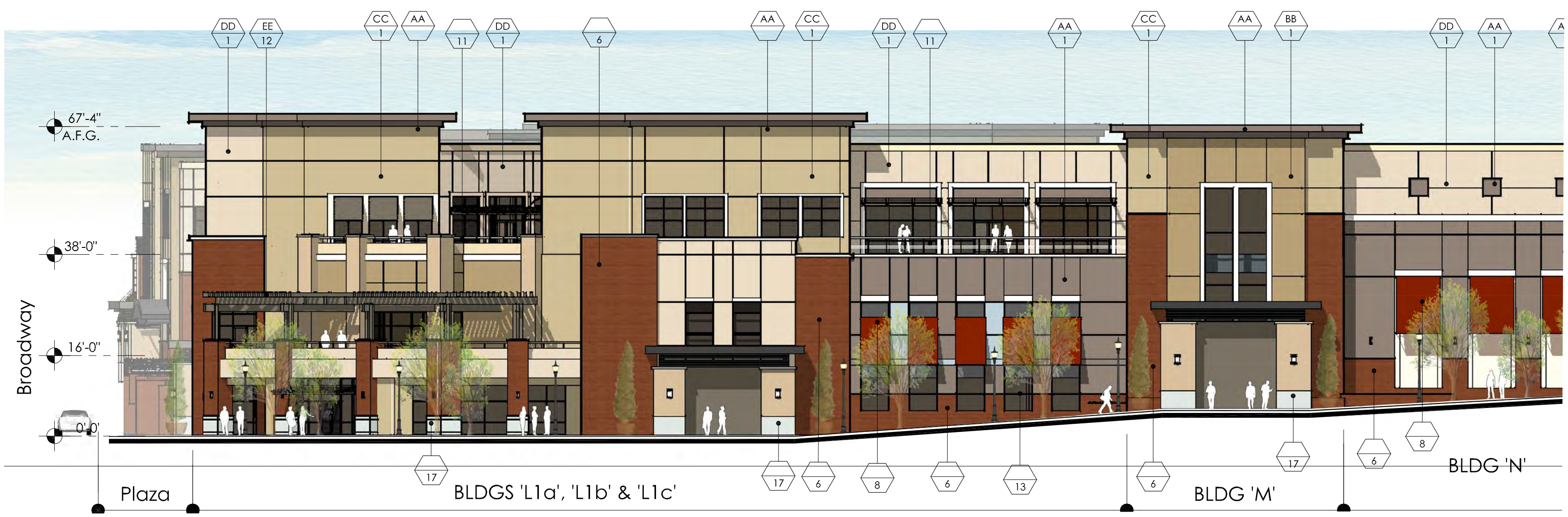


Bike Network

Figure 3-13
Proposed Pedestrian and Bicycle Network

Source: Benner Stange Architects

Elevation 1: New Safeway Elevation



Elevation 2: Pleasant Valley Avenue Elevation (at Broadway)

Figure 3-14
Project Architectural Elevations, New Safeway and Pleasant Valley Avenue

Source: Benner Stange Architects

Elevation 3: Broadway Elevation at Pleasant Valley

Elevation 4: Interior Street Elevation

Figure 3-15
Project Architectural Elevations, Broadway and Interior

Source: Benner Stange Architects

The current shopping center also has two vehicle access points along Pleasant Valley Avenue; the main shopping center entrance opposite Gilbert street, which is a fully signalized intersection with 1 inbound lane and 1 outbound lane, and an easterly secondary driveway which permits only right-in/right-out movements. These access points would remain where they currently exist, but the main entry would be realigned and re-striped to provide 3 inbound lanes and 2 outbound lanes.

Parking

The existing shopping center currently contains a total of 615 off-street parking spaces, nearly all of them contained within the large surface parking lot between the retail stores and Pleasant Valley Avenue.

The Project proposes a total of approximately 967 off-street parking spaces, including 851 standard spaces, 30 designated handicap spaces and 86 designated compact spaces. Parking would be located in surface parking lots and along drive aisles throughout the site, on a rooftop parking lot over the Safeway store and adjacent to Buildings B and C, and in a centralized parking garage with three levels of parking over ground floor retail space (Buildings H and J).

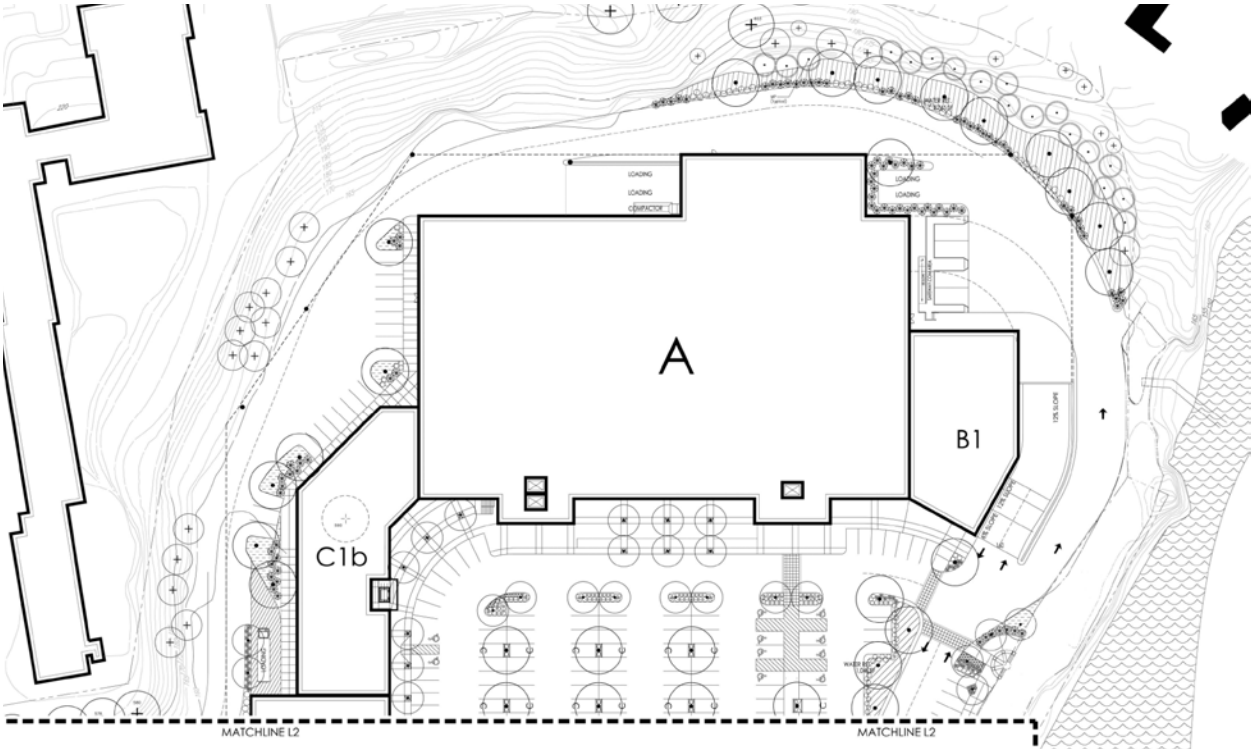
Landscaping, Plazas and Open Space

The proposed landscaping plan (see **Figure 3-16**) includes parking lot landscaping with new trees planted at each end of the surface parking aisles and within planter islands placed along the centerline of the parking aisles, at a ratio of approximately one tree per 8 parking spaces. New trees would also be planted along internal sidewalks, at pedestrian crossings and in landscaped areas along the perimeter of the Project site. Pedestrian circulation would be distinguished through the use of decorative brick paving material for easy identification. Additionally, new plaza areas would be provided along Broadway and along the new internal street, and a sidewalk and landscaping would be provided along the easterly site boundary adjacent to Claremont Pond and the outdoor patio restaurant at Building E. The plazas are intended to be accessible to neighbors, and would include lighted towers, restaurant patios and wider sidewalks to accommodate seating, outdoor art and flowers.

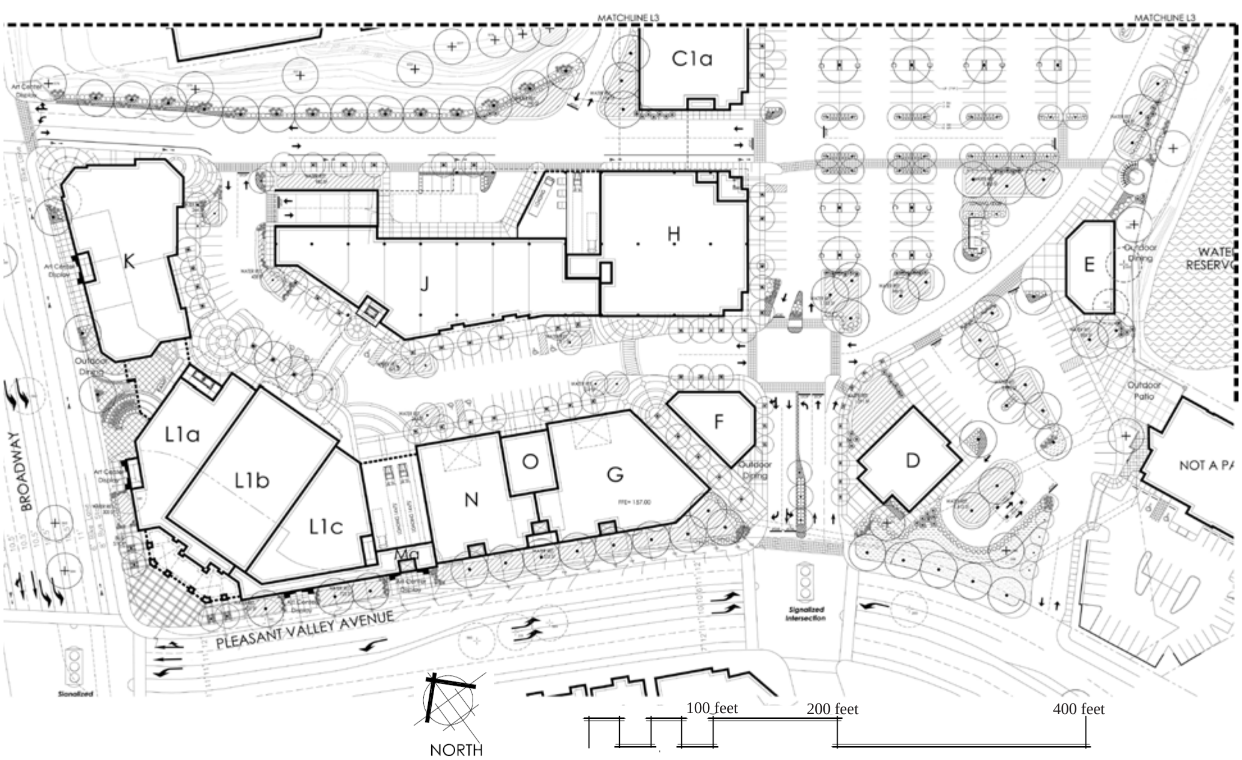
Off-Site Roadway Modifications

The Project proposes a number of roadway modifications on Broadway and 51st Street/Pleasant Valley Avenue to generally improve access and circulation for all travel modes and to specifically provide signalized left-turn access on Broadway to and from the Project site. Off-site roadway modifications proposed as part of the Project include the following.

- Broadway would be reduced from three through lanes to two through lanes in each direction between College Avenue and 49th Street to accommodate new bike lanes.
- Class 2 bicycle lanes would be provided on both sides of Broadway between College Avenue and just south of 51st Street/Pleasant Valley Avenue.
- The two existing right-in/right-out Project driveways on Broadway between Pleasant Valley Avenue and Coronado Avenue would be eliminated.
- The Project driveway on Broadway opposite Coronado Avenue would be signalized to provide left turns in and out of the Project site. The proposed signal would be coordinated with the existing signals on Broadway at 45th Street, 51st Street/Pleasant Valley Avenue, College Avenue, and Broadway Terrace. The intersection would provide an exclusive left-turn lane from southbound Broadway to the Project site. The proposed signal would also provide a protected pedestrian crossing connecting the residential neighborhood west of Broadway to the Project site.
- The five metered on-street parking spaces on the west side of Broadway between College and Coronado Avenues would be removed.



Northerly Portion of Site



Southerly Portion of Site

Figure 3-16
Project Landscape Plan

Source: Chrisopher Freshley, Landscape Architect

- The provision for the southbound left-turn lane from Broadway into the Project site would require the elimination of the existing median break that provides access to Wendy's Restaurant from northbound Broadway. The northbound left-turn lane on Broadway at College Avenue would be modified to provide left-turn access into the existing Wendy's Restaurant on the opposite side of Broadway from the Project site.
- At the Broadway/51st Street/Pleasant Valley Avenue intersection:
  - The southbound approach would be modified from the current configuration which provides one shared right/ through lane, one exclusive through lane, one shared through/left lane, and one exclusive left-turn lane to provide one shared right/through lane, one through lane, and two left-turn lanes. In addition, the southbound approach would also provide a six-foot wide median pedestrian refuge island.
  - The northbound approach would be modified from the current configuration which provides one shared right/ through lane, one through lane, and one shared through/left lane to provide one shared right/ through lane, one through lane, and one exclusive left-turn lane. In addition, the northbound approach would also provide a six-foot wide median pedestrian refuge island. These modifications would result in loss of four on-street parking spaces on the east side of Broadway just south of 51st Street/Pleasant Valley Avenue.
  - Intersection signal equipment would be upgraded to replace the existing split phasing with protected left-turn phasing in the north/south direction, which would result in more efficient and safer signal operations.
  - The existing northbound and southbound right-turn slip lanes and "pork chop" islands (northwest and southeast corners of the intersection, respectively) would be eliminated. The reconstructed northwest corner of the intersection would be designed to accommodate access to the three driveways that would lose their access. In addition, the reconstructed northwest corner would also be redesigned to provide four parking spaces on 51st Street to replace the five parking spaces on the slip lane that would be eliminated.
  - The median on the westbound Pleasant Valley Avenue approach would be widened to provide an 11-foot wide median pedestrian refuge island.
- At the Gilbert Street/Project Driveway/Pleasant Valley Avenue intersection:
  - A second left-turn lane would be provided from eastbound Pleasant Valley Avenue into the project site.
  - The westbound approach would be modified from the current configuration which provides one right-turn lane, one through lane, and one shared through/left lane to provide one shared right/ through lane, one through lane, and one exclusive left-turn lane within the current right-of-way.
  - Three in-bound lanes would be provided at the Project driveway entrance to accommodate the two eastbound left turns and the shared right turn off of Pleasant Valley Avenue.[3]
  - One right-turn lane and a shared through/left-turn lane would be provided on the southbound Project driveway exit.
  - The intersection signal equipment would be upgraded to replace the existing permitted left-turn phasing with protected phasing for the westbound Pleasant Valley Avenue left-turn movement.

[3] Not all images of the Project used in this EIR show the Pleasant Valley Avenue entrance at Gilbert Street with three in-bound travel lanes. Many images show only two in-bound lanes at this Project entrance. However, in all cases, the analysis in this EIR (where relevant) has assumed three in-bound lanes as described above.

- The following bus stops would be moved from the near-side to the far-side of (i.e., from before to after) the intersection:
    - Northbound Broadway from just south of Pleasant Valley Avenue to north of Pleasant Valley Avenue. The proposed configuration would result in an eight-foot wide bus stop just north of Pleasant Valley Avenue. In addition, the adjacent sidewalk would also be widened by three feet.
    - Eastbound 51st Street/Pleasant Valley Avenue from just west of Broadway to about 150 feet east of Broadway. This would also result in loss of four on-street parking spaces east of Broadway which can be replaced west of Broadway. In addition, one or more street trees may also need to be removed to accommodate the new bus stop.
    - Eastbound Pleasant Valley Avenue from just west to just east of Gilbert Street.

The proposed modifications along Broadway can be accommodated within the existing curb-to-curb right-of-way. Providing a second left-turn lane from eastbound Pleasant Valley Avenue into the Project site would require widening Pleasant Valley Avenue. Pleasant Valley would be widened from 71 feet (curb-to-curb) to 75 feet just east of Broadway, and from 78 feet to 79 feet just west of Gilbert Street.

Rooftop Mechanical Equipment Shields

Noise from roof-top mechanical equipment is subject to the City's Noise Ordinance standards, which stipulates that the operation of all roof-top or other mechanical equipment must meet a design standard of 45 dBA at adjacent residences, taking into account all operational noise. The Project applicant has proposed that all mechanical equipment used during operation of the Project will be designed and used with shielding or other noise attenuation as necessary to fully comply with this standard. The types of shielding that may be required will be dependent upon the specific mechanical equipment used, and will be determined prior to City approval of mechanical building permits.

Employment

As of May 2009, employment at the existing Safeway store was 142 people. Employment for the remainder of the shopping center varies by establishment, but is estimated (using a ratio of approximately 750 square feet of space per worker[4]) at approximately 183 people (137,500 square feet not including Safeway ÷ 750 square feet per employee). Thus, the total current employment at the existing shopping center is estimated to be approximately 325 people.

Safeway expects to increase its employment to approximately 212 people once the proposed larger Safeway goes into operation. By using the same employment ratio for the remainder of the Project development, the Project results in an estimated approximately 343 new employees.. Thus, the total projected employment under the Project is estimated to be approximately 555 people or an increase of approximately 230 employees over existing conditions.

Project Construction Schedule and Phasing

The Project would be constructed in two phases over approximately 20 months. Construction is anticipated to begin in July 2013 and end in March 2015. Project phasing is intended to enable the shopping center to remain operational and economically viable throughout the construction period, to capitalize on the current opportunity to move the Safeway grocery store into the current CVS Pharmacy site soon after the current CVS lease expires, and to match future phase development to meet both current

[4] USDOE, Energy Information Administration, *Commercial Buildings Energy Consumption Survey*, 1995, which determined a combined average of approximately 766 square feet per worker for all commercial uses, nationwide.

and expected future retail market demands. Phasing of the Project would occur as shown in **Table 3-2** and **Figures 3-17** and **3-18**, and as described below.

Table 3-2: Proposed Construction Phases
(Square feet)

Phase I

Land Use Types	Existing	Demolished/Vacated	Proposed New	Change	Total
Grocery	47,975	(47,975)	65,013	17,038	65,013
Pharmacy	87,220	(87,220)		(87,220)	
Retail, other	24,769	(10,756)	23,864	13,108	37,877
Bank / Financial	21,000				21,000
Office, other			8,835	8,835	8,835
Restaurant	4,500				4,500
Common Space					
Total	185,464	(145,951)	97,712	(48,239)	137,225

Phase II

Land Use Types	After Phase I	Demolished/Vacated	Proposed New	Change	Total
Grocery	65,013			-	65,013
Pharmacy	-			-	-
Retail, other	37,877	(14,013)	167,674	153,661	191,538
Bank / Financial	21,000	(21,000)	8,426	(12,574)	8,426
Office, other	8,835			-	8,835
Restaurant	4,500	(4,500)	19,421	14,921	19,421
Common Space	-		29,303	29,303	29,303
Total	137,225	(39,513)	195,521	185,311	322,536

Total Project

Land Use Types	Existing	Demolished/Vacated	Proposed New	Change	Total
Grocery	47,975	(47,975)	65,013	17,038	65,013
Pharmacy	87,220	(87,220)	-	(87,220)	-
Retail, other	24,769	(24,769)	191,538	166,769	191,538
Bank / Financial	21,000	(21,000)	8,426	(12,574)	8,426
Office, other	-	-	8,835	8,835	8,835
Restaurant	4,500	(4,500)	19,421	14,921	19,421
Common Space		-	29,303	29,303	29,303
Total	185,464	(185,464)	322,536	137,072	322,536

Phase I

Phase I construction is anticipated to last approximately 10 months, from July 2013 to April 2014. Phase I activities are shown in **Figure 3-17** and described below:

- Phase I would begin with demolition of the approximately 87,200 square-foot Building 6 (the current CVS Pharmacy) and the approximately 10,750 square-foot Building 5 (currently containing PayLess Shoes, Jamba Juice, Game Stop, 1st Title Credit Union, Rockridge Cleaners, Health Foods, and Great Clips). Removal of Building 5 would enable construction equipment to access through the center of the site between Building 4 and Building 6, from the Pleasant Valley Avenue/Gilbert Street entrance to the Broadway/Coronado Avenue exit. Demolition activities may include the remediation of hazardous materials. Hazardous materials that may be found on the site are detailed in Chapter 4.9: Hazards and Hazardous Materials. Remediation would include “wet” method demolition practices, on-site stockpile management and monitoring for dust and vapors, and off-site transportation and disposal of asbestos containing material.
- Establishment of a staging area for construction in approximately the center of the existing parking lot.
- Construction of the new approximately 65,000 square-foot Safeway store (new Building A). The new grocery would be a single story building but with high ceilings, appearing to be a 2-story height. The roof of the new Safeway store would provide roof-top parking for up to 240 vehicles, accessed by ramps at both the east and west ends of the building. A new loading space and trash and recycling receptacles would be located at the northeast corner of this building, accessed by an outer ring road. Once completed, the existing Safeway store would be vacated and relocated to this new space.
- Flanking the new grocery store on the east would be construction of a small 1-story retail building of approximately 8,200 square feet (Building B), potentially including a garden center or other retail use accessory to the grocery.
- To the west of the new Safeway store would be a new 2-story building of approximately 26,400 square feet (Building C). The ground level would contain smaller retail spaces and the upper floor would be comprised of office space and roof-top parking. The new Building C would be slightly smaller in length than the existing building at this location, enabling construction of a new driveway access past this building, leading from the rear service drive directly through to the main eastern parking lot. This driveway would provide more convenient access to the Safeway store from Broadway.
- The surface parking lot in front of the new Safeway would be resurfaced and re-striped in a perpendicular (rather than angled) design.

The eastern edge of the site would be improved with landscaping, a pedestrian path and small plazas overlooking the adjacent quarry pond.

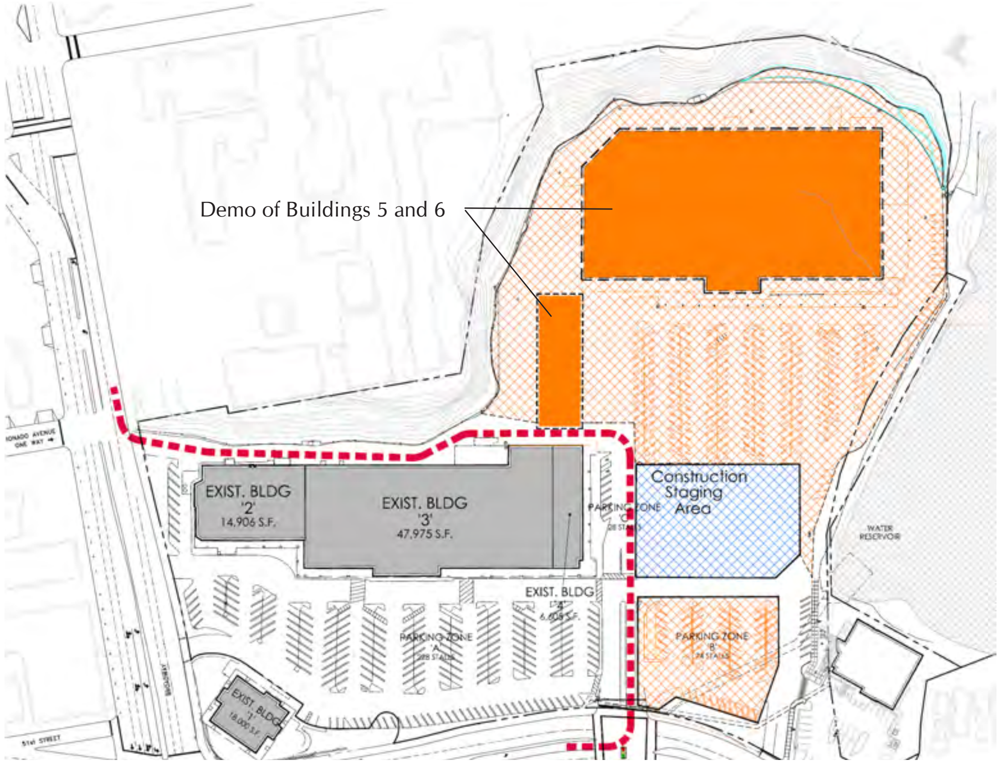
Staging Area

Demolition

Demolition Zone

Existing

Service Route



Phase I Demolition

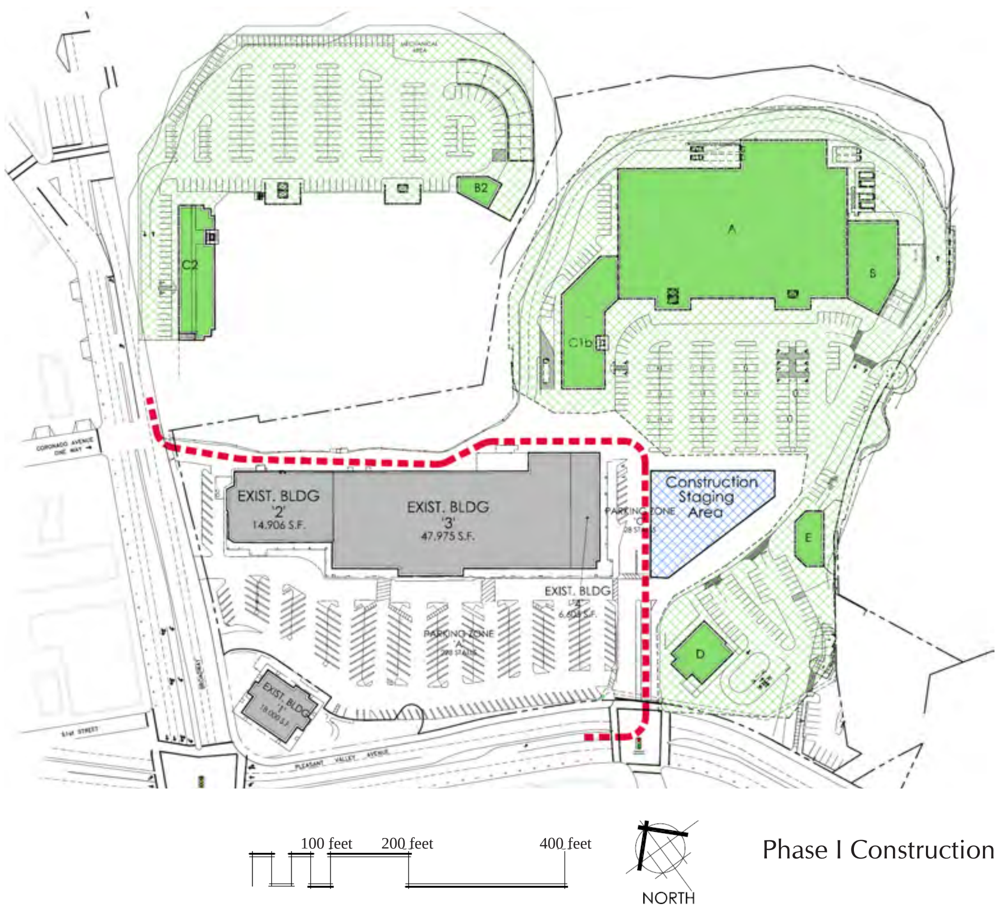
Staging Area

New Construction

Construction Zone

Existing

Service Route



Phase I Construction

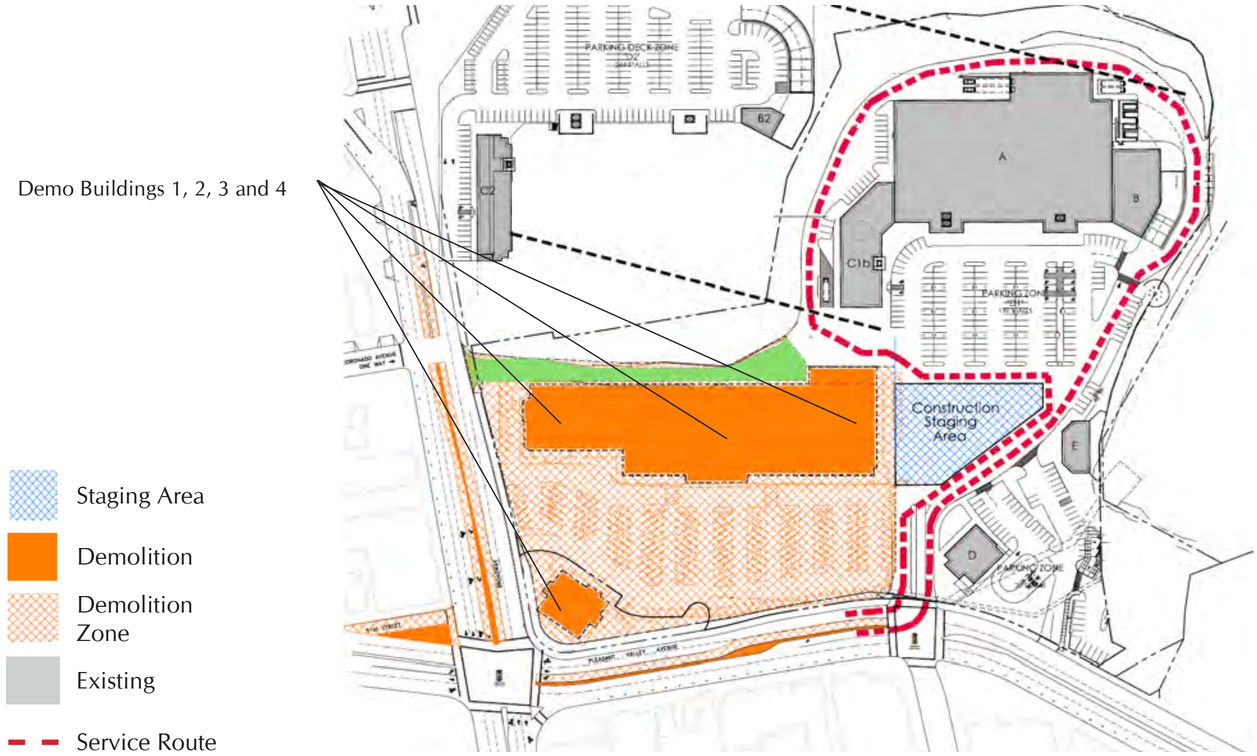
Figure 3-17
Project Phasing Plan, Phase I

Source: PD Centers

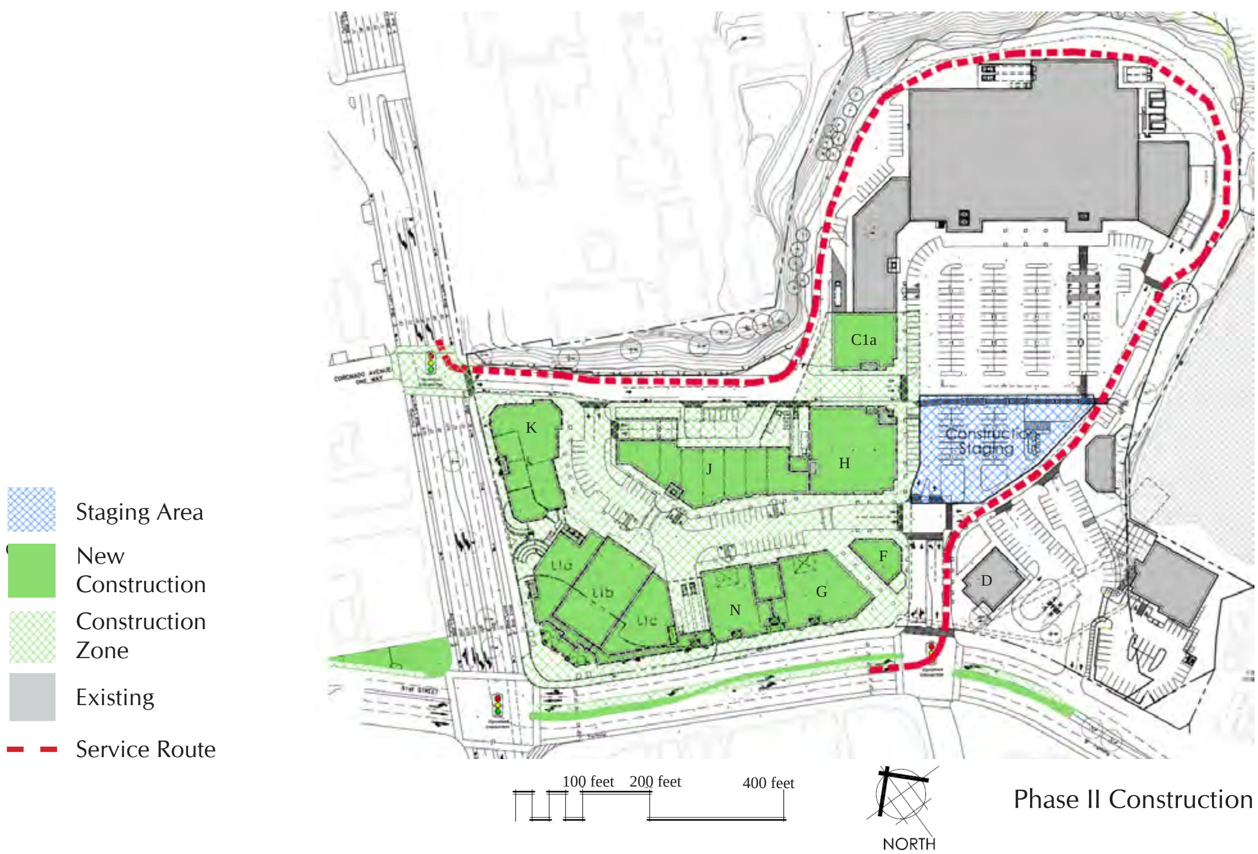
Phase II

Phase II would last approximately 10 months, from May of 2014 to March of 2015. Phase II activities are shown in **Figure 3-18** and described below.

- Demolition of the approximately 15,000 square-foot Building 2 (Boston Market restaurant, Bank of America and Pet Food Express), the approximately 48,000 square-foot Building 3 (the current Safeway), the approximately 6,600 square-foot Building 4 (Starbucks, Dress Barn and Ritz Camera), and the approximately 18,000 square-foot Building 1 (Chase Bank).
- Construction of Building D at the northeast corner of the Pleasant Valley Avenue/Gilbert Street entrance. This building would be an approximately 8,400 square-foot bank with a drive through and associated surface parking spaces. The drive through aisle would be accessed via the driveway connection to Pleasant Valley Avenue east of the main entrance intersection.
- New 2- and 3-story buildings totaling approximately 144,800 square feet of retail and restaurant space would be constructed along the Broadway and Pleasant Valley Avenue frontages (Buildings F, G, O, N, L and K). Some of the shops would face out onto Broadway and Pleasant Valley Avenue and all would have storefront presence facing onto a new internal street.
- Additional new retail space totaling approximately 30,600 square feet would be constructed along the north side of this new internal street. Buildings H and J would contain a parking garage with three levels of parking over ground floor retail space.
- A new Broadway/Coronado Avenue entrance/exit drive would be constructed along the northerly site boundary as a major new entry into the shopping center.
- The existing median in Broadway near the Coronado Avenue intersection would be removed.
- A new internal street would be constructed to connect the new Broadway/Coronado Avenue entrance/exit drive to the main entry at Pleasant Valley Avenue/Gilbert Street. This internal street would form an "L" shape, with the top portion of the "L" connecting to the Broadway entry drive and the lower-right portion of the "L" connecting to the Pleasant Valley entry drive. Perpendicular parking spaces would be arranged along this internal street, along with sidewalks, small plazas and landscaping. This internal street would also provide access to the loading docks for Buildings F, G, O, N, L and K.
- A new traffic signal would be installed at Broadway/Coronado Avenue.
- Lane improvements and median changes would be constructed on Broadway, along with circulation changes on Coronado Avenue.
- Removal of the existing median in Pleasant Valley Avenue between Gilbert Street and Broadway, and the sidewalk and portions of the landscaping along Pleasant Valley Avenue.
- A new median in Pleasant Valley Avenue and lane improvements on both Pleasant Valley Avenue and Broadway would be constructed.
- Final construction would include resurfacing and re-striping of the portion of the surface parking lot which had been used as the construction staging area, and of the Pleasant Valley Avenue/Gilbert entrance/exit.
- A pedestrian aisle would connect through the parking lot from the main entry at Pleasant Valley Avenue directly to the new Safeway store.



Phase II Demolition



Phase II Construction

Figure 3-18
Project Phasing Plan, Phase II

Source: PD Centers

Project Objectives

In general, the purpose of the Project is to redevelop existing space at the site to support development of a new Lifestyle Safeway store and to add new commercial space at the site.

The specific Project objectives are as follows:

- Revitalize the 15.4-acre site at the intersection of Pleasant Valley Avenue and Broadway through phased redevelopment of the existing 1960s suburban style commercial development with a vibrant urban shopping environment composed of an approximately 65,000 square foot Safeway store and approximately 228,000 square feet of other leasable space for retail, restaurant, office, and associated uses.
- Improve Safeway store to offer a more comprehensive range of retail services and products to Safeway's customers, including: an on-site "from scratch" bakery; a pharmacy; expanded wine, cheese and floral offerings; an expanded deli (including warm food table, and prepared catering food items); a "service" meat and seafood service (as compared to the pre-packaged items currently available); organic produce; and one or more specialty drink kiosks.
- Provide a more functional and efficient shopping area configuration by improving access and walkability to create a sense of place where customers can enjoy amenities from all the retailers within the center, thereby enhancing the overall shopping experience.
- Construct an urban infill development that accommodates a larger grocery store anchor than currently exists and that attracts and retains other high-quality retail tenants, including those that will provide shopping options to local customers that are not currently available in the City.
- Construct a retail development that will provide significant benefits to the City and community in terms of increased employment opportunities, tax revenues and shopping opportunities.
- Enable the shopping center, especially the grocery store, to remain operational throughout the construction period.
- Coordinate development in phases in order to meet both current and expected future retail market demands.
- Construct energy efficient buildings using environmentally-friendly design practices incorporating "green" features where possible.
- Improve aesthetics of the site through native and drought-tolerant landscaping, while maintaining and protecting adjacent surface waters.
- Comply with all applicable agreements pertaining to the property, including the terms of a land lease that precludes development of housing on the site.
- Improve site circulation by consolidating access points, developing an outer ring road and providing internal roadways with clear direction options for various destinations within the center.
- Enhance pedestrian and bicycle access to the project site by providing a meandering sidewalk that substantially encircles the site and new plaza areas as well as a pedestrian/bike path along the eastern edge of the site.
- Provide sufficient parking to serve the needs of Safeway and other retail tenants that has direct and convenient access from major thoroughfares and will be inviting, well-lit, safe and screened to a greater degree than current conditions from pedestrians and motorists.
- Provide several hundred construction jobs as well as approximately 70 new union jobs with Safeway and approximately 170 new positions with the expansion of the retail center.

- Complete the project on schedule and within budget.
- Capitalize on the current opportunity to move the Safeway grocery store into the CVS Pharmacy site soon after the current CVS lease expires.

Uses of this EIR

It is anticipated that this EIR will provide environmental review for all City of Oakland discretionary approvals and action necessary for this Project, as well as for all approvals needed from other governmental agencies. A number of City permits and approvals would be required before the development of the Project could proceed. As Lead Agency for the proposed Project, the City of Oakland would be responsible for the approvals required for development. A list of required permits and approvals that may be required by the City includes:

- Approval of an Interim Conditional Use Permit to allow for commercial use in the R-50 Medium Density Residential Zone pursuant to Chapter 17.01 of the Oakland Planning Code;
- Design Review pursuant to Chapter 17.136 of the Oakland Planning Code;
- Zoning variances (if required);
- Approval of a Category IV Creek Protection Permit for exterior development and work that may include earthwork, landscape walls, fences, patios, decks, private drainage improvements, irrigation systems and trenching conducted within the 20 foot setback from the top of bank of the adjacent watercourse (the quarry pond) pursuant to Chapter 13.16 of the Oakland Municipal Code;
- Approval of a Conditional Use Permit (for any drive-through facilities or alcohol sales);
- Approval of a Subdivision Map (or lot line adjustment);
- Tree removal permits pursuant to the City's Protected Trees Ordinance (Chapter 12.36 of the Oakland Municipal Code);
- Encroachment permits for work within and close to public rights-of-way (Chapter 12.08 of the Oakland Municipal Code); and
- Demolition permits, grading permits, and building permits.

Other Agencies Whose Approval May be Required

- Bay Area Air Quality Management District (BAAQMD) – Granting of permits for stationary source air emissions and compliance with Regulation 2, Rule 1 for all portable construction equipment subject to that rule.
- East Bay Municipal Utilities District (EBMUD) – Granting new water service connections and meters.
- State Water Resources Control Board (SWRCB) – Acceptance of Notice of Intent to obtain coverage under the General Construction Activity Storm Water Permit.
- San Francisco Bay Regional Water Quality Control Board (RWQCB) – water quality certification under Section 401 of the Clean Water Act may be necessary for landscaping adjacent to the quarry pond.
- California Department of Fish and Game (CDFG) – A Streambed Alteration Agreement pursuant to California Fish and Game Code Sections 1600–1616 may be necessary for landscaping adjacent to the quarry pond.

4

Setting, Impacts, Standard Conditions of Approval and Mitigation Measures

This chapter contains an analysis of the environmental topics relevant to the proposed Project, and constitutes the major portion of this Draft EIR. Sections 4.1 through 4.15 describe the existing setting for each topic analyzed in this EIR relevant to the proposed Project, the potential impacts that could result from implementation of the Project, relevant City policies and Standard Conditions of Approval that would minimize potential adverse effects that could result from implementation of the Project, and additional mitigation measures if necessary to reduce impacts of the Project.

The following provides an overview of the scope of the analysis included in this chapter, organization of the sections, the methods for determining what impacts are significant, and the applicability of the City's Uniformly Applied Development Standards (also referred to as Standard Conditions of Approval).

Environmental Topics

The June 24, 2009 Notice of Preparation (NOP) for this EIR indicated that the proposed Project may have environmental impacts related to aesthetics, air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation, and utilities/service systems. The NOP also indicated that it was not anticipated that the Project would have significant environmental impacts on agricultural resources, cultural resources, land use plans and policies, mineral resources, population and housing, public services or recreation, but that these environmental factors would also be analyzed in an EIR.

As indicated in the NOP, the following environmental topics are addressed in this EIR:

- 4.1: Aesthetics
- 4.2: Air Quality
- 4.3: Biological Resources
- 4.4: Cultural Resources
- 4.5: Geology and Soils
- 4.6: Greenhouse Gas Emissions
- 4.7: Hazards and Hazardous Materials
- 4.8: Hydrology and Water Quality
- 4.9: Land Use, Plans and Policies
- 4.10: Noise
- 4.11: Transportation, Circulation and Parking
- 4.12: Utilities and Public Services

- 4.13: Other Less-than-Significant Effects

Format of Topic Sections

Each environmental topic section generally includes two main subsections: (1) Setting; and (2) Impacts (construction, Project and cumulative), Standard Conditions of Approval, and Mitigation Measures. Identified significant impacts are identified, together with corresponding mitigation measures.

The following notations are provided after each identified significant impact and mitigation measure:

- LTS = Less than Significant
- LTS with SCA = Less than Significant with implementation of uniformly applied development standards or Standard Conditions of Approval
- S = Significant
- SU = Significant and Unavoidable

These notations indicate the significance of the impact with and without mitigation.

Determination of Significance

Under CEQA, a significant effect is defined as a substantial or potentially substantial adverse change in the physical environment. Each of the following impact evaluations is prefaced by criteria of significance which are the thresholds for determining whether an impact is significant. The criteria of significance used in this EIR are derived from the City of Oakland's CEQA Thresholds/Criteria of Significance. The Thresholds are offered as guidance in preparing environmental review documents. The City requires use of these Thresholds unless the location of the project or other unique factors warrants the use of different thresholds. The Thresholds are intended to implement and supplement provisions in the CEQA Guidelines for determining the significance of environmental effects, including Sections 15064, 15064.5, 15065, 15382 and Appendix G, and form the basis of the City's Initial Study and Environmental Review Checklist.

The Thresholds are intended to be used in conjunction with the City's Uniformly Applied Development Standards and Conditions of Approval (see discussion below), which are incorporated into projects as Conditions of Approval regardless of the determination regarding a project's environmental impacts.

CEQA requires the analysis of potential adverse effects of the project on the environment. Potential effects of the environment on the project are legally not required to be analyzed or mitigated under CEQA. However, this document nevertheless analyzes potential effects of the environment on the project in order to provide information to the public and decision-makers. Where a potential significant effect of the environment on the project is identified, the document, as appropriate, identifies Standard Conditions of Approval and/or project-specific non-CEQA recommendations to address these issues (see discussion below).

Uniformly Applied Development Standards and Conditions of Approval

The City's Thresholds are intended to be used in conjunction with the City's Uniformly Applied Development Standards and Conditions of Approval. These Uniformly Applied Development Standards and Conditions of Approval (referred to in the EIR as Standard Conditions of Approval or SCA) are incorporated into projects as conditions of approval regardless of the determination of a project's environmental impacts. As applicable, the Standard Conditions of Approval are adopted as requirements of an individual project when it is approved by the City and are designed to, and will, avoid or substantially reduce a project's environmental effects.

In reviewing project applications, the City determines which Standard Conditions of Approval are applied, based upon the zoning district, community plan, and the type(s) of permit(s)/approvals(s) required for the project. Depending on the specific characteristics of the project type and/or project site, the City will determine which Standard Conditions of Approval apply to a specific project; for example, Standard Conditions of Approval related to creek protection permits will only be applied to projects on creek side properties. Because these Standard Conditions of Approval are mandatory City requirements, the impact analysis assumes that these will be imposed and implemented by the project. If a Standard Condition of Approval would reduce a potentially significant impact to less than significant, the impact will be determined to be less than significant and no mitigation is imposed.

The Standard Conditions of Approval incorporate development policies and standards from various adopted plans, policies, and ordinances (such as the Oakland Planning and Municipal Codes, Oakland Creek Protection, Stormwater Water Management and Discharge Control Ordinance, Oakland Tree Protection Ordinance, Oakland Grading Regulations, National Pollutant Discharge Elimination System (NPDES) permit requirements, Housing Element-related mitigation measures, California Building Code, and Uniform Fire Code, among others), which have been found to substantially mitigate environmental effects. Where there are peculiar circumstances associated with a project or project site that will result in significant environmental impacts despite implementation of the Standard Conditions of Approval, the City will determine whether there are feasible mitigation measures to reduce the impact to less-than-significant levels.

Cumulative Analysis Context

CEQA defines cumulative as "two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts." Section 15130 of the CEQA Guidelines requires that an EIR evaluate potential environmental impacts when the project's incremental effect is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. These impacts can result from a combination of the proposed project together with other projects causing related impacts. "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects."

The methodology used for assessing cumulative impacts typically varies depending on the specific topic being analyzed. For example, the geographic and temporal (time-related) parameters related to a cumulative analysis of air quality impacts are not necessarily the same as those for a cumulative analysis of noise or aesthetic impacts. This is because the geographic area that relates to air quality is much larger and regional in character than the geographic area that could be impacted by potential noise or aesthetic impacts from a proposed project and other cumulative projects/growth. The noise and aesthetic cumulative impacts inherently are more localized than air quality and transportation impacts which are more regional in nature. Accordingly, the parameters of the respective cumulative analyses in this document are determined by the degree to which impacts from this Project are likely to occur in combination with other development projects.

Since 2000, the City of Oakland has developed and maintained a cumulative growth scenario and land use database primarily for use in cumulative transportation analyses for Oakland EIRs. Oakland's growth scenario is developed using a forecast-based approach (i.e., an approach based on regional forecasts of economic activity and demographic trends). The Association of Bay Area Government's (ABAG) projections provide the citywide and regional economic and demographic inputs. The scenario also incorporates extensive local information and input regarding the locations for growth and change within the City including past, present, existing, pending and reasonably foreseeable future development in the area surrounding the Project site. The latter provide specificity about growth and development in Oakland for use in allocating growth to subareas and traffic analysis zones (TAZs) within the City. Transportation analyses using the Alameda County Transportation Commission (ACTC) travel demand model require inputs at the TAZ level. The scenario also includes existing development conditions within the baseline and growth projections for adjacent jurisdictions. The forecast-based approach for defining the cumulative growth scenario is used as a basis for cumulative analysis of transportation and transportation-related noise, air quality and greenhouse gas emissions impacts.

For other cumulative topics analyzed in this EIR which have a closer geographic cumulative context, a “list method” of past, present and reasonably foreseeable future projects, based on the City’s latest list of Major Development Projects, is used.[1]

The cumulative discussions that follow explain the geographic scope of the area affected by each cumulative effect, and draw on the information in the cumulative growth scenario consistent with the defined geographic area.

Recommended Conditions

Although not required by CEQA, certain “Recommendations” are included in this EIR. These recommended conditions are not necessary to address or mitigate any significant environmental impacts of the Project under CEQA, but are recommended by City Staff to address effects of the Project. These recommendations will be considered by decision makers during the course of Project review and may be imposed as Project-Specific Conditions of Approval.

[1] As a separate, independent project currently before the City of Oakland for consideration for approval, Safeway, Inc. also proposes to replace an existing Safeway supermarket and closed gasoline service station with a new two-story building housing a larger Safeway supermarket, seven separate ground-floor retail shops and a restaurant, at 6320 College Avenue, at the northeast corner of College and Claremont Avenues. As with other projects on the City’s list of Major Development Projects, that project is included in the cumulative analysis if and when applicable, based on the environmental issue addressed.

4.1 Aesthetics

This chapter evaluates the proposed Project's potential aesthetic effects. It describes the existing visual character of the site and evaluates the changes that development of the Project as proposed would have with respect to visual impacts and shadows.

This chapter is based on field surveys of the Project site and a review of data provided by the City and the Project applicant. Materials reviewed for the purposes of this aesthetics analysis include aerial photographs, site plans, architectural elevations and planning documents. The site plan, drawn to scale, provides building locations with respect to the overall site and the architectural elevations convey a realistic sense of the Project in elevation as well as perspective drawings.

Physical Setting

The following includes a description of the visual quality of the Project site and its surroundings and views in the vicinity of the site.

Local Context

The Project site is located in an urbanized portion of Oakland adjacent to two major arterials (Broadway and Pleasant Valley Avenue). Existing land uses are varied and include commercial, public, institutional and residential uses along major streets in the area.

With the exception of several apartment buildings across Pleasant Valley Avenue from the Project site, most structures in the immediate vicinity do not exceed three stories in height. The structures in the vicinity of the Project site vary greatly in physical appearance and range from Victorian-era homes to modern, multi-story residential and commercial buildings. Building setbacks from the street vary, with parking areas in front of several buildings. There are a number of prominent billboards in the vicinity. There is a large pond along the east side of the Project site.

Visual Character of the Surrounding Area

Given the urban nature of the Project area, views from the Project site of the surrounding area are generally limited to the immediate developed area adjacent to the site. The adjacent pond is visible from much of the site.

Visual Character of the Site

The Project site currently supports a variety of one-story retail buildings in a conventional shopping mall configuration, with a large parking field located in front of the stores. There is some landscaping in the parking areas, and trees along the edges of the Project site.

View Corridors

View corridors are defined as the total field of vision from a specific viewpoint. They are formed by physical elements (i.e., buildings) that guide lines of sight and control view directions available to pedestrians or motorists. Public view corridors are in areas where views are available from publicly-accessible places such as city streets, parks and other public spaces. The Project site is not located within any formally-identified view corridor.

Light and Glare

Sources of light and glare on and in the vicinity of the Project site are typical of a highly-urbanized area located adjacent to major arterials. Existing light sources include exterior building lighting, security lighting for buildings and exterior surface parking lots, signage, street lights and vehicular traffic.

Shadows

With the exception of the bank building on the corner of Broadway/Pleasant Valley Avenue (which is a 2-story building), buildings currently located at the Project site do not exceed one story in height. None of the existing buildings produce shadows that adversely affect adjacent off-site buildings or properties.

Urban Decay

Urban decay is defined as, among other characteristics, visible symptoms of physical deterioration that invite vandalism, loitering, and graffiti that are caused by a downward spiral of business closures and long term vacancies. This physical deterioration to properties or structures is so prevalent, substantial, and lasting for a significant period of time that it impairs the proper utilization of the properties and structures, and the health, safety, and welfare of the surrounding community. The manifestations of urban decay include such visible conditions as plywood-boarded doors and windows, parked trucks and long term unauthorized use of the properties and parking lots, extensive gang and other graffiti and offensive words painted on buildings, dumping of refuse on site, overturned dumpsters, broken parking barriers, broken glass littering the site, dead trees and shrubbery together with weeds, lack of building maintenance, homeless encampments, and unsightly and dilapidated fencing.

Current Retail Market Conditions

Retail market conditions are strong in the Project's market area. The City of Oakland has a low retail vacancy rate, with few vacancies in the market area's major commercial shopping nodes. Long-term retail vacancy is not a prevalent issue in the market area. There are limited retail properties in Piedmont and thus no appreciable retail vacancy in Piedmont. Existing retail vacancies generally appear well-maintained and retail vacancies in the market area are typically absorbed quickly, especially in the market area's major retail shopping districts. There are only limited instances of poorly maintained retail vacancies within the market area.

Despite a high level of sales within the Project's market area, a substantial amount of demand generated by market area residents "leaks" from the market area, meaning that sufficient retail shopping opportunities are not available in the market area to fully capture demand generated by market area residents. An exception to this leakage is in the food & beverage category, where the market area is estimated to attract 24% more sales than would be expected from resident spending alone. Inclusive of this sales attraction, the market area as a whole leaks 41% of resident spending potential, meaning that 41% of resident spending on average is spent outside the market area, resulting in lost jobs, personal income and sales tax revenues to the community.

Existing Blight and Urban Decay

During fieldwork conducted in October, 2011 for the Urban Decay Analysis (see **Appendix 4.1**), with periodic subsequent field visits throughout 2012, there were only a few visible signs of litter, graffiti, weeds, or rubbish associated with existing commercial nodes in the Project's market area, most notably at the periphery of some of the nodes.

Regulatory Setting

The main documents that are applicable to aesthetics and visual quality within and around the Project site are the Land Use and Transportation Element of the General Plan, the Oakland Planning Code, and applicable Standard Conditions of Approval.

City of Oakland

Oakland General Plan

Land Use and Transportation Element. The Land use and Transportation Element (LUTE) is intended to guide land use and development within the City of Oakland. Applicable aesthetic resources policies are listed below:

> *Policy T6.2: Improving Streetscapes*. The City should make major efforts to improve the visual quality of streetscapes. Design of the streetscape, particularly in neighborhoods and commercial centers, should be pedestrian-oriented and include lighting, directional signs, trees, benches, and other support facilities.
>
> *Policy N1.5: Designing Commercial Development*. Commercial development should be designed in a manner that is sensitive to surrounding residential uses.
>
> *Policy I/C4.3: Reducing Billboards*. Billboards should be reduced or eliminated in commercial and residential areas in Oakland neighborhoods through mechanisms that minimize or do not require the expenditure of city funds.
>
> *Policy N1.8: Making Compatible Development*. The height and bulk of commercial development in "Neighborhood Mixed-Use Center" and "Community Commercial" areas should be compatible with that which is allowed for residential development.

Open Space, Conservation and Recreation Element. The Open Space, Conservation and Recreation Element of the General Plan (OSCAR) promotes the preservation and good design of open space, and the protection of natural resources to improve aesthetic quality in Oakland. The following policies are relevant to visual resource concerns associated with the proposed Project:

> *Policy OS-10.1: View Protection*. Protect the character of existing scenic views in Oakland, paying particular attention to: (a) views of the Oakland Hills from the flatlands; (b) views of downtown and Lake Merritt; (c) views of the shoreline; and (d) panoramic views from Skyline Boulevard, Grizzly Peak Road, and other hillside locations.
>
> *Policy OS-10.2: Minimizing Adverse Visual Impacts*. Encourage site planning for new development which minimizes adverse visual impacts and takes advantage of opportunities for new vistas and scenic enhancement.
>
> *Policy OS-10.3: Underutilized Visual Resources*. Enhance Oakland's underutilized visual resources, including the waterfront, creeks, San Leandro Bay, architecturally significant buildings or landmarks, and major thoroughfares.

Oakland Planning Code - Design Review

The designs of new projects in Oakland are subject to the following performance criteria that are utilized as part of the City's Design Review process:

For Nonresidential Facilities and Signs

1. That the proposal will help achieve or maintain a group of facilities which are well related to one another and which, when taken together, will result in a well-composed design, with consideration given to site, landscape, bulk, height, arrangement, texture, materials, colors, and appurtenances; the relation of these factors to other key facilities in the vicinity; and the relation of the proposal to the total setting as seen from key points in the surrounding area. Only elements of design which have some significant relationship to outside appearance shall be considered, except as otherwise provided in Section 17.136.060;
2. That the proposed design will be of a quality and character which harmonizes with, and serves to protect the value of, private and public investments in the area;
3. That the proposed design conforms in all significant respects with the Oakland General Plan and with any applicable design review guidelines or criteria, district plan, or development control map which have been adopted by the Planning Commission or City Council.

Blight and Urban Decay

City ordinances, such as the City of Oakland Municipal Code of Ordinances Chapter 8.10 on Graffiti, Section 8.18.060 on Noxious Weeds, Chapter 8.24 on Property Blight, Section 8.38.170 on Dumping Garbage, Chapter 8.54 on Vacant Building Registration, Chapter 12.04 on Sidewalk, Driveway, and Curb Construction and Maintenance, require property owners to maintain their properties so as not to create a nuisance by creating a condition that reduces property values and promotes blight and neighborhood deterioration. Enforcement of these ordinances can help prevent physical deterioration due to any long-term closures of retail spaces. Code enforcement is managed by the City of Oakland's Building Services Division. They look into the accumulation of trash, debris, graffiti, and other blight on properties. The Building Services Division is responsible for enforcement and is allowed to take actions needed to enforce the ordinances. Also, according to Municipal Code Section 15.08.110, the owner in violation, "is liable for any costs, expenses, accruing interest, and disbursements paid for or incurred by the City of Oakland and any of its contractors in correction, abatement, and prosecution of the violation."[1] Citizens can report code violations through a telephone hotline or online form. Once a complaint is issued and determined valid, the owner has 16 days to pay the violation ticket or work with the City to fix the violation. Similar codes also exist in the City of Piedmont, such as the City of Piedmont Municipal Code of Ordinances Chapter 6 on the Abatement of Nuisances.[2]

City of Oakland's Standard Conditions of Approval

The City's Standard Conditions of Approval relevant to this impact topic are listed below for reference. The conditions of approval will be adopted as requirements of the proposed Project if the Project is approved by the City to help ensure that no significant impacts (for the applicable topic) occur. As a result, they are not listed as mitigation measures.

> **SCA Aesth-1: Lighting Plan**. *Prior to the issuance of an electrical or building permit.* The proposed lighting fixtures shall be adequately shielded to a point below the light bulb and reflector and that prevent unnecessary glare onto adjacent properties. Plans shall be submitted to the Planning and Zoning Division and the Electrical Services Division of the Public Works Agency for review and approval. All lighting shall be architecturally integrated into the site.

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[1] City of Oakland Municipal Code, Section 15.08.110, "Abatement of Violations," http://library.municode.com/index.aspx?clientid=16308&stateid=5&statename=california (accessed November 18, 2011).

[2] City of Piedmont Municipal Code, "Chapter 6 Abatement of Nuisances," pages 6-2, 6-3, and 6-4 http://www.ci.piedmont.ca.us/html/city_code/pdf/chapter6.pdf (accessed July 5, 2012).

SCA Aesth-2: Tree Removal Permit. *Prior to issuance of a demolition, grading, or building permit*. Prior to removal of any protected trees, per the Protected Tree Ordinance, located on the project site or in the public right-of-way adjacent to the project, the project applicant must secure a tree removal permit from the Tree Division of the Public Works Agency, and abide by the conditions of that permit.

SCA Aesth-3: Tree Replacement Plantings. *Prior to issuance of a final inspection of the building permit*. Replacement plantings shall be required for erosion control, groundwater replenishment, visual screening and wildlife habitat, and in order to prevent excessive loss of shade, in accordance with the following criteria:

a. No tree replacement shall be required for the removal of nonnative species, for the removal of trees which is required for the benefit of remaining trees, or where insufficient planting area exists for a mature tree of the species being considered.

b. Replacement tree species shall consist of Sequoia sempervirens (Coast Redwood), Quercus agrifolia (Coast Live Oak), Arbutus menziesii (Madrone), Aesculus californica (California Buckeye) or Umbellularia californica (California Bay Laurel) or other tree species acceptable to the Tree Services Division.

c. Replacement trees shall be at least of twenty-four (24) inch box size, unless a smaller size is recommended by the arborist, except that three fifteen (15) gallon size trees may be substituted for each twenty-four (24) inch box size tree where appropriate.

d. Minimum planting areas must be available on site as follows:

    i. For Sequoia sempervirens, three hundred fifteen square feet per tree;

    ii. For all other species listed in #2 above, seven hundred (700) square feet per tree.

e. In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee as determined by the master fee schedule of the city may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians.

f. Plantings shall be installed prior to the issuance of a final inspection of the building permit, subject to seasonal constraints, and shall be maintained by the project applicant until established. The Tree Reviewer of the Tree Division of the Public Works Agency may require a landscape plan showing the replacement planting and the method of irrigation. Any replacement planting which fails to become established within one year of planting shall be replanted at the project applicant's expense.

SCA Aesth-4: Tree Protection During Construction. *Prior to issuance of a demolition, grading, or building permit*. Adequate protection shall be provided during the construction period for any trees which are to remain standing, including the following, plus any recommendations of an arborist:

a. Before the start of any clearing, excavation, construction or other work on the site, every protected tree deemed to be potentially endangered by said site work shall be securely fenced off at a distance from the base of the tree to be determined by the City Tree Reviewer. Such fences shall remain in place for duration of all such work. All trees to be removed shall be clearly marked. A scheme shall be established for the removal and disposal of logs, brush, earth and other debris which will avoid injury to any protected tree.

b. Where proposed development or other site work is to encroach upon the protected perimeter of any protected tree, special measures shall be incorporated to allow the roots to breathe and obtain water and nutrients. Any excavation, cutting, filing, or compaction of the existing ground surface within the protected perimeter shall be minimized. No change in existing ground level shall occur within a distance to be determined by the City Tree Reviewer from the base of any protected tree at any time. No burning or use of equipment with an open flame shall occur near or within the protected perimeter of any protected tree.

c. No storage or dumping of oil, gas, chemicals, or other substances that may be harmful to trees shall occur within the distance to be determined by the Tree Reviewer from the base of any protected trees, or any other location on the site from which such substances might enter the protected perimeter. No heavy construction equipment or construction materials shall be operated or stored within a distance from the base of any protected trees to be determined by the tree reviewer. Wires, ropes, or other devices shall not be attached to any protected tree, except as needed for support of the tree. No sign, other than a tag showing the botanical classification, shall be attached to any protected tree.

d. Periodically during construction, the leaves of protected trees shall be thoroughly sprayed with water to prevent buildup of dust and other pollution that would inhibit leaf transpiration.

e. If any damage to a protected tree should occur during or as a result of work on the site, the project applicant shall immediately notify the Public Works Agency of such damage. If, in the professional opinion of the Tree Reviewer, such tree cannot be preserved in a healthy state, the Tree Reviewer shall require replacement of any tree removed with another tree or trees on the same site deemed adequate by the Tree Reviewer to compensate for the loss of the tree that is removed.

f. All debris created as a result of any tree removal work shall be removed by the project applicant from the property within two weeks of debris creation, and such debris shall be properly disposed of by the project applicant in accordance with all applicable laws, ordinances, and regulations.

Impacts, Standard Conditions of Approval and Mitigation Measures

Criteria of Significance

The Project would result in a significant impact related to aesthetics if it would:

Scenic Resources:

1. Have a substantial adverse effect on a public scenic vista[3];
4. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state or locally designated scenic highway;
5. Substantially degrade the existing visual character or quality of the site and its surroundings;

Light and Glare:

6. Create a new source or substantial light or glare which would substantially and adversely affect daytime or nighttime views in the area;

[3] Only impacts on scenic views enjoyed by members of the public generally (but not private views) are potentially significant.

Shadows:

7. Introduce landscape that now or in the future cast substantial shadows on existing solar collectors (in conflict with California Public Resource Code Section 25980-25986);
8. Cast shadow that substantially impairs the function of a building using passive solar heat collection, solar collectors for hot water heating, or photo-voltaic solar collectors;
9. Cast shadow that substantially impacts the beneficial use of any public or quasi-public park, lawn, garden, or open space;
10. Cast shadow on an historic resource, as defined by CEQA Section 15064.2(a), such that the shadow would materially impair the resource's historic significance by materially altering those physical characteristics of the resource that convey its historical significance and that justify its inclusion or eligibility for listing in the National Register of Historic Places, California Register of Historic Resources, Local register of historic resources or a historical resource survey form (DPR Form 523) with a rating of 1-5;

Adequate Lighting

11. Require an exception (variance) to the policies and regulations in the General Plan, Planning Code, or Uniform Building Code, and the exception causes a fundamental conflict with policies and regulations in the General Plan, Planning Code, and Uniform Building Code addressing the provisions of adequate light related to appropriate uses; or

Wind

12. Create winds exceeding 36 mph for more than 1 hour during daylight hours during the year. [4]

Scenic Vistas

Impact Aesth-1: Views from the Project site have not been identified as scenic vistas or important visual resources in the Oakland General Plan or by a regulatory agency with jurisdiction over the site. As a result, development of the Project would not significantly alter scenic vistas. (**LTS**)

Given the urban nature of the area, views from and through the Project site of the surrounding area are generally limited to the immediate developed area adjacent to the site. Views to the East Bay hills and downtown Oakland are limited by surrounding development. Views from the Project site have not been identified as scenic vistas or important visual resources in the Oakland General Plan or by a regulatory agency with jurisdiction over the site. No views of San Francisco Bay are available from the Project site. Development of the Project would not significantly alter scenic vistas. As indicated in **Figure 4.1-1**, views from vantage points to the north of the site, which are substantially elevated at the top of the rock outcropping, would look primarily out and across the site and the Project's buildings would not obstruct long distance views from these areas. Views of the Project from surrounding private properties are not public views and so are not considered a potential environmental impact under CEQA.

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[4] The wind analysis only needs to be done if the project's height is 100 feet or greater (measured to the roof) and one of the following conditions exist: (a) the project is located adjacent to a substantial water body (i.e., Oakland Estuary, Lake Merritt or San Francisco Bay); or (b) the project is located in Downtown. Downtown is defined in the Land Use and Transportation Element of the General Plan (page 67) as the area generally bounded by West Grand Avenue to the north, Lake Merritt and Channel Park to the east, the Oakland Estuary to the south and I-980/Brush Street to the west.

Mitigation Measures

None needed

Scenic Resources

Impact Aesth-2: No scenic resources have been formally identified at the Project site, and development of the Project would have no adverse effects on any formally-identified scenic resources. (**LTS with SCA**)

Scenic resources are defined to include, but are not limited to trees, rock outcroppings and historic buildings within a state or locally designated scenic highway. Certain trees located on the Project site which will be removed are ornamental landscape species with minor scenic value. The loss of these trees will be compensated by replacement plantings as proposed by the Project (see Project Description, Landscape Plans) and as required pursuant to SCA Aesth-2 and -3. The prominent rock outcroppings and significant geologic features, which remain from prior quarrying activities at the site, will not be disturbed by the Project. The site contains no historic resources or other potentially significant scenic resources.

Mitigation Measures

None needed

Visual Character and Quality

Impact Aesth-3: The visual character of the Project site and its surroundings would change as a result of the Project, but the general character of the site would remain as a commercial shopping center. The Project would not substantially degrade but rather would improve the existing visual character and quality of the site and its surroundings. (**LTS**)

As shown in Figures **4.1-2 and -3**, the existing visual character of the Project site is that of a traditional suburban style shopping mall, with retail stores to the rear of the lot and a large parking area in front of the stores.

Implementation of the Project would change the visual character of the site. For example, much of the existing surface parking lot which is currently along the street frontage of both Broadway and Pleasant Valley Avenue would be replaced with new, 2 and 3-story buildings and associated landscaping. As suggested by the artist renderings of the Project, the design of the shopping center would be more urban in character, with denser development, taller buildings, newer architecture and an internal street pattern. These changes would improve rather than degrade the existing visual character and quality of the site. Older buildings would be replaced with newer, more modern and architecturally more interesting building design

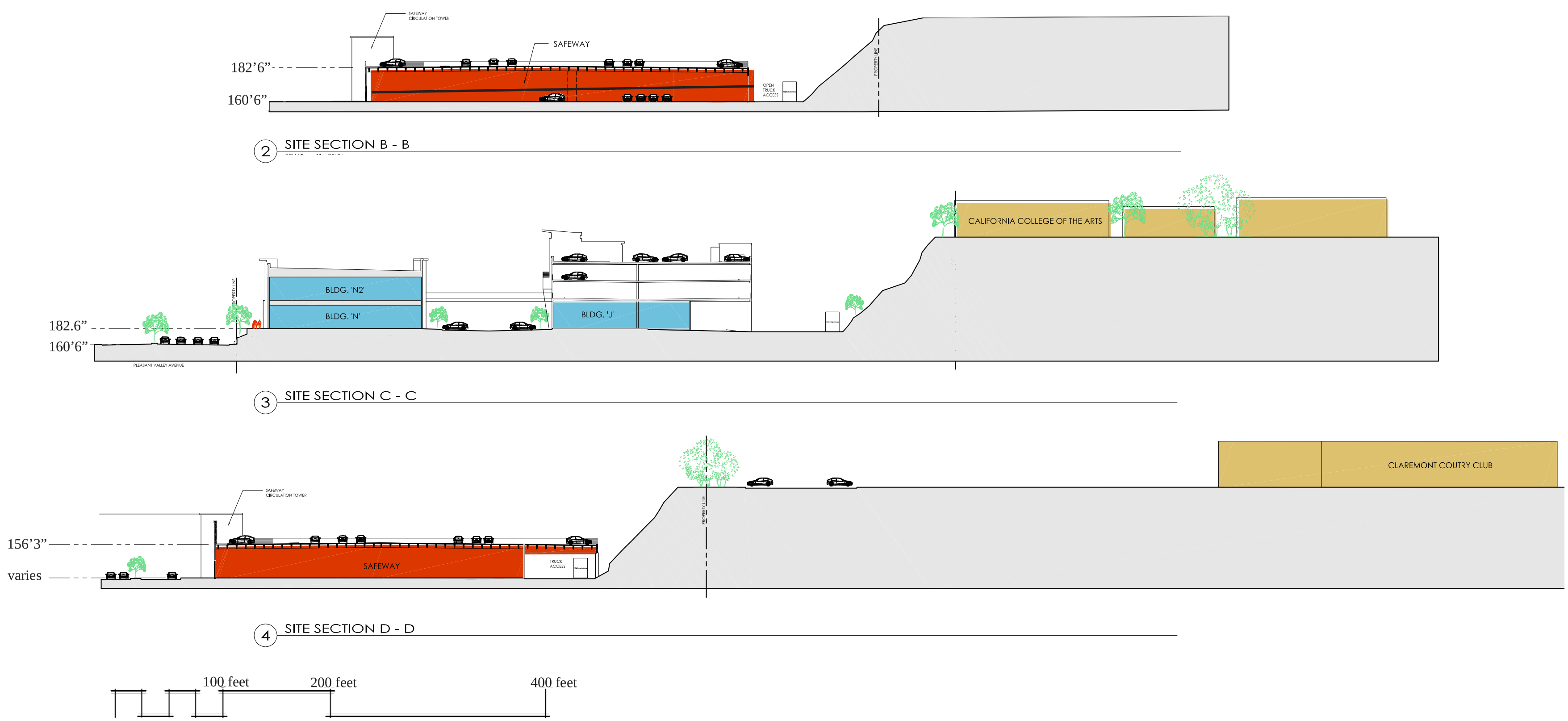


Figure 4.4-1
Cross Sections Showing Views Over Project from Northerly Properties

Source: Benner Stange Architects

Existing View from Broadway Looking East

Proposed View from Broadway Looking East

Figure 4.1-2
Existing and Proposed Views from Broadway

Source: Benner Stange Architects

Existing View from Pleasant Valley

Proposed View from Pleasant Valley

Figure 4.1-3
Existing and Proposed Views from Pleasant Valley

Source: Benner Stange Architects

Design Review Criteria

The Planning Commission, upon recommendation of the Design Review Committee, will ultimately determine whether the design of the Project is appropriate and adequate. The following analysis evaluates the Project against the design review findings that the Planning Commission must make to approve the Project pursuant to Section 17.136 of the Municipal Code. This evaluation is not intended to presuppose the Planning Commission's determination, but is provided here to indicate the environmental factors that may be applicable toward that determination.

1) That the proposal will help achieve or maintain a group of facilities which are well related to one another and which, when taken together, will result in a well-composed design, with consideration given to site, landscape, bulk, height, arrangement, texture, materials, colors, and appurtenances; the relation of these factors to other key facilities in the vicinity; and the relation of the proposal to the total setting as seen from key points in the surrounding area. Only elements of design which have some significant relationship to outside appearance shall be considered, except as otherwise provided in Section 17.136.060.

    Although the proposed Project consists of several buildings arranged on the site, the architectural style of each building is similar in appearance and detail. New buildings will be well related to one another in regard to architectural style and grouping (bulk, height, arrangement, texture, materials, colors, and appurtenances), and will result in a well-composed design. The architectural style does not seek to mimic or imitate the design of any of its surrounding buildings (which consist of an assortment of historic institutional buildings, small single-family cottages, garden apartments, mid-rise apartments and large box-like commercial structures), but instead proposes a design that is unique to the Project. The Project design seeks to create an improved relationship to the adjacent quarry pond through landscape and construction of a pedestrian pathway.

2) That the proposed design will be of a quality and character which harmonizes with, and serves to protect the value of, private and public investments in the area;

    New building placement along the frontages of Broadway and Pleasant Valley Road will replace and improve upon the prominence of current views of the parking lots. New landscaping along the easterly edge of the site will improve and enhance the aesthetic value of the adjacent quarry pond. New landscaping and hardscape improvements (courtyards, pedestrian amenities, etc.) throughout the Project site would improve upon the total Project site setting as seen from key points in the surrounding area (see **Figures 4.1-4 and -5**.

3) That the proposed design conforms in all significant respects with the Oakland General Plan and with any applicable design review guidelines or criteria, district plan, or development control map which have been adopted by the Planning Commission or City Council.

    As indicated in Chapter 4.9: Land Use and Policy Consistency of this EIR, the Project is consistent in all significant respects with the policies of the City of Oakland's General Plan, including the Land Use and Transportation Element and all other applicable General Plan elements. With the exception of the need for a minor variance for height limits, the Project is also consistent with the applicable regulations of the Zoning ordinance. The height limit variance does not introduce any adverse physical environmental effects.

Mitigation Measures

None needed

View of Parking Structure and Pedestrian Bridge

View of New Internal Street and Plaza

Figure 4.1-4
Artist's Renderings, Internal Views of Project

Source: Benner Stange Architects

View from Pleasant Valley Entrance to Plaza

View from Safeway Parking Deck

Figure 4.1-5
Artist's Renderings, Internal Views of Project

Source:Benner Stange Architects

Light and Glare

Impact Aeasth-4: Lighting at the site would be modified as part of the proposed Project, but stores and parking areas at the site would still be illuminated in a manner similar to what is currently observed at the site. (**LTS with SCA)**

The Project's proposed schematic Lighting Plan (see **Figure 4.1-6**) includes new ornamental building lighting on the prominent edges of new buildings (generally placed at approximately 9 feet high along the outer walls) as well as new ornamental light pole fixtures in the parking lots (anticipated to be 15 to 20 feet tall), and new ceiling light fixtures installed in the ceilings above parking decks. Final lighting plans showing the precise location, size and type of fixtures will be prepared at later stages of final design for the Project.

Standard Conditions of Approval

Implementation of SCA Aesth-1: Lighting Plan would require that proposed lighting fixtures be adequately shielded to a point below the light bulb and reflector to prevent unnecessary glare onto adjacent properties. Final design plans must be submitted to the Planning and Zoning Division and the Electrical Services Division of the Public Works Agency for their review and approval to ensure that lighting is architecturally integrated into the site. If approved, the Project would be required to comply with Standard Condition of Approval Aesth-1, ensuring that light and glare impacts would be reduced to a level of less than significant.

Mitigation Measures

None needed

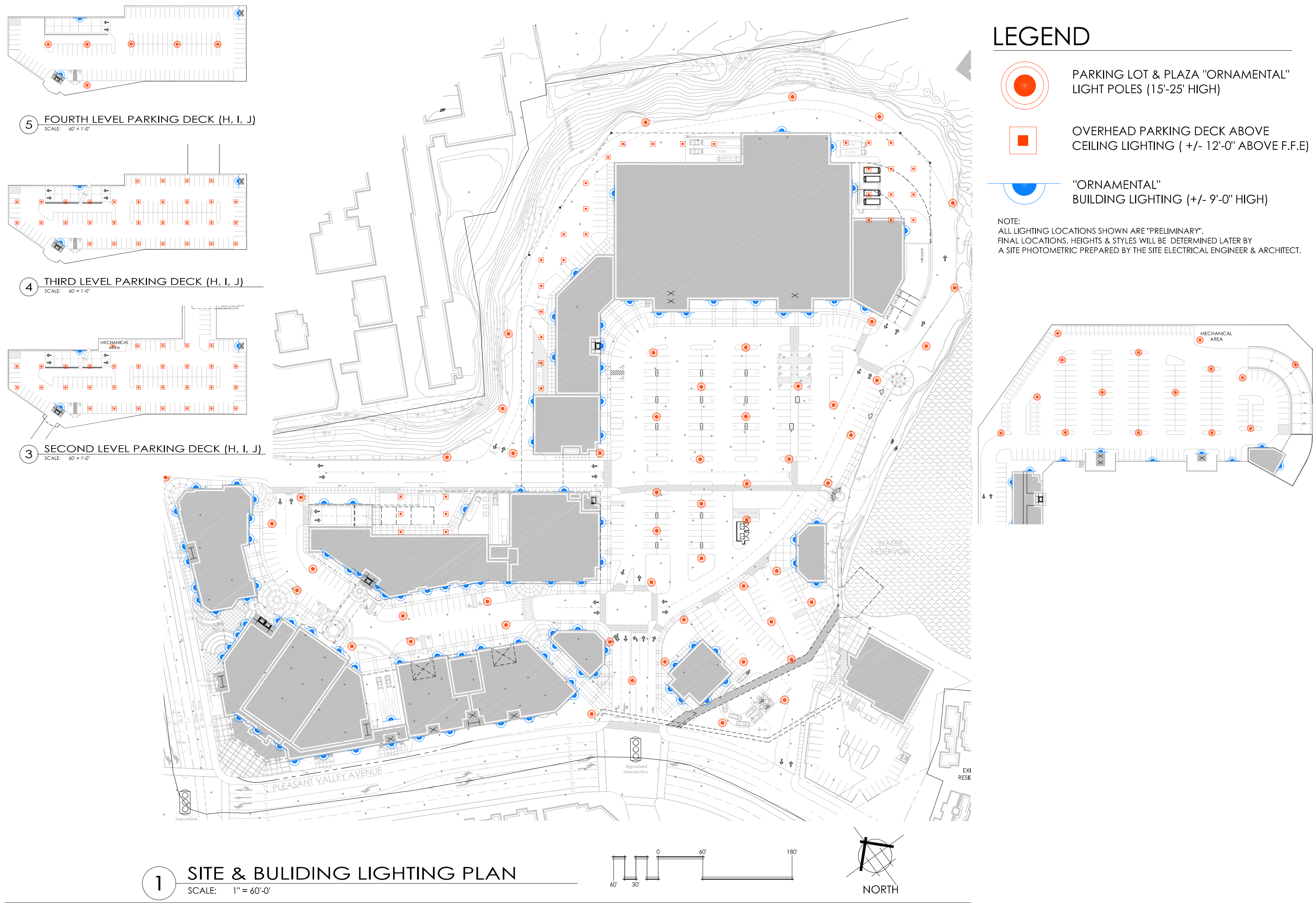


Figure 4.1-6
Project Lighting Plan

Source: Benner Stange Architects

Landscape Shadows, Shadows on Solar Collectors, Shadows on Public Space

Impact Aesth-5: No structures or landscape improvement proposed by the Project would at any time create substantial shadows beyond the Project site and thus would not interfere with any off-site solar collectors or generate shadows that would fall on any public space. (**No Impact**)

The shadow studies prepared for the proposed Project are shown in **Figures 4.1-7 through -10**. As shown, the longest shadows would be generated in winter during the morning and evening, but none of the shadows cast by the proposed buildings would fall on existing adjacent structures, off-site solar collectors or public spaces.

Mitigation Measures

None needed

Shadows on Historic Resources

Impact Aesth-6: Structures proposed at the Project site would not generate shadows that would fall on any historic resources. (**No Impact**)

There are historic structures located on the California College of the Arts property adjacent to the Project site to the northwest. However, given the topography of the area and the design of the Project, the Project's most significant (i.e., longest) shadows that would occur at 3:00 p.m. on a winter day (as shown on Figure 4.1-9) would not cast shadows that would materially impair the resource's historic significance by materially altering those physical characteristics of the resource that convey its historical significance.

Mitigation Measures

None needed

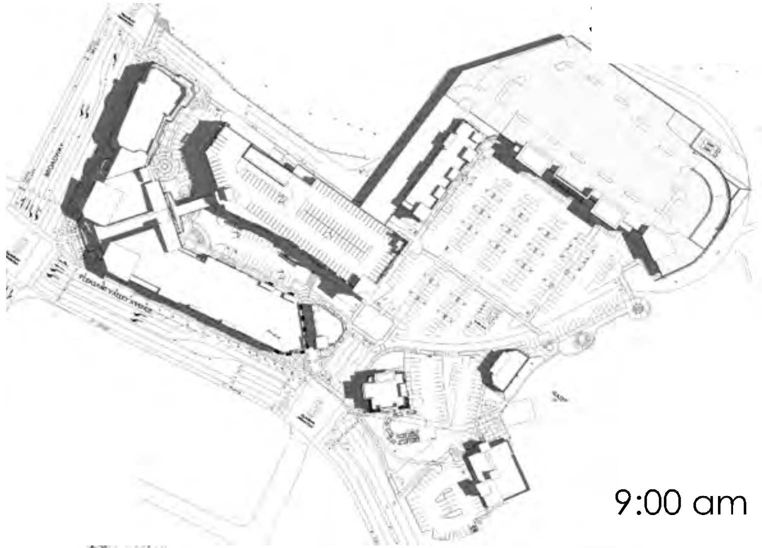
Adequate Lighting

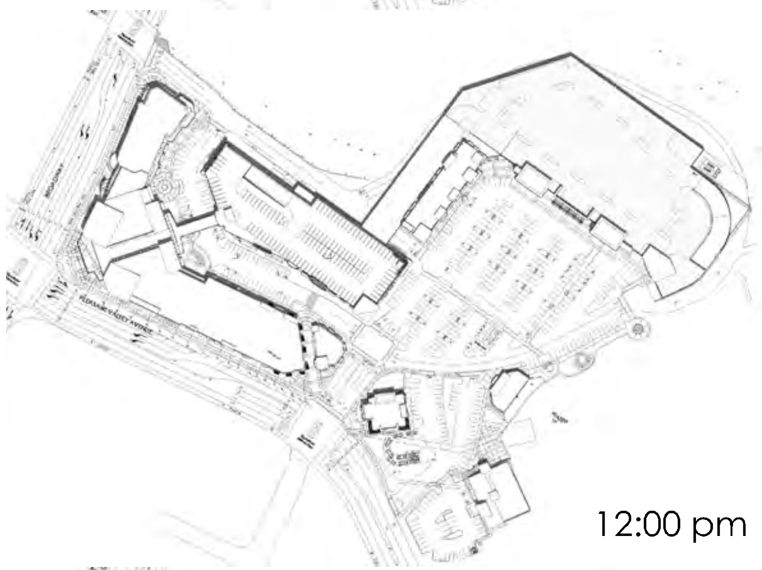
Impact Aesth-7: The Project would not fundamentally conflict with any policies or regulations of the General Plan, Planning Code or Uniform Building Code that address appropriate provisions of adequate light for various types of land uses. (**LTS**)

The Project would not require an exception or variance to the policies of the General Plan and would not require an exception or variance to the regulations found in the Uniform Building Code. The Project would require a minor zoning variance to the height limitations of the Planning Code, but this variance would not preclude the provision of adequate natural light into the Project site. Furthermore, implementation of SCA Aesth-1: Lighting Plan would ensure that new lighting provided at the Project site is adequate and appropriate for all proposed uses and will not "spill" over onto adjacent properties.

Mitigation Measures

None needed





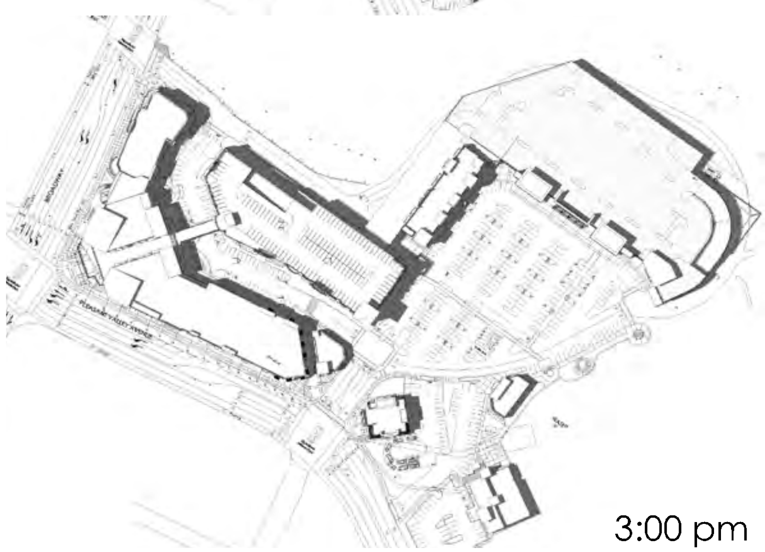


Figure 4.1-7
Shadow Study, Spring Equinox

Source: Benner Stange Architects

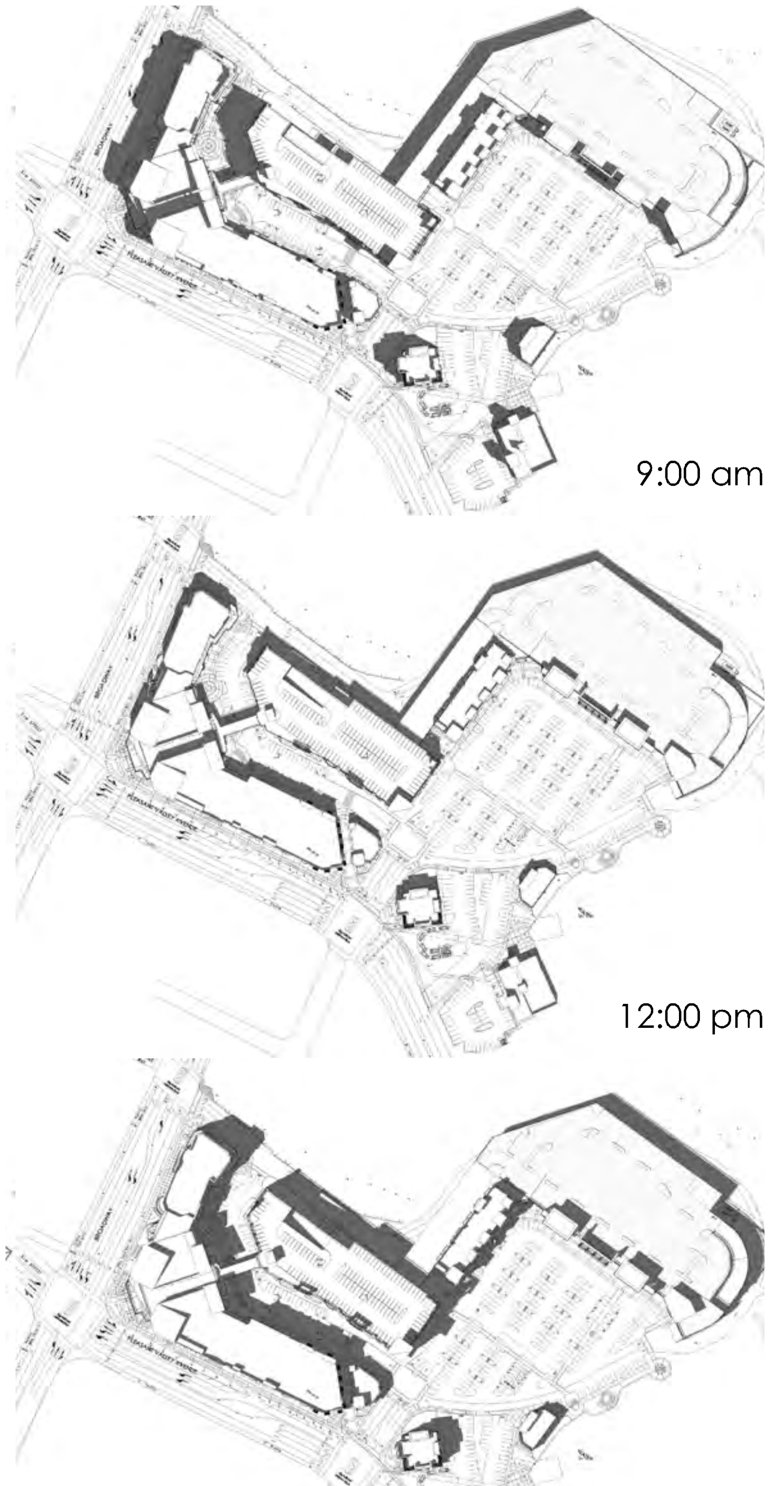


Figure 4.1-8
Shadow Study, Fall Equinox

Source: Benner Stange Architects

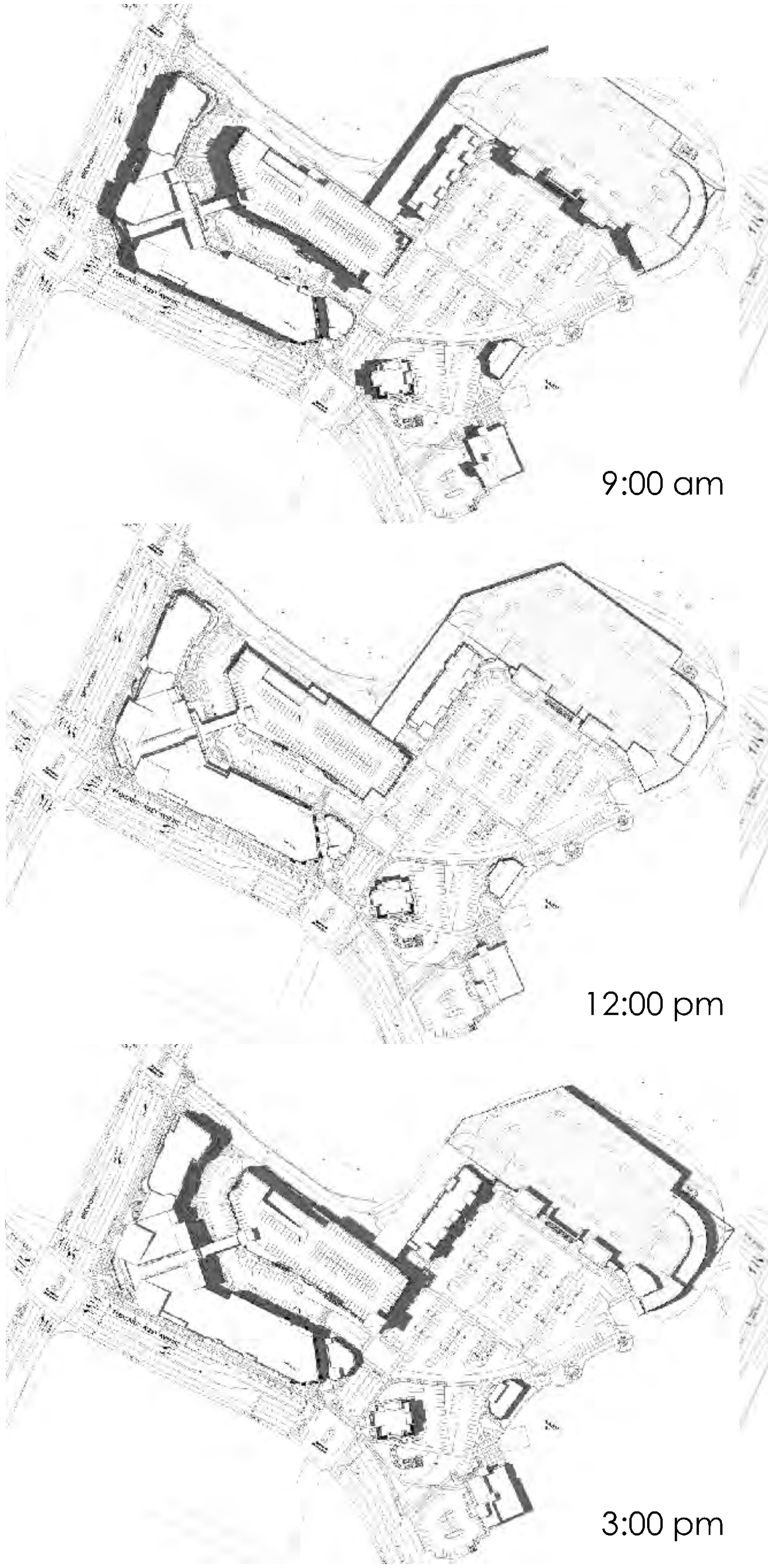


Figure 4.1-9
Shadow Study, Summer Solstice

Source: Benner Stange Architects

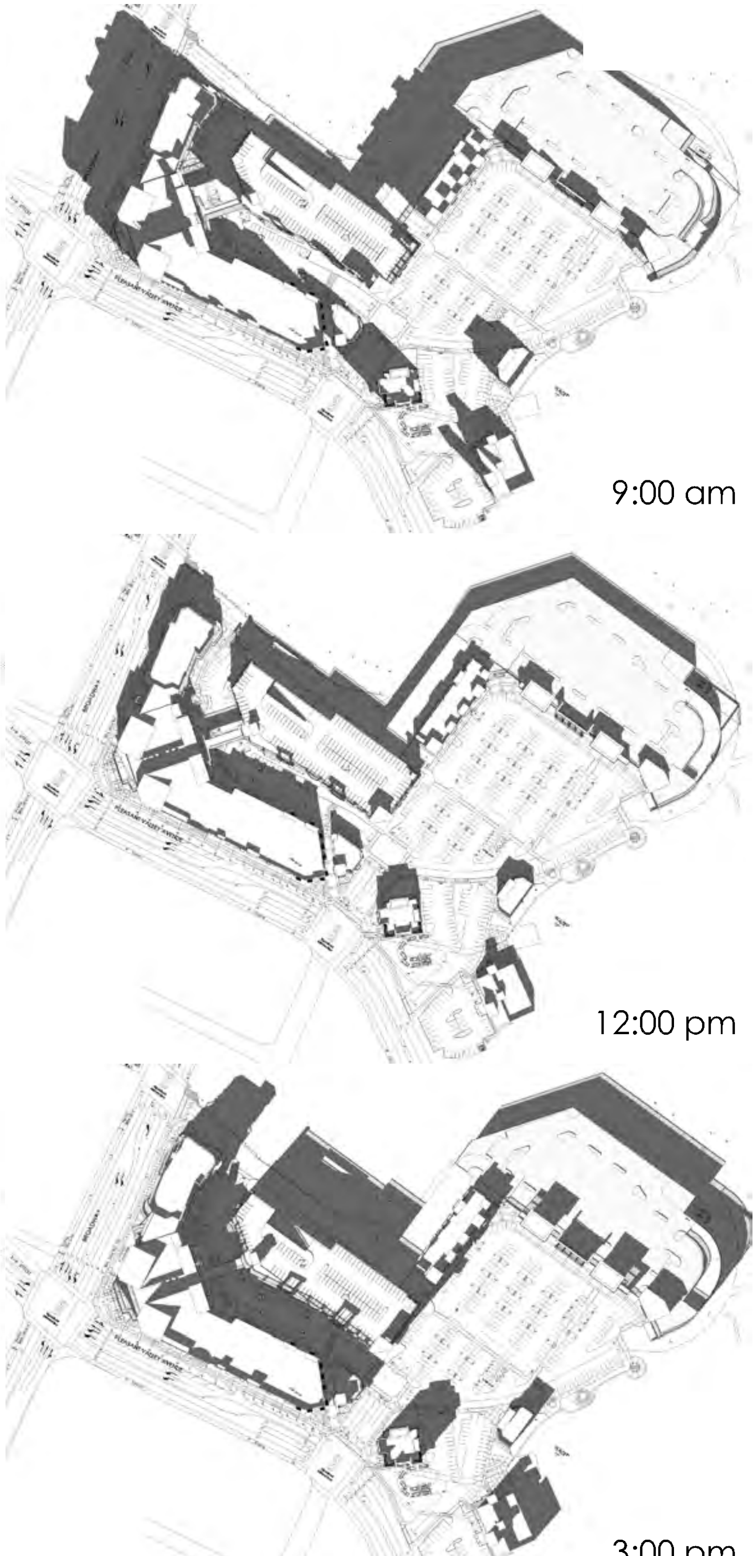


Figure 4.1-10
Shadow Study, Winter Solstice

Source: Benner Stange Architects

High Winds

Impact Aesth-8: Given the limited height of proposed structures at the Project site and the site's location, wind modeling is not necessary and there would be no wind-related impacts associated with the proposed Project. (**No Impact**)

The City of Oakland requires wind modeling for proposed structures that exceed 100 feet in height and that are located adjacent to a substantial body of water because such structures are considered more likely to result in wind impacts. Such taller structures may, in some circumstances, have the potential to generate surface-level winds which could exceed 36 miles per hour for more than one daylight hour each year. None of the structures proposed at the Project site would exceed 100 feet in height and the site is not located near a substantial surface water body. The adjacent quarry pond is not considered to be a "substantial" body of water such as the San Francisco Bay or Lake Merritt.

Mitigation Measures

None needed

Urban Decay

Impact Aesth-9: Based on consideration of market conditions, retail leakage, existing regulatory controls that address blight, and diverted sales due to the Project, the Project would not cause business closures, long term vacancies and physical deterioration of properties. Therefore, the Project would not result in substantial urban decay impacts. (**LTS**)

This section evaluates the potential for the Project to result in urban decay and visual blight by diverting retail sales from existing stores and thus causing business closures, long term vacancies and physical deterioration of properties. This evaluation summarizes the results of an Urban Decay Analysis conducted for the Project, which is presented in its entirety in **Appendix 4.1**. The Urban Decay Analysis based its conclusions upon consideration of current market conditions and retail sales leakage, regulatory controls that limit blight (described in the Regulatory Setting section), and diverted sales due to the Project.

Retail market conditions are strong in the market area. The City of Oakland has a low retail vacancy rate, with few vacancies in the market area's major commercial shopping nodes. Long-term retail vacancy is not a prevalent issue in the market area. There is no appreciable retail vacancy in Piedmont. Retail vacancies in the market area are typically absorbed quickly, especially in the market area's major retail shopping districts.

After consideration of out of market area sales and recaptured sales leakage, the Project has the potential to divert $14.2 million in sales from existing market area retailers, including food sales generated by market area residents as well as home furnishings and appliance sales. Despite the Project's sales impacts, especially in the food & beverage category, existing retailers would not be expected to close as a result of the Project opening. Existing market area stores that would be most affected by sales diverted to the Project would be those stores that are already most directly competitive with the existing Safeway store, namely the Trader Joe's on College Avenue, the Safeway at College and Claremont, Piedmont Grocery on Piedmont Avenue, the Safeway on Grand Avenue, Whole Foods on Bay Place, and the Trader Joe's on Lakeshore Avenue. These most directly competitive existing stores are high retail sales performers and are anticipated to be able to withstand the enhanced competition. Even with the loss of some degree of sales to the expanded, more upscale "Lifestyle" Safeway store, particularly initially as shoppers explore the broader options available, smaller niche stores would continue to provide quality of service and products not available at Safeway, and are also anticipated to be able to withstand the competition from the Project.

Additionally, the market area is anticipated to be characterized by continued retail leakage in almost all major retail categories. This remaining leakage would continue to sustain existing retailers, and if any existing stores do close, would provide an opportunity for other retailers to enter the marketplace focused on satisfying unmet retail demand. Continued household growth within the market area would also offset some of the Project's anticipated sales impacts on existing market area grocery and food stores.

Given the size of Oakland's retail market, more than 200,000 square feet of retail space would need to become vacant to increase Oakland's retail vacancy rate by 1.0%. Even with a 1.0% increase in the vacancy rate, Oakland's retail market would still be operating at a relatively healthy overall vacancy rate.

Existing retail vacancies generally appear well-maintained. Existing measures to maintain private commercial property in good condition in the market area are generally effective. City ordinances, such as the City of Oakland Municipal Code of Ordinances Chapter 8.10 on Graffiti, Section 8.18.060 on Noxious Weeds, Chapter 8.24 on Property Blight, Section 8.38.170 on Dumping Garbage, Chapter 8.54 on Vacant Building Registration, Chapter 12.04 on Sidewalk, Driveway, and Curb Construction and Maintenance, require property owners to maintain their properties so as not to create a nuisance by creating a condition that reduces property values and promotes blight and neighborhood deterioration. Similar codes also exist in the City of Piedmont, such as the City of Piedmont Municipal Code of Ordinances Chapter 6. These existing regulatory controls will help prevent potential urban decay in the event any existing retailers in the market area close following the opening of the Project.

Therefore, based on consideration of market conditions, diverted sales and additional retail leakage, and existing regulatory controls that address blight, the Project would not cause business closures, long term vacancies and physical deterioration of properties, and the urban decay impacts of the Project would be less than significant.

Mitigation Measures

None needed

Cumulative Aesthetic Resources Impacts

Cumulative Impact Aesth-10: Implementation of the Project, combined with other past, present, existing, pending and reasonably foreseeable projects that would be visible in the vicinity of the Project site would not result in significant adverse changes to existing visual character, views, light and glare or shadow. (**LTS**)

Geographic Context

The geographic area considered for the cumulative analysis of land use issues includes the area in close proximity to the Project Site including the upper Broadway corridor, the "lower" College Avenue corridor and the surrounding north Oakland neighborhoods. This area was defined because it includes the Project Site, the immediately surrounding neighborhoods, and a larger context for the Project. This area does not include any other major projects identified on the City's Major Project List as of July 2012.[5]

As analyzed throughout this section, the Project would not result in a significant aesthetic impact by creating a substantial adverse effect on a scenic vista; substantially damaging scenic resources; substantially degrading the existing visual character or quality of the site and its surroundings; creating a new source of substantial light or glare; introducing landscape that would now or in the future cast

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[5] http://www2.oaklandnet.com/oakca/groups/ceda/documents/report/oak025453.pdf

substantial shadows on existing solar collectors; casting shadow that substantially impairs the function of a building using passive solar heat collection, impairing the beneficial use of any public or quasi-public park, lawn, garden, or open space, or shadow on a historic resource.

Cumulative Shadow Impacts

For the vast majority of the year, the Project would not cast shadows beyond the Project site or its adjacent public right-of-way. Only during the late afternoon in the winter season would Project-generated shadows cast onto adjacent properties to the north, and these shadows would not shade a public park or open space, nor would they materially affect an historic resource. The Project would not cast shadows onto the same locations as shadows cast by other reasonably foreseeable development projects, nor would other cumulative projects cast shadows into the same locations as the shadows cast by the Project. The Project's shadows would not contribute to any significant cumulative increase in shadows other than those which it casts on its own. Although cumulative development within the upper Broadway corridor would result in greater areas being shadowed at various times of the day, the Project's contribution to increased shadows would not have an adverse cumulative effect on solar collection, beneficial uses of parks or shadowing of historic resources and the cumulative shadow impact would be less than significant.

Cumulative Visual Character and Viewshed Impacts

Project structures, when combined with structures associated with other recent or reasonably foreseeable future development projects in the vicinity, would alter the overall cumulative aesthetic character of the area by adding new identifiable architectural elements and increasing the overall urban character of the Broadway corridor. Given the height of the Project (a maximum of approximately 70 above ground surface at its highest location) and its setting within a prior quarry (which depresses the site in comparison to the surrounding topography to the north and west) the Projects' buildings would not be visible from many long-range vantage points or scenic vistas, and would not add to a cumulatively adverse change in the visual character of the surroundings. The Project's contribution to the potential overall increase in building height and massing (particularly along Broadway) would not constitute a demonstrably negative cumulative aesthetic effect, and the cumulative visual impact would be less than significant.

The proposed Project is consistent with the City's General Plan land use designation for the site and together with the majority of past, present, existing, pending and reasonably foreseeable future development projects, is subject to the City's Design Review process. The purpose of the Design Review process is to consider the design treatment and relationship of buildings to the surrounding built environment and ensure no significant adverse aesthetic impacts would result. All future development that could occur in the vicinity of the Project site would be required to adhere to established restrictions, guidelines, standards, policies and criteria that address building appearance, height, bulk, configuration and suitability to the environmental context. In particular, the City's Design Review criteria set forth in the Oakland Planning Code primarily considers a project's appropriateness to its physical setting. The Design Review process would ensure that future projects, taken together, would not result in significant adverse cumulative effects to aesthetics.

Cumulative Urban Decay Impacts

The Urban Decay Analysis of the Project conducted for this EIR evaluated 12 retail development projects in the Project's market area and surrounding areas that have the potential to contribute along with the Project to cumulative market area diverted sales, and associated potential for business closures, vacancies and urban decay. Only five of the cumulative projects are within the market area. These projects include the following:

- Civiq, located at 51st Street and Telegraph Avenue in Oakland - a mixed-use development with 19,500 square feet of retail, 100 residential units, and 60,000 square feet of office space, with unknown timing;
- BevMo! on Piedmont Avenue in Oakland – a retail beverage store seeking a CUP to locate in space previously occupied by Blockbuster;
- MacArthur BART Transit Village in Oakland – an affordable housing and redevelopment project adjacent to the BART station comprising 624 residential units, 42,500 square feet of retail/commercial space, and surface parking;
- Valdez & 23rd Street Project in Oakland – a mixed use project with 281 residential units, 500-car parking structure, including 250 public spaces, and potential space for 12,000 square feet of retail.; and
- College & Claremont Safeway expansion, located at College and Claremont avenues, 36,787 net new square feet of retail, including expansion and conversion of a Safeway store to a Lifestyle store, 1.1 miles from the Project site, EIR and public review in progress, potential completion date 2015.

These five projects vary in distance from the Project site, ranging from 0.6 miles for the 51st Street and Telegraph Avenue project and 2.0 miles for the Valdez & 23rd Street Project.

Of particular relevance to the cumulative analysis are the plans for the College & Claremont Safeway site. An existing 24,260-square foot Safeway store with 1,120 square feet of pad space is proposed to be redeveloped with an expanded 51,510-square-foot Safeway store and an additional 9,537 square feet of restaurant and retail space. The result will comprise a net increase of 36,787 square feet of commercial space. This net increment of retail space is estimated to generate $26.1 million in net new retail sales, of which 28% are estimated to be generated by this Project's market area residents, or $7.3 million.

These cumulative projects, together with the Project, have the potential to increase the market area sales from $14.2 million for just the Project to $59.7 million. As with the Project, based on consideration of market conditions, diverted sales and additional retail leakage, and existing regulatory controls that address blight, the Urban Decay Analysis concluded that these cumulative projects would not cause business closures, long term vacancies and physical deterioration of properties, and cumulative urban decay impacts would be less than significant.

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4.2

Air Quality

This chapter describes existing air quality, identifies potential air quality impacts of the Project, discusses the effects of air quality on the Project and recommends mitigation measures to reduce or eliminate potentially significant air quality impacts where possible and appropriate. This analysis has been prepared using methodologies and assumptions from the May, 2012 Bay Area Air Quality Management District's (BAAQMD) *California Environmental Quality Act Air Quality Guidelines* (CEQA *Guidelines*).[1] Technical air quality emission modeling for this chapter of the EIR has been provided by ENVIRON International, Inc.

The analysis of greenhouse gas emissions and global climate change is presented in Chapter 4.6: Greenhouse Gas Emissions.

Physical Setting

The following discussion provides an overview of existing air quality conditions in the region and Oakland area. Ambient standards and the regulatory framework relating to air quality are summarized. Climate, air quality conditions, and typical air pollutant types and sources are described.

Regional Air Quality

The Project site is located within the City of Oakland, which is located in the San Francisco Bay Area Air Basin (SFBAAB), a large, shallow air basin ringed by hills that taper into a number of sheltered valleys around the perimeter. Two primary atmospheric outlets exist. One is through the Golden Gate Strait, a direct outlet to the Pacific Ocean. The second outlet extends to the northeast, along the west delta region of the Sacramento and San Joaquin Rivers.

The City of Oakland is within the jurisdiction of the BAAQMD. Air quality conditions in the SFBAAB have improved significantly since BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. Exceedance of air quality standards occurs primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

Ozone levels, measured by peak concentrations and the number of days over the State 1-hour standard, have declined substantially as a result of aggressive programs by the BAAQMD and other regional, State and Federal agencies. The reduction of peak concentrations represents progress in improving public health; however, the Bay Area still exceeds the State standard for 1-hour ozone.

Levels of particulate matter (PM_{10} and $PM_{2.5}$) in the Bay Area have exceeded State standards at least two times per year during the past three years. The Bay Area is considered a non-attainment area for PM_{10} and $PM_{2.5}$ relative to the State standard, and unclassified for the federal standards.

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[1] Bay Area Air Quality Management District (BAAQMD), *California Environmental Quality Act Guidelines Update*, May 2012.

No exceedance of the State or federal carbon monoxide (CO) standards has been recorded at any of the region's monitoring stations since 1991. The Bay Area is currently considered a maintenance area for State and federal CO standards.

The BAAQMD's 2009 Ozone Attainment Plan (OAP) contains district-wide control measures to reduce ozone precursor emissions (e.g., ROG and NO_x) and particulate matter. Ozone, in particular, results from the reaction of organic gases (ROG) and nitrogen oxide (NO_x) in the atmosphere. To reduce ozone, its precursors (ROG and NO_x) are regulated. The State standards for these pollutants are at least as stringent as the national standards.

Toxic air contaminants (TACs) are not criteria pollutants, but are associated with health-related effects and have appreciable concentrations in the Bay Area. The US Environmental protection Agency (EPA) and the California Air Resources Board (ARB) have identified over 800 substances that are emitted into the air that may affect human health. Some of these substances are considered to be carcinogens, while others are known to have other adverse health effects. As part of ongoing efforts to identify and assess potential health risks to the public, BAAQMD has collected and compiled air toxic emissions data from industrial and commercial sources of air pollution throughout the Bay Area. Monitoring data and emissions inventory of toxic air contaminants helps the BAAQMD determine health risk to Bay Area residents. The 2003 emissions inventory shows that emissions of many TACs are decreasing in the Bay Area.

Ambient monitoring concentrations of TACs indicates that pollutants emitted primarily from motor vehicles (1,3-butadiene and benzene) account for slightly over one-half of the average calculated cancer risk from ambient air in the Bay Area.[2] According to the BAAQMD, ambient benzene levels declined dramatically in 1996 with the advent of Phase 2 reformulated gasoline. Due to this reduction, the calculated average cancer risk based on monitoring results has been reduced to 143 in one million. However, this risk does not include the risk resulting from exposure to diesel particulate matter or other compounds not monitored. Although not specifically monitored, recent studies indicate that exposure to diesel particulate matter may contribute significantly to cancer risk (approximately 500 – 700 in one million) that is greater than all other measured TACs combined.[3]

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[2] BAAQMD, 2007, *Toxic Air Contaminant Control Program Annual Report 2003 Volume 1*, August.

[3] Ibid.

Table 4.2-1: Regional Attainment Status

Pollutant	Federal Status	State Status
Ozone (O_3) – 1-Hour Standard	No Designation	Serious Non-attainment
Ozone (O_3) – 8-Hour Standard	Marginal Non-attainment	Non-attainment
Respirable Particulate Matter (PM_{10})	Unclassified	Non-attainment
Fine Particulate Matter ($PM_{2.5}$)	Unclassifiable/Attainment	Non-attainment
Carbon Monoxide (CO)	Attainment/Unclassified	Attainment
Nitrogen Dioxide (No_2	Attainment/Unclassified	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Sulfates	No Designation	Attainment
Lead	No Designation	Attainment
Hydrogen Sulfide	No Designation	Unclassified
Visibility Reducing Particles	No Designation	Unclassified

Source: Bay Area Air Quality Management District.
California Air Resource Board

Local Climate and Air Quality

Air quality is a function of both local climate and local sources of air pollution. The amount of a given air pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and/or dilute that pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain, and for photochemical pollutants, sunshine.

The City of Oakland is located in the Northern Alameda and Western Contra Costa subregion of the SFBAAB. This climatological subregion stretches from Richmond to San Leandro. Its western boundary is defined by the Bay, and its eastern boundary by the Oakland-Berkeley Hills. The Oakland-Berkeley Hills have a ridge line height of approximately 1,500 feet, a significant barrier to air flow. The most densely populated area of the subregion lies in a strip of land between the Bay and the lower hills.

In this area, marine air traveling through the Golden Gate, as well as across San Francisco and through the San Bruno Gap, is a dominant weather factor. The Oakland-Berkeley Hills cause the westerly flow of air to split off to the north and south of Oakland, which causes diminished wind speeds. The prevailing winds for most of this subregion are from the west.

Temperatures in this subregion have a narrow range due to the proximity of the moderating marine air. Maximum temperatures in summer average in the mid-70's, with minimums in the mid-50's. Winter highs are in the mid- to high-50's, with lows in the low- to mid-40's.

The air pollution potential is lowest for the parts of the subregion that are closest to the Bay, due largely to good ventilation and less influx of pollutants from upwind sources. The occurrence of light winds in the evenings and early mornings occasionally causes elevated pollutant levels.

The air pollution potential at the northern (Richmond) and southern (Oakland, San Leandro) parts of this subregion is marginally higher than communities directly east of the Golden Gate, because of the lower frequency of strong winds.

This subregion contains a variety of industrial air pollution sources. Some industries are quite close to residential areas. The subregion is also traversed by frequently congested freeways. Traffic and congestion, and the motor vehicle emissions they generate, are increasing.

Pollutant monitoring results for the years 2007 (when monitoring began at the new station on November 1) to 2009 (as of September 30th) are shown in **Table 4.2-2**, at the closest monitoring station to the Project site for which data was available (9925 International Boulevard, Oakland).[4] Ambient air quality monitoring stations indicate that air quality in the Project area has generally been good. As indicated in the monitoring results, no violations of the State PM_{10} standard were recorded during the monitoring period. No violations of the federal PM_{10} standard were recorded during the monitoring period. During the monitoring period, one violation of the federal $PM_{2.5}$ standard occurred at this monitoring station on February 3, 2009. The State 1-hour ozone standard and the federal 8-hour ozone standard have not been exceeded during the monitoring period at this monitoring station. Both State and federal NO_2 standards were not exceeded in this area during the monitoring period.

Table 4.2-2: Ambient Air Quality Monitoring Data at 9925 International Boulevard, Oakland

Pollutant	Standard	Days Standard Exceeded		
		2007*	2008	2009**
Ozone	State 1-Hour	0	0	0
Ozone	Federal 8-Hour	0	0	0
Ozone	State 8-Hour	0	0	0
PM_{10}	Federal 24-Hour	0	0	0
PM_{10}	State 24-Hour	0	0	0
$PM_{2.5}$	Federal 24-Hour	0	0	3
Nitrogen Dioxide	State 1-Hour	0	0	0

Notes:
*Monitoring began at this station on November 1, 2007.
**Monitoring data through September 30, 2009 only.
PM_{10} and $PM_{2.5}$ are measured every sixth day, so the number of days exceeding the standard is estimated.
Source: Telephone Conversation with Kent Chrysler, BAAQMD on 11/24/09, CARB Air Quality Data Statistics at http://www.arb.ca.gov/adam/index.html .

Air Quality Issues

Six key air quality issues – local CO hotspots, vehicle emissions, fugitive dust, odors, construction equipment exhaust and toxic air contaminants – are described below.

Vehicle Emissions

Long-term air emission impacts are those associated with changes in automobile travel within the City. Mobile source emissions would result from vehicle trips associated with increased vehicular travel. As is true throughout much of the U.S., motor vehicle use is projected to increase substantially in the region. The BAAQMD, local jurisdictions, and other parties responsible for protecting public health and welfare will continue to seek ways of minimizing the air quality impacts of growth and development in order to avoid further exceedance of the standards.

[4] Other monitoring sites are located at Filbert Street in Oakland, on 6th Street in Berkeley and in Concord. The International Boulevard site is the closest and most representative site of these several locations.

Construction Equipment Exhaust

Construction activities cause combustion emissions from utility engines, heavy-duty construction vehicles, equipment hauling materials to and from construction sites, and motor vehicles transporting construction crews. Exhaust emissions from construction activities vary daily as construction activity levels change. The use of construction equipment results in localized exhaust emissions.

Local Carbon Monoxide Hotspots

Local air quality is most affected by CO emissions from motor vehicles. CO is typically the pollutant of greatest concern because it is created in abundance by motor vehicles and it does not readily disperse into the air. Because CO does not readily disperse, areas of vehicle congestion can create "pockets" of high CO concentrations called "hot spots." These pockets have the potential to exceed the State 1-hour standard of 20.0 ppm and/or the 8-hour standards of 9.0 ppm.

While CO transport is limited, it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentrations, modeling is recommended to determine a project's effect on local CO levels.

Fugitive Dust

Fugitive dust emissions are generally associated with demolition, land clearing, exposure of soils to the air, and cut and fill operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations, and weather conditions.

Odors

Odors are also an important element of local air quality conditions. Specific activities can raise concerns on the part of nearby neighbors. Major sources of odors include restaurants, manufacturing plants, and agricultural operations. While sources that generate objectionable odors must comply with air quality regulations, the public's sensitivity to locally produced odors often exceeds regulatory thresholds.

Toxic Air Contaminants

In 1998, the ARB identified diesel engine particulate matter as a toxic air contaminant (TAC). Facilities that may have substantial diesel exhaust emissions include truck stops; warehouse/distribution centers; large commercial or industrial facilities; high volume transit centers; schools with high volume of bus traffic; high volume highways or high volume arterial/roadways with high levels of diesel traffic.

Determining how hazardous a substance is depends on many factors, including the amount of the substance in the air, how it enters the body, how long the exposure lasts, and what organs in the body are affected. One major way these substances enter the body is through inhalation of either gases or particulates. While many gases are harmful, very small particles penetrate deep into the lungs, contributing to a range of health problems. Exhaust from diesel engines is a major source of these airborne particles. California's Office of Environmental Health Hazard Assessment (OEHHA) has determined that long-term exposure to diesel exhaust particulates poses the highest cancer risk of any TAC it has evaluated. Fortunately, improvements to diesel fuel and diesel engines have already reduced emissions of some of the contaminants, which, when fully implemented, will result in a 75 percent reduction in particle emissions from diesel-powered trucks and other equipment by 2010 (compared to 2000 levels) and an 85 percent reduction by 2020. Similarly, improvements have been made to significantly reduce TAC emissions from gasoline-powered vehicles. These improvements are anticipated to continue into the foreseeable future.

The BAAQMD's Community Air Risk Evaluation (CARE) Program examined TAC emissions from stationary sources, area sources, and on-road and off-road mobile sources. This program included developing a TAC emissions inventory and conducting computer modeling to identify areas in the San Francisco Bay Area Air Basin (SFBAAB) that are cumulatively impacted from sources of TACs. Demographic data was then used to identify communities of individuals that are disproportionably impacted from high concentrations of TACs. According to the findings of Phase 1 of the CARE Program, diesel PM accounts for about 80 percent of the inhalation cancer risk from TACs in the SFBAAB. The highest diesel PM emissions occur in the urban core areas of Concord, eastern San Francisco, western Alameda County, Redwood City/East Palo Alto, Richmond/San Pablo, and San Jose.

Sensitive Receptors

For purposes of air quality and public health and safety, sensitive receptors are generally defined as land uses with population concentrations that would be particularly susceptible to disturbance from dust and air pollutant concentrations, or other disruptions associated with project construction and/or operation. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals and convalescent homes are considered to be relatively sensitive to poor air quality because children, the elderly and the infirm are more susceptible to respiratory disease and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system.

In the immediate vicinity of the Project site there are numerous sensitive receptors including multi-family residences immediately across Pleasant Valley Avenue south from the Project site, the apartment building and the Claremont Country Club immediately to the north and adjacent to the site, and homes to the east on Montgomery Street and View Place.

Regulatory Setting

The Federal Clean Air Act (FCAA) governs air quality in the United States. In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulation under the California Clean Air Act (CCAA). At the federal level, the EPA administers the FCAA. The CCAA is administered by ARB at the State level, and by the Air Quality Management Districts at the regional and local levels. The BAAQMD regulates air quality at the regional level.

Air quality standards, the regulatory framework, and State and Federal attainment status are discussed below.

Air Quality Standards

Both State and federal governments have established health-based Ambient Air Quality Standards (AAQS) for six air pollutants: carbon monoxide (CO); ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb) and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. These standards are designed to protect public health and welfare with a reasonable margin of safety.

In addition to primary and secondary AAQS, the State of California has established a set of episode criteria for O_3, CO, NO_2, SO_2 and PM. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase.

California AAQS and National AAQS for the criteria pollutants are listed in **Table 4.2-3**. Health effects of these criteria pollutants are described in **Table 4.2-4**.

Table 4.2-3: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	National Standard
Ozone	1 Hour	0.09 ppm	---
	8 Hour	0.070 ppm	0.075 ppm
Carbon Monoxide	1 Hour	20 ppm	35 ppm
	8 Hour	9.0 ppm	9 ppm
Nitrogen Dioxide	1 Hour	0.18 ppm	---
	Annual	0.03 ppm	0.053 ppm
Sulfur Dioxide	24 Hour	0.04 ppm	0.14 ppm
	Annual	---	0.030 ppm
Particulates	24 Hour	50 ug/m3	150 ug/m3
< 10 microns	Annual	20 ug/m3	---
Particulates	24 Hour	---	35 ug/m3
< 2.5 microns	Annual	12 ug/m3	15 ug/m3

Concentrations: ppm = parts per million ug/m3 = micrograms per cubic meter
Source: Bay Area Air Quality Management District, Bay Area Pollution Summary – 2008.

Table 4.2-4: Health Effects of Air Pollutants

Pollutant	Health Effects	Examples of Sources
Suspended Particulate Matter(PM 2.5 and PM 10)	• Reduced lung function • Aggravation of the effects of gaseous pollutants • Aggravation of respiratory and cardio respiratory diseases • Increased cough and chest discomfort • Soiling • Reduced visibility	• Stationary combustion of solid fuels • Construction activities • Industrial processes • Atmospheric chemical reactions
Ozone (O_3)	• Breathing difficulties • Lung damage	Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon Monoxide (CO)	• Chest pain in heart patients • Headaches, nausea • Reduced mental alertness • Death at very high levels	Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Lead (Pb)	• Organ damage • Neurological and reproductive disorders • High blood pressure	• Metals processing • Fuel combustion • Waste disposal
Nitrogen Dioxide (NO_2)	Lung damage	See carbon monoxide sources
Toxic Air Contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

Source: ARB and EPA, 2005

Federal Regulatory Setting

Federal Clean Air Act (FCAA)

The 1970 FCAA authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The FCAA Amendments of 1990 (FCAAA) changed deadlines for attaining national standards, as well as remedial actions required of areas of the nation that exceed the standards. Under the FCAAA, State and local agencies in areas that exceed the national standards are required to develop State Implementation Plans (SIPs) to demonstrate how they will achieve the national standards for O_3 by specified dates. The FCAAA requires that projects receiving federal funds demonstrate conformity to the approved SIP and local air quality attainment plan for the region. Conformity with the SIP requirements also satisfies the FCAAA requirements.

United States Environmental Protection Agency

At the Federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the FCAA, as amended in 1970, 1977 and 1990.

The FCAA required EPA to establish primary and secondary national AAQS. The FCAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The FCAAA added requirements for states with non-attainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility to review all state SIPs to determine conformation to the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the non-attainment area that imposes additional control measures. Failure to submit an appropriate SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

State Regulatory Setting

California Clean Air Act (CCAA)

In 1988, the CCAA required that all air districts in the State endeavor to achieve and maintain California ambient air quality standards for CO, O_3, SO_2 and NO_2 by the earliest practical date. The CCAA provides districts with new authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each district plan is to achieve a 5 percent annual reduction, averaged over consecutive three-year periods, in district-wide emissions of each non-attainment pollutant or its precursors. Additional physical or economic development within the region would tend to impede the emissions reduction goals of the CCAA. Generally, the State standards for these pollutants are more stringent than the national standards.

California Air Resources Board (ARB)

The ARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California, and for implementing the CCAA. The CCAA requires that all air districts in California endeavor to achieve and maintain California ambient air quality standards by the earliest practical date. The act specifies that districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

ARB is primarily responsible for developing and implementing air pollution control plans to achieve and maintain the National ambient air quality standards. The ARB has primary responsibility for statewide pollution sources and produces a major part of the State Implementation Plan. Local air districts are still relied upon to provide additional strategies for sources under their jurisdiction. The ARB combines this data and submits the completed State Implementation Plan to EPA.

Other ARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing California Ambient Air Quality Standards (CAAQS), which in many cases are more stringent than the National Ambient Air Quality Standards (NAAQS), determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

Air Quality and Land Use Handbook

The ARB has developed an Air Quality and Land Use Handbook, which is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process.[5] The ARB handbook recommends that planning agencies strongly consider proximity to these sources when finding new locations for "sensitive" land uses such as homes, medical facilities, daycare centers, schools and playgrounds.

Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners and large gasoline service stations. Key recommendations in the Handbook include taking steps to avoid siting new, sensitive land uses (including residences, day care centers, playgrounds or medical facilities):

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day or rural roads with 50,000 vehicles/day.
- Within 1,000 feet of a major service and maintenance rail yard.
- Immediately downwind of ports (in the most heavily impacted zones) and petroleum refineries.
- Within 300 feet of any dry cleaning operation (for operations with two or more machines, provide 500 feet).
- Within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater).

The Handbook specifically states that its recommendations are advisory, and acknowledges land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

The Project site is occupied by commercial uses, which are not sensitive land uses. The Project site is not located within 500 feet of a freeway or urban roads with more than 100,000 vehicles/day, it is not within 1,000 feet of a major service and maintenance rail yard or immediately downwind of the Ports or a petroleum refinery, and is not within 300 feet of a large gas station.

Bay Area Air Quality Management District

BAAQMD is the primary agency responsible for assuring that the NAAQS and CAAQS are attained and maintained in the Bay Area. BAAQMD's jurisdiction includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo and Santa Clara counties, and the southern portions of Solano and Sonoma counties. The Air District's responsibilities in improving air quality in the region include: preparing plans for attaining and maintaining air quality standards; adopting and enforcing rules and regulations; issuing permits for stationary sources of air pollutants; inspecting stationary sources and responding to citizen complaints; monitoring air quality and meteorological conditions; awarding grants to reduce mobile emissions; implementing public outreach campaigns; and assisting local governments in addressing climate change.

The BAAQMD attains and maintains air quality conditions in the San Francisco Bay Area Air Basin (SFBAAB) through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the BAAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of

[5] California Air Resources Board, 2005, *Air Quality and Land Use Handbook: A Community Health Perspective*, April.

air pollution. The BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the FCAA, FCAAA, and the CCAA.

Ozone Attainment Plan

The BAAQMD prepared the 2009 *Ozone Attainment Plan* to address non-attainment of the National 1-hour ozone standard in the SFBAAB. The purpose of the 2009 OAP is to:

- Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the CCAA to implement "all feasible measures" to reduce ozone;
- Consider the impacts of ozone control measures on particulate matter (PM), air toxics, and greenhouse gases in a single, integrated plan;
- Review progress on improving air quality in recent years;
- Establish emission control measures to be adopted or implemented in the 2009-2012 timeframe.

Similarly, the BAAQMD prepared the 2009 Clean Air Plan to address non-attainment of the CAAQS.

BAAQMD CEQA Guidelines

On June 2, 2010 the BAAQMD adopted *Thresholds of Significance for use in Determining the Significance of Projects' Environmental Effects under the California Environmental Quality Act* and published *CEQA Guidelines* for consideration by lead agencies. In addition to thresholds of significance for greenhouse gas (GHG) emissions, the thresholds lowered the previous (1999) threshold of significance for annual emissions of Reactive Organic Gases (ROG), Nitrogen Oxides (NO_x) and particulate matter exhaust (PM_{10}), and set a standard for smaller particulates ($PM_{2.5}$) and fugitive dust.

On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the Air District had failed to comply with CEQA when it adopted the thresholds. The court did not determine whether the Thresholds were valid on the merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the District to set aside the thresholds and cease dissemination of them until the Air District had complied with CEQA. In view of the court's order, lead agencies will need to determine appropriate air quality thresholds of significance based on substantial evidence in the record. Lead agencies may rely on the Air District's updated CEQA Guidelines (updated May 2012) for assistance in calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures.

City of Oakland

Relevant policies and conditions from the City's General Plan and Standard Conditions of Approval are described below:

General Plan

Open Space Conservation and Recreation Element. The Open Space Conservation and Recreation (OSCAR) Element of the City of Oakland's General Plan includes the following policies related to air quality:

> *Policy CO-12.1*: Promote land use patterns and densities which help improve regional air quality conditions. The City supports efforts of the responsible public agencies to reduce air pollution.
>
> *Policy CO-12.4:* Require that development projects be designed in a manner which reduces potential adverse air quality impacts.

Policy CO-12.6: Control of Dust Emissions. Require construction, demolition, and grading practices which minimize dust emissions. These practices are currently required by the City and include the following:

- Avoiding earth moving and other major dust generating activities on windy days.
- Sprinkling unpaved construction areas with water during excavation, using reclaimed water where feasible. (Watering can reduce construction-related dust by 50 percent.)
- Covering stockpiled sand, soil, and other particulates with a tarp to avoid blowing dust.
- Covering trucks hauling dirt and debris to reduce spills. If spills do occur, they should be swept up promptly before materials become airborne.
- Preparing a comprehensive dust control program for major construction in populated areas or adjacent to sensitive uses like hospitals and schools.
- Operating construction and earth-moving equipment, including trucks, to minimize exhaust emissions.

City of Oakland's Standard Conditions of Approval

The City's Standard Conditions of Approval relevant to air quality are listed below for reference. These Conditions of Approval were cited in the December 2007 Initial Study, and will be adopted as requirements of the proposed Project if the Project is approved by the City to help reduce and/or avoid potentially significant impacts on air quality occur. As a result, they are not listed as mitigation measures.

SCA Air-1: Construction-Related Air Pollution Controls (Dust and Equipment Emissions). *Ongoing throughout demolition, grading, and/or construction.* During construction, the project applicant shall require the construction contractor to implement all of the following applicable measures recommended by the Bay Area Air Quality Management District (BAAQMD):

a. Water all exposed surfaces of active construction areas at least twice daily (using reclaimed water if possible). Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.

b. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).

c. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

d. Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

e. Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).

f. Limit vehicle speeds on unpaved roads to 15 miles per hour.

g. Idling times shall be minimized either by shutting equipment off when not is use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485, of the California Code of Regulations. Clear signage to this effect shall be provided for construction workers at all access points.

h. All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

i. Post a publicly visible sign that includes the contractor's name and telephone number to contact regarding dust complaints. When contacted, the contractor shall respond and take corrective action within 48 hours. The telephone numbers of contacts at the City and BAAQMD shall also be visible. This information may be posted on other required on-site signage.

j. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.

k. All excavation, grading, and demolition activities shall be suspended when average wind speeds exceed 20 mph.

l. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

m. Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for one month or more).

n. Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress.

o. Install appropriate wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of the construction site to minimize windblown dust. Wind breaks must have a maximum 50 percent air porosity.

p. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.

q. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.

r. All trucks and equipment, including tires, shall be washed off prior to leaving the site.

s. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.

t. Minimize the idling time of diesel-powered construction equipment to two minutes.

u. The project applicant shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction and 45 percent particulate matter (PM) reduction compared to the most recent California Air Resources Board (CARB) fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as they become available.

v. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).

w. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NOx and PM.

x. Off-road heavy diesel engines shall meet the CARB's most recent certification standard.

SCA Air-2: Asbestos Removal in Structures. *Prior to issuance of a demolition permit.* If asbestos-containing materials (ACM) are found to be present in building materials to be removed, the project applicant shall submit specifications signed by a certified asbestos consultant for the removal, encapsulation, or enclosure of the identified ACM in accordance with all applicable laws and regulations, including but not necessarily limited to: California Code of Regulations, Title 8; Business and Professions Code; Division 3; California Health & Safety Code 25915-25919.7; and Bay Area Air Quality Management District, Regulation 11, Rule 2, as may be amended.

Impacts, Standard Conditions of Approval and Mitigation Measures

Criteria of Significance[6]

The Project would result in a significant impact related to air quality if it would:

Project Impacts:

1. During project construction result in average daily emissions of 54 pounds per day of ROG, NO_x, or $PM_{2.5}$ or 82 pounds per day of PM_{10};
2. During project operation result in average daily emissions of 54 pounds per day of ROG, NO_x, or $PM_{2.5}$ or 82 pounds per day of PM_{10}; or result in maximum annual emissions of 10 tons per year of ROG, NO_x, or $PM_{2.5}$ or 15 tons per year of PM_{10};
3. Contribute to carbon monoxide (CO) concentrations exceeding the California Ambient Air Quality Standards (CAAQS) of nine parts per million (ppm) averaged over eight hours and 20 ppm for one hour;
4. During either project operation or project construction expose persons by siting a new source or a new receptor to substantial levels of Toxic Air Contaminants (TACs) resulting in:
    a. a cancer risk level greater than 10 in one million,
    b. a non-cancer risk (chronic or acute) hazard index greater than 1.0, or
    c. an increase of greater than 0.3 micrograms per cubic meter of annual average $PM_{2.5}$ [7] or;
5. Frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people. [8]

Cumulative Impacts:

1. During either project operation or project construction expose persons by siting a new source or a new receptor to substantial levels of TACs resulting in (a) a cancer risk level greater than 100 in a

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[6] The City's thresholds of significance which are used in this EIR to make determinations regarding the significance of the Project's air quality and greenhouse gas emissions impacts are based on the May 2010 BAAQMD Thresholds of Significance and the evidence developed by BAAQMD to support those Thresholds. The technical and scientific basis for the BAAQMD's 2010 Thresholds was not rejected by the court. Use of the City's thresholds is consistent with and authorized by CEQA Guidelines Section 15064. These thresholds of significance remain in effect, and have not been challenged.

[7] Pursuant to BAAQMD May 2012 updated CEQA Guidelines, when siting new TAC sources consider receptors located within 1,000 feet, and when siting new receptors consider TAC sources located within 1,000 feet including, but not limited to, stationary sources, freeways, major roadways (10,000 or greater vehicles per day), truck distribution centers, ports, and rail lines. The cumulative analysis should consider the combined risk from all existing and reasonably foreseeable future sources. For this threshold receptors include residential uses, schools, parks, daycare centers, nursing homes, and medical centers.

[8] For this threshold sensitive receptors include residential uses, schools, daycare centers, nursing homes, and medical centers.

million, (b) a non-cancer risk (chronic or acute) hazard index greater than 10.0, or (c) an increase of greater than 0.8 micrograms per cubic meter of annual average PM2.5.

2. If a project exceeds the identified project-level significance thresholds, its emissions would be also be cumulatively considerable.

Construction Period Fugitive Dust Emissions

Impact Air-1: During construction, the proposed Project would generate fugitive dust from demolition, grading, hauling and construction activities. The fugitive dust emissions associated with these construction activities would be effectively reduced to a level of less than significant based on implementation of required City of Oakland Standard Conditions of Approval. (**LTS with SCA**)

Project-related construction activities including demolition, site preparation, earthmoving and general construction activities would generate short-term emissions of fugitive dust. Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of mitigation, construction activities may result in significant quantities of dust, and as a result, local visibility and PM_{10} and $PM_{2.5}$ concentrations may be adversely affected on a temporary and intermittent basis. In addition, the fugitive dust generated by construction would include larger particles that would fall out of the atmosphere within several hundred feet of the site and could result in nuisance-type impacts.

Standard Conditions of Approval

The City of Oakland considers implementation of effective and comprehensive dust control measures (Best Management Practices) recommended by the BAAQMD as the threshold of significance for fugitive dust emissions (both PM_{10} and $PM_{2.5}$); if a project complies with specified dust control measures, it would not result in a significant impact related to construction period dust emissions. In order to be protective of the health of nearby residences as well as to reduce dust emissions that could affect regional air quality, the Project is required to implement BAAQMD recommended construction period dust control measures pursuant to the City's Standard Conditions of Approval, and to comply with the requirements found under the City Municipal Code (Section 15.36.100; Dust Control Measures). These measures include both "Basic" and "Enhanced" measures for the Project since the Project meets several of the criteria for enhanced measures. The City's Standard Conditions of Approval **SCA Air-1** is consistent with both the "Basic" and "Enhanced" measures recommended by the BAAQMD including, but not limited to:

- watering of all exposed surfaces of active construction;
- covering all trucks hauling soil, sand, and other loose materials;
- removing all visible mud or dirt track-out onto adjacent public roads, paving all roadways, driveways, sidewalks, etc. as soon as feasible; and
- enclosing, covering and watering exposed stockpiles.

Furthermore, to reduce the potential for asbestos-laden dust emissions, the Project is required to implement **SCA Air-2** which requires certified asbestos removal, encapsulation, or enclosure of any identified asbestos containing materials in accordance with all applicable laws and regulations, including but not necessarily limited to those of the California Code of Regulations, the California Health & Safety Code and the Bay Area Air Quality Management District's regulations and rules.

Implementation of these standard conditions of approval would ensure that the impact of construction-period fugitive dust remains at a less than significant level.

Mitigation Measures

None needed

Construction Period Criteria Air Pollutants and Precursor Emissions

Impact Air-2: During construction, the proposed Project would generate regional ozone precursor emissions and regional particulate matter emissions from construction equipment exhaust. However, Project-related construction emissions would not generate emissions of criteria air pollutants that would exceed the City's thresholds of significance. (**LTS with SCA**)

Project-related construction activities including demolition, site preparation, earthmoving and general construction activities would generate short-term emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. Emissions generated from these activities include dust particles that are 10 microns or less in diameter (PM_{10}) and particles that are less than 2.5 microns in diameter ($PM_{2.5}$), combustion emissions of criteria pollutants (ROG, NO_x, CO, SO_x and PM_{10}) from operation of construction equipment and from worker vehicles, and evaporative emissions (ROG) from asphalt paving and architectural coating applications.

The City's significance thresholds consider construction emissions, even though temporary, to result in a significant impact if daily maximum emissions of construction-related criteria air pollutants or precursors would exceed 54 pounds per day of ROG, NO_x and $PM_{2.5}$, or 82 pounds per day of PM_{10} (with the PM values linked to construction exhaust emissions only).

Quantification of construction-period emissions has been conducted. The California Emissions Estimator Model (CalEEMod, Version 2011.1.1) has been used to quantify construction-related criteria air pollutants and precursors.[9] Input and assumptions used in the model run for the Project's construction period effects include the following:

- Start Date and Construction Schedule: This analysis has assumed a conservatively early start date for initiation of Phase I construction starting in July 2013. Phase I construction is anticipated to last approximately 10 months, ending by April 2014. Phase II construction would commence almost immediately thereafter, beginning in May 2014 and lasting approximately 10 months until March of 2015.
- Demolition Volume: During Phase I, approximately 490,000 cubic feet of building material is assumed to be demolished and removed (Buildings 5 and 6). During Phase II, approximately 438,000 cubic feet of building material is assumed to be demolished and removed (Buildings 1, 2, 3 and 4).

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9 CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model incorporates Pavley standards and Low Carbon Fuel standards into the mobile source emission factors. The model was developed in collaboration with the air districts of California. Default data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The model is free of charge and will be periodically updated when modifications are warranted. The model is an accurate and comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model can be used for a variety of situations where an air quality analysis is necessary or desirable including California Environmental Quality Act (CEQA) documents.

- Debris Hauling: CalEEMod defaults were used assuming a truck hauling capacity of 20 cubic yards (or 540 cubic feet), and a round trip hauling distance of 30 miles.
- Excavation: Excavation volume is expected to be minimal (only that associated with new building foundation footings) as no below grade structures are proposed.
- Construction/Coating/Paving: CalEEMod defaults were automatically extrapolated from the above input. Architectural coating (painting) is assumed to rely on low-VOC paint pursuant to the requirements of SCA Air-1.

Standard Conditions of Approval

For all proposed projects, BAAQMD recommends implementation of all Basic construction control measures, whether or not construction-related emissions exceed applicable thresholds of significance. The Project would be subject to these Basic construction control measures through implementation of the City's Standard Conditions of Approval **SCA Air-1**, including but not limited to:

- minimizing idling times by shutting equipment off when not is use or reducing the maximum idling time to five minutes;
- maintaining and properly tuning all construction equipment in accordance with the manufacturer's specifications;
- achieving an off-road equipment fleet-average of 20% NOx reduction and 45% particulate matter reduction compared to the most recent CARB fleet average;
- using low volatile organic compound coatings that are more stringent than local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).

These standard conditions of approval are incorporated into the CalEEMod air quality model as input. The CalEEMod output sheets are included in **Appendix 4.2A**.

Based on this input data, the average daily criteria pollutant emissions associated with Project-related construction activity is identified in **Table 4.2-5** for reactive organic gases (ROG) and nitrogen oxides (NO_x) (two precursors of ozone) and particulate matter (PM_{10} and $PM_{2.5}$).

Table 4.2-5: Project Construction Emission Estimates, Average Daily Emissions (in Pounds Per Day)

	Reactive Organic Gases	Nitrogen Oxides	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Phase I Construction				
Average Daily Regional Emissions	28	28	0.9	0.9
Phase II Construction				
Average Daily Regional Emissions	42	33	1.0	1.0
Significance Threshold	54.0	54.0	82.0	54.0
Exceed?	No	No	No	No

Source: Lamphier-Gregory, 2010

As indicated in the table, Project-related average daily construction emissions would not exceed the City's significance thresholds for ROG, NO_x, PM_{10} or $PM_{2.5}$. Thus, the Project's regional ozone precursor emissions and regional particulate matter emissions during construction would be less than significant.

Mitigation Measures

None needed

Construction Period Health Risks to Adjacent Sensitive Receptors

Impact Air-3: The proposed Project's construction-related emissions would not result in the estimated cancer risk, chronic health index, acute health index or annual average $PM_{2.5}$ concentration levels exceeding the individual source significance threshold. **(LTS)**

An analysis of local risk and hazard impacts (including hazards from fine particulate matter ($PM_{2.5}$) concentrations) resulting from the proposed Project's construction activities has been prepared. The Project's construction entails the commercial building construction as well as roadway construction to the south and west of the site. The Project's construction is scheduled to occur for 20 months spanning two construction phases from July 2013 to March 2015, and is proposed to consist of the following:

- Demolition of all 185,500 square feet of existing commercial buildings.
- Construction of approximately 323,000 square feet of new commercial buildings, including a Safeway grocery store, retail, office, and restaurant spaces.
- Construction of surface parking, rooftop parking, and a three-level above-ground parking garage totaling approximately 967 parking spaces.

The roadway construction to the south of the site is expected to occur for approximately 5 months (from June 2014 to October 2014), and the roadway construction to the west of the site is expected to occur for approximately 3 months (from June 2014 to August 2014). Roadway construction is proposed to consist of demolition, installing new traffic signals, paving and landscaping.

Toxic Air Contaminants (TAC) Emissions

Project construction-related TAC emissions are due to fuel-combusting construction equipment and mobile sources. Construction-related emissions of reactive organic gases (ROG) and particulate matter (PM_{10} and $PM_{2.5}$) from construction equipment and mobile sources were calculated from CalEEMod model results. Emission of diesel particulate matter (DPM) is assumed to be equal to PM_{10} emissions. To estimate construction-related total particulate matter (PM_{10} and $PM_{2.5}$) emissions and maximum daily total organic gases (TOG) emissions, CalEEMod incorporated the Project's equipment list and usage information[10][11] and calendar year-specific emission factors for 2013-2015 from OFFROAD2007. Equipment load factors in CalEEMod are obtained from OFFROAD2007.

Exhaust PM_{10} emissions from off-road equipment from on-site and roadway construction were used to estimate annual average DPM concentrations. Exhaust and fugitive $PM_{2.5}$ emissions from on-site construction and exhaust $PM_{2.5}$ emissions from roadway construction were used to estimate annual average $PM_{2.5}$ concentrations. CalEEMod's daily maximum output of ROGs were converted to total

[10] CalEEMod provided default phase duration, equipment list and activity was used to estimate emissions for site construction. For roadway construction, the Project sponsor provided phase duration, equipment list and activity estimate emissions.

[11] CalEEMod GHG and criteria pollutant construction emissions include on-site and off-site vehicle activity as well as non-mobile emissions such as those from architectural coatings.

organic gases (TOG) based on guidance from USEPA.[12] Emissions calculated by CalEEMod were reduced by 33% to account for errors in the load factors in the OFFROAD2007 database included in CalEEMod, consistent with guidance from ARB.[13] PM_{10} and $PM_{2.5}$ emissions were further reduced by 45% per City Standard Conditions of Approval (SCA Air-1). PM_{10} and $PM_{2.5}$ emissions were even further reduced by 45% per BAAQMD CEQA Guidelines to account for the 2-minute idling restriction in the Oakland SCA.[14]

TAC emissions from construction are shown in **Table 4.2-6**. Detailed calculations and assumptions along with the CalEEMod outputs are provided in Appendix 4.2A.

Table 4.2-6: TAC Emissions from Construction

Construction Phase	Timeline	DPM (tons)	PM2.5 (tons)	TOG (max. lbs/day)
On Site	July 2013-Mar 2015	0.16	0.35	10
Roadway, south	June 2014 – Oct. 2014	0.0041	0.0041	1.6
Roadway, north	June 2014 – Aug 2014	0.0041	0.0041	0.83

Source: ENVIRON, Intl.., October 2012

For modeling purposes, annual average emissions of PM_{10} and $PM_{2.5}$ (expressed in grams per second), were derived by taking the total emissions and dividing by the construction duration (days), number of working hours per day, and 3,600 to convert from hours to seconds. Maximum hourly emissions of TOGs (expressed in grams per second) were derived by the maximum daily TOG emissions from on-site and from roadway construction divided by the number of working hours per day, and 3,600 to convert from hours to seconds. It is conservatively assumed that the maximum daily emissions from on-site construction occur concurrently with the maximum daily emissions from the roadway construction. Modeled construction-related emission rates for TOG, PM_{10} and $PM_{2.5}$ (in grams per second) are also shown in Appendix 4.2B.

Project Construction Risks

Project construction-related risks were analyzed by estimating ambient air concentrations of diesel particulate matter (DPM), $PM_{2.5}$, and total organic gases (TOG). To estimate air concentrations, AERMOD (a Gaussian air dispersion model) was used. Additional details on the air dispersion modeling are presented in Appendix 4.2B. AERMOD incorporates emission factors, source parameters and 5 years

[12] USEPA. 2010. Conversion Factors for Hydrocarbon Emission Components. July. Available online at: http://www.epa.gov/oms/models/nonrdmdl/nonrdmdl2010/420r10015.pdf. Accessed October 11, 2012

[13] In September 2010, the ARB announced that its methods used to estimate the load factor for off-road equipment were incorrect and led to an overestimate of emissions by a factor of at least 33%. ARB is currently revising their emissions model, OFFROAD, which has not yet been released. In the meantime, direction from ARB is to reduce the load factors by 33% to take into account this error. The slides from the ARB workshop discussing this change are available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/emissions_inventory_presentation_full_10_09_03.pdf. Accessed October 11, 2012

[14] BAAQMD. 2012. California Environmental Quality Act Air Quality Guidelines. May. Available online at:http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en. Accessed September 21, 2012.

of meteorological data to estimate air concentrations of inert pollutants. As discussed above, emission rates were developed using data from CalEEMod. A 20-meter-by-20-meter array of volume sources was used to represent construction activity at the site. Roadway construction activity was represented by an array of 10-meter-by-10-meter volume sources. Construction activities are assumed to occur only in the daytime between 7 a.m. and 5 p.m. Hence emissions were modeled for the hours of 7 a.m. to 5 p.m. only. The model was run with 5 years of upper air and surface data from year 2007 to 2011, obtained from the meteorological station at the Oakland Airport, the most representative station in the vicinity of the Project. The met data meets BAAQMD's 90% completeness by quarter requirement since it has less than 10% of the hours missing when evaluated on a quarterly basis.

The calculation of concentrations for use in a health risk assessment (HRA) requires the selection of appropriate concentration averaging times. The annual average DPM and $PM_{2.5}$ dispersion factors were modeled for use in calculating the cancer risks and chronic non-cancer hazards associated with DPM emissions and annual average $PM_{2.5}$ concentration associated with $PM_{2.5}$ emissions. The maximum hourly dispersion factor was modeled to determine acute hazards associated with speciated emissions of TOG. The urban setting was used, to better reflect the characteristics of the surrounding area. An array of receptors with 10-meter spacing extending out to 1,000 feet from the Project boundary was used over all land uses. Receptors were placed on four vertical levels to account for multi-story residences, at 1.8 meters to simulate adult breathing height, in accordance with BAAQMD Guidance, and at 4.8, 7.8 and 10.8 meters to simulate a second, third and fourth story, respectively.

There are numerous sensitive receptors that are within 200 meters from the edge of the Project site, including:

- approximately 20 single-family homes west of Broadway along Desmond and Coronado Streets (approximately 280 meters from the existing CVS, and about 120 meters from the construction zone for the other retail buildings near Broadway),
- several multi-family housing developments south of Pleasant Valley Avenue (approximately 210 meters from the existing CVS, and about 40 meters from the construction zone for the other retail buildings near Pleasant Valley Avenue),
- the California College of the Arts (approximately 90 meters from the existing CVS, and about 40 meters from the construction zone for the other retail buildings at the northerly portion of the site), the Far West Alternative School (approximately 100 meters from the existing CVS, and 210 meters from the construction zone for the other retail buildings at the northerly portion of the site), and an apartment building (about 60 meters but uphill of the quarry slope from the existing CVS, and about 40 meters from the construction zone for the other retail buildings at the northerly portion of the site) to the north, and
- approximately 20 single-family homes along Montgomery (approximately 145 meters from the existing CVS, and about 270 meters from the construction zone for the other retail buildings) and several single-family and multi-family housing developments on View Place (approximately 175 meters from the existing CVS, and about 130 meters from the construction zone for the other retail buildings) west of the Project site.

Each of the sensitive receptor locations was included in the model array.

Cancer risk, chronic health index (HI), and acute health index (HI) were calculated from ambient annual and hourly concentrations using intake factors, cancer potency factors, and chronic and acute reference exposure levels calculated consistent with Office of Environmental Health Hazard Assessment

(OEHHA)[15] and BAAQMD[16] guidance. As shown in **Table 4.2-7**, the chronic HI, acute HI, and annual $PM_{2.5}$ concentration are below the thresholds.

Table 4.2-7 Construction-Period Health Risk Analysis for Off-Site Sensitive Receptors

	Cancer Risk (per million)	Chronic Health Risk (Index #)	Acute Health Risk (Index #)	PM2.5 Concentration (ug/m³)
Calculated Value at Max Exposed Individual Sensitive Receptor (Cal. College of Arts)	6	0.008	0.13	0.09
Threshold	10	1	1	0.3
Exceed Threshold?	No	No	No	No

Source: ENVIRON, December 2012

Construction-related cancer risks are estimated to be 6-in-a-million at the off-site maximally exposed individual sensitive receptor (MEISR). This is less than the 10-in-a-million threshold. The location of the MEISR is at the California College of the Arts, which is not a residential location. All receptor locations, including the MEISR, were conservatively evaluated with resident child exposure parameters since it would result in higher risks than any other sensitive population. Exposure parameters can be found in Appendix 4.2B. Since the MEISR is the highest off-site cancer risk, all other locations would have lower risks and fall under threshold levels.

Mitigation Measures

None needed

Operational Related Criteria Air Pollutants

Impact Air-4: Once complete and occupied, the proposed Project would generate emissions of criteria pollutants (ROG, NO_x and PM_{10}), primarily as a result of increased motor vehicle traffic and also from area source emissions. Project-related traffic emissions, combined with anticipated area source emissions, would not generate emissions of criteria air pollutants that would exceed the City's thresholds of significance. (**LTS**)

The City's thresholds of significance consider operational emission to result in a significant impact if the additional maximum operational emissions of criteria air pollutants would exceed 54 pounds per day or 10 tons per year of ROG, NO_x and $PM_{2.5}$, and 82 pounds per day or 15 tons per year of PM_{10}.

The CalEEMod Version 2001.1.1 computer program was used to calculate both the existing baseline criteria pollutant emissions generated by operation of the existing shopping center, and the criteria pollutant emissions generated by operation of the proposed new shopping center (the Project).

[15] Cal/EPA. 2003. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Office of Environmental Health Hazard Assessment. August

[16] BAAQMD. 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January. Available online at: http://baaqmd.gov/~/media/Files/Engineering/Air%20Toxics%20Programs/hrsa_guidelines.ashx. Accessed October 11, 2012

For both of these scenarios, location factors related to the Project site have been included into the analysis as provided for in the model. These factors include its location in a fairly higher-density urban environment with a broad mix of surrounding uses, the general availability of transit (AC Transit busses traveling the Broadway corridor, and the amount of sidewalks and bike paths provided within a 1-mile square area surrounding the site. CalEEMod input assumptions and output sheets are included as Appendix 4.2B.

The maximum daily and total annual emissions of criteria pollutants (ROG, NO_x, PM_{10} and $PM_{2.5}$) generated by the proposed Project operations are shown below in **Table 4.2-8**. From these Project emissions, the current "baseline" emissions from the existing shopping center have been subtracted out, resulting in a net increase in criteria pollutants associated with the Project. These net new increases in criteria pollutants are then compared to the City's significance thresholds to determine significance.

Table 4.2-8: Project Operational Emission Estimates (2013)

	Reactive Organic Gases	Nitrogen Oxides	PM_{10} (total)	$PM_{2.5}$ (total)
Daily Emissions (lbs/day)				
Operations (Vehicle Emissions)	56.9	132.6	50.4	5.8
Area Source Emissions	8.2	0	0	0
Energy Emissions	0.5	1.1	0	0
Total Regional Emissions	65.6	133.7	50.4	5.8
Less Baseline (Existing Operational Emissions)	- 49.3	- 105.2	- 3.0	- 3.0
Net Additional Area/Operational Emissions	*16.4*	*28.5*	*47.4*	*1.2*
Significance Threshold	54.0	54.0	82.0	54.0
Exceed?	No	No	No	No
Annual Emissions (tons/yr)				
Operations (Vehicle Emissions)	10.4	24.2	9.2	1.0
Area Source Emissions	1.5	0.1	0	0
Energy Emissions	0.1	0.2	0	0
Total Regional Emissions	12.0	24.4	9.2	1.0
Less Baseline (Existing Operational Emissions)	- 9.0	- 19.2	- 7.6	- 0.9
Net Additional Area/Operational Emissions	*3.0*	*5.2*	*1.6*	*0.1*
Significance Threshold	10	10	15	10
Exceed?	No	No	No	No

Source: Lamphier-Gregory, 20011

Project-related emissions, as shown in Table 4.3-6, would not exceed the City's thresholds of significance for ROG, NO_x, PM_{10} or $PM_{2.5}$. Therefore, criteria pollutant emissions during project operations would have a less than significant effect on regional air quality.

Standard Conditions of Approval

Although the Project's net increase in emissions would not exceed the applicable thresholds, these emissions would be even further reduced with implementation of Standard Condition of Approval **SCA**

Trans-1: Parking and Traffic Management Plan (see Chapter 4.11). This condition requires the project applicant to develop and implement a Transportation Demand Management Plan for the Project capable of further reducing single-occupant vehicle use at the site through a variety of strategies including enhancement and promotion of transit and other alternative modes of travel.

Mitigation Measures

None needed

Operational Toxic Air Emissions

Impact Air-5: The Project would include a back-up generator that would emit small amounts of toxic emissions. (**LTS**)

The Project includes a 60-kW natural gas-fired emergency generator, a source of operational-related TAC and $PM_{2.5}$ emissions. This emergency generator will support the Safeway supermarket in the unlikely event of a power outage. Emission factors from the California Air Toxics Emission Factors (CATEF)[17] and the USEPA's AP-42[18] were used to estimate TAC and $PM_{2.5}$ emissions for the natural gas internal combustion engine, in accordance with BAAQMD permit evaluation guidance.[19] For emissions estimation purposes, it was assumed that the emergency generator would be permitted for 100 hours. Detailed emissions calculations can be shown in Appendix 4.2B. Based on these calculations, annual average emissions and maximum hourly emissions of TACs do not exceed any BAAQMD TAC Trigger Levels, the emission threshold levels below which the resulting health risks are not expected to cause, or contribute significantly to, adverse health effects.

The concentrations of $PM_{2.5}$ from the natural gas emergency generator was estimated and compared to the operational-related $PM_{2.5}$ concentration threshold. Concentrations were estimated using the USEPA SCREEN3 model using worst-case meteorological conditions. The calculation of emissions using the SCREEN3 model with worst-case meteorological conditions is very conservative and typically provides calculations that are higher than actual concentrations. The model was conducted taking into account the effects that the buildings would have on air movement, as well as both simple and complex terrain algorithms to account for elevated terrain immediately north of the Safeway building. Since the exact location of the emergency generator has not yet been identified, this analysis conservatively assumes that the highest concentration estimated by the SCREEN3 model to potentially occur at any receptor. Using all the foregoing conservative assumptions, the highest annual-average concentration of $PM_{2.5}$ as estimated by the SCREEN3 model is 0.02 $\mu g/m^3$. This value is substantially lower than the individual project threshold of 0.3 $\mu g/m^3$. This would be a less-than-significant impact.

Mitigation Measures

None needed

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[17] Available at: http://www.arb.ca.gov/ei/catef/catef.htm Accessed 11/14/2012

[18] Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources. Chapter 3.2 Natural Gas-fired Reciprocating Engines. Available at: http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf (Accessed 11/14/2012)

[19] BAAQMD Permit Handbook. Section 5.2.3.2. Stationary Natural Gas Engines. Available at: http://hank.baaqmd.gov/pmt/handbook/rev02/PH_00_05_02_03_02.pdf (Accessed 11/14/2012)

Carbon Monoxide Concentrations

Impact Air-6: New vehicle trips associated with the proposed Project would add to carbon monoxide concentrations near streets that provide access to the Project site. The carbon monoxide emission levels associated with the Project's vehicle trips would not exceed the City's thresholds of significance. (**LTS**)

Vehicular traffic associated with the project would emit carbon monoxide (CO) into the air along roadway segments and near intersections. Since CO does not readily disperse, areas of vehicle congestion can create pockets of high CO concentrations called "hot spots." Typically, high CO concentrations are associated with roadways and intersections operating at deficient levels of service (LOS) or with extremely high traffic volumes.

Emissions and ambient concentrations of carbon monoxide have decreased greatly in recent years. These improvements are due largely to the introduction of cleaner burning motor vehicles and motor vehicle fuels. No exceedance of the State or national CO standard has been recorded at any of the Bay Area's monitoring stations since 1991. The Bay Area has attained the state and national CO standard.[20] However, because elevated CO concentrations are generally fairly localized, heavy traffic volumes and congestion can lead to high levels of CO, or "hot spots," while concentrations at the closest air quality monitoring station may be below state and national standards.

The City's thresholds of significance indicate that a project contributing to CO concentrations exceeding the California Ambient Air Quality Standard (CAAQS) of 9 parts per million (ppm) averaged over 8 hours and 20 ppm for 1 hour would be considered to have a significant impact. A project is unlikely to exceed these thresholds if the following conditions are met: [21]

Is the project consistent with an applicable Congestion Management Program established by the County Congestion Management Agency for designated roads or highways, regional transportation plan, and local congestion management agency plans?

> The Project is the redevelopment of a shopping center and does not involve any roadway modifications. It is consistent with the applicable Congestion Management Program established by the County Congestion Management Agency for designated roads or highways, regional transportation plan, and local Congestion Management Agency plans.

Would the project result in an affected intersection experiencing more than 44,000 vehicles per hour, or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway)?

> The proposed Project would not contribute a substantial number of vehicle trips to any intersection experiencing more than 44,000 vehicles per hour, or to any intersection experiencing more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited. Peak hour traffic volumes at all surrounding intersections are well below the 44,000 vehicle-per-hour criteria and are projected to remain below that level in 2015 and 2030.

Since the Project would not exceed these conditions, the Project would be expected to result in a less-than-significant impact to air quality from CO concentrations.

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[20] California Air Resources Board, *2006 Area Designations for State Ambient Air Quality Standards – Carbon Monoxide*, Figure 4 (http://www.arb.ca.gov/desig/adm/2006/state_co.pdf) and *February 2009 Area Designations for National Ambient Air Quality Standards – Carbon Monoxide* (http://www.arb.ca.gov/desig/adm/2008/fed08_co.pdf).

[21] BAAQMD, May 2010 CEQA Guidelines

Mitigation Measures

None needed

Odor

Impact Air-7: The proposed Project would not frequently create substantial objectionable odors affecting a substantial number of people. (**LTS**)

Under the City of Oakland's thresholds of significance, odor impacts that could result from siting a new odor source near existing sensitive receptors or siting a new sensitive receptor near an existing odor source would cause a significant impact. Examples of land uses that have the potential to generate considerable odors include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants. The proposed Project would not include uses that have been identified by the City of Oakland as potential sources of objectionable odors. The operation of the proposed Project would not generate objectionable odors. The proposed Project includes grocery, restaurant and other retail uses that could generate cooking odors that are not normally considered objectionable. Additionally, any food services would need to comply with local ordinances regarding trash maintenance and appropriate ventilation of cooking areas.

The proposed Project would have a less than significant odor impact because it would not frequently create substantial objectionable odors affecting a substantial number of people.

Mitigation Measures

None needed

Cumulative Air Quality Impacts

Cumulative Impact Air-8: The Project would not individually result in a considerable contribution to a significant cumulative impact to air quality, and the cumulative impact would be considered less than significant. (**LTS**)

For purposes of this cumulative analysis, the geographic context considered for cumulative air quality impacts is the regional air basin, which contributes to regional emissions of criteria pollutants, and basin-wide projections.

The San Francisco Area Air Basin (SFBAAB) is currently designated as a non-attainment area for state and national ozone standards and national particulate matter ambient air quality standards. SFBAAB's non-attainment status is attributed to the region's development history. Past, present and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary.

According to City of Oakland significance thresholds, any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact. However, since the Project would not result in a significant air quality impact, the Project would not individually contribute significantly to a cumulatively considerable impact to air quality, and the cumulative impact would be considered less than significant.

Mitigation Measures

None needed

Cumulative Health Risks

Cumulative Impact Air-9: The proposed Project's construction-related emissions and operation emissions would not lead to a cumulatively significant risk for cancer, chronic health, acute health or annual average $PM_{2.5}$ concentrations that would exceed the cumulative source significance thresholds. (**LTS**)

The following provides an evaluation of cumulative risks from all off-site sources within 1,000 feet from the Project boundary, as well as from on-site sources, to evaluate the cumulative impact on off-site receptors.

Off-site Stationary Sources

BAAQMD has developed a Stationary Source and Risk Analysis Tool ("BAAQMD Risk Analysis Tool") for permitted sources to identify off-site stationary sources of TACs. The BAAQMD Risk Analysis Tool for Alameda County has been used to compile a list of potential stationary sources to be evaluated within 1,000 feet of the Project boundary. Five stationary sources, consisting of one diesel generator, one co-generation plant and three gas dispensing facilities were identified within 1,000 feet of the Project. The impacts of these sources were estimated using a distance-based multiplier for diesel engines from the BAAQMD Diesel Internal Combustion (IC) Engine Distance Multiplier Tool[22] and using BAAQMD Distance Adjustment Multiplier for Gasoline Dispensing Facilities.[23] For the Claremont Country Club gas dispensing facility (where screening values were not available) and for the Claremont House co-generation plant (which is composed of a diesel engine and gas fired cogeneration unit), impacts were estimated using BAAQMD-provided emissions data and screening level risk calculator.

Roadways

The impacts of roadways were analyzed consistent with the BAAQMD CEQA Guidelines. BAAQMD provides screening tools to assess the impact of roadways on nearby receptors. The estimated cancer risk from the roadways obtained using the screening tool for surface streets depends on the distance between the receptor and the nearest travel lane of the roadway, the average number of vehicles that travel on the roadway in a day, and the orientation of the roadway. The distance between the receptor and the roadway was determined using geographical information software, and the average daily traffic (ADT) was obtained from data reported by the California Environmental Health Tracking Program.[24] When the roadway ADT or distance between a receptor and a roadway is between two values in the screening

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[22] BAAQMD 2012. Diesel Internal Combustion (IC) Engine Distance Multiplier Tool. June. Available online at: http://baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Multiplier%20Tools%20May%202012/Diesel%20IC%20Engine%20Multiplier%20Tool.ashx?la=en. Accessed October 11, 2012

[23] BAAQMD 2012. Gasoline Dispensing Facility (GDF) Distance Multiplier Tool. June. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Multiplier%20Tools%20May%202012/Diesel%20IC%20Engine%20Multiplier%20Tool.ashx?la=en. Accessed October 11, 2012

[24] California Environmental Health Tracking Program traffic spatial linkage web service. Available online at: http://www.ehib.org/traffic_tool.jsp. Accessed October 11, 2012

tables, linear interpolation was performed to obtain the cancer risk at the reported distance and ADT. Four roadways were identified within the 1,000 foot zone of influence with daily traffic greater than 10,000 vehicles: Pleasant Valley Avenue, Broadway, Broadway Terrace and College Avenue.

Cumulative Impacts on Off-Site Receptors

Table 4.2-9 shows the maximum estimated cancer risk, chronic HI, and PM2.5 concentration from the stationary sources at the maximum exposed individual receptor (MEIR) off-site. The cumulative impacts evaluation was completed for the off-site MEIR by summing the impacts from Project construction, off-site stationary sources and nearby roadways. As shown, the sum of cancer risks is less than the CEQA cumulative threshold of 100 in a million. Similarly, the estimated chronic HI and the annual average $PM_{2.5}$ concentrations fall below the corresponding significance thresholds for cumulative impacts.

Cumulative Impacts on Off-Site Receptors (Operational)

TAC emissions from the natural gas-fired emergency generator are not expected to lead to adverse health effects. However, there is some incremental contribution to $PM_{2.5}$ concentrations as a result of the operation of the emergency generator. The highest contribution to $PM_{2.5}$ concentration from off-site sources would be due to roadways. Specifically, a location near the proximity of College Avenue, Broadway Avenue, and Broadway Terrace would likely have the highest contribution to $PM_{2.5}$ concentration from offsite sources. If it were to be assumed that the highest concentration of $PM_{2.5}$ from the emergency generator would be at this location, the cumulative $PM_{2.5}$ concentration would be 0.66 $\mu g/m^3$. This concentration would not exceed the cumulative threshold of 0.8 $\mu g/m^3$. This approach is very conservative in that the actual operational $PM_{2.5}$ from the natural gas fired emergency generator would likely be much closer to the location of the Safeway store, and therefore would have dramatically lower contributions from the roadways.

Mitigation Measures

None needed

Table 4.2-9: Cumulative Community Risks and Hazards

	During Construction			During Operation
Facility	**Cancer Risk (# in 1 million)**	**Chronic HI**	**$PM_{2.5}$ Concentration. (ug/m^3)**	**$PM_{2.5}$ Concentration. (ug/m^3)**
Project Construction/Operation	6.0	0.008	0.09	0.02
Claremont County Club (5295 Broadway Terrace)	0.04	0.00001	NA	NA
Unocal (5300 Broadway)	0.28	0.0004	NA	NA
Claremont House (4500 Gilbert Street)	0.93	0.0049	0.008	0.008
Betts Sud Machine (4400 Piedmont Avenue)	0.1	0.000015	NA	NA
Pleasant Valley Ave.	1.6	< 0.03	0.1	0.03
Broadway Ave.	4.3	< 0.03	0.18	0.27
Broadway Terrace	0.9	< 0.03	0.03	0.14
College Ave.	2.4	< 0.03	0.10	0.22
Total	**16.3**	**0.12**	**0.44**	**0.66**
Cumulative Threshold	100	10	0.8	0.8
Exceed Cumulative Threshold?	No	No	No	No

Source: ENVIRON, 2012

4.3

Biological Resources

This section evaluates the proposed Project's potential impacts on biological resources. This section describes the existing biological resources in the vicinity of the site and evaluates the changes that development of the Project might have with respect to biological resources. The analysis and discussion in this section of the EIR is based primarily on the following:

- *Biological Resources Evaluation*, prepared for this EIR by AECOM, May 1, 2009.
- *Tree Inventory and Assessment Report*, prepared for this EIR by AECOM, revised December 3, 2010.[1]

Setting

Existing Biological Resources at the Project Site

On Site Trees

Although it has been supporting a wide range of commercial uses and associated parking spaces for more than 40 years, the Project site contains mature landscaping. As required by the City of Oakland, a survey of all existing protected trees either on the site or within 10 feet of development activity has been completed. Pursuant to the City of Oakland Tree Protection Ordinance, the City of Oakland defines protected trees as California and coast live oaks measuring four inches in diameter at breast height (dbh) or larger, and all other trees measuring nine inches dbh, except eucalyptus and Monterey pine. However, Monterey pines are protected when located on city property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed.

Vegetation on the site consists mainly of ruderal grasses and forbs on the cliff face and around the north side of the quarry pond, and large stands of non-native blue gum (*Eucalyptus globulus*) on top of the cliffs to the north and the east and south above the quarry pond. Other vegetation on site is comprised of landscape ornamental plantings around the buildings and parking lot.

The most abundant trees on the Project site are blue gum, found in large stands on the cliff top and surrounding the quarry pond to the north, east and south. The blue gums and other eucalyptus species are excluded from protection under the City's ordinance. The interior parking lot islands do not contain protected trees. Many of the trees in the parking lot islands are young and are smaller than the minimum size requirement for protection under the municipal code. Coast live oaks with a dbh less than 4 inches are located within the parking islands, although the majority of oaks found in the parking lot area are holly oaks (*Quercus illicifolia*), none of which are protected due to their small size.

A total of 30 protected trees and three Monterey pines (33 trees representing 11 different species) were observed and tagged in the study area (which includes all areas to be affected during Project construction

[1] These reports are available for review at the City's Planning Division offices

plus a 30-foot buffer zone, including medians) during the tree inventory conducted on March 4, 2009 and December 1, 2010. The location of the protected trees is shown in **Figure 4.3-1**. **Table 4.3-1** lists each protected tree identified during the inventory.

Many of the protected trees are located in maintained landscape spaces around the buildings and parking lot. The other protected trees are found on the perimeter of the property, the median strips of Broadway and Pleasant Valley Avenue, or on the cliff north of the building complex. The most common protected tree species found in the study area were California sycamore (*Platanus racemosa*) and Cootamundra wattle (*Acacia baileyana*). Three of the 30 protected trees are Coast live oaks, which are native to the area. All three of these trees are found in the cliff at the north side of the building complex.

Of the 33 trees within the study area (including the 3 Monterey pines), 18 were rated good suitability for preservation, 8 were rated moderate, and 7 were rated poor. Trees rated “good” have good health and structural stability, and the potential for longevity at the site. Trees rated “moderate” may require more management and may have shorter life spans than those rated “good”. Trees rated “poor” have poor health or significant structural defects that cannot be abated with treatment. Trees in this category can be expected to decline regardless of management practices.

Table 4.3-1: Tree Inventory Data

Tag	Latin Name	Common Name	DBH Total	DBH_1	DBH_2	DBH_3	DBH_4	DBH_5	Health	Structure	Age	Suitability for Preservation	Comment
575	Schinus molle	Peruvian pepper tree	14	14					3	2	mature	moderate	On cliffside behind Safeway growing straight out
576	Quercus agrifolia	Coast live oak	8.5	5	3.5				3	2	young	poor	stump w/ two trunk size sprouts
577	Acacia baileyana	Cootamundra wattle	10.6	10.6					2	2	over mature	poor	very lopsided growth; top largely dead
578	Acacia baileyana	Cootamundra wattle	12.5	7	5.5				2	2	mature	poor	canopy very thin; dual trunks at base; weak branch attachments
579	Acacia baileyana	Cootamundra wattle	36.6	4.5 x 2	4.0 x 5	3.0 x 2	1.6		1	1	over mature	poor	nothing but epicormic growth on main upright trunk; remainder dead
580	Acacia baileyana	Cootamundra wattle	13.5	3.5 x 2	2.5 x 2	1.5			3	3	mature	moderate	suppressed by large eucalyptus above; multi-trunked at base
581	Ulmus parvifolia	Chinese elm	12	12					3	4	mature	good	has had some large branches removed but healing and well corrected

Table 4.3-1: Tree Inventory Data

Tag	Latin Name	Common Name	DBH Total	DBH_1	DBH_2	DBH_3	DBH_4	DBH_5	Health	Structure	Age	Suitability for Preservation	Comment
582	Ulmus parvifolia	Chinese elm	11.9	11.9					3	3	mature	moderate	appears three large branches have torn out in the pase, 1 at base, with large areas where bark has been stripped
583	Platanus racemosa	California sycamore	9.1	9.1					3	4	mature	good	pruned up for clearance but done well, at early age
584	Platanus racemosa	California sycamore	9.4	9.4					3	3	mature	good	has more attachements close together than 583 but still o.k.
585	Olea europaea	olive	14.2	5.6	3.6	3.2	1.1	0.7	3	3	mature	good	typically multi-trunked; canopy a little thin but still fine
586	Pinus pinea	Italian stone pine	41.8	41.8					4	3	mature	good	dual-trunks at 5' though bark appears pressed at 3' - included?
587	Pinus radiata	Monterey pine	18.2	18.2					2	4	mature	poor	canopy is thin - to an extent that indicates a potential problem

Table 4.3-1: Tree Inventory Data

Tag	Latin Name	Common Name	DBH Total	DBH_1	DBH_2	DBH_3	DBH_4	DBH_5	Health	Structure	Age	Suitability for Preservation	Comment
588	Pinus radiata	Monterey pine	21.3	21.3					3	3	mature	moderate	pruned for wire clearance; slight lean - stress crack on lean-to side
589	Pinus radiata	Monterey pine	15.8	15.8					2	3	mature	poor	lots of branch tip dieback; some small branches dead; symptoms of drought stress for these Monterey pines?
590	Eriobotrya deflexa	bronze loquat	16.6	5.1	3.3 x 2	2.1	2	0.8	4	3	mature	good	multi-trunked at base
591	Platanus racemosa	California sycamore	10.9	10.9					3	4	mature	good	median tree
592	Platanus racemosa	California sycamore	10.3	10.3					3	3	mature	good	median tree
593	Platanus racemosa	California sycamore	12	12					4	4	mature	good	median tree
594	Platanus racemosa	California sycamore	15.8	15.8					3	4	mature	good	median tree; few epicormic sprouts on lower scaffold branches
595	Olea europaea	olive	14.4	7.8	6.6				4	3	mature	good	dual trunked at base
596	Acacia melanoxylon	blackwood acacia	15.8	15.8					4	3	mature	moderate	at top of cliff leaning out with some correction

Table 4.3-1: Tree Inventory Data

Tag	Latin Name	Common Name	DBH Total	DBH_1	DBH_2	DBH_3	DBH_4	DBH_5	Health	Structure	Age	Suitability for Preservation	Comment
597	Acacia melanoxylon	blackwood acacia	15.8	15.8					4	2	mature	moderate	two trees fused at base to 4.5’
598	Cedrus atlantica	Atlas cedar	24.5	24.5					4	4	mature	good	on top of cliff, away from ledge
599	Quercus agrifolia	Coast live oak	9.1	6.5	2.6				4	3	mature	good	slightly lopsided growth (slope side) but otherwise fine
601	Acacia baileyana	Cootamundra wattle	10	5.5	4.5				3	2	young	poor	stump w/lg trunk-sized sprouts; lg trunk ripped out w/area of rot
602	Quercus agrifolia	Coast live oak	5	5					3	4	mature	good	inaccessible to tag; canopy somewhat thin
603	Acacia melanoxylon	blackwood acacia	9	9					3	3	mature	moderate	on cliff, no access; leaning in; broken off limb at 3’
198	Platanus racemosa	California sycamore	9.5	9.5					4	4	mature	good	
199	Platanus racemosa	California sycamore	9.5	9.5					4	4	mature	good	very small wound w/rot near base
200	Platanus racemosa	California sycamore	12.9	12.9					4	3	mature	good	8"x12" wound near base
201	Platanus racemosa	California sycamore	9.2	9.2					2	3	mature	gpd	wounds at base; lots of small branch dieback; thin canopy

Table 4.3-1: Tree Inventory Data

Tag	Latin Name	Common Name	DBH Total	DBH_1	DBH_2	DBH_3	DBH_4	DBH_5	Health	Structure	Age	Suitability for Preservation	Comment
218	Platanus racemosa	California sycamore	13.0	13.0					4	3	mature	moderate	large wound on trunk, avg. 8" wide by 4' plus high from base; tree still appears vigorous

Tags 587, 588, 589 Not protected but written notice and public posting required for removal EDAW -Tree Inventory Report for the Rockridge Safeway Project

Source: EDAW | AECOM, *Tree Inventory and Assessment Report: Rockridge Safeway Project, Oakland, Alameda County, California*, revised December 2010

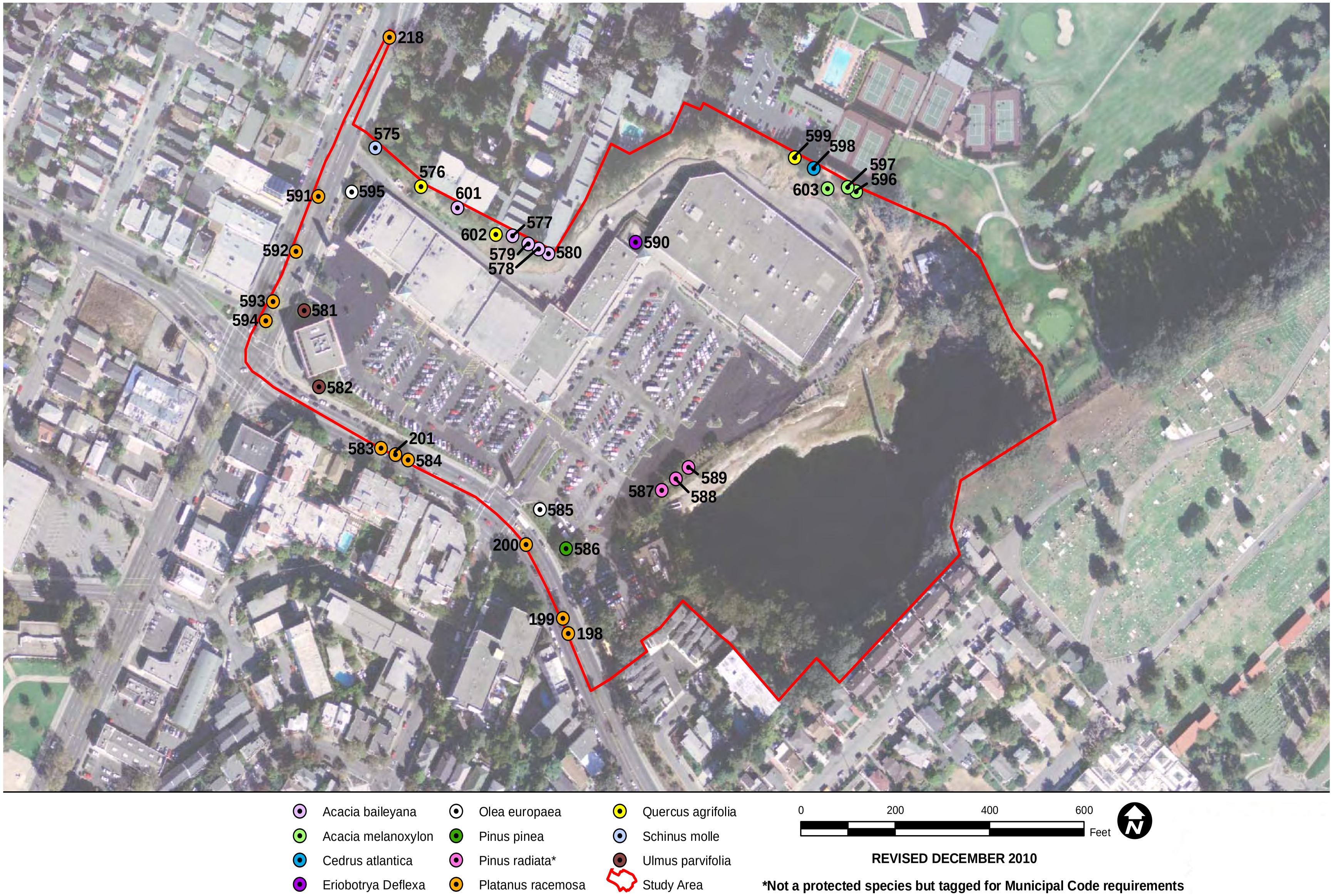

Figure 4.3-1
Protected Trees in the Study Area

Source: AECOM

Adjacent Biological Resources

Property immediately adjacent to the Project site contains areas of fairly dense vegetation, including a number of trees (some of which may be Protected Trees).

The Claremont Pond (also known as Old Quarry Pond) is an adjacent facility owned by the Claremont Country Club. The quarry pond serves mainly as a water storage facility which supplies the country club's irrigation needs for the golf course. As indicated above, it is also a potential habitat for local plants and wildlife. Although redevelopment of the Project site is not likely to have any direct effects on the quarry pond and its associated habitats, the area adjacent to the quarry pond is proposed for amenity improvements including new landscaping and a pedestrian path.

A reconnaissance-level site assessment was conducted on March 4, 2009. The entire study area (see **Figure 4.3-2**) was surveyed on foot, all distinct habitat types were identified, and all plant and wildlife species observed or detected by sign were recorded. This survey was intended as an initial evaluation of on-site habitat types and an assessment of the potential for occurrence of special-status plant and wildlife species within the study area. Although not part of the Project site, the quarry pond and surrounding banks were the primary focus of the survey, since they have some potential to provide biological value as compared with the developed shopping center at the Project site.

Plant Communities and Wildlife Habitats

The study area supports highly disturbed lands characterized by ruderal vegetation and ornamental landscape. Large stands of non-native blue gum (*Eucalyptus globules*) surround the quarry pond and dominate the cliff tops on the north side of the study area. A very small patch of coyote brush (*Baccharis pilularis*) is present on the northeast portion of the study area adjacent to the Claremont Country Club. Vegetation communities and wildlife habitats present within the study area are shown in **Figure 4.3-3**.

Wildlife habitats are typically distinguished by vegetation types, with varying combinations of plant species providing different resources for use by wildlife. The following is a discussion of existing habitats found in the study area, and the wildlife species they have the potential to support. Because most of the study area is developed, its value to wildlife species is greater for those that can persist in disturbed areas with little habitat complexity, and are habituated to human activities.

Within the study area, eucalyptus woodlands are located on the cliff tops to the north and surrounding the quarry pond. Here, the canopy is dominated by Tasmanian blue gum trees 40 to 80 feet in height. The understory supports mostly non-native grasses such as wild oats (*Avena fatua*) and ripgut brome (*Bromus diandrus*). Occasional related species present are blackwood acacia (*Acacia melanoxylon*) and Cootamundra wattle (*Acacia baileyana*). Eucalyptus woodland is not a native plant community, and is not described in Sawyer and Keeler-Wolf (1995); it would be classified as an upland following Cowardin *et al.* (1979).

Non-native woodlands provide cover for reptiles, amphibians, mammals and potential nest sites for avian species. Locations where understory vegetation is inhibited, such as the eucalyptus woodland found in the study area, provide less structure and cover for understory and ground foraging and nesting species. Although the characteristics of trees required by birds varies by species, the highest quality trees for birds tend to be those that are large (i.e., are tall and have a large diameter at breast height) and have large branches to support nests, dense foliage to conceal nests, peeling bark, and/or cavities. The large eucalyptus trees in the study area have potential to support nesting and foraging birds (via flowers, seeds and associated insects), including raptors, passerines and wading birds. Eucalyptus stands in the study area have the potential to support waterbird nests, especially given the adjacency of aquatic foraging habitat, although no evidence of such nests was detected during the EDAW surveys or discovered during EDAW research.

Figure 4.3-2
Project Study Area for Biological Resources

Source: AECOM

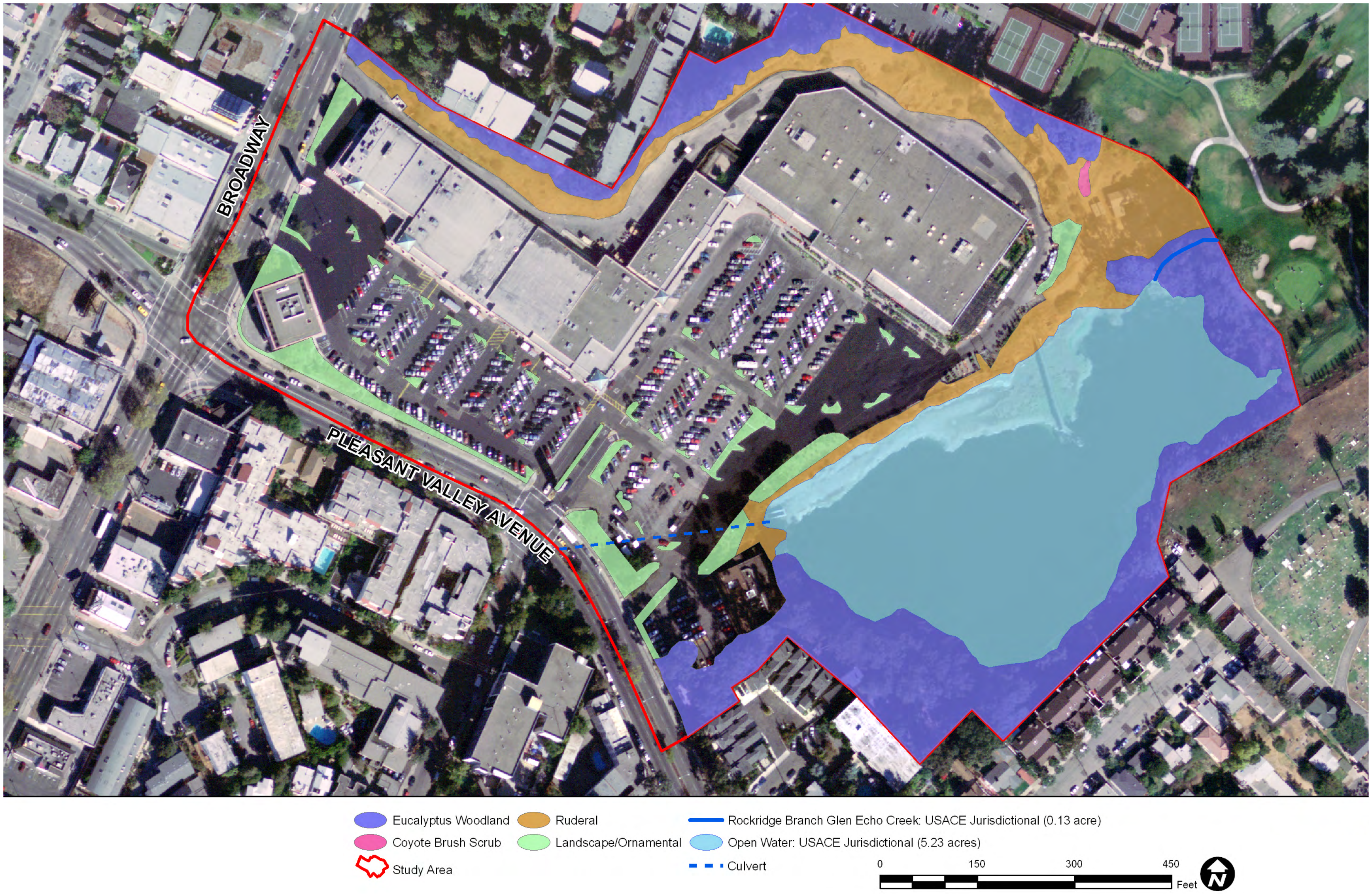

Figure 4.3-3
Study Area Vegetation Communities and Wildlife Habitats

Source: AECOM

Ruderal Vegetation

Ruderal vegetation is typical of disturbed lands on which the native vegetation has been completely removed by human activities such as grading, disking, cultivation or other surface disturbances. Such areas, if left undeveloped, may become re-colonized by invasive exotic species as well as certain weedy native species. It is usually dominated by non-native annual species, although perennial species may also be a significant component.

Ruderal vegetation in the study area is found on the cliff face to the north and along the west side of the quarry pond. Common non-native plant species found in the study area include wild oats, ripgut brome, scotch broom (*Genista monspessulana*), English ivy (*Hedera helix*), fennel (*Foeniculum vulgare*), wild radish (*Raphanus sativa*), mustard (*Brassica sp.*), cheeseweed (*Malva parviflolia*), spiny sowthistle (*Sonchus asper*), cranesbill (*Geranium dissectum*), and redstem fillaree (*Erodium cicutarium*). Native species present were miner's lettuce (*Claytonia perfoliata*), California poppy (*Eschscholzia*), and narrowleaf milkweed (*Asclepias fascicularis*). Ruderal vegetation as it occurs in the study area is not specifically described by Sawyer and Keeler-Wolf (1995), although portions of it conform to the California annual grassland series. Ruderal vegetation in the study area would be classified as upland following Cowardin *et al.* (1979).

Wildlife species generally associated with disturbed ruderal lands that would be expected to occur in the study area include raccoon (*Procyon lotor*), opossum (*Didelphus virginianus*), European starling (*Sturnus vulgaris*), and mourning dove (*Zenaida macroura*). Killdeer (*Charadriusa vociferous*) are also often associated with open disturbed substrates. Other wildlife species that are common in disturbed landscapes and adapted to human activity which likely occur in ruderal vegetation in the study area include house mice (*Mus musculus*), black rat (*Rattus rattus*), American crow (*Corvus brachyrhynchos*), western scrub jay (*Aphelocoma californica*), and Brewer's blackbird (*Euphagus cyanocephalus*), among others. The lack of woody vegetation limits nesting opportunities primarily to ground nesting birds such as killdeer (*Charadrius vociferous*). Rodents provide foraging opportunities in open ruderal areas for larger birds such as raptors and herons that may nest in eucalyptus woodlands in the study area.

Landscaped/Ornamental Lands

Landscaped lands are those on which the native vegetation has been completely removed and replaced with ornamental horticultural species. These areas include planting beds, parking lot islands, planter boxes and median strips. Such areas are not expected to support any naturally occurring vegetation, although invasive native and non-native plant species frequently colonize landscaped sites. Landscaped areas have little potential to support unique or rare botanical resources.

Landscaped/Ornamental lands within the study area include the parking lot islands and surrounding planter beds, the median strips and the ornamental landscaping surrounding the buildings. Landscape/ornamental species found within the study area include holly oak (*Quercus ilex*), Italian stone one (*Pinus pinea*), olive (*Olea europaea*), bronze loquat (*Eriobotrya deflexa*), Chinese juniper (*Juniperus chinensis*), box (*Buxus sempervirens*), Japanese pittosporum (*Pittosporum tobira*), African lily (*Agapanthus africanus*), English ivy and gazania (*Gazania linearis*). Disturbed/landscaped lands as they occur in the study area are not specifically described by Sawyer and Keeler-Wolf (1995) and would be classified as upland following Cowardin *et al.* (1979).

Landscaped and ornamental vegetation in the study area provides habitat for many of the same wildlife species as ruderal areas, although trees and shrubs provide more structure for foraging and nesting birds. House finches (*Carpadacus mexicanus*) and house sparrows (*Passer domesticus*) are common in such habitats.

Coyote Brush Scrub

Coyote brush scrub is considered a sub-type of northern (Franciscan) coastal scrub. It differs primarily by the dominance of coyote brush. These scrub types consist of low shrubs up to six feet tall with a well-developed herbaceous or low woody understory. Vegetative cover is mostly dense with scattered grassy openings. While northern coastal scrub is best developed on windy, exposed sites with shallow, rocky soils, an increase in soil depth and moisture availability seems to favor dominance by coyote brush. This vegetation community is distributed in patches from southern Oregon to Point Sur in Monterey County (Holland 1986).

In the northeast of the study area by the Claremont Country Club is a small parch of coyote brush best described as coyote brush scrub. Coyote brush is the sole shrub in this area. The understory is ruderal vegetation dominated by non-native grasses as described in the ruderal vegetation section, above. Coyote brush scrub corresponds to the coyote brush series as classified by Sawyer and Keeler-Wolf (1995) and is classified as upland following Cowardin *et al.* (1979).

Chaparral habitat, often interspersed with other habitats, provides foraging and nesting habitat for species that are attracted to edges of communities. The scrub habitat in the study area is limited to a small patch that provides some additional cover for native and non-native wildlife species. Reptiles likely to use this habitat include western fence lizard (*Sceloporus occidentalis*). Avian species found in edge communities that may occur in the study area include California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*) and California towhee (*Pipilo crissalis*) that forage among leaf litter for invertebrates. Native mammals utilizing chaparral habitats that may occur in the study area include brush rabbit (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*) and deer mice (*Peromyscus maniculatus*). California towhee and black tailed deer (*Odocoileus hemionus*) were observed in this habitat during the site visit.

Open Water

Open water aquatic habitats such as lakes and reservoirs support numerous native and non-native fish species such as Sacramento sucker (*Catostomus occidentalis*), rainbow trout (*Oncorhynchus mykiss*), largemouth bass (*Micropterrus salmoides*), smallmouth bass (*Micropterus dolomieu*), bluegill (*Lepomis macrochirus*), and common carp (*Cyprinus carpio*). This habitat is also important to a variety of non-fish species such as Pacific chorus frog (*Pseudacris regilla*), western toad (*Bufo boreas*), California newt (*Taricha torosa*), red swamp crayfish (*procambarus clarkia*), western pond turtle (*Actinemys marmorata*), a California species of special concern, and numerous insects and aquatic insect larvae that provide food for fish, amphibians, aquatic reptiles and bats. Many bird species also rely upon open water habitats for foraging, including mallard (*Anas platyrhynchos*), American coots (*Fulica americana*), numerous other waterfowl, and water bird species such as double-crested cormorant.

The quarry pond in the study area (adjacent to the Project site) provides over five acres of open water habitat for commonly occurring fish, amphibians and bird species such as those described above. It also provides a drinking water source for common bird and mammal species occurring in upland habitats. The shoreline is characterized by steep banks on all sides with the vegetation ranging around the quarry pond from disturbed grasses and shrubs adjacent to the shopping center to eucalyptus woodland and ornamental ivy on the remaining banks. The bank below the residential development across from the shopping center is a steep cliff of exposed rock greater than 100 feet high. At the time of the site visit, the water level was high and the stairwell and maintenance walkway were completely submerged. Natural wetland or emergent marsh vegetation was absent from the quarry pond and its shoreline. American coot, mallard, American crows and western gulls (*Larus occidentalis*) were observed in this habitat during the site visit.

Special-Status Species

Special-status plant species include those listed as endangered, threatened, rare or those species proposed for listing by the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and the California Native Plant Society.

Based on a review of the California Natural Diversity Database (CDFG 2009), and AECOM's knowledge of the region, a total of 30 special-status species have been recorded as occurring in the region of the study area (**Figure 4.3.4**). None of the 30 species are expected to occur on the Project site due to the disturbed and developed nature. All 30 species were determined to have no potential to be present on site due to an absence of suitable habitat, or are presumed absent because they would have been detectable during the reconnaissance-level site assessment.

Special-status wildlife species are defined as animals which are listed under either the Federal Endangered Species Act or the California Endangered Species Act, or which are classified as Species of Special Concern by the California Department of Fish and Game, are on the CDFG Watch List, or are tracked by the California Natural Diversity Database (CNDDB). Based on a literature review and a familiarity with the fauna within the Project region, several special-status animal species were considered to have at least some potential to occur within the region or have been recorded historically in the Project vicinity. Most of these wildlife species are not expected to occur at the Project site due to a lack of suitable habitat. In addition, the Project site is isolated from extant populations of these species and suitable habitats in the region due to surrounding urbanization.

Special-status mammals, birds and fish that occur in salt marsh and bayshore habitats within five miles of the site (i.e., salt marsh harvest mouse [*Reithrodontomys reviventris*] and California least tern [*Sterna antillarum browni*], both federally- and state-listed Endangered) have no potential for occurrence at the Project site due to its developed nature, and are not addressed in this EIR.

The quarry pond within the study area (adjacent to the Project site) is characterized by steep banks, lacks emergency marsh vegetation, and is likely inhabited by predatory fish species based on the depth and presence of permanent water. These qualities diminish its value as habitat for native aquatic resources such as California red-legged frog (*Rana aurora draytoni*), a federally-listed Threatened and a California Species of Special Concern. Although the creek feeding the quarry pond has hydrologic connectivity to other aquatic features in the region, there is no connectivity to natural habitats that support the species due to the surrounding urban development which extends to the golf course and beyond. The closest California red-legged frog occurrence is located in the Oakland hills east of Highway 13, and was recorded in the 1940's. Sacramento perch (*Archoplites interruptus*), a California Species of Special Concern is known from Lake Anza in Tilden Park (Contra Costa County), although it is not expected in the quarry pond due to a lack of aquatic vegetation and refuge habitat.

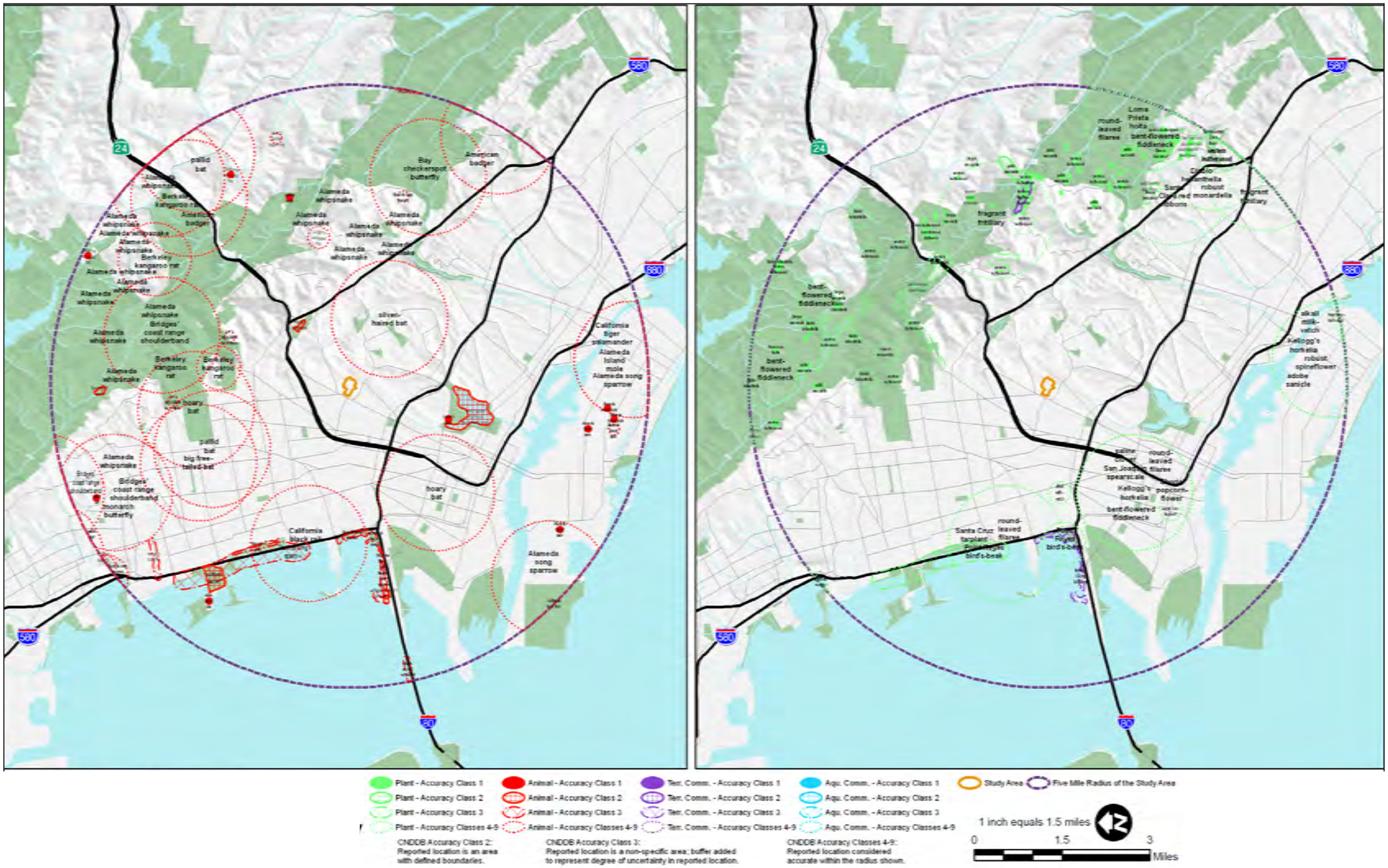

Figure 4.3-4
Special Status Species in the Region

Source: AECOM

Table 4.3-2: Potentially Occurring Special-Status Wildlife Species

Common Name	Scientific Name	Status	Potential For Occurrence
State or Federally Endangered or Threatened Species			
Amphibians			
California tiger salamander	Ambystoma californiense	FT; CSC	None —extirpated from region
California red-legged frog	Rana draytonii	FT; CSC	Not expected — no suitable habitat and lack of occurrences
Reptiles			
Alameda whipsnake	Masticophis lateralis euryxanthus	FT, ST	Not expected no suitable habitat and isolated from known populations
Invertebrates			
Bay checkerspot butterfly	Euphydryas editha bayensis	FT	None —extirpated from region
California Species of Special Concern, State Protected, or Federal Candidate Species			
Invertebrates			
Lee's microblind harvestman	Microcina leei	CNDDB	Not expected — no suitable habitat
Bridge's coast range shoulderband snail	Helminthoglypta nickliniana bridgesi	CNDDB	Not expected — no suitable habitat
Monarch butterfly	Danaus plexippus	CNDDB	Not expected — eucalyptus habitat is not well sheltered from winds
Brackish water snail	Mimic tryonia	CNDDB	None — extirpated from region
Fish			
Sacramento perch	Archoplites interruptuts	CSC	Not expected — no suitable habitat
Amphibians			
Foothill yellow-legged frog	Rana boylii	CSC	Not expected — no suitable habitat
Reptiles			
Western pond turtle	Clemmys marmorata	CSC	Low — pond provides marginal habitat
Mammals			
San Francisco dusky-footed woodrat	Neotoma fuscipes annectens	CSC	Not expected —no suitable habitat and isolated from natural areas
American badger	Taxidea taxus	CSC	Not expected – no suitable habitat and isolated from natural areas
Hoary bat	Lasiurus cinereus	CNDDB	Low
Silver haired bat	Lasionycteris noctivagans	CNDDB	Low
Pallid bat	Antrozus pallidus	CSC	Low
Big free-tailed bat	Nyctinomops macrotis	CSC	Low
Birds			
Cooper's hawk (nesting only)	Accipiter cooperii	WL	Low — eucalyptus woodland provides potential nesting habitat
Sharp-shinned hawk (nesting only)	Accipiter striatuts	WL	Low— eucalyptus woodland provides potential foraging habitat
Golden eagle (nesting/wintering)	Aquila chrysaetos	CSC; CFP	Not expected no suitable habitat and too urbanized
California Yellow warbler (nesting only)	Dendroica petechia brewsteri	CSC	Not Expected — no suitable riparian habitat
Northern harrier	Circus cyaneus	CSC	Not expected - no suitable open habitat and too urbanized

Table 4.3-2: Potentially Occurring Special-Status Wildlife Species

Common Name	Scientific Name	Status	Potential For Occurrence
Alameda song sparrow	Melospiza melodia pusillula	CSC	Not expected — no suitable salt marsh habitat
White-tailed kite (nesting only)	Elanus leucurus	CFP	Low — eucalyptus woodland provides potential nesting habitat
Saltmarsh common yellowthroat	Geothlypis trichas sinuosa	CSC	Not expected — no suitable salt marsh habitat
*Status Codes	FE = Listed as endangered by the Federal Government FT = Listed as threatened by the Federal Government FPT = Proposed Listed as threatened by the Federal Government FC = Federal Candidate Species SE = Listed as endangered by the State of California		ST = Listed as threatened by the State of California CFP = Fully protected under the California Fish and Game Code CSC = California Species of Special Concern WL = California Department of Fish and Game Watch List CNDDB = Tracked by the California Natural Diversity Data Base

Source: EDAW | AECOM, *Biological Resources Evaluation: Rockridge Safeway Project, Oakland, Alameda County, California.*

The small scrub patch at the Project site is not large enough to support Alameda whipsnake (*Masticophis lateralis euryxanthus*), federally-listed Threatened, and State-listed Threatened, which are known from shrub habitats in the Oakland hills within five miles east of the site. These occurrences are located east of Highway 13 and numerous roads, residential and commercial developments create a substantial dispersal barrier to the study area. Other special-status species which have been recorded historically within five miles of the study area, but are now considered extirpated (CDFG 2009) from the region due to development and habitat loss, include:

- California tiger salamander (*Ambystoma californiense*), federally-listed Threatened and a California Species of Special Concern
- Berkeley kangaroo rat (*Dipodomys heermanni berkeleyenisis*), a species tracked by CNDDB
- Brackish water snail (*Mimic tryonia*), a species tracked by CNDDB
- Bay checkerspot butterfly (*Euphydyas editha bayensis*), federally-listed Threatened

Potentially Occurring Special Status Species

Special-status species with a potential to occur within the study area include waterbirds, nesting birds and potentially roosting bats and western pond turtle.

Waterbirds

Shorebirds and water birds encompass species that are strongly dependent upon aquatic and wetland habitat, and include such families as loons (*Gaviidae*), grebes (*Podicipedidae*), pelicans (*Pelecanidae*), herons and egrets (*Ardeidae*), swans, geese and ducks (*Anatidae*), Gruiformes (*Gruidae*, cranes, *Rallidae*, rails, coots, moorhens), gulls (*Laridae*), non-sandpiper shorebirds (*Charadriidae*, *Haematopodidae*, *Recurvirostridae*, plovers, oystercatchers, stilts and avocets), and sandpipers (*Scolopacidae*).

Nesting Birds

Raptors: Most raptors such as white-tailed kites (*Elanus leucurus*), California Fully Protected, red-tailed hawks (*Buteo jamaicensis*), red-shouldered hawks, and Coopers hawk (*Accipter cooperii)*, a California Watch List species, nest in mature, large coniferous or deciduous trees and use twigs or branches as nesting material. Smaller raptors such as American kestrel (*Falco sparverius*) and western screech owl (*Otus kennoicottii*) may nest in cavities in anthropogenic structures and trees. Short-eared owls (*Asio flkammeus*) and northern harriers (*Circus cyaneus*), both California Species of Special Concern, nest on the ground in grassland, marshes and agricultural fields with tall vegetation. Common raptors such as American kestrels, great horned owl (*Bubo virginianus*), common barn owl (*Tyto alba*) and red-tailed hawks could nest on site and are afforded protection under the Migratory Bird Treaty Act and California Department of Fish and Game Code. The nesting period for raptors generally occurs between December 15 and August 31.

<u>Special-Status Passerine and Non-Passerine Land Birds</u>: Passerines (perching birds) are a taxonomic grouping that consists of several families including swallows (*Hirundinidae*), larks (*Alaudidae*), crows, ravens and jays (*Corvidae*), shrikes (*Laniidae*), vireos (*Vireonidae*), finches (*Fringillidae*) and Emberzids (*Emberzidae*, warblers, sparrows, blackbirds, etc.), among others. Non-passerine birds are a non-taxonomic based grouping typically used by ornithologists to categorize a loose assemblage of birds. Families grouped into this category include kingfishers (*Alcedinidae*), woodpeckers (*Picadae*), swifts (*Apodidae*), hummingbirds (*Trochilidae*), and pigeons and doves (*Columbidae*), among others. Habitat, nesting and foraging requirements for these species are wide ranging, therefore outlining generic habitat requirements for this grouping is difficult. These species typically use most habitat types and are known to nest on the ground, in shrubs and trees, on buildings, under bridges and within cavities, crevices and manmade structures. Many of these species migrate long distances and all birds except starlings, English house sparrows and rock doves (pigeons) are protected under the federal Migratory Bird Treaty Act and California Fish and Game Code. The nesting period for passerines and non-passerine land birds occurs between February 1 and August 31.

Roosting Bats

Four special-status bat species are considered to have at least some potential to occur within the trees and buildings located in the study area, including the following:

- Pallid bat (*Antrozous pallidus*), a California Species of Special Concern
- Silver-haired bat (*Lasionycteris noctivagans*), a species tracked by the California Natural Diversity Data Base
- Big free-railed bat (*Nyctinomops macrotis*), a California Species of Special Concerns
- Hoary bat (*Lasiurus cinereus*), a species tracked by the California Natural Diversity Data Base

These species have been recorded historically within five miles of the site, although occurrences are dated from the early part of the 20^{th} century (CDFG 2009). These species variously use mature trees, snags, crevices and human-made structures (such as buildings and bridges) for roosting, either for winter roosting (hibernacula) or for forming nursery colonies. Bats are generally site faithful, and will not abandon an established roosting area unless disturbed.

Western Pond Turtle

The western pond turtle is the only fresh-water turtle native to greater California (Storer 1930). The literature describes two subspecies of western pond turtle: the northwestern pond turtle (*A.m. marmorata*) and the southwestern pond turtle (*A.m. pallida*). Overall, western pond turtles are habitat generalists, and have been observed in slow-moving rivers and streams (e.g., oxbows), lakes, reservoirs, permanent and ephemeral wetlands, stock ponds and sewage treatment plants. They prefer aquatic habitat with refugia such as undercut banks and submerged vegetation (Holland 1994), and require emergent basking sites such as mud banks, rocks, logs and root wads to thermoregulate their body temperature (Holland 1994, Bash 1999).

Western pond turtles regularly utilize upland terrestrial habitats, most often during the summer and winter, especially for oviposition (females), overwintering, seasonal terrestrial habitat use and overland dispersal (Reese 1996, Holland 1994). Females have been reported ranging as far as 500 meters (1,640 feet) from a watercourse to find suitable nesting habitat (Reese and Welsh 1997). Nest sites are most often situated on south or west-facing slopes, are sparsely vegetated with short grasses or forbs, and are scraped in sands or hardpacked, dry silt or clay soils (Holland 1994, Rathbbun et al. 1992, Holte 1994, Reese and Welsh 1997). Western pond turtles exhibit high site fidelity, returning in sequential years to the same terrestrial site to nest or overwinter (Reese 1996).

Regulatory Setting

This section briefly describes federal, state, and local regulations, permits, and policies pertaining to biological resources and wetlands as they apply to the proposed Project.

Federal Regulations

Federal Endangered Species Act

Implementation of the federal Endangered Species Act (ESA) is overseen by the US Fish and Wildlife Service (USFWS) which has jurisdiction over plants, wildlife and most freshwater fish, and the National Marine Fisheries Service (NMFS) which has jurisdiction over anadromous fish, marine fish, and mammals. The ESA prohibits the "take" of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

Under Section 9 of the ESA, the take prohibition applies to wildlife and fish species, but also prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9 of the federal ESA.

Section 10 of the ESA requires the issuance of an "incidental take" permit before any public or private action may be taken that would potentially harm, harass, injure, kill, capture, collect, or otherwise hurt (i.e., take) any individual of an Endangered or Threatened species. The permit requires preparation and implementation of a habitat conservation plan that would offset the take of individuals that may occur, incidental to implementation of the Project by providing for the overall preservation of the affected species through specific mitigation measures.

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 U.S.C., Section 703, Supplement I, 1989) states that without a permit issued by the U.S. Department of the Interior, it is unlawful to pursue, hunt, take, capture, or kill any migratory bird. This act encompasses birds as well as bird nests and eggs.

Clean Water Act

The USACE and Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under Sections 404 and 401 of the CWA. Projects that would result in the placement of dredged or fill material into waters of the United States require a Section 404 permit from the USACE.

Wetlands receive protection under Section 404 of the Clean Water Act (CWA). The U.S. Army Corps of Engineers (USACE) exerts jurisdiction over "waters of the U.S.", including, but not limited to, all waters which are subject to the ebb and flow of tide, wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds, and tributaries of the above features. The extent of waters of the United States is generally defined as that portion which falls within the limits of “ordinary high water”. Field indicators of ordinary high water include clear and natural lines on opposite sides of the banks, scouring, sedimentary deposits, drift lines, exposed roots, shelving, destruction of terrestrial vegetation, and the presence of litter or debris. Typically, the width of waters corresponds to the two-year flood event.

Wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetland determination under the federal wetland definition adopted by the US Army Corps of Engineers (USACE) requires the presence of three factors:

- wetland hydrology,
- plants adapted to wet conditions, and
- soils that are routinely wet or flooded [33 CFR Section 328.3(b)].

The Supreme Court of the United States ruled in 2001 (January 8, 2001: *Solid Waste Agency of Northwestern Cook County v. United States Army Corps of Engineers et al.*) that certain isolated wetlands do not fall under the jurisdiction of the CWA. This decision was further clarified in the more recent Supreme Court case, *Rapanos v. United States* (2006) (USEPA, 2007). That decision clarified that the term "waters of the United States" includes only those relatively permanent, standing or continuously flowing bodies of water forming geographic features that are described in ordinary parlance as streams, oceans, rivers, and lakes.

State Regulations

California Endangered Species Act

Under the California Endangered Species Act (CESA), the California Department of Fish and Game (CDFG) has the responsibility for maintaining a list of threatened and endangered species (California Fish and Game Code Section 2070). CDFG also maintains a list of “candidate species,” which are species formally noticed as being under review for addition to either the list of endangered species or the list of threatened species. In addition, CDFG maintains lists of “species of special concern,” which serve as “watch lists.” Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present on the project site and determine whether the proposed project could have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any proposed project that may impact a candidate species.

California Native Plant Protection Act

The California Native Plant Protection Act (NPPA) directs CDFG to carry out the legislature’s intent to “preserve, protect, and enhance endangered plants in this state.” The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. The California Endangered Species Act expanded upon the original NPPA and enhanced legal protection for plants. CESA established threatened and endangered species categories, and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, there are three listing categories for plants in California: rare, threatened, and endangered.

California Fish and Game Code

Under the California Fish and Game Code it is unlawful to take, possess or needlessly destroy the nest or eggs of any bird, and the take, possession or destruction of any birds in the orders *Falconiformes* (hawks) or *Strigiformes* (owls) or of their nests and eggs is prohibited. The Fish and Game Code also allows the designation of a species as Fully Protected. This is a greater level of protection than is afforded by the CESAsince such a designation means the listed species cannot be taken at any time. Bats and other non-game mammals are also protected by the Fish and Game Code, which provides that destruction of an occupied, non-breeding bat roost resulting in the death of bats, or disturbance that causes the loss of a maternity colony of bats (resulting in the death of young) is prohibited.

The California Department of Fish and Game (CDFG) exercises jurisdiction over wetland and riparian resources associated with rivers, streams, and lakes under California Fish and Game Code Sections 1600 to 1607. The CDFG has the authority to regulate work that will substantially divert, obstruct, or change the natural flow of a river, stream or lake; substantially change the bed, channel, or bank of a river, stream or lake; or use material from a streambed. The CDFG's jurisdiction along a river, stream, creek or other water body is usually bounded by the top-of-bank or the outermost edges of riparian vegetation.

CDFG is also authorized under the California Fish and Game Code, Sections 1600–1616, to enter into a Streambed Alteration Agreement with applicants and develop mitigation measures when a proposed project would obstruct the flow or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams. The CDFG does not normally assert jurisdiction over wetlands unless they are subject to Streambed Alteration Agreements (California Fish and Game Code Sections 1600–1616) or they support state-listed endangered species, but does provide comments on USACE permit actions under the Fish and Wildlife Coordination Act.

State Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (SWRCB), acting through the nine Regional Water Quality Control Boards, has authority over "waters of the State" under the Porter-Cologne Water Quality Control Act. In creek or river systems, RWQCB takes jurisdiction similar to CDFG, from top of bank to top of bank. The RWQCB also asserts that it has authority over all wetlands, including isolated wetlands.

The SWRCB, acting through the nine Regional Water Quality Control Boards, must also certify that a USACE permit action meets state water quality objectives (CWA, Section 401).

Local Plans and Polices

City of Oakland General Plan

The Open Space, Conservation, and Recreation (OSCAR) Element of the City of Oakland General Plan was adopted in 1996. OSCAR policies pertaining to natural resources with potential relevance to implementation of the proposed Project include the following:

> *Policy CO-6.1*: Protect Oakland's remaining natural creek segments by retaining creek vegetation, maintaining creek setbacks, and controlling bank erosion. Design future flood control projects to preserve the natural character of creeks and incorporate provisions for public access, including trails, where feasible. Strongly discourage projects which bury creeks or divert them into concrete channels.
>
> *Policy CO-7.1*: Protect native plant communities, especially oak woodlands, redwood forests, native perennial grasslands, and riparian woodlands, from the potential adverse impacts of development. Manage development in a way which prevents or mitigates adverse impacts to these communities.

> *Policy CO-7.4*: Discourage the removal of large trees on already developed sites unless removal is required for biological, public safety, or public works reasons.
>
> *Policy CO-8.1*: Work with federal, state, and regional agencies on an ongoing basis to determine mitigation measures for development which could potentially impact wetlands. Strongly discourage development with immitigable adverse impacts.
>
> *Policy CO-9.1*: Protect rare, endangered, and threatened species by conserving and enhancing their habitat and requiring mitigation of potential adverse impacts when development occurs within habitat areas.
>
> *Policy CO-11.1*: Protect wildlife from the hazards of urbanization, including loss of habitat and predation by domestic animals.
>
> *Policy CO-11.2*: Protect and enhance migratory corridors for wildlife. Where such corridors are privately owned, require new development to retain native habitat or take other measures which help sustain local wildlife population and migratory patterns.

The following policy is from the Land Use and Transportation Element:

> *Policy W3.3*: Native plant communities, wildlife habitats, and sensitive habitats should be protected and enhanced.

City of Oakland Tree Protection Ordinance

The City of Oakland Tree Protection Ordinance (Oakland Municipal Code (OMC) Chapter 12.36) applies to the removal of protected trees under certain circumstances. Factors to be considered in determining significance include the number, type, size, location and condition of the protected trees to be removed and/or impacted by construction and the protected trees to remain, with special consideration given to native trees. Protected trees include the following:

- *Quercus agrifolia* (California or coast live oak) measuring four inches diameter at breast height (dbh) or larger, and
- any other tree measuring nine inches dbh or larger except *Eucalyptus* and *Pinus radiata* (Monterey pine); provided, however, that Monterey pine trees on City property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed are considered to be Protected trees.

City of Oakland Creek Ordinance

The City of Oakland's Creek Protection, Storm Water Management, and Discharge Control Ordinance (OMC Chapter 13.16), provides a high level of protection for creeks within Oakland's city limits. The ordinance defines a creek as "…a watercourse that is a naturally occurring swale or depression, or engineered channel that carries fresh or estuarine water either seasonally or year around." In addition, under the ordinance definition, a creek channel must be hydrologically connected to a waterway above or below a project site, and the channel must exhibit a defined bed and bank.

A creek protection permit is required whenever work is to be undertaken on a creekside property. The ordinance prohibits, among other things, the discharge of concentrated stormwater or other modification of the natural flow of water in a watercourse, development within a watercourse or within 20 feet from the top of the bank, and the deposition or removal of any material within a watercourse without a permit. Depending on the type of activity being permitted, conditions of approval may include the submittal of a creek protection plan and/or a hydrology report, revegetation with native plant species, the use of soil bioengineering techniques for bank stabilization and erosion control, and implementation of stormwater quality protection measures. The following activities, among others, are typically not permitted:

- Removal of riparian vegetation;
- Culverting or undergrounding of a creek;
- Moving the location of a creek;
- Structures spanning a creek; and/or
- Riprap, rock gabions, or concrete within the bed or on the creek banks.

Uniformly Applied Development Standards Imposed as Standard Conditions of Approval

The City's Standard Conditions of Approval relevant to biological resources are listed below for reference. If the proposed Project is approved by the City, then all applicable Standard Conditions of Approval would be adopted as conditions of approval and required of the Project to help ensure less-than-significant impacts to biological resources. The Standard Conditions of Approval are incorporated and required as part of the Project, so they are not listed as mitigation measures.

SCA Bio-1: Tree Removal During Breeding Season. To the extent feasible, removal of any tree and/or other vegetation suitable for nesting of raptors shall not occur during the breeding season of December 15 and August 31.

a. If tree removal must occur during the breeding season, all sites shall be surveyed by a qualified biologist to verify the presence or absence of nesting raptors or other birds. Pre-removal surveys shall be conducted within 15 days prior to start of work from December 15 through August 31. The pre-removal surveys shall be submitted to the Planning and Zoning Division and the Tree Services Division of the Public Works Agency.

b. If the survey indicates the potential presences of nesting raptors or other birds, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be determined by the biologist in consultation with the CDFG, and will be based to a large extent on the nesting species and its sensitivity to disturbance. In general, buffer sizes of 200 feet for raptors and 50 feet for other birds should suffice to prevent disturbance to birds nesting in the urban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.

SCA Bio-2: Creek Protection Plan (*Prior to and ongoing throughout demolition, grading, and/or construction activities*):

a. The approved creek protection plan shall be included in the project drawings submitted for a building permit (or other construction-related permit). The project applicant shall implement the creek protection plan to minimize potential impacts to the creek during and after construction of the project. The plan shall fully describe in plan and written form all erosion, sediment, stormwater, and construction management measures to be implemented on-site.

b. If the plan includes a stormwater system, all stormwater outfalls shall include energy dissipation that slows the velocity of the water at the point of outflow to maximize infiltration and minimize erosion. The project shall not result in a substantial increase in stormwater runoff volume or velocity to the creek or storm drains.

SCA Bio-3: Regulatory Permits and Authorizations (*Prior to issuance of a demolition, grading, or building permit within vicinity of the creek)*. Prior to construction within the vicinity of the creek, the project applicant shall obtain all necessary regulatory permits and authorizations from the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), California Department of Fish and Game, and the City of Oakland, and shall comply with all conditions issued by applicable agencies. Required permit approvals and certifications may include, but not be limited to the following:

a. U.S. Army Corps of Engineers (Corps): Section 404. Permit approval from the Corps shall be obtained for the placement of dredge or fill material in Waters of the U.S., if any, within the interior of the project site, pursuant to Section 404 of the federal Clean Water Act.

b. Regional Walter Quality Control Board (RWQCB): Section 401 Water Quality Certification. Certification that the project will not violate state water quality standards is required before the Corps can issue a 404 permit, above.

c. California Department of Fish and Game (CDFG): Section 1602 Lake and Streambed Alteration Agreement. Work that will alter the bed or bank of a stream requires authorization from CDFG.

SCA Bio-4: Creek Monitoring (*Prior to issuance of a demolition, grading, or building permit within vicinity of the creek)*. A qualified geotechnical engineer and/or environmental consultant shall be retained and paid for by the project applicant to make site visits during all grading activities; and as a follow-up, submit to the Building Services Division a letter certifying that the erosion and sedimentation control measures set forth in the Creek Protection Permit submittal material have been instituted during the grading activities.

SCA Bio-5: Creek Landscaping Plan (*Prior to issuance of a demolition, grading, or building permit within vicinity of the creek)*. The project applicant shall develop a final detailed landscaping and irrigation plan for review and approval by the Planning and Zoning Division prepared by a licensed landscape architect or other qualified person. Such a plan shall include a planting schedule, detailing plant types and locations, and a system for temporary irrigation of plantings.

a. Plant and maintain only drought-tolerant plants on the site where appropriate as well as native and riparian plants in and adjacent to riparian corridors. Along the riparian corridor, native plants shall not be disturbed to the maximum extent feasible. Any areas disturbed along the riparian corridor shall be replanted with mature native riparian vegetation and be maintained to ensure survival.

b. All landscaping indicated on the approved landscape plan shall be installed prior to the issuance of a Final inspection of the building permit, unless bonded pursuant to the provisions of Section 17.124.50 of the Oakland Planning Code.

All landscaping areas shown on the approved plans shall be maintained in neat and safe conditions, and all plants shall be maintained in good growing condition and, whenever necessary replaced with new plant materials to ensure continued compliance with all applicable landscaping requirements. All paving or impervious surfaces shall occur only on approved areas.

The following Standard Conditions of Approval were previously identified in Chapter 4.1: Aesthetic Resources, and also pertain to biological resource issues:

SCA Aesth-2: Tree Removal Permit. *Prior to issuance of a demolition, grading, or building permit.* Prior to removal of any protected trees, per the Protected Tree Ordinance, located on the project site or in the public right-of-way adjacent to the project, the project applicant must secure a tree removal permit from the Tree Division of the Public Works Agency, and abide by the conditions of that permit.

SCA Aesth-3: Tree Replacement Plantings. *Prior to issuance of a final inspection of the building permit.* Replacement plantings shall be required for erosion control, groundwater replenishment, visual screening and wildlife habitat, and in order to prevent excessive loss of shade, in accordance with the following criteria:

a. No tree replacement shall be required for the removal of nonnative species, for the removal of trees which is required for the benefit of remaining trees, or where insufficient planting area exists for a mature tree of the species being considered.

b. Replacement tree species shall consist of Sequoia sempervirens (Coast Redwood), Quercus agrifolia (Coast Live Oak), Arbutus menziesii (Madrone), Aesculus californica (California

Buckeye) or Umbellularia californica (California Bay Laurel) or other tree species acceptable to the Tree Services Division.

c. Replacement trees shall be at least of twenty-four (24) inch box size, unless a smaller size is recommended by the arborist, except that three fifteen (15) gallon size trees may be substituted for each twenty-four (24) inch box size tree where appropriate.

d. Minimum planting areas must be available on site as follows:

    i. For Sequoia sempervirens, three hundred fifteen square feet per tree;

    ii. For all other species listed in #2 above, seven hundred (700) square feet per tree.

e. In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee as determined by the master fee schedule of the city may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians.

f. Plantings shall be installed prior to the issuance of a final inspection of the building permit, subject to seasonal constraints, and shall be maintained by the project applicant until established. The Tree Reviewer of the Tree Division of the Public Works Agency may require a landscape plan showing the replacement planting and the method of irrigation. Any replacement planting which fails to become established within one year of planting shall be replanted at the project applicant's expense.

SCA Aesth-4: Tree Protection During Construction. *Prior to issuance of a demolition, grading, or building permit.* Adequate protection shall be provided during the construction period for any trees which are to remain standing, including the following, plus any recommendations of an arborist:

a. Before the start of any clearing, excavation, construction or other work on the site, every protected tree deemed to be potentially endangered by said site work shall be securely fenced off at a distance from the base of the tree to be determined by the City Tree Reviewer. Such fences shall remain in place for duration of all such work. All trees to be removed shall be clearly marked. A scheme shall be established for the removal and disposal of logs, brush, earth and other debris which will avoid injury to any protected tree.

b. Where proposed development or other site work is to encroach upon the protected perimeter of any protected tree, special measures shall be incorporated to allow the roots to breathe and obtain water and nutrients. Any excavation, cutting, filing, or compaction of the existing ground surface within the protected perimeter shall be minimized. No change in existing ground level shall occur within a distance to be determined by the City Tree Reviewer from the base of any protected tree at any time. No burning or use of equipment with an open flame shall occur near or within the protected perimeter of any protected tree.

c. No storage or dumping of oil, gas, chemicals, or other substances that may be harmful to trees shall occur within the distance to be determined by the Tree Reviewer from the base of any protected trees, or any other location on the site from which such substances might enter the protected perimeter. No heavy construction equipment or construction materials shall be operated or stored within a distance from the base of any protected trees to be determined by the tree reviewer. Wires, ropes, or other devices shall not be attached to any protected tree, except as needed for support of the tree. No sign, other than a tag showing the botanical classification, shall be attached to any protected tree.

d. Periodically during construction, the leaves of protected trees shall be thoroughly sprayed with water to prevent buildup of dust and other pollution that would inhibit leaf transpiration.

e. If any damage to a protected tree should occur during or as a result of work on the site, the project applicant shall immediately notify the Public Works Agency of such damage. If, in the professional opinion of the Tree Reviewer, such tree cannot be preserved in a healthy state, the

Tree Reviewer shall require replacement of any tree removed with another tree or trees on the same site deemed adequate by the Tree Reviewer to compensate for the loss of the tree that is removed.

f. All debris created as a result of any tree removal work shall be removed by the project applicant from the property within two weeks of debris creation, and such debris shall be properly disposed of by the project applicant in accordance with all applicable laws, ordinances, and regulations.

Impacts, Standard Conditions of Approval and Mitigation Measures

Criteria of Significance

The Project would result in a significant impact related to biological resources if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service;
3. Have a substantial adverse effect on federally protected wetlands (as defined by Section 404 of the Clean Water Act) or state protected wetlands, through direct removal, filling, hydrological interruption, or other means;
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
5. Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan;
6. Fundamentally conflict with the City of Oakland Tree Protection Ordinance (Oakland Municipal Code (OMC) Chapter 12.36) by removal of protected trees under certain circumstances. Factors to be considered in determining significance include:
    a. The number, type, size, location and condition of (a) the protected trees to be removed and/or impacted by construction and (b) the protected trees to remain, with special consideration given to native trees.[2]
    b. Protected trees include the following: *Quercus agrifolia* (California or coast live oak) measuring four inches diameter at breast height (dbh) or larger, and any other tree measuring nine inches dbh or larger except eucalyptus and *pinus radiata* (Monterey pine); provided, however, that Monterey pine trees on City property and in development-related situations where more than five Monterey pine trees per acre are proposed to be removed are considered to be Protected trees.

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[2] Oakland Planning Code section 17.158.280E2 states that "Development related" tree removal permits are exempt from CEQA if no single tree to be removed has a dbh of 36 inches or greater **and** the cumulative trunk area of all trees to be removed does not exceed 0.1 percent of the total lot area.

7. Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect biological resources. Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of riparian and aquatic habitat through:

    a. discharging a substantial amount of pollutants into a creek;

    b. significantly modifying the natural flow of the water;

    c. depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability; or

    d. adversely impacting the riparian corridor by significantly altering vegetation or wildlife habitat.

Special Status Species and Habitat

Impact Bio-1: Large trees and buildings within the Project site and its immediate vicinity provide potential nesting habitat for birds and roosting habitat for bats, which could be disturbed during construction. Additionally, the quarry pond adjacent to the Project site provides marginally suitable aquatic habitat for the western pond turtle and if present, pond turtles could be adversely affected by Project construction activities. (**LTS with SCA and Mitigation Measures**)

Species protected by the federal and State endangered species acts are not expected to occur on the Project site. Special-status plants are not expected based on a lack of suitable habitat or are presumed absent. The quarry pond and surrounding vegetation provides some habitat value to water birds, nesting birds, roosting bats and potentially western pond turtle. Work in the vicinity of the quarry pond would take place in the shopping center parking lot and includes landscape and hardscape improvements at the ridge of the quarry pond's western slope. The quarry pond is not part of the Project site and no work will occur in or on the pond itself.

Avian Habitat

Common water birds have potential to occur within the quarry pond in the Study Area and may nest in surrounding upland vegetation. The eucalyptus woodland provides potential nesting habitat for communally nesting species such as great blue heron and egrets which are common in the Bay Area, even in urbanized landscapes when aquatic habitats are adjacent. Mallards and coots which were observed during the site visit may nest in ruderal upland habitats.

The large trees within eucalyptus woodlands near the quarry pond provide potential nesting habitat for common and special-status raptors. These species are well adapted to nesting in urban environments, and a Cooper's hawk nest is recently recorded from Downtown Oakland in the vicinity of Lake Merritt (CDFG 2009). The ruderal and landscaped habitats provide foraging opportunities as small mammals and birds are likely present. A red-tailed hawk was observed flying over the quarry pond during the site visit. Short-eared owls and northern harrier are not expected to occur due to a lack of open habitat for foraging and nesting.

Given the diversity of nest sites utilized by perching birds, including many anthropogenic structures, suitable nesting and foraging habitat for commonly occurring passerines occurs within all habitats in the study area with the exception of paved ground. Abandoned and actively used buildings are often utilized by swallows for nesting especially near water sources such as the quarry pond. Ornamental trees and shrubs as well as the eucalyptus woodland provide cover and substrate for nesting that can be a limiting factor in urbanized areas. Special-status passerines such as Alameda song sparrow (*Melospiza melodia* *pusillula*), a California Species of Special Concern, are not expected to occur on site due to the urbanized nature and lack of occurrences in the immediate vicinity.

Standard Conditions of Approval

Implementation of Standard Conditions of Approval Bio-1 requires nesting surveys if tree removal is to occur during the breeding season, and establishment of buffers around any identified active nests of raptors or other birds. If approved, the Project would be required to comply with Standard Condition of Approval Bio-1, and implementation of SCA Bio-1 will ensure that potential nesting habitat would not be disturbed during construction and would remain at a level of less than significant.

Bats

Buildings within the shopping center provide potential roost sites, although their active use reduces the potential for bats to be present. The large trees within the eucalyptus woodland also provide cover for use as roosting habitat and the quarry pond provides foraging opportunities for bat species if they occur in the area. Since occurrences in the vicinity are dated and the site is highly disturbed by human activity, sensitive bat species are considered to have a low potential to occur in the study area.

Standard Conditions of Approval

The potential for take of protected bat species would be reduced through implementation of the requirements found in SCA Bio-1. To further implement SCA Bio-1, the following recommendation from the consulting biologist shall be implemented:

> **SCA Implementation: Roosting Bat Survey.** A pre-construction survey for roosting bats shall be performed by a qualified biologist within 30 days prior to any removal of trees or structures on the Project site. If no active roosts are found, then no further action would be warranted. If either a maternity roost or hibernacula (structures used by bats for hibernation) is present, the following minimization measures shall be implemented:
>
> a. If active maternity roosts or hibernacula are found in trees or structures which will be removed as part of Project construction, the Project should be redesigned to avoid the loss of the tree or structure occupied by the roost to the extent feasible. If an active maternity roost is located and the Project cannot be redesigned to avoid removal of the occupied tree or structure, demolition can commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). Disturbance-free buffer zones as determined by a qualified biologist in coordination with CDFG should be observed during the maternity roost season (March 1 through July 31).
>
> b. If a non-breeding bat hibernacula is found in a tree or structure scheduled for removal, the individuals should be safely evicted, under the direction of a qualified biologist (as determined by a memorandum of understanding [MOU] with CDFG), by opening the roosting area to allow air flow through the cavity. Demolition can then follow at least one night after initial disturbance for airflow. This action should allow bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees or structures with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.

If approved, the Project would be required to comply with Standard Condition of Approval Bio-1, including the biologist's implementation recommendations for roosting bat surveys identified above. Implementation of SCA Bio-1, including the implementation recommendations of the biologist, would reduce potential impacts to bats and their habitat to a level of less than significant.

Western Pond Turtle

The quarry pond adjacent to the Project site provides marginally suitable aquatic habitat for the western pond turtle. The closest occurrence of this species, which can inhabit waterways that are manmade and disturbed by human activity, is from Lake Temescal, just over a mile north of the site. The date of the sighting is unknown, and is based on a museum record (CDFG 2009). Pond turtles require haul out areas for basking. The quarry pond does not provide adequate basking sites due to steep banks as well as the absence of floating debris such as logs or aquatic vegetation. Surrounding uplands are well shaded, which is not optimal for turtles. The only upland area which is potentially suitable for use by turtles, and may allow them to bask, is the ruderal habitat on the eastern bank of the quarry pond, when water levels are low and the slope may be more gradual. At the time of the site visit, the water level was so high that this area was submerged and the narrow band of open vegetation would have been inaccessible due to steep banks. The quarry pond itself is adequate as aquatic habitat since water is present year round and fish and invertebrates are likely available as a food source. Based on the poor quality of the surrounding upland habitat and limited basking opportunities, western pond turtle are considered to have a low potential to occur on site.

Mitigation Measures

Although there is a low potential for western pond turtles to occur at the site, the following mitigation measures shall be implemented to reduce potential impacts to western pond turtle, should they occur:

Mitigation Measure Bio-1a: Western Pond Turtle Surveys: A western pond turtle survey should be conducted by a qualified biologist within two weeks prior to any disturbance or removal of upland vegetation around the quarry pond. If a turtle is found, it should be relocated out of harm's way in coordination with CDFG.

a) If any turtles are encountered within the construction zone during construction, all work shall halt until the qualified biologist has determined whether it is a western pond turtle or some other species. If it is not a western pond turtle, work may continue.

b) If a western pond turtle is found, the CDFG shall be notified regarding the presence of the western pond turtle and all work shall stop until additional exclusion measures have been defined and authorization to proceed is obtained from the CDFG. No person shall handle or otherwise harass any individual western pond turtle encountered during construction, with the exception of handling by the qualified biologist. A plan shall be developed in consultation with the CDFG to relocate the western pond turtle individuals to the nearest protected habitat outside the construction zone and to provide necessary on-site construction avoidance measures to prevent inadvertent take of this species.

Mitigation Measure Bio-1b: Contractor Awareness. Contractor education should be conducted to make workers aware of measures being taken to protect resources on the site and to contribute to increased vigilance during their work. Before initiation of construction activities within close proximity to the quarry pond, all construction workers shall be trained by the qualified biologist regarding the potential presence of western pond turtle and the fact that this species is to be avoided, and if any turtles are seen, the job foreman must be notified and construction shall be halted until appropriate measures have been taken.

Implementation of Mitigation Measures Bio-1a and -1b above would reduce potential impacts to western pond turtles to a level of less than significant.

Wetlands, Riparian Habitat and Sensitive Natural Communities

Impact Bio-2: No wetlands or sensitive natural communities are present at the Project site such that they would be disturbed by Project construction or operation. However, landscape improvements at the edge of the Project site have the potential to adversely affect off-site wetland, riparian and sensitive natural communities. (**LTS with SCA**)

Aquatic resources including riparian areas, wetlands and certain aquatic vegetation communities are considered sensitive biological resources and can fall under the jurisdiction of several regulatory agencies. Any Project modifications to these features would likely require permits and regulatory approvals from USACE, CDFG and RWQCB.

The Project site is located in an urbanized area that has supported commercial uses for many years. No riparian habitat or sensitive natural communities are present at the Project site. However, potentially federal and State jurisdictional waters are located within the immediate vicinity of the Project site, including the day-lighted section of the Rockridge Branch of Glen Echo Creek (0.13 acre) and the quarry pond (5.23 acres), both un-vegetated waters. These off-site features are expected to fall under the jurisdiction of CDFG and the RWQCB (portions of the slope down to the quarry pond below top-of-bank), and the USACE (below ordinary high water mark).

The Project does not propose to conduct any construction or grading within the day-lighted section of the Rockridge Branch of Glen Echo creek or the quarry pond, nor is any construction proposed within the area below the top of bank, which generally coincides with the location of the existing fencing along the current parking area. However, the Project does include proposed landscape improvements and a pedestrian path along the edge of the Project site nearest to the quarry pond to improve aesthetics. Portions of this landscaping and path are within 20 feet of the top of bank.

Standard Conditions of Approval

Implementation of Standard Conditions of Approval Bio-2 through Bio-5 requires that those portions of the landscaping and path that fall within 20 feet of the top of bank obtain approval of a City of Oakland Category IV Creek Protection permit (see further discussion below). Pursuant to the required Creek Protection permit, the Project applicant will be required to submit an Erosion and Sedimentation Control Plan, a Creek Protection Plan and a detailed Landscape Plan; to obtain all regulatory permits and authorizations; and to provide for an on-site monitor during construction to ensure compliance with all applicable Best Management Practices (BMPs). Compliance with the requirements of the City's Creek Protection permit through compliance with SCA Bio-2 through -5 would ensure that the Project would not adversely affect off-site wetlands, riparian habitat and sensitive natural communities.

Additional Permit Requirements

To the extent that details of the Landscape Plan and Creek Protection Plan ultimately approved by the City indicate that any landscape or erosion control work may occur on those portions of the slope below the top of existing bank, these plans would likely be required to also obtain approval of a Streambed Alteration Agreement from the CDFG, and a 401 permit certification from the RWQCB.

Provided that such landscaping plans do not include work in any areas below the ordinary high water mark of the day-lighted section of the Rockridge Branch of Glen Echo creek or the quarry pond, no federal (i.e., USACE) jurisdiction would be affected.

With implementation of Standard Conditions of Approval, the Project will comply with the requirements of the City's Creek Protection Permit and other jurisdictional requirements (as may be applicable), and such compliance will ensure that no potential impacts to wetlands or sensitive natural communities would occur.

Mitigation Measures

None required

Wildlife Movement/Nursery Sites

Impact Bio-3: Redevelopment of the Project site as proposed would not adversely affect wildlife movement or nursery sites. (**No Impact**)

The Project site is located in an urbanized area that has supported commercial uses for more than 40 years. There are no wildlife movement corridors passing through the Project site, and the site is not used as a wildlife nursery.

Mitigation Measures

None required

Habitat Conservation Plans/Natural Community Conservation Plans

Impact Bio-4: Redevelopment of the Project site as proposed would not fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan. (**No Impact**)

No habitat conservation plans or natural community conservation plans are currently in force at the Project site or in the vicinity of the Project site.

Mitigation Measures

None required

Compliance with Oakland Tree Protection Ordinance

Impact Bio-5: Redevelopment of the Project site as proposed would result in removal of four (4) "protected trees" to accommodate new buildings, six (6) protected trees within roadway medians, and two (2) non-protected Monterey pines for improved access to the adjacent quarry pond. Compliance with the provisions of the Oakland Tree Protection Ordinance pursuant to City of Oakland Standard Conditions of Approval would reduce impacts of these tree removals to a level of less than significant. (**LTS with SCA**)

According to the Landscape Plans prepared for the Project, four on-site protected trees, six protected trees within roadway medians, and two non-protected Monterey pines are proposed for removal. Within the site, the following four (4) trees are proposed to be removed in order to accommodate proposed new buildings:

- tree #581, a mature Chinese elm (Ulmus parvifolia) with a total trunk diameter at breast height (dbh) of 12", in good condition located along Broadway near Pleasant Valley Avenue,
- tree #582, a mature Chinese elm (Ulmus parvifolia) with a total trunk diameter at breast height (dbh) of nearly 12", in moderate condition located along Pleasant Valley Avenue,
- tree #590, a mature bronze loquat (Eriobotrya deflexa) with a total trunk diameter of 16.6" dbh, in good condition currently located between and to the rear of the current CVS store and the adjacent building 5, and

- tree #595, a mature olive tree (Olea europaea) with a total trunk diameter of 14.4” dbh, in good condition located along Broadway near the Coronado Drive intersection.

As part of the proposed Project, existing medians within Pleasant Valley Avenue and Broadway adjacent to the Project site are proposed for reconstruction to accommodate turn lanes and other roadway geometries. There are six (6) California sycamore trees, each at least 9-inches in diameter, that would specifically need to be removed in order to accommodate this roadway median work. Three (3) other median trees, also California sycamores, are in immediate proximity to the identified median work and may need to be removed pending final roadway designs.

Additionally, two (2) Monterey pines (Pinus radiate) located along the edge of the Project site near the quarry pond (just north of the new AAA building) would also be removed.[3]

All of the other 18 protected trees on the Project site and within the medians would be retained as part of the Project landscape plan. Additionally, a large number of existing trees which are not large enough to be considered protected trees under the ordinance would also be retained.

The Landscape Plan shows that approximately 90 new trees (a variety of Green Vase Zelkova, London plane, Monterey pine, olive, pear and Magnolia) would be planted throughout the site including within the parking lots, along the Pleasant Valley Road and Broadway frontages and along the edge of the site near the quarry pond.

Standard Conditions of Approval

Compliance with City of Oakland Standard Conditions of Approval to obtain a tree removal permit prior to removal of any “protected trees”(SCA Aesth-2), the requirements for the provision of replacement trees (SCA Aesth-3) and provisions for the protection of trees to remain during construction activities (SCA Aesth-4) would ensure that any potential tree removal necessary for Project construction would be conducted in compliance with City ordinances and regulations, thereby ensuring that this impact remains at a level of less than significant.

Mitigation Measures

None required

Compliance with Oakland Creek Protection Ordinance

Impact Bio-6: Although the proposed Project would be subject to the provisions of the City of Oakland Creek Protection Ordinance, there is nothing about the Project that would fundamentally conflict with elements of the ordinance intended to protect biological resources. The Project would not discharge a substantial amount of pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it adversely impact a riparian corridor by significantly altering vegetation or wildlife habitat. (**LTS with SCA**)

Based on review of the proposed Project’s site plan, no development or work is proposed within the daylighted section of the Rockridge branch of Glen Echo creek or on the downside slope of the quarry

[3] Monterey pines are only considered protected on City property in development situations involving the proposed removal of more than 5 Monterey pines per acre. Although the Monterey pines within this Project area are not protected, if they are to be removed written notice and public posting of these trees is required by the code and therefore the trees are included in this inventory.

pond. However, the area adjacent to the quarry pond is proposed for amenity improvements including new landscaping and a pedestrian path. Portions of this landscaping and trail are within 20 feet of the top of bank and would thus qualify for a Category IV Creek Protection permit (see Figure 4.8-4 In Chapter 4.8, Hydrology and Water Quality.

Potential Conflicts with the Ordinance

The detailed elements of the appropriate Creek Protection Permit will be required pursuant to subsequent submittals for the Project, as required by SCA Bio-2, -3, -4 and -5. For purposes of this CEQA analysis, the question is whether the proposed Project would fundamentally conflict with elements of the ordinance intended to protect biological resources. These fundamental elements of the ordinance are addressed below.

Would the Project discharge a substantial amount of pollutants into the creek or watercourse?

- The hardscape portions of the trail and small gazebo sites are pitched such that they drain westerly back toward the parking lot rather than eastward toward the quarry pond. Thus, stormwater runoff potentially carrying pollutants from the trail will not discharge toward the quarry pond or the creek.

Would the Project significantly modify the natural flow of water?

- Since no development or work is proposed within the daylighted section of the Rockridge branch of Glen Echo creek or on the downside slope of the quarry pond, the Project would not significantly modify the natural flow of water within the creek or the quarry pond.

Would the Project deposit substantial amounts of new material into the creek or cause substantial bank erosion or instability?

- Pursuant to SCA Hydro-5 and Bio-2 through Bio-5, the Project applicant will be required to submit an Erosion and Sedimentation Control Plan, a Creek Protection Plan and a detailed Landscape Plan, obtain all regulatory permits and authorizations, and provide for an on-site monitor during construction to ensure compliance with all applicable Best Management Practices (BMPs) to avoid and reduce the potential for dust, erosion and sedimentation. Compliance with these plans would ensure that the Project would not deposit a substantial amount of new material into the quarry pond or cause substantial bank erosion.

Would the Project adversely impact a riparian corridor by significantly altering vegetation or wildlife habitat?

- The proposed pedestrian trail is located on land which is currently paved and used as a parking lot, and the trail will be separated from the steep banks of the quarry pond by a tall wrought-iron fence. Thus, construction of the trail will not alter nor endanger any existing riparian vegetation or habitat.

With implementation of Standard Conditions of Approval, the Project will comply with the requirements of the City's Creek Protection Permit and will not fundamentally conflict with those elements of the Creek Protection Ordinance intended to protect biological resources.

Mitigation Measures

None required

Cumulative Biological Resources Impacts

Cumulative Impact Bio-7: The Project would not result in a significant cumulative impact on biological resources. (**LTS**)

The Project vicinity is largely developed. None of the projects on the City's Major Projects list are near the Project site. There are no other projects in the vicinity that would, in combination with the Project, cause significant cumulative impacts on biological resources.

Mitigation Measures

None required

4.4

Cultural Resources

This chapter of the EIR provides a description of the historic setting of the Project site and its surroundings, as well as an assessment of the potential impacts that demolition of the existing shopping center and development of a new shopping center at the Project site would have on historic resources.

Physical Setting

Historic Setting of the Project Site

Prior Quarry Operations

The Project site sits at the location of an old rock quarry originally established in the late 1800s. As indicated in the City of Oakland's Open Space, Conservation and Recreation Element of the General Plan, "[Mineral] deposits between Claremont Canyon and the San Leandro border were especially important to the City's early development. For years these volcanic rocks were mined in quarries and open pits in the East Bay, providing material for road base, paving, curbs and foundation stone." [1]

According to the book: *Rockridge, Images of America* by Robin and Tom Wolf: [2]

> *"The area that has become known as Rockridge was open land lying just east of an Ohlone Indian settlement on Temescal Creek. On Vicente Peralta's rancho, cattle grazed along creek paths that in the future would become Broadway Terrace and Highway 24. Starting with the gold rush, squatters founded Oakland, Peralta's rancho was squeezed into a small area, the railroad boosted Oakland, and the outlying areas of Rockridge became the site of a gravel quarry, cemeteries, the estates of mining tycoons, and a scattering of farms.*
>
> *Some say the name Rock Ridge (then two words) was inspired by the rock quarry then operated by the Oakland Paving Company, which was located at the end of a rocky ridge that ran through the hills. . . "*
>
> *[This quarry,] later known as Bilger Quarry, was a major employer in Rockridge in the second half of the 19th century. At its height, the quarry employed over 200 workers. An on-site dormitory was operated by the quarry, housing approximately 125 workers, most of whom were recent immigrants from Italy. The dormitory organized bocce ball teams that represented the villages in Italy from which the workers came. . . Weekend picnicking at the quarry was a popular pastime of quarry worker families."*

This quarry described above is the where the Project site is located, and the current shopping center sits at the base of the prior quarry operation. The quarry was operated under several ownerships from the 1870's

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[1] City of Oakland, *Open Space, Conservation and Recreation Element* (OSCAR) of the General Plan

[2] *Rockridge, Images of America*. Robin and Tom Wolf, published by Arcadia Publishing, copyright 2007

to 1957, when it was permanently closed. The previous quarry walls are still quite visible, as shown in the photograph on **Figure 4.4-1**.

In recognition of the Bilger Quarry site's importance in Oakland's early development, the quarry property (more specifically shown on the Oakland Cultural Heritage Survey as the quarry pond) is designated as a C3 resource (not a designated historic property, but a property of secondary importance not included within an Area of Primary Importance). For purposes of environmental review under CEQA, only those properties designated as Historic Properties, properties designated as Potential Designated Historic Properties (PDHPs) that have an existing rating of "A" or "B" or are located within an Area of Primary Importance, Oakland Landmarks, S-7 Preservation Combining Zone properties, and Preservation Study List properties are considered historic resources.

Existing Shopping Center

In 1964 and 1965, the six buildings that make up the existing shopping center were constructed on the Project site. Since these buildings are not over 50 years old, they do not meet the criteria for designation as an historic resource. Further, these buildings are not associated with events or patterns of events that have made a significant contribution to the broad patterns of local and regional history; they are not associated with the lives of persons important to the nation or to California's past; they do not embody distinctive characteristics of a type, period, region, or method of construction, or represent the work of a master, or possesses high artistic values; nor do these buildings have the potential to yield information important to the prehistory or history of the State or the nation.

No individual structures at the Project site have been listed on, or been determined to be eligible for listing in the National Register of Historic Places or the California Register of Historical Resources, and no existing buildings within the Project site are designated under the Oakland Cultural Heritage Survey as landmarks or Potentially Designated Historic Properties.

Surrounding Historic Resources

Although the Project site and its existing structures are not considered historic resources under CEQA, there are historic resources within the general vicinity.

Nearby Landmarks

Treadwell Mansion

On the property to the immediate north of the Project site at the California College of Arts (5200 Broadway) is the Treadwell Mansion and Stable. This building is an Oakland Landmark and listed on the National Register of Historic Places and the California Register of Historical Resources. The building was constructed in the 1880's (estimated) as the home of John and James Treadwell, owners of the Tesla coal mine in eastern Alameda County. As shown on **Figure 4.4-1**, it is a Stick-Eastlake house and stable. The Stick-Eastlake style was popular in the late 19th century as highly stylized and decorative versions of the Stick style, but there are relatively few surviving examples of this style when compared to other more popular styles of Victorian architecture. The building is important for its architectural style and the age of its construction, as well as its association with the California College of the Arts (see discussion under Areas of Primary Importance, below).

Oakland Technical High School

The Oakland Technical High School main building, which was built in 1914, was declared an Oakland Landmark by the city of Oakland in 1985 and was nominated for the National Register of Historic Places in 1986. The building (see also **Figure 4.4-2**) is located on Broadway between 42nd and 45th Streets, approximately 1½ blocks southwest of the Project site. Designed by City Architect John J. Donovan, who also designed the Oakland City Hall and Oakland Municipal Auditorium, the building's architectural style is "stripped classical with Viennese Secessionist overtones. The historic main classroom and auditorium building is reinforced concrete trimmed with polychrome terra cotta. The entire Broadway façade, about 600 feet long, is screened with two-story engaged columns alternating with tall, three-part windows." [3]

During the 1970s, the main building was seismically reinforced within its interior while its historic exterior was preserved. The school is owned by the Oakland Unified School District and still operated as a public high school.

Nearby Areas of Primary Importance (API)

Under the City of Oakland Historic Preservation Element, an Area of Primary Importance (API) is defined as "A historically or visually cohesive area or property group identified by the Reconnaissance or Intensive Surveys which usually contains a high proportion of individual properties with ratings of "C" or higher. At least two-thirds of the properties within an API must be contributory to the API (i.e., the must reflect the API's principal historical or architectural themes). APIs appear eligible for the National Register of Historic Places either as districts or as historically-related complexes."[4] As shown on **Figure 4.4-3,** there are a number of APIs within the Project site vicinity.

California College of the Arts API [5]

Frederick Meyer, a cabinetmaker from Germany, came to live in the Bay Area in 1902. He established a cabinet shop and taught at the Mark Hopkins Institute of Art. In 1907, Meyer founded the California College of the Arts in Berkeley to provide an education for artists and designers that would integrate both theory and practice in the emerging Arts and Crafts movement. In 1922 Meyer bought the four-acre James Treadwell estate at Broadway and College Avenue in Oakland and transformed the buildings and grounds into a college campus. In 1936 the school was renamed the California College of Arts and Crafts. Meyer remained president until his retirement in 1944.

After World War II, new programs were added such as wood design, glass, interior architecture, and film/TV, evolving in response to new technologies and changes in the art world. In response to increasing enrollment, the campus expanded after World War II to include the Martinez Hall for painting and printmaking, the Treadwell Ceramic Arts Center, and Founder's Hall. Several gallery spaces host faculty and student exhibitions and reviews. In 2003, in recognition of the institution's growth and the broadening of its focus and offerings, the college changed its name back to the California College of the Arts, and is an internationally respected institution.

[3] City of Oakland, Oakland Cultural Heritage Survey, 1985

[4] City of Oakland, Historic Preservation Element, Appendix A: Definitions

[5] California College of the Arts, http://www.cca.edu/about/history

Remains of Bilger Quarry Walls

California College of Arts - Treadwell Mansion

Figure 4.4-1
Historic Resources in the Vicinity

Sources: http://oaklandgeology.wordpress.com/2008/03/10/rockridge-shopping-center-quarry and http://en.wikipedia.org/wiki/File:Treadwell_Mansion_%28Oakland,_CA%29.JPG

Oakland Technical High School

Chapel of the Chimes

Figure 4.4-2
Historic Resources in the Vicinity

Sources: http://en.wikipedia.org/wiki/Oakland_Technical_High_School and http://www.bluffton.edu/~sullivanm/jmchimes/jmchimes.html

Figure 4.4-3
Historic Area of Importance in the Vicinity

Source: OCHS

Mountain View Cemetery/Chapel of the Chimes API

St. Mary's Cemetery opened in 1863 at the end of what is now Howe Street, and Mountain View Cemetery opened at the head of Piedmont Avenue in 1865, replacing Oakland's original downtown cemetery. St. Mary's was one of the very first cemeteries established in Oakland, located in what was then the outskirts of the City. Originally established to meet the needs of St. Mary's parish, the cemetery grew to its present 42-acre property. The Mountain View Cemetery is a large 226-acre cemetery designed by Frederick Law Olmsted. Olmsted's design draws upon the concepts of American Transcendentalism, integrated Parisian grand monuments and broad avenues. Many of California's important historical figures, drawn by Olmsted's reputation, are buried here. Both of these cemeteries are encompassed in the probable National Register quality Mountain View Cemetery-Chapel of the Chimes historic district.

Adjoining Mountain View Cemetery is the Chapel of the Chimes, located at 4499 Piedmont Avenue. Originally known as the California Crematorium and Columbarium, the OCHS describes this building as follows:

> *"This building is an outstanding example of a Romanesque revival funerary building. Its present form dates from 1927, architect Julia Morgan and builder Conner and Conner. The building is a 1 and 2-story structure with multiple low-gabled tile roofs at several levels, large round-arch windows with cast concrete tracery, and a pyramid-roofed bell tower with open arches. The 1920s building visible from the street incorporates a 1909 building at its center and has numerous rear additions from the 1940-90s, all with distinctive period interiors. The architect, Julia Morgan was California's first licensed woman architect, trained at UC and the Ecole de Beaux Arts. Her large San Francisco firm produced some 800 buildings over a 50-year career, with emphasis on institutional and residential buildings."* [6]

The OCHS rates the Chapel of the Chimes property A1+ (of highest importance) for its design quality and materials and type/style, its historical associations, and designer. It is a primary contributor to the Mountain View Cemetery-Chapel of the Chimes historic district. The building (see **Figure 4.4-2**) appears individually eligible for the National Register of Historic Places.

Mountain View Cemetery Support API

With the opening of the Mountain View and St. Mary's cemeteries, the blocks closest to the gates of the cemetery almost immediately attracted monument shops and residents who worked at the cemetery, as well as several plant nurseries, and other businesses reliant on cemetery trades and customers. This cluster of cemetery-related business occurred at the end of Piedmont Avenue and the adjacent Howe Street. Because of their historical connections to the cemeteries, this area is delineated as a support area to the Mountain View/Chapel of the Chimes API.

The Mountain View Cemetery Support District is a historically related early 20th century mixed-use and commercial district of approximately 19 buildings on part of three blocks lining the Piedmont Avenue approach to Mountain View Cemetery. Buildings within the district are varied in size, age and design, with most buildings dating from the 1900s – 90s. The main property type is early-20th century commercial building, but it also includes period revival funerary buildings and 19th and early 20th century housing. Individual contributors to this district include:

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[6] City of Oakland, Oakland Cultural Heritage Survey, DPR Form 523, 1996

- 4460-64 Howe Street, built as the home of Angus and Mary McIsaacs (superintendent of St. Mary's Cemetery) in 1898. It is a representative example of a 19th century vernacular housing, with an OCHS rating of C2+, particularly for its historical associations, and a primary contributor to the district
- 4466 Howe Street, a 20th century vernacular Craftsman housing, with an OCHS rating of Ed2-
- 4449 Piedmont, an early 20th century vernacular "airplane" bungalow, with an OCHS rating of D2-
- 4455 Piedmont Avenue, an early 20th century utilitarian industrial building (Amador Marble Company) with an OCHS rating of B-2+ (front) and C2+ (rear)
- Other contributors include the brick building at 4460 Piedmont built as a Jewish mortuary in 1925, the early 20th century Payne Monument Shop at 4468 Piedmont.

The Mountain View Cemetery Support District is a separate commercial support district to the cemeteries, with a very distinctive character but probably only enough integrity (physical intactness) to be a locally significant district (an API). [7]

Oakland Cremation Association/Chapel of Memories

The Oakland Cremation Association was established in 1902 by Mr. Frank Crawford, and originally included a crematorium and a columbarium. While the Columbarium still stands (with several additions), the Crematorium, which stood at Pleasant Valley and Montgomery, was demolished in 1992.

The Chapel of Memories Columbarium is rated in the OCHS as B+1+, and appears to be individually eligible for listing on the National Register and City Landmark designations.

Other Historic Resources

Archaeological Resources [8]

The East Bay's earliest known inhabitants were aboriginals usually called Ohlones, sometimes Costanoans. Huge shellmounds left by these peoples were once near the mouth of Temescal Creek in Emeryville and on the shores of Brooklyn Basin in what is now the Oakland Estuary. The Ohlones inhabited the area which is now Oakland for at least 3,500 years. At the time of Spanish settlement of the area, there were probably four or five Ohlone villages, all traces of which have long since disappeared, but which may exist as archaeological sites. Three of these villages are believed to have been located in the vicinity of 51st and Telegraph, Trestle Glen, and Holy Names College. The village is believed to have been located in the vicinity of 51st and Telegraph, approximately 0.6 miles west of the Project site.

Spanish Land Grant

In 1820, during California's period of Spanish rule, the Spanish governor of California granted nearly 45,000 acres of land (in what are now the cities of San Leandro, Oakland, Alameda, Emeryville, Piedmont, Berkeley, and Albany) to Don Luis Maria Peralta, a sergeant in the Spanish Army. Peralta divided up the grant among his sons, giving his son Jose Vicente Peralta land that includes present day Rockridge. Vicente built his adobe on Temescal Creek on what is now Vicente Street, approximately 0.7 miles northwest of the Project site.

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[7] City of Oakland, Oakland Cultural Heritage Survey

[8] City of Oakland, Historic Preservation Element, Introduction

Oakland's Northward Development

During the period from 1852 to 1897 and through to the 1920s, several events occurred which gave rise to a northerly expansion of the original City of Oakland. In 1860 a telegraph line and road was constructed from Oakland to Sacramento along the route that is now Telegraph Avenue. In 1869, the first transcontinental railroad was completed, with Oakland selected as the western-most terminus. In 1873 a horse car line was constructed along what is now Telegraph Avenue, connecting Oakland to the College of California (now the University of California in Berkeley). In 1903, most of the independent streetcar and electric train lines throughout Oakland were consolidated into the Key Route, which ran along Telegraph Avenue with separate streetcar lines that connected the Key Route into the upper Oakland Hills area. After the 1906 earthquake, many San Franciscans decided to move east to Oakland, resulting in a significant population growth period. Each of these events and developments gave rise to a northward expansion of the City of Oakland, which primarily occurred along the alignments of Telegraph Avenue and Broadway.

Evidence of this period of Oakland's history can still be found along the Broadway corridor in the vicinity of the Project site. Examples include: [9]

- the commercial building at 4800 Broadway (one block south of the Project site at the corner of Whitmore), a 1920s-era period revival commercial building rated D3 under the Oakland Cultural Heritage Survey (OCHS)
- the remodeled store building at 4919-29 Broadway (at the southwest corner of Broadway and 51st Street across from the Project site), a 1927 early 20th century service garage remodeled as early 20th century store building rated F3 under the OCHS due to substantial visible alterations.
- the industrial building at 5107 Broadway (immediately across the street from the Project site), a 1925 industrial building rated a C3 property under the OCHS, particularly for its type/style of design and for the prominence of its architect (McWethy & Greenleaf)
- The store building at 5251-69 Broadway (one block north of the Project site at the corner of College Avenue), a 1910s-era Beaux Arts derivative commercial sore rated a C3 property under the OCHS
- The Myers (May) store building at 5279-85 Broadway (one block north of the Project site on the northerly side of College Avenue), a 1923 example of early 20th century store buildings reflecting neighborhood commercial development and 1902s speculative development. It is rated E3 under the OCHS, principally because its architectural integrity has been seriously compromised by remodels over time.
- The 2-story store/apartment building at 4344 Broadway (approximately 2 blocks north of the Project site), a 1910s-era decorative brick store and apartment building with intricately patterned polychrome brick and stucco work, rated Dc3 under the OCHS
- The 1-story store previously occupied by the Gap at 4400 Broadway (approximately 2 blocks north of the Project site), a 1910s-era Beaux Arts derivative automobile showroom and service garage rated Dc3 under the OCHS.

There are also a number of individual buildings and homes throughout the general vicinity that were constructed during the late 19th through mid-20th century with OCHS ratings of C, D and E. These older homes and buildings can be found south of Pleasant Valley Avenue (particularly along Mather Street), west of Broadway and along Montgomery and Howe Street.

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[9] City of Oakland, Oakland Cultural Heritage Survey

Regulatory Setting

Federal

National Historic Preservation Act of 1966 (as amended)

The National Historic Preservation Act (NHPA) of 1966 establishes a program to preserve historic properties throughout the U.S. and, among other things, authorizes the Secretary of the Interior to expand and maintain a National Register of Historic Places composed of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture. The National Register is administered by the National Park Service, which is part of the U.S. Department of the Interior.

In general, properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture, and that:

- are associated with events that have made a significant contribution to the broad patterns of U.S. history; or
- are associated with the lives of persons significant in the past; or
- embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- have yielded, or may be likely to yield, information important in prehistory or history.

In general, cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register.

No individual structures at the Project site have been listed, or been determined to be eligible for listing in the National Register of Historic Places, and the Project site is not located within an historic district.

State of California

The mission of the State Historical Resources Commission and the Office of Historic Preservation is to preserve and enhance California's irreplaceable historic heritage as a matter of public interest so that its vital legacy of cultural, educational, recreational, aesthetic, economic, social, and environmental benefits will be maintained and enrich the lives of present and future generations.

California Register of Historical Resources

In order for a resource to meet the criteria for listing in the California Register of Historical Resources, it must satisfy all of the following three provisions:

1. It meets one or more of the following four criteria of significance:
    - The resource is associated with events or patterns of events that have made a significant contribution to the broad patterns of local and regional history;
    - The resource is associated with the lives of persons important to the nation or to California's past;
    - The resource embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or

- The resource has the potential to yield information important to the prehistory or history of the State or the nation (this criterion applies primarily to archaeological sites).

2. The resource retains historic integrity (defined below); and
3. It is fifty years old or older (except for rare cases where it can be demonstrated that sufficient time has passed to understand the historical importance of the resource).

The California Register regulations are similar to the criteria used by the National Park Service for the National Register of Historic Places. Any resource listed on or formally determined to be eligible for listing on the National Register is automatically listed on the California Register.[1]

The California Register defines "integrity" as "the authenticity of a property's physical identity, evidenced by the survival of characteristics that existed during the property's period of significance." A property must, therefore, retain enough of its historic character or appearance to be recognizable as an historical resource. California Register regulations specify that integrity is a quality that applies to historic resources in seven ways: location, design, setting, materials, workmanship, feeling, and association. A property must retain most of these qualities to possess integrity.

No individual structures at the Project site have been listed or been determined to be eligible for listing in the California Register of Historical Resources, and the Project site is not located within an historic district.

City Of Oakland

Relevant policies and conditions from the City's General Plan, Municipal Code and Standard Conditions of Approval are described below:

General Plan

Land Use and Transportation Element. The Land Use and Transportation Element (LUTE) is intended to guide development within the City of Oakland. Applicable historic resources policies are listed below:

> *Policy N9.8: Preserving History and Community.* Locations that create a sense of history and community within the City should be identified and preserved where feasible.

> *Policy N9.9: Respecting Architectural Integrity.* The City encourages rehabilitation efforts which respect the architectural integrity of a building's original style.

City of Oakland Historic Preservation Element: The City of Oakland's Historic Preservation Element (HPE), adopted in 1994 and amended subsequently, is intended to "provide a broad, multifaceted historic preservation strategy that addresses a wide variety of properties, and is intended to help revitalize Oakland's districts and neighborhoods and secure other preservation benefits."[2] The Element establishes goals and objectives, and provides a means of identifying historic properties in Oakland. It also lists all existing properties currently on the National Register, discusses the Oakland Cultural Heritage Survey's evaluation system, and establishes guidelines for determining landmark eligibility. The Historic Preservation Element of the General Plan (HPE) describes policies for the preservation of Oakland's historic resources. These policies include:

> *Policy 2.4: Landmark and Preservation District Regulations.* Demolitions and removals involving Landmarks or Preservation Districts will generally not be permitted, or be subject to

[1] California Code of Regulations, Title 14, Chapter 11.5, Section 4851(a)

[2] City of Oakland, *City of Oakland General Plan, Historic Preservation Element*, 1994, p. 1-1

postponement unless certain findings are made. Demolition or removal of more important landmarks and of most Preservation District properties will normally not be permitted without the required findings, while demolition or removal of less important landmarks will be subject only to postponement.

- Alterations or new construction involving Landmarks and Preservation Districts will normally be approved if they are found to meet the Secretary of the Interior's Standards for the Treatment of Historic Properties or if certain other findings can be made.
- Findings for approval of demolitions, removals, alterations or new construction involving Landmarks or Preservation Districts will seek to balance preservation of these properties with other concerns.

Policy 3.1: Avoid or Minimize Adverse Historic Preservation Impacts Related to Discretionary City Actions. This City will make reasonable efforts to avoid or minimize adverse effects on the Character-Defining Elements of existing or Potential Designated Historic Properties (PDHPs) which could result from private or public projects requiring discretionary actions.

Policy 3.7: Property Relocation Rather than Demolition. As a condition of approval for all discretionary projects involving demolition of existing PDHPs, the City will normally require that reasonable efforts be made to relocate the properties to an acceptable site.

The HPE also provides the following policy for identification of historic resources for CEQA purposes:

Policy 3.8: Definition of "Local Register of Historical Resources" and the Historic Preservation "Significant Effects" for Environmental Review purposes: For purposes of environmental review under CEQA, the following properties will constitute the City of Oakland's Local Register of Historic Resources:

- All Designated Historic Properties
- Those Potential Designated Historic Properties that have an existing rating of "A" or "B" or are located within an Area of Primary Importance.
- Until complete implementation of Action 2.1.2 (Re-designation), the "Local Register" will also include the following designated properties: Oakland Landmarks, S-7 Preservation Combining Zone properties, and Preservation Study List properties.

Action 3.8.1: Include Policy 3.8's definitions of "Local Register of Historical Resources" and historic preservation "significant effect" in the City's Environmental Review Regulations. Amend the Regulations to include specific measures that may be considered to mitigate significant effects to a Historical Resource. Measures appropriate to mitigate significant effects to a Historical Resource may include one or more of the following measures depending on the extent of the proposed addition or alteration.

- Modification of those elements of the Project design adversely affecting the character elements of the property.
- Relocation of the affected Historical Resource to a location consistent with its historical or architectural character.

If the above measures are not found to be feasible, the following measures may be considered:

- Modification of the Project design to include restoration of the remaining historic character of the property.
- Modification of the Project design to incorporate or replicate elements of the building's original architectural design.

- Salvage and preservation of significant features and materials of the structure in a local museum or within the new project.
- Measures to protect the Historical Resource from effects of on-site or other construction activities.
- Documentation in a Historic American Buildings Survey report or other appropriate format:
- Photographs, oral history, video, etc.
- Placement of a plaque, commemorative marker, or artistic or interpretive display on the site providing information on the historical significance of the resource.
- Contribution to a Facade Improvement Fund, the Historic Preservation Revolving Loan Fund, the Oakland Cultural Heritage Survey, or other program appropriate to the character of the resource.

Oakland Cultural Heritage Survey (OCHS)

The Historic Preservation element lays out a rating system for designating historic properties as derived from the OCHS. The OCHS uses a five tier rating system for describing the historic importance of an individual property, "A" (Highest Importance), "B" (Major Importance), "C" (Secondary Importance), "D" (Minor Importance), E (No Importance). The ratings are derived from evaluations based on the following criteria:

- Visual Quality/Design: Evaluation of exterior design, interior design, materials and construction, style or type, supporting elements, feelings of association, and importance of designer.
- History/Association: Association of person or organization, the importance of any event, association with patterns, and the age of the building.
- Context: Continuity and familiarity of the building within the district.
- Integrity and Reversibility: Evaluation of the building's condition, its exterior and interior alterations, and any structural removals.

Properties that have the potential for improvement are assigned both an "existing" and "contingency" rating (e.g., Ca). The existing rating describes the current condition of the property, and is denoted by an upper case letter. The contingency rating evaluates the possible rating if certain improvements were made, and is designated by a lower case letter. A (+) or a (-) following the rating indicates a slightly higher or lower rating.

Individual properties are also rated based on the historic importance of the surrounding properties, or district: "1" (Area of Primary Importance), "2" (Area of Secondary Importance), or "3" (Not in an Area of Primary or Secondary Importance). The importance of the individual property to the district is designated by a "+" (Contributor to the District) or "-" (Not a Contributor). For example, a property designated "Ba-1+ is a B-rated property with a possibility of attaining an A- rating, and is a contributor to an Area of Primary Importance.

City of Oakland's Standard Conditions of Approval

The City's Standard Conditions of Approval relevant to cultural resources are listed below for reference. These Conditions of Approval will be adopted as requirements of the proposed Project if the Project is approved by the City to help ensure that significant impacts are reduced. As a result, they are not listed as mitigation measures.

> **SCA Cultural-1: Archaeological Resources:** *Ongoing throughout demolition, grading, and/or construction.* Pursuant to CEQA Guidelines section 15064.5 (f), "provisions for historical or unique archaeological resources accidentally discovered during construction" should be instituted.

a. Therefore, in the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and the project applicant and/or lead agency shall consult with a qualified archaeologist or paleontologist to assess the significance of the find. If any find is determined to be significant, representatives of the project proponent and/or lead agency and the qualified archaeologist would meet to determine the appropriate avoidance measures or other appropriate measure, with the ultimate determination to be made by the City of Oakland. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.

b. In considering any suggested measure proposed by the consulting archaeologist in order to mitigate impacts to historical resources or unique archaeological resources, the project applicant shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while measures for historical resources or unique archaeological resources are carried out.

c. Should an archaeological artifact or feature be discovered on-site during project construction, all activities within a 50-foot radius of the find would be halted until the findings can be fully investigated by a qualified archaeologist to evaluate the find and assess the significance of the find according to the CEQA definition of a historical or unique archaeological resource. If the deposit is determined to be significant, the project applicant and the qualified archaeologist shall meet to determine the appropriate avoidance measures or other appropriate measure, subject to approval by the City of Oakland, which shall assure implementation of appropriate measures recommended by the archaeologist. Should archaeologically-significant materials be recovered, the qualified archaeologist shall recommend appropriate analysis and treatment, and shall prepare a report on the findings for submittal to the Northwest Information Center.

SCA Cultural-2: Paleontological Resources. *Ongoing throughout demolition, grading, and/or construction.* In the event of an unanticipated discovery of a paleontological resource during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995,1996)). The qualified paleontologist shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the City determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the City for review and approval.

SCA Cultural-3: Human Remains. *Ongoing throughout demolition, grading, and/or construction.* In the event that human skeletal remains are uncovered at the project site during construction or ground-breaking activities, all work shall immediately halt and the Alameda County Coroner shall be contacted to evaluate the remains, and following the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the City shall contact the California Native American Heritage Commission (NAHC), pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease within a 50-foot radius of the find until appropriate arrangements are made. If the agencies determine that avoidance is not feasible, then an alternative plan shall be prepared with specific steps and timeframe required to resume construction activities. Monitoring, data recovery, determination of significance and avoidance measures (if applicable) shall be completed expeditiously.

SCA Cultural-5: Archaeological Resources – Sensitive Areas (*Prior to issuance of a demolition, grading, or building permit*). The project applicant shall implement either Provision A (Intensive Pre-

Construction Study) or Provision D (Construction ALERT Sheet). However, if in either case a high potential presence of historic-period archaeological resources on the project site is indicated, or a potential resource is discovered, the project applicant shall also implement all of the following provisions:

a. Provision B (Construction-Period Monitoring),

b. Provision C (Avoidance and/or Find Recovery), and

c. Provision D (to establish a Construction ALERT Sheet if the Intensive Pre-Construction Study was originally implemented per Provision A, or to update and provide more specificity to the initial Construction ALERT Sheet if a Construction Alert Sheet was originally implemented per Provision D).

Provisions A through Provisions D are detailed as follows:

d. Provision A: Intensive Pre-Construction Study - The project applicant, upon approval from the City Planning and Zoning Division, may choose to complete a site-specific, intensive archaeological resources study prior to soil-disturbing activities occurring on the project site. The purpose of the site-specific, intensive archaeological resources study is to identify early the potential presence of history-period archaeological resources on the project site. If that approach is selected, the study shall be conducted by a qualified archaeologist approved by the City Planning and Zoning Division. If prepared, at a minimum, the study shall include:

   i. An intensive cultural resources study of the project site, including subsurface presence/absence studies, of the project site. Field studies conducted by the approved archaeologist(s) may include, but are not limited to, auguring and other common methods used to identify the presence of archaeological resources;

   ii. A report disseminating the results of this research;

   iii. Recommendations for any additional measures that could be necessary to mitigate any adverse impacts to recorded and/or inadvertently discovered cultural resources.

   iv. If the results of the study indicate a high potential presence of historic-period archaeological resources on the project site, or a potential resource is discovered, the project applicant shall hire a qualified archaeologist to monitor any ground disturbing activities on the project site during construction (see Provision B, Construction-Period Monitoring, below), implement avoidance and/or find recovery measures (see Provision C, Avoidance and/or Find Recovery, below), and prepare an ALERT Sheet that details what could potentially be found at the project site (see Provision D, Construction ALERT Sheet, below).

e. Provision B: Construction-Period Monitoring - Archaeological monitoring would include briefing construction personnel about the type of artifacts that may be present (as referenced in the ALERT Sheet, require per Provision D, Construction ALERT Sheet, below) and the procedures to follow if any are encountered, field recording and sampling in accordance with the Secretary of Interior's Standards and Guidelines for Archaeological Documentation, notifying the appropriate officials if human remains or cultural resources are discovered, or preparing a report to document negative findings after construction is completed. If a significant archaeological resource is discovered during the monitoring activities, adherence to Provision C, Avoidance and/or Find Recovery, discussed below), would be required to reduce the impact to less than significant. The project applicant shall hire a qualified archaeologist to monitor all ground-disturbing activities on the project site throughout construction.

f. Provision C: Avoidance and/or Find Recovery - If a significant archaeological resource is present that could be adversely impacted by the proposed project, the project applicant of the specific project site shall either:

g. Stop work and redesign the proposed project to avoid any adverse impacts on significant archaeological resource(s); or,

    i. If avoidance is determined infeasible by the City, design and implement an Archaeological Research Design and Treatment Plan (ARDTP). The project applicant shall hire a qualified archaeologist who shall prepare a draft ARDTP that shall be submitted to the City Planning and Zoning Division for review and approval. The ARDTP is required to identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain. The ARDTP shall identify the scientific/historic research questions applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. The ARDTP shall include the analysis and specify the curation and storage methods. Data recovery, in general, shall be limited to the portions of the archaeological resource that could be impacted by the proposed project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods are practical. The project applicant shall implement the ARDTP. Because the intent of the ARDTP is to save as much of the archaeological resource as possible, including moving the resource, if feasible, preparation and implementation of the ARDTP would reduce the potential adverse impact to less than significant.

h. Provision D: Construction ALERT Sheet - The project applicant, upon approval from the City Planning and Zoning Division, may choose to prepare a construction ALERT sheet prior to soil-disturbing activities occurring on the project site, instead of conducting site-specific, intensive archaeological resources pursuant to Provision A, above. The project applicant shall submit for review and approval by the City prior to subsurface construction activity an "ALERT" sheet prepared by a qualified archaeologist with visuals that depict each type of artifact that could be encountered on the project site. Training by the qualified archaeologist shall be provided to the project's prime contractor; any project subcontractor firms (including demolition, excavation, grading, foundation, and pile driving); and/or utilities firm involved in soil-disturbing activities within the project site.

i. The ALERT sheet shall state, in addition to the basic archaeological resource protection measures contained in other standard conditions of approval, that in the event of discovery of the following cultural materials, all work must be stopped in the area and the City's Environmental Review Officer contacted to evaluate the find: concentrations of shellfish remains; evidence of fire (ashes, charcoal, burnt earth, fire-cracked rocks); concentrations of bones; recognizable Native American artifacts (arrowheads, shell beads, stone mortars [bowls], humanly shaped rock); building foundation remains; trash pits, privies (outhouse holes); floor remains; wells; concentrations of bottles, broken dishes, shoes, buttons, cut animal bones, hardware, household items, barrels, etc.; thick layers of burned building debris (charcoal, nails, fused glass, burned plaster, burned dishes); wood structural remains (building, ship, wharf); clay roof/floor tiles; stone walls or footings; or gravestones.

    i. Prior to any soil-disturbing activities, each contractor shall be responsible for ensuring that the ALERT sheet is circulated to all field personnel, including machine operators, field crew, pile drivers, and supervisory personnel.

If the project applicant chooses to implement Provision D, Construction ALERT Sheet, and a potential resource is discovered on the project site during ground disturbing activities during construction, the project applicant shall hire a qualified archaeologist to monitor any ground disturbing activities on the project site during construction (see Provision B, Construction-Period Monitoring, above), implement avoidance and/or find recovery measures (see Provision C, Avoidance and/or Find Recovery, above), and prepare an updated ALERT Sheet that addresses the potential resource(s) and other possible resources based on the discovered find found on the project site.

Impacts, Standard Conditions of Approval and Mitigation Measures

This section assesses the potential for adverse impacts related to historic resources resulting from demolition of the existing shopping center and construction of the new proposed Project.

Criteria of Significance

The Project would result in a significant impact related to cultural resources if it would:

1. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5. Specifically a "substantial adverse change" includes physical demolition, destruction, relocation, or alteration of a resource or its immediate surroundings such that the significance of the historical resource would be "materially impaired." The significance of an historical resource is "materially impaired" when a project demolishes or materially alters, in an adverse manner, those physical characteristics of the resource that convey its historical significance and that justify its inclusion on, or eligibility for inclusion on an historical resource list (including the California Register of Historical Resources, the National Register of Historical Resources, Local Register, or historical resources survey form (DPR Form 523) with a rating of 1-5;
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5;
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
4. Disturb any human remains, including those interred outside of formal cemeteries.

City of Oakland Definition of Historic Resources

The City of Oakland defines an historical resource under CEQA as one that meets the following criteria:

- A resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources
- A resource included in Oakland's Local Register of Historical Resources (which includes all Designated Historic Properties [Landmarks, Heritage Properties, Study List Properties, Preservation Districts, and S-7 and S-20 Preservation Combining Zone Properties], and those Potential Designated Historic Properties that have an existing rating of "A" or "B" or are located within an Area of Primary Importance), unless the preponderance of evidence demonstrates that it is not historically or culturally significant;
- A resource identified as significant (e.g., rated 1-5) in a historical resource survey recorded on Department of Parks and Recreation Form 523, unless the preponderance of evidence demonstrates that it is not historically or culturally significant;
- Any object, building, structure, site area, place, record, or manuscript which the Oakland City Council determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the California Register of Historical Resources CEQA Guidelines Section 15064.5; or
- A resource that is determined by the City Council to be historically or culturally significant even though it does not meet the other four criteria listed here.

Definition of Impact to Historic Resources

Under CEQA Guidelines Section 15064.5 (b), a project with an effect that may cause a substantial adverse change in the significance of an historic resource is a project that may have a significant effect on the environment. Substantial adverse change in the significance of an historical resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. The significance of an historical resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources.
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

Historic Resources

Impact Cultural-1: The Project would not directly result in a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5. (**LTS**)

The Project site is the location of the original Oakland Paving Company/Bilger Quarry. In recognition of the Bilger Quarry site's importance in Oakland's early development, the quarry property (more specifically shown on the Oakland Cultural Heritage Survey as the Old Quarry Pond) is rated under the OCHS as C3 (a property of secondary importance not included within an Area of Primary Importance). It is not included on nor has it been found eligible for inclusion on the National Register of Historical Resources, the California Register of Historical Resources or the Local Register. It has not been documented on a DPR Form 523 historical resources survey form with a rating of 1 through 5. Therefore, the Project site is not considered a significant historical resource as defined in CEQA Guidelines §15064.5. Redevelopment of the existing shopping center with a new, more modern and larger retail center would not alter or change the significance of the Oakland Paving Company/Bilger Quarry site. The landscape improvements along the Project site's easterly edge near the quarry pond would enhance access and views of this remnant of the quarry.

Although the Project site is located in an area of Oakland with numerous historic resources, including Oakland Landmarks and Areas of Primary Importance, redevelopment of the existing shopping center with a new, more modern and larger retail center would not alter or change the significance of these nearby resources. The existing shopping center has been located in the vicinity of these nearby historic resources for nearly 50 years, and the Project will not directly affect nor indirectly change the historic context of these surrounding sites.

The nearest historic resource to the Project site is the Treadwell Mansion at the California College of the Arts, located immediately to the north of the site. High levels of groundborne vibration can damage fragile buildings. The Federal Transit Administration (FTA) has indicated that non-engineered timber and masonry buildings can be exposed to groundborne vibration levels of 0.2 inches per second without experiencing structural damage. Equipment anticipated to be used during construction includes flatbed delivery trucks, drill rigs, excavators, dump trucks, front-end loaders, bobcats, jackhammers, concrete trucks, and portable generators. The operation of heavy-duty construction equipment (e.g., a large bulldozer) generates typical vibration levels of 0.089 inches per second at a distance of 25 feet. Construction activity involving heavy-duty construction equipment would be further than 25 feet from the Treadwell Mansion. Therefore, groundborne vibration exposure levels at the Treadwell Mansion would be less than 0.2 inches per second, and this historical resource would not be expected to experience structural damage. In addition, the Treadwell Mansion existed at this location throughout the period of quarrying activities at the Project site, and thus survived without damage the vibrations associated with that quarry activity.

Mitigation Measures

None needed

Archaeological or Paleontological Resources, and Human Remains

Impact Cultural-2: The Project would not cause a substantial adverse change in the significance of a known archaeological resource, nor would it directly or indirectly destroy a known unique paleontological resource or site, or unique geologic feature. It is possible that currently unknown archaeological or paleontological resources could be damaged during site grading and construction. Implementation of City of Oakland Standard Conditions of Approval will reduce such potential impacts to a level of less than significant. (**LTS with SCA**)

There are no known archaeological resources or known unique paleontological resources at the Project site. Given the prior use of the site as a quarry operation, it is highly unlikely that any archaeological resource or unique paleontological resource is present. As the location of an active rock quarry for nearly 80 years (from the 1870s to 1957, when it was permanently closed), the site could be considered a unique geologic feature, however, this geologic feature has been the site of an existing shopping center for nearly 50 years. Redevelopment of the existing shopping center with a new, more modern and larger retail center will not further alter or change the significance of this geologic feature.

However, since the Project site is located in relative proximity to the location of a believed Ohlone village, in proximity to the original Vicente Peralta rancho, and is the location of an historic-period quarry operation, there is the potential that remnants from the old quarry operation or other unknown archaeological or paleontological resources could be buried beneath the site. Discovery of such resources during demolition and construction activity for the Project is unlikely given that quarrying operations continued to occur on the site until the late 1950s, and then the site was filled and graded to support construction of the existing shopping center. According to the *Geotechnical Investigation* for the site, fill material primarily consisting of clay with thin layers of gravel and sand were placed to a depth of 20 to 30 feet in portions of the site to level the site for construction of the existing shopping center in the 1960s, although depth to bedrock is less than 3 feet near the rock slope along the north end of the shopping center adjacent to the old quarry walls.

Standard Conditions of Approval

In the event of an unanticipated discovery of historic, archaeological or unique paleontological resources during demolition or construction activities associated with the Project, SCA Cultural-1 and -2 requires that excavations within 50 feet of the find be temporarily halted or diverted until the discovery is examined by a qualified archaeologist or paleontologist, documented and evaluated for significance, and procedures established to consider avoidance of the resource or preparation of an excavation plan if avoidance is unfeasible. There is a higher likelihood that previously undiscovered historic-period archaeological resources related to historic-period settlement of Oakland could be discovered during construction due to the site's historic use as a quarry. SCA Cultural-5, which further implements SCA Cultural-1, specifies additional intensive pre-construction survey, construction period monitoring, and avoidance and recovery measures that would apply to the Project. Implementation of Standard Conditions of Approval SCA Cultural-1, -2 and -5 would ensure that potential impacts related to the discovery of currently unknown, but potentially present archaeological resources remain at a level of less than significant.

Mitigation Measures

None needed

Cumulative Cultural Resource Impacts

Cumulative Impact Cultural-3: Implementation of the Project would not adversely affect historic or cultural resources, thus it would similarly not combine with other past, present, existing, pending and reasonably foreseeable projects may have cultural resource impacts. (**No Impact**)

While other reasonably foreseeable projects throughout Oakland may adversely affect city-wide historic resources, the Project would not directly result in a substantial adverse change in the significance of an on-site historical or cultural resource or directly or indirectly result in a substantial adverse change in the significance of a nearby historical or cultural resource. Thus, the Project would not contribute to any cumulative adverse impacts to cultural resources.

Mitigation Measures

None needed

4.5

Geology and Soils

This chapter evaluates the proposed Project's potential impacts related to geology and soils. This section describes the existing geology and soil conditions in the vicinity of the site, and evaluates the extent to which geology and soil conditions may affect development of the Project as proposed. The analysis and discussion in this section of the EIR is based primarily on the September 14, 2007 *Geotechnical Investigation, Safeway Replacement Store #3132,* prepared by Kleinfelder.[1]

Physical Setting

Regional Geology

The San Francisco Bay Area lies within the Coast Range geomorphic province, a series of discontinuous northwest tending mountain ranges, ridges, and intervening valleys characterized by complex folding and faulting. Such features in the eastern portion of the San Francisco Bay Area include the Diablo Range, Berkeley Hills and the East Bay Plain. The Project site is situated slightly up-slope from the western base of the Berkeley Hills.

Geologic and geomorphic structures within the San Francisco Bay Area are dominated by the San Andreas Fault, a right-lateral strike-slip fault that extends from the Gulf of California to Cape Mendocino. It forms a portion of the boundary between two independent tectonic plates: to the west is the Pacific plate, which moves relative to the North American plate (located east of the fault). In the San Francisco Bay Area, movement across this plate boundary is concentrated on the San Andreas Fault. However, it is also distributed, to a lesser extent, across a number of other faults that include the Hayward, Calaveras and Concord, among others. Together, these faults are referred to as the San Andreas Fault system. Movement along the San Andreas Fault system has been ongoing for about the last 25,000,000 years. The northwest trend of these faults within this fault system is largely responsible for the string northwest structural orientation of geologic and geomorphic features in the San Francisco Bay Area.

Local Geology

The portion of the Berkeley Hills in which the Project site is located is transected by the Hayward fault zone and exposed bedrock units that vary from Cretaceous Franciscan rocks to various tertiary sedimentary formations. Localized studies indicate that the area consists of Quaternary alluvial deposits and rock outcrops. Based on mapping by the California Geological Survey, the site is underlain by Pleistocene-age alluvial fan deposits and Mesozoic bedrock.

Faulting and Seismicity

The Project site is situated within the San Francisco Bay Area, which is characterized by numerous active faults and moderate to high seismic activity. As indicated in the *Geotechnical Investigation*, the site is not

[1] This report is available for review at the City Planning Division offices

located within a state-designated Earthquake Fault Rupture Zone where site-specific studies addressing the potential for surface fault rupture are required, and no known active faults traverse the site.

The Hayward fault is the closest fault to the Project site, located approximately 2.2 kilometers to the northeast. The Hayward fault is a right-lateral strike-slip fault. Other significant faults located near the site include the Calaveras, Concord-Green Valley, San Andreas and Rodgers Creek faults. A major seismic event on these or other nearby faults may cause substantial ground shaking at the Project site. In addition, the Project site is located in proximity to two northeasterly-dipping thrust faults. The U.S. Geological Survey has reported that the overall probability of an earthquake of magnitude 6.7 or greater on the North Hayward segment of the Hayward-Rodgers Creek Fault system before 2030 is approximately 16 percent. A magnitude 7.1 earthquake on the Hayward fault would be expected to generate violent seismic ground shaking (Modified Mercalli Intensity IX) at the Project site.

The *Geotechnical Investigation* indicated that the soils encountered during testing contained sufficient clayey soils or were of sufficient density to reduce the potential for liquefaction, and that as a result, the potential for liquefaction or lateral spreading at the Project site is low.

Slopes and Potential Slope Failure

The existing shopping center at the Project site was constructed in the 1960's at the western portion of a previous quarry. The site is relatively level, and has been created by cuts in the northern and eastern portion and fills in the southwestern portion. An existing cut slope is visible at the north (rear) of the property, to a height of approximately 50 feet. The inclination of this cut slope varies, but originally appears to have been about 1:1 (horizontal to vertical). There are areas of erosion on the slope, as well as large (up to about 3-foot size) fractured rock located at the toe of the slope. The exposed rock is comprised of both grey claystone and brown sandstone. A cyclone fence has been placed at the toe of the cut to protect the existing asphalt loading area/driveway and buildings (about 40 to 75 feet away). There are also a number of short and low wooden walls at the toe to provide protection of the loading area/driveway. There is slope debris behind the fence and wooden wall, with at least one wall having collapsed. Exiting commercial and residential structures are located near the top of the slope.

Along the east side of the property is a pond that has been left after the quarry operations were stopped. The water in the pond is about 20 feet below the shopping center grade, and the top of the bank is about 30 feet from the existing buildings (asphalt parking and driveway are located between the buildings and the bank of the pond). The bank of the pond is in rock, and nearly vertical. On the opposite side of the pond is an extremely steep cut slope (nearly vertical) into rock that is about 80 to 100 feet high.

The grade near the intersection of Broadway and Pleasant Valley Road is 5 to 8 feet higher than street grade (both Broadway and Pleasant Valley Road), probably the result of the placement of fill in this area.

Soils Conditions

A field investigation of the Project site was performed on April 30 and May 1, 2007, and consisted of drilling eight borings (see **Figure 4.5-1**). Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. As indicated in the *Geotechnical Investigation*, the existing asphalt pavement at the project site varies substantially across the site, with the asphalt measured to be about 2 to 5 inches thick over about 4 to 12 inches of aggregate base material. Underlying the pavement, either highly weathered claystone or sandstone was encountered to the maximum depth drilled (about 50.5 feet). At the surface, the claystone and sandstone appear to be extremely weathered, and became less weathered with depth. Boring B-1 located near the old quarry pond encountered clayey soil with variable gravel content to the depth drilled. Bedrock was seen exposed between Boring B-1 and the edge of the quarry, indicating that this once was not quarried. Two samples of the near surface clayey soil had Plasticity Limits of 12, which is considered to be low expansive potential.

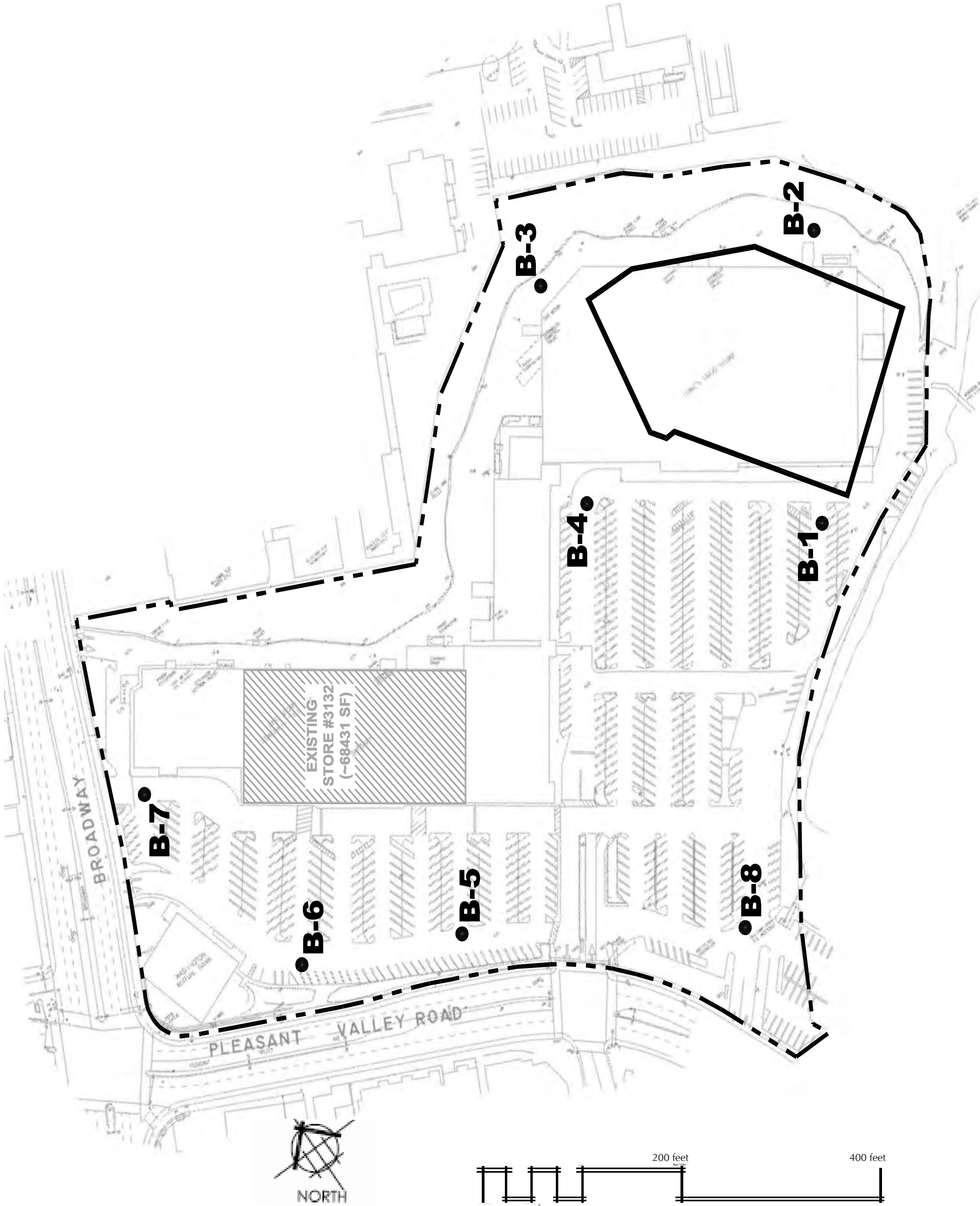


Figure 4.5-1
Soil Boring Locations

Source: Kleinfelder

A screening level *Phase II Environmental Assessment* conducted by GeoTrans in 2001. During this assessment, depth to bedrock was found to be variable across the Project site, from less than 3 feet near the rock slope along the north end of the shopping center (behind the stores) to 20 feet. Brick fragments indicative of fill material were present in samples collected from SB-2 (see **Figure 4.5-2**) to a depth of 20 feet below grade, The soil/fill material primarily consisted of silty clay and sandy clay, with thin layers of gravel and sand present at SB-2 at 10 and 15 feet below ground surface (bgs).

Regulatory Setting

State Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act), signed into law December 1972, requires the delineation of zones along active faults in California. The Alquist-Priolo Act regulates development on or near active fault traces to reduce the hazard of fault rupture and to prohibit the location of most structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the delineated zones, and regulations include withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement. Surface fault rupture, however, is not necessarily restricted to the area within an Alquist-Priolo Zone.

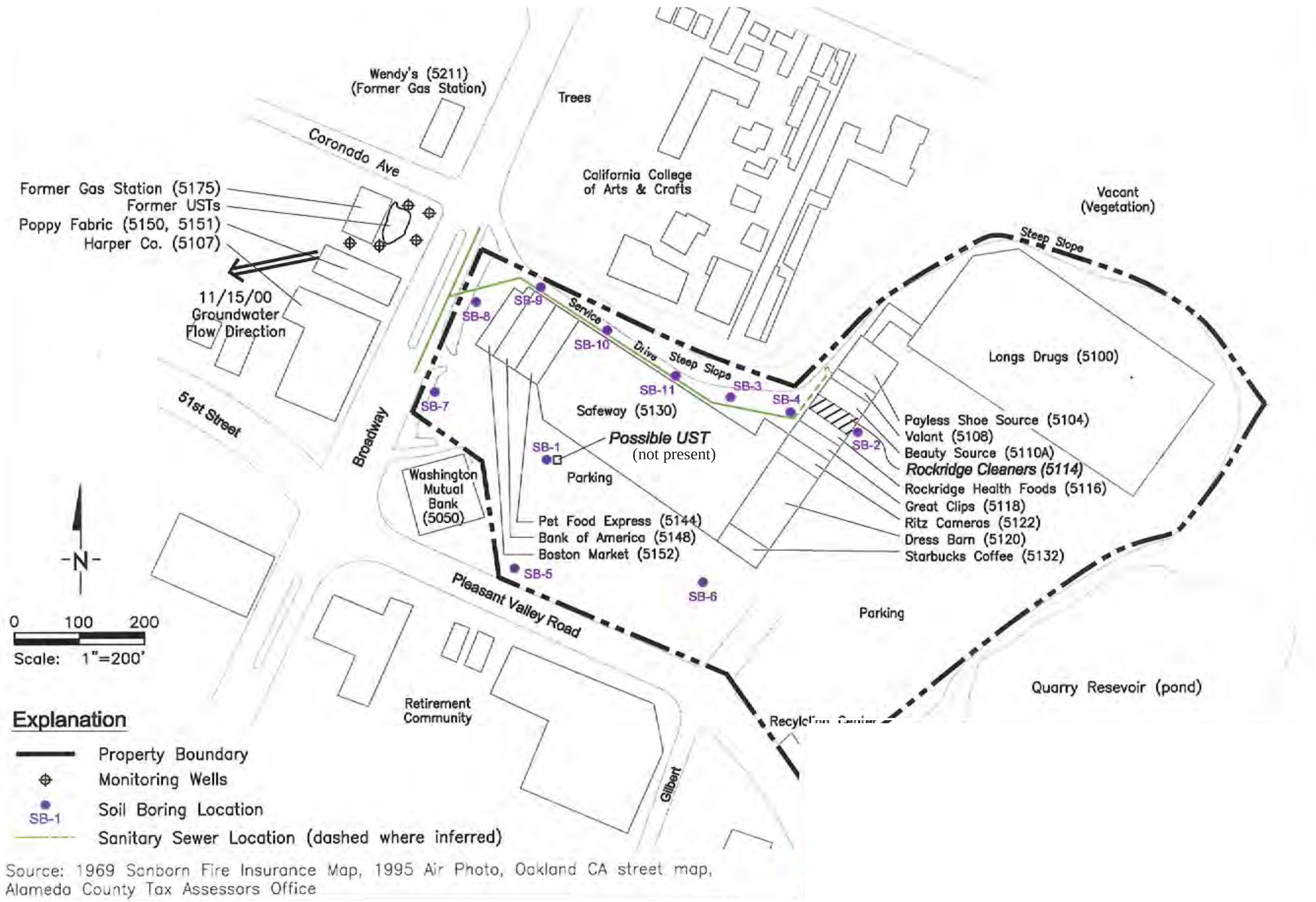
Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a Seismic Hazard Zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design. The Project site is not located within a Seismic Hazard Zone for liquefaction or landslides, as designated by the California Geological Survey (CGS, 2005).

California Building Code

Published by the International Conference of Building Officials (ICBO), the Uniform Building Code is a widely adopted model building code in the United States. The California Building Code incorporates by reference the 1997 Uniform Building Code (UBC) with necessary California amendments. These amendments include significant building design criteria that have been tailored for California earthquake conditions (CBSC, 2001).

The California Building Code is contained in Title 24 of the California Code of Regulations (CCR), Title 24, Part 2, which is a portion of the California Building Standards Code (CBSC, 2005). Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. The project site is located within Seismic Zone 4. Of the four seismic zones, Zone 4 is expected to experience the greatest effects from earthquake groundshaking and therefore has the most stringent requirements for seismic design.



Source: 1969 Sanborn Fire Insurance Map, 1995 Air Photo, Oakland CA street map, Alameda County Tax Assessors Office

Figure 4.5-2
Environmental Site Assessment Soil Boring Locations

Source: GeoTrans

City of Oakland Regulations

Relevant policies and conditions from the City's General Plan, Municipal Code and Standard Conditions of Approval are described below:

City of Oakland General Plan

Safety Element: The November 2004 Safety Element of the Oakland General Plan contains the following policies and actions regarding geology and soils issues that apply to the Project.

Policy GE-1: Develop and continue to enforce and carry out regulations and programs to reduce seismic hazards and hazards from seismically triggered phenomena.

Action GE-1.1: Continue to enforce the geologic reports ordinance by requiring site-specific geologic reports for development proposals in the Hayward fault Special Studies Zone, and restricting the placement of structures for human occupancy within fifty feet of the trace.

Action GE-1.2: Enact regulations requiring the preparation of site-specific geologic or geotechnical reports for development proposals in areas subject to earthquake-induced liquefaction, settlement or severe ground shaking, and conditioning project approval on the incorporation of necessary mitigation measures.

Policy GE-2: Continue to enforce ordinances and implement programs that seek specifically to reduce the landslide and erosion hazards.

Action GE-2.1: Continue to enforce provisions under the subdivision ordinance requiring that, under certain conditions, geotechnical reports be filed and soil hazards investigations be made to prevent grading from creating unstable slopes, and that any necessary corrective actions be taken.

Action GE-2.2: Continue to enforce the grading, erosion and sedimentation ordinance by requiring, under certain conditions, grading permits and plans to control erosion and sedimentation.

Action GE-2.3: Continue to enforce provisions under the creek protection, storm water management and discharge control ordinance designed to control erosion and sedimentation.

Ordinances and Oakland Municipal Code

The City of Oakland implements the following regulations and ordinances aimed at reducing soil erosion and protecting water quality and water resources:

Grading Ordinance (Ordinance No. 10312)

This ordinance is intended to reduce erosion during grading and construction activities. Chapter 13.16 of the Oakland Municipal Code requires that a project applicant obtain grading permits for earth moving activities under specified conditions of 1) volume of earth to be moved, 2) slope characteristics, 3) areas where "land disturbance" or 4) stability problems have been reported. To obtain a grading permit, the project applicant must prepare and submit to the Public Works Agency a soils report, a grading plan, and an erosion and sedimentation control plan for approval.

Sedimentation and Erosion Control Ordinance (Ordinance No. 10446)

This ordinance is also aimed at reducing erosion during construction and operations. Pursuant to this ordinance, Chapter 3304.2 of the Oakland Municipal Code requires any person who performs grading, clearing, and grubbing or other activities that disturb the existing soil to take appropriate preventative measures to 1) control erosion; 2) prevent sedimentation of eroded materials onto adjacent lands, public streets, or rights-of-way; and 3) prevent of the flow of eroded materials to any water course, by any route.

Building Services Division

In addition to compliance with building standards set forth by the California Building Code, the project applicant will be required to submit to the Oakland Building Services Division an engineering analysis accompanied by detailed engineering drawings for review and approval prior to excavation, grading, or construction activities on the project site. Specifically, an engineering analysis report and drawings of relevant grading or construction activities on a project site would be required to address constraints and incorporate recommendations identified in geotechnical investigations. These required submittals and City reviews ensure that the buildings are designed and constructed in conformance with the seismic and other requirements of all applicable building code regulations, pursuant to standard City of Oakland procedures.

City of Oakland's Standard Conditions of Approval

The City's Standard Conditions of Approval relevant to geology and soils are listed below for reference. These Conditions of Approval will be adopted as requirements of the proposed Project if the Project is approved by the City to help ensure that no significant geologic impacts occur. As a result, they are not listed as mitigation measures.

SCA Geo-1: Erosion and Sedimentation Control Plan

a. The project applicant shall obtain a grading permit if required by the Oakland Grading Regulations pursuant to Section 15.04.780 of the Oakland Municipal Code. The grading permit application shall include an erosion and sedimentation control plan for review and approval by the Building Services Division. The erosion and sedimentation control plan shall include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. The plan shall include, but not be limited to, such measures as short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Off-site work by the project applicant may be necessary. The project applicant shall obtain permission or easements necessary for off-site work. There shall be a clear notation that the plan is subject to changes as changing conditions occur. Calculations of anticipated stormwater runoff and sediment volumes shall be included, if required by the Director of Development or designee. The plan shall specify that, after construction is complete, the project applicant shall ensure that the storm drain system shall be inspected and that the project applicant shall clear the system of any debris or sediment.

b. The project applicant shall implement the approved erosion and sedimentation plan. No grading shall occur during the wet weather season (October 15 through April 15) unless specifically authorized in writing by the Building Services Division.

SCA Geo-2: Soils Report. A preliminary soils report for each construction site within the project area shall be required as part of this project and submitted for review and approval by the Building Services Division. The soils reports shall be based, at least in part, on information obtained from on-site testing. Specifically, the minimum contents of the report should include:

a. Logs of borings and/or profiles of test pits and trenches:

    i. The minimum number of borings acceptable, when not used in combination with test pits or trenches, shall be two (2), when in the opinion of the Soils Engineer such borings shall be sufficient to establish a soils profile suitable for the design of all the footings, foundations, and retaining structures.

ii. The depth of each boring shall be sufficient to provide adequate design criteria for all proposed structures.

iii. All boring logs shall be included in the soils report.

b. Test pits and trenches

i. Test pits and trenches shall be of sufficient length and depth to establish a suitable soils profile for the design of all proposed structures.

ii. Soils profiles of all test pits and trenches shall be included in the soils report.

c. A plat shall be included which shows the relationship of all the borings, test pits, and trenches to the exterior boundary of the site. The plat shall also show the location of all proposed site improvements. All proposed improvements shall be labeled.

d. Copies of all data generated by the field and/or laboratory testing to determine allowable soil bearing pressures, sheer strength, active and passive pressures, maximum allowable slopes where applicable and any other information which may be required for the proper design of foundations, retaining walls, and other structures to be erected subsequent to or concurrent with work done under the grading permit.

e. Soils Report. A written report shall be submitted which shall include, but is not limited to, the following:

f. Site description;

i. Local and site geology;

ii. Review of previous field and laboratory investigations for the site;

iii. Review of information on or in the vicinity of the site on file at the Information Counter, City of Oakland, Office of Planning and Building;

iv. Site stability shall be addressed with particular attention to existing conditions and proposed corrective attention to existing conditions and proposed corrective actions at locations where land stability problems exist;

v. Conclusions and recommendations for foundations and retaining structures, resistance to lateral loading, slopes, and specifications, for fills, and pavement design as required;

vi. Conclusions and recommendations for temporary and permanent erosion control and drainage. If not provided in a separate report they shall be appended to the required soils report;

vii. All other items which a Soils Engineer deems necessary;

viii. The signature and registration number of the Civil Engineer preparing the report.

g. The Director of Planning and Building may reject a report that she/he believes is not sufficient. The Director of Planning and Building may refuse to accept a soils report if the certification date of the responsible soils engineer on said document is more than three years old. In this instance, the Director may be require that the old soils report be recertified, that an addendum to the soils report be submitted, or that a new soils report be provided.

Impacts, Standard Conditions of Approval and Mitigation Measures

Criteria of Significance

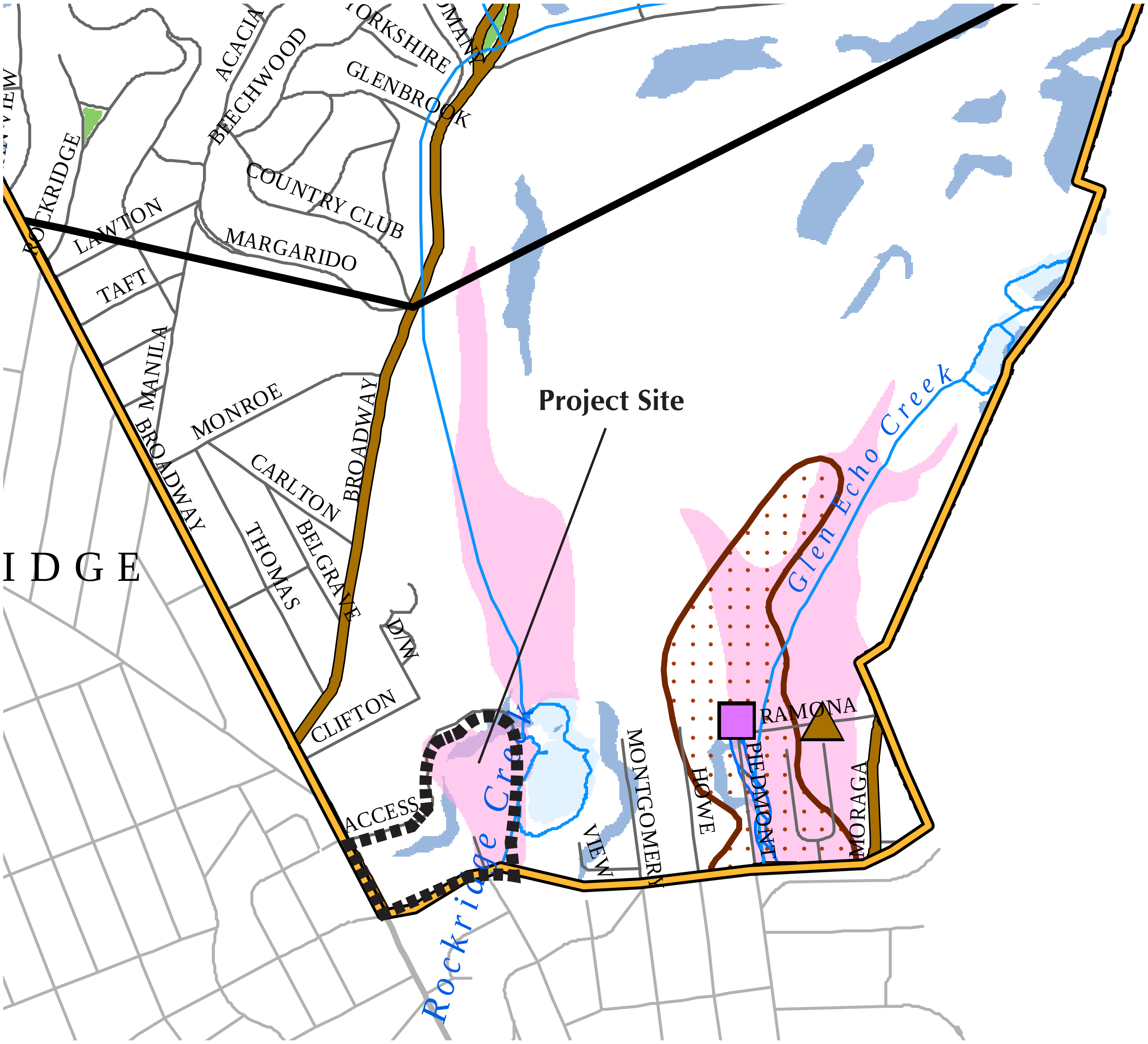
The Project would result in a significant impact related to geology and soils if it would:

1. Expose people or structures to substantial risk of loss, injury, or death involving:
    a. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map or Seismic Hazards Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publications 42 and 117 and PRC §2690 et. seq.);
    b. Strong seismic ground shaking;
    c. Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse; or
    d. Landslides;
2. Result in substantial soil erosion or loss of topsoil, creating substantial risks to life, property, or creeks/waterways;
3. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as it may be revised), creating substantial risks to life or property;
4. Be located above a well, pit, swamp, mound, tank vault, or unmarked sewer line, creating substantial risks to life or property;
5. Be located above landfills for which there is no approved closure and post-closure plan, or unknown fill soils, creating substantial risks to life or property ; or
6. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Seismic Ground Shaking and Ground Failure

Impact Geo-1: The Project site is located in an area that would be subject to very strong ground shaking and potential liquefaction in a major seismic event. Implementation of City of Oakland standard conditions of approval and compliance with California Building Code standards will ensure that foundation designs for all new buildings minimize the effects of ground shaking and seismic-induced ground failure to a level of less than significant. (**LTS with SCA**)

The Project site is not located within an Alquist-Priolo Special Studies zone. However, according to the City of Oakland Safety Element (see **Figure 4.5-3**), the easterly portions of the Project site are located in a Potential Liquefaction Area and subject to seismic-induced ground failure.



Potential Landslide Area

Potential Liquefaction Area

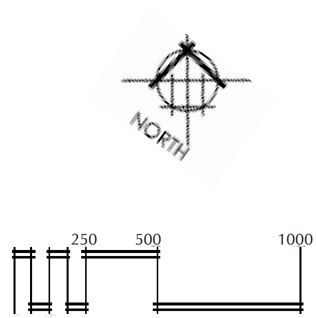


Figure 4.5-3
City of Oakland Safety Element

Source: City of Oakland

Standard Conditions of Approval

Pursuant to SCA Geo-2, the Project applicant shall be required to submit a detailed soils report along with detailed engineering drawings to the City of Oakland Building Services Division prior to excavation, grading or construction activities on the site. The required submittals will ensure that the buildings at the site are designed and constructed in conformance with the requirements of all applicable building code regulations.

With implementation of the requirements found in Standard Condition of Approval Geo-2, the risks of injury and structural damage from seismic ground shaking and seismic ground failure would be less than significant.

Mitigation Measures

None required

Landslides

Impact Geo-2: The cut slope at the Project site's northerly boundary shows evidence of erosion and fallen debris, and could potentially be susceptible to slides. Implementation of City of Oakland standard conditions of approval and compliance with all recommendations will ensure that any necessary corrective actions to address potential land instability will be implemented, minimizing the potential effects of land sliding to a level of less than significant. (**LTS with SCA**)

The Project site itself is relatively level, but an existing off-site cut slope extends along the site's northern boundary averaging approximately 50 feet in height. According to the City of Oakland Safety Element (see **Figure 4.5-3**), this large slope is identified as a Potential Landslide Area.

The inclination of the cut slope varies, but originally appears to be at about 1:1 (horizontal to vertical). As indicated in the *Geotechnical Investigation*, there are areas of erosion on this slope and there is evidence of fallen debris at the toe of the slope behind the cyclone fence and low wooden walls that have been constructed to protect the existing asphalt loading area/driveway and buildings.

The Project does not propose to conduct any grading, tree removal or alteration to this cut slope other than some additional minor landscape improvements (i.e., planting of additional trees). As such, the Project would not exacerbate or further increase slope instability.

Standard Conditions of Approval

Implementation of Standard Conditions of Approval Geo-2 requires preparation of a soils report, stipulating that "site stability be addressed and proposed corrective actions be prescribed at locations where land stability problems exist." The 2007 Geotechnical Investigation did not provide an assessment of the stability of this existing cut slope, although it does note that no signs of immediate instability were observed. To further implement SCA Geo-2, the following shall be implemented:

> **Catchment Structures:** Pursuant to recommendations from the 2007 Kleinfelder Geotechnical Investigation, the Project applicant shall reconstruct the on-site catchment structures at the toe of the cut slope along the northerly site boundary and implement measures as necessary to minimize erosion and ensure the continued stability of the cut slope. Detailed catchment structure designs shall be included in the required soils report, and implemented.

If approved, the Project would be required to comply with Standard Condition of Approval Geo-2, including the 2007 geotechnical investigation's recommendation for reconstructing catchment structures at the toe of the cut slope and any other measures determined necessary to minimize erosion and ensure the continued stability of the cut slope. Implementation of SCA Geo-2 will ensure the continued stability of the cut slope such that the potential risk of injury and structural damage from slope failure would remain less than significant.

Mitigation Measures

None required

Geologic Fill

Impact Geo-3: Portions of the easterly side of the Project site near the quarry pond contain clayey soil with variable gravel content, potentially unsuitable as a sub-grade soil for building foundations. Implementation of City of Oakland Standard Condition of Approval and compliance with all recommendations will ensure that any necessary corrective actions to address site grading and foundation design will be implemented, minimizing the potential effects of unstable fill soils to a level of less than significant. (**LTS with SCA**)

The *Geotechnical Investigation* indicates that soils anticipated to be encountered at all proposed building locations will be able to support the proposed building loads on shallow footings, and that the floor slabs can be supported on grade over a prepared sub-grade. However, that report also identified one potential fill area located on the east side of the Project (at Boring B-1) where additional evaluation should be conducted during construction for the presence of unsuitable sub-grade soil.

Standard Conditions of Approval

The potential risk of structural damage from unstable soils would be reduced through implementation of the requirements found in SCA Geo-2. To further implement SCA Geo-2, the following shall be implemented:

> **Excavation of Unsuitable Soils:** Pursuant to recommendations from the 2007 Kleinfelder Geotechnical Investigation, in the event that unsuitable soil is encountered during the construction phase, such soils should be excavated to a firm bottom and the resulting hole should be backfilled with engineered fill or lean mix concrete.

If approved, the Project would be required to comply with Standard Condition of Approval Geo-2, including the 2007 geotechnical investigation's recommendation for unsuitable soils identified above. Implementation of SCA Geo-2 would ensure that the potential risk of structural damage from unstable soils would be less than significant.

Mitigation Measures

None required

Soil Erosion

Impact Geo-4: Site preparation and construction activity associated with the Project could result in soil erosion as the surface is disrupted. Implementation of City of Oakland Standard Conditions of Approval will ensure that all necessary measures are taken to prevent erosion during construction to a level of less than significant. (**LTS with SCA**)

The Project site has been fully developed and paved and there is little or no visible topsoil remaining. Site preparation and construction activity associated with the proposed redevelopment could result in soil erosion as the surface is disrupted.

Standard Conditions of Approval

Implementation of City of Oakland Standard Condition of Approval Geo-1, requiring preparation and implementation of an Erosion and Sediment Control Plan will ensure that all necessary measures are taken to prevent excessive erosion, including erosion resulting from stormwater runoff.

Mitigation Measures

None required

Expansive Soil

Impact Geo-5: Soils samples taken at the Project site indicate that near-surface soils are considered to have a low potential for expansion. With Standard Conditions of Approval, potential impacts related to expansive soils would be less than significant. (**LTS with SCA**)

Soils samples taken at the Project site indicate that near-surface soils are primarily clayey with a Plasticity Limit of 12, which is considered to be low expansion potential.

Standard Conditions of Approval

Compliance with Standard Condition of Approval Geo-2 includes consideration of soil expansion potential. Given the low expansion potential of soils in soil samples taken at the Project site, and with required implementation of SCA Geo-2, potential impacts related to expansive soils would be less than significant.

Mitigation Measures

None required

Wells/Pits/Swamps/Mounds/Tank Vaults/Unmarked Sewer Lines

Impact Geo-6: The Project site has been previously developed and there are no known wells, pits, swamps, mounds, tank vaults or unmarked sewer lines located below the surface of the site that would be disturbed as a result of the proposed redevelopment. (**No Impact**)

Mitigation Measures

None required

Landfills

Impact Geo-7: The Project site has been previously developed and there is no evidence to suggest that the site has been previously used as a landfill. Redevelopment of the Project site as proposed would not result in the placement of any structures above landfills. (**No Impact**)

Mitigation Measures

None required

Soils Unsuitable for Septic Tanks/Alternative Wastewater Disposal Systems

Impact Geo-8: The Project site is currently served by municipal sewage systems, and redevelopment as proposed would continue to be served by these systems. The use of septic systems is not anticipated. (**No Impact**)

Mitigation Measures

None required

Cumulative Geology/Soils Impacts

Cumulative Impact Geo-9: Portions of Oakland are underlain by unstable geology and soil conditions, and cumulative development under these conditions could expose people or structures to substantial adverse effects. However, with required implementation of City of Oakland Standard Conditions of Approval, as well as other applicable local and State laws and regulations, cumulative impacts related to unstable geology and soil conditions would remain less than significant. **(LTS)**

Cumulative development would continue to expose people and property to potential seismic hazards and adverse soil conditions. Many existing buildings (i.e., past projects) in the surrounding area have been built in accordance with older building code requirements for geotechnical and seismic safety that were in effect at the time of building construction. Present and future projects within the surrounding cumulative geographic area are now subject to enhanced building requirements that result in reduced geologic and seismic hazards. As present and future projects replace aging infrastructure and older structures with new, more rigorously regulated projects, the potential for cumulative seismic risks is incrementally reduced over time.

Review and permitting of specific development projects would involve characterization and consideration of site-specific geologic and soils conditions. All development projects in Oakland would be subject to the City's Standard Conditions of Approval, as well as other applicable local and State laws and regulations. Therefore, cumulative impacts related to geology and soils hazards would remain less than significant.

Mitigation Measures

None required

4.6

Greenhouse Gas Emissions

There has been significant recent advancement in scientific understanding of the relationship between certain air emissions and trend-line changes in climatic conditions that have national and even global ramifications. New information about greenhouse gas (GHG) emissions and their potential effects on global climate change, as well as new public environmental policy, has emerged and become more formalized. Guidance has been issued by the state regarding requirements for environmental review under CEQA for proposed projects related to GHG emissions and global climate change.

In recognition that climate change is an environmental issue now warranting review under CEQA, this EIR provides a thorough assessment of this Project's contribution to greenhouse gas and its effects on climate change. The analysis contained in this EIR relies upon the BAAQMD May 2012 updated CEQA Guidelines for assistance in calculating air pollution and greenhouse emissions.

Technical greenhouse gas emission modeling for this chapter of the EIR has been provided by ENVIRON International, Inc.

Physical Setting

There is a general scientific consensus that global climate change is occurring, caused in whole or in part by increased emissions of greenhouse gases (GHGs) that keep the Earth's surface warm by trapping heat in the Earth's atmosphere,[1] in much the same way as glass traps heat in a greenhouse. While many studies show evidence of warming over the last century and predict future global warming, the precise causes of such warming and its potential effects are far less certain.[2] While the greenhouse effect is responsible for maintaining a habitable climate on Earth, human activity has caused increased concentrations of these gases in the atmosphere, contributing to an increase in global temperatures and alteration of climatic conditions.

The U.S. EPA has recently concluded that scientists know *with virtual certainty* that:

- Human activities are changing the composition of Earth's atmosphere. Increasing levels of greenhouse gases like carbon dioxide (CO_2) in the atmosphere since pre-industrial times are well-documented and understood.
- The atmospheric buildup of CO_2 and other greenhouse gases is largely the result of human activities such as the burning of fossil fuels.

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1 U.S. Environmental Protection Agency (US EPA), Global Warming – Climate: Uncertainties (web page), January 2000, http://yosemite.epa.gov/oar/globalwarming.nsf/content/ClimateUncertainties.html#likely, accessed July 24, 2007.

2 "Global climate change" is a broad term used to describe any worldwide, long-term change in the earth's climate. "Global warming" is more specific and refers to a general increase in temperatures across the earth, although it can cause other climatic changes, such as a shift in the frequency and intensity of weather events and even cooler temperatures in certain areas, even though the world, on average, is warmer.

- A warming trend of approximately 0.7° to 1.5° F occurred during the 20th century. Warming occurred in both the northern and southern hemispheres, and over the oceans.
- The major greenhouse gases emitted by human activities remain in the atmosphere for periods ranging from decades to centuries. It is therefore virtually certain that atmospheric concentrations of greenhouse gases will continue to rise over the next few decades. Increasing greenhouse gas concentrations tend to warm the planet.”[3]

At the same time, there is much uncertainty concerning the magnitude and rate of the warming. Specifically, the US EPA notes that “important scientific questions remain about how much warming will occur; how fast it will occur; and how the warming will affect the rest of the climate system, including precipitation patterns and storms. Answering these questions will require advances in scientific knowledge in a number of areas:

- Improving understanding of natural climatic variations, changes in the sun’s energy, land-use changes, the warming or cooling effects of pollutant aerosols, and the impacts of changing humidity and cloud cover.
- Determining the relative contribution to climate change of human activities and natural causes.
- Projecting future greenhouse emissions and how the climate system will respond within a narrow range.
- Improving understanding of the potential for rapid or abrupt climate change.”[4]

Greenhouse Gases (GHGs)

Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are the principal GHGs, and when concentrations of these gases exceed the natural concentrations in the atmosphere, the greenhouse effect may be enhanced. CO_2, CH_4, and N_2O occur naturally, but are also generated through human activity. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Other human-generated GHGs, which have much higher heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6), which are byproducts of certain industrial processes.[5]

Potential Effects of Human Activity on GHG Emissions

Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions (and thus substantial increases in atmospheric concentrations). In 1994, atmospheric CO_2 concentrations were found to have increased by nearly 30 percent above pre-industrial (c.1860) concentrations.

The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential (GWP),[6] and is expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically measured in terms of pounds or tons of CO_2 equivalents (CO_2e).

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3 US EPA, 2000, op. cit.

4 Ibid.

5 CalEPA, 2006b. *Final 2006 Climate Action Team Report to the Governor and Legislature.* Sacramento, CA. April 3.

6 The potential of a gas or aerosol to trap heat in the atmosphere.

Global Emissions

Worldwide emissions of GHGs in 2004 were 30 billion tons of CO_2e per year[7] (including both ongoing emissions from industrial and agricultural sources, but excluding emissions from land-use changes).

U.S. Emissions

In 2004, the United States emitted about 8 billion tons of CO_2e or about 25 tons/year/person. Of the four major sectors nationwide - residential, commercial, industrial and transportation - transportation accounts for the highest fraction of GHG emissions (approximately 35 to 40 percent); these emissions are entirely generated from direct fossil fuel combustion.[8]

State of California Emissions

In 2004, California emitted approximately 550 million tons of CO_2e, or about 6 percent of the U.S. emissions. This large number is due primarily to the sheer size of California compared to other states. By contrast, California has one of the fourth lowest per capita GHG emission rates in the country, due to the success of its energy-efficiency and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth by more than half of what it would have been otherwise.[9] Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states.

The California EPA Climate Action Team stated in its March 2006 report that the composition of gross climate change pollutant emissions in California in 2002 (expressed in terms of CO_2 equivalence) were as follows:

- Carbon dioxide (CO_2) accounted for 83.3 percent;
- Methane (CH_4) accounted for 6.4 percent;
- Nitrous oxide (N_2O) accounted for 6.8 percent; and
- Fluorinated gases (HFCs, PFC, and SF_6) accounted for 3.5 percent.[10]

The California Energy Commission found that transportation is the source of approximately 41 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent, and industrial sources at 20 percent. Agriculture and forestry is the source of approximately 8.3 percent, as is the source categorized as "other," which includes residential and commercial activities.[11]

7 United Nations Framework Convention on Climate Change (UNFCCC), *Sum of Annex I and Non-Annex I Countries Without Counting Land-Use, Land-Use Change and Forestry (LULUCF). Predefined Queries: GHG total without LULUCF* (Annex I Parties). Bonn, Germany, http://unfccc.int/ghg_emissions_data/predefined_queries/items/3814.php, accessed May 2, 2007.

8 US EPA, 2000, op. cit.

9 California Energy Commission (CEC), Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 - Final Staff Report, publication # CEC-600-2006-013-SF, Sacramento, CA, December 22, 2006; and January 23, 2007 update to that report.

10 Cal EPA, 2006b, op. cit.

11 California Energy Commission (CEC), 2007, op. cit.

Bay Area Emissions

BAAQMD most recently updated the GHG emission inventory in 2010 using a base year of 2007.[12] In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of the Bay Area's GHG emissions, accounting for 36.41% of the Bay Area's 95.8 million tons of GHG emissions in 2007. Industrial and commercial sources were the second largest contributors of GHG emissions with about 36.40% of total emissions. Domestic sources (e.g., home water heaters, furnaces, etc.) account for about 7% of the Bay Area's GHG emissions, and energy production accounted for 15.9% percent. Off-road equipment and agriculture make up the remainder with approximately 3% and 1.2% of the total Bay Area 2007 GHG emissions, respectively.

Oakland Emissions

The City of Oakland, in partnership with the Local Governments for Sustainability (ICLEI), has developed a greenhouse gas emissions inventory estimating citywide GHG emissions for the year 2005 at approximately 3 million metric tons of CO_2e.[13] This citywide GHG emissions inventory reflects all the energy used and waste produced within the Oakland city limits. When emissions from highway transportation are considered in this total, approximately 58% of Oakland's GHG emissions are associated with the transportation sector. Natural gas consumption represents approximately 22% of Oakland's GHG emissions, while electricity use and decomposition represent 16% and 4% of Oakland's GHG emissions, respectively.

Table 4.6-1: Oakland Estimated Community-wide GHG Emissions, 2005

GHG Emission Source	Metric Tons of Carbon Dioxide Equivalent (CO_2e)	Percent of Total
Non-Highway Transportation	759,883	22%
Highway Transportation	1,006,911	29%
Mobile Sources (Port of Oakland)	211,910	6%
Commercial/Industrial Electricity	320,212	9%
Commercial/Industrial Natural Gas	285,365	8%
Residential Electricity	150,105	4%
Residential Natural Gas	346,339	10%
Other Stationary Sources	226,900	7%
Landfill Methane from Solid Waste	126,361	4%
Total	3,433,986	100%

Source: City of Oakland, Garrett Fitzgerald, Sustainability Coordinator.
Note: Individual percentages do not sum to total due to rounding.

[12] BAAQMD. *Source Inventory of Bay Area Greenhouse Gas Emissions.* February 2010.

[13] City of Oakland Resolution Approving Preliminary Planning Targets for Development of the Draft Oakland Energy and Climate Action Plan. June 23, 2009.

Construction and Development Emissions

The construction and operation of developments, such as the proposed Project, cause GHG emissions. Operational phase GHG emissions result from energy use associated with heating, lighting and powering buildings (typically through natural gas and electricity consumption in Oakland), pumping and processing water, as well as fuel used for transportation and decomposition of waste associated with building occupants. New development can also create GHG emissions in its construction and demolition phases including the use of fuels in construction equipment, creation and decomposition of building materials, vegetation clearing, natural gas usage, electrical usage (since electricity generation by conventional means is a major contributor to GHG emissions, discussed below), and transportation.

However, it is important to acknowledge that new development does not necessarily create entirely new GHG emissions, since most of the persons who will visit or occupy new development will come from other locations where they were already causing such GHG emissions. Further, as discussed above, it has not been demonstrated that new GHG emissions caused by a local development project can affect global climate change, or that a project's net increase in GHG emissions, if any, when coupled with other activities in the region, would be cumulatively considerable.

Potential Effects of Human Activity on Global Climate Change

Globally, climate change has the potential to impact numerous environmental resources through anticipated, though uncertain, impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. A warming of about 0.2°C (0.36°F) per decade is projected, and there are identifiable signs that global warming is taking place, including substantial loss of ice in the Arctic.[14]

However, the understanding of GHG emissions, particulate matter, and aerosols on global climate trends remains uncertain. In addition to uncertainties about the extent to which human activity rather than solar or volcanic activity is responsible for increasing warming, there is also evidence that some human activity has cooling, rather than warming, effects, as discussed in detail in numerous publications by the International Panel on Climate Change (IPCC), namely "Climate Change 2001, The Scientific Basis"(2001).[15]

Acknowledging uncertainties regarding the rate at which anthropogenic greenhouse gas emissions would continue to increase (based upon various factors under human control, such as future population growth and the locations of that growth; the amount, type, and locations of economic development; the amount, type, and locations of technological advancement; adoption of alternative energy sources; legislative and public initiatives to curb emissions; and public awareness and acceptance of methods for reducing emissions), and the impact of such emissions on climate change, the IPCC devised a set of six "emission scenarios" which utilize various assumptions about the rates of economic development, population growth, and technological advancement over the course of the next century.[16] These emission scenarios are paired with various climate sensitivity models to attempt to account for the range of uncertainties that affect climate change projections. The wide range of temperature, precipitation, and similar projections

[14] International Panel on Climate Change (IPCC) Special Report on Emissions Scenarios, 2000, www.grida.no/climate/ipcc/emission/002.htm, accessed July 24, 2007.

[15] The IPCC was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme to assess scientific, technical and socio-economic information relevant for the understanding of climate change, its potential impacts and options for adaptation and mitigation.

[16] IPCC, 2000, op. cit.

yielded by these scenarios and models reveal the magnitude of uncertainty presently limiting climate scientists' ability to project long-range climate change (as previously discussed).

The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects, according to the IPCC[17]:

- Snow cover is projected to contract, with permafrost areas sustaining thawing;
- Sea ice is projected to shrink in both the Arctic and Antarctic;
- Hot extremes, heat waves, and heavy precipitation events are likely to increase in frequency;
- Future tropical cyclones (typhoons and hurricanes) will likely become more intense;
- Non-tropical storm tracks are projected to move poleward, with consequent changes in wind, precipitation, and temperature patterns. Increases in the amount of precipitation are very likely in high-latitudes, while decreases are likely in most subtropical regions; and
- Warming is expected to be greatest over land and at most high northern latitudes, and least over the Southern Ocean and parts of the North Atlantic Ocean.

Potential secondary effects from global warming include global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

Potential Effects of Climate Change on State of California

According to the California Air Resources Board (CARB), some of the potential impacts in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years.[18] Several recent studies have attempted to explore the possible negative consequences that climate change, left unchecked, could have in California. These reports acknowledge that climate scientists' understanding of the complex global climate system, and the interplay of the various internal and external factors that affect climate change, remains too limited to yield scientifically valid conclusions on such a localized scale. Substantial work has been done at the international and national level to evaluate climatic impacts, but far less information is available on regional and local impacts. In addition, projecting regional impacts of climate change and variability relies on large-scale scenarios of changing climate parameters, using information that is typically at too general a scale to make accurate regional assessments.[19]

Below is a summary of some of the potential effects reported in an array of studies that could be experienced in California as a result of global warming and climate change:

Air Quality

Higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. For other pollutants, the effects of climate change and/or weather are less well studied, and even less well understood.[20] If higher temperatures are accompanied by

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[17] Ibid.

[18] California Air Resources Board (CARB), 2006c. Public Workshop to Discuss Establishing the 1990 Emissions Level and the California 2020 Limit and Developing Regulations to Require Reporting of Greenhouse Gas Emissions, Sacramento, CA. December 1.

[19] Kiparsky, M. and P.H. Gleick, 2003. *Climate Change and California Water Resources: A Survey and Summary of the Literature*. Oakland, CA: Pacific Institute for Studies in Development. July 2003

[20] US EPA, 2007, op. cit.

drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the State.[21]

Water Supply

Uncertainty remains with respect to the overall impact of global climate change on future water supplies in California. For example, models that predict drier conditions (i.e., parallel climate model (PCM)) suggest decreased reservoir inflows and storage and decreased river flows relative to current conditions. By comparison, models that predict wetter conditions (i.e., HadCM2) project increased reservoir inflows and storage, and increased river flows.[22]

A July 2006 technical report prepared by the California Department of Water Resources (DWR) addresses the State Water Project (SWP), the Central Valley Project, and the Sacramento-San Joaquin Delta. Although the report projects that "[c]limate change will likely have a significant effect on California's future water resources . . . [and] future water demand," it also reports that "much uncertainty about future water demand [remains], especially [for] those aspects of future demand that will be directly affected by climate change and warming. While climate change is expected to continue through at least the end of this century, the magnitude and, in some cases, the nature of future changes is uncertain. This uncertainty serves to complicate the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood."[23] DWR adds that "[i]t is unlikely that this level of uncertainty will diminish significantly in the foreseeable future."[24] Still, changes in water supply are expected to occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows.25 Water purveyors, such as the East Bay Municipal Utilities District (EBMUD), are required by state law to prepare Urban Water Management Plans (UWMPs) (discussed below, under Regulatory Context for Greenhouse Gas Emissions and Climate Change) that consider climatic variations and corresponding impacts on long-term water supplies.26 DWR has published a 2005 SWP Delivery Reliability Report, which presents information from computer simulations of the SWP operations based on historical data over a 73-year period (1922–1994). The DWR notes that the results of those model studies "represent the best available assessment of the delivery capability of the SWP." In addition, the DWR is continuing to update its studies and analysis of water supplies. EBMUD would incorporate this information from DWR in its update of its current UWMP 2005 (required every five years per the California Water Code), and information from the UWMP can be incorporated into Water Supply

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[21] California Climate Change Center (CCCC), 2006. Our Changing Climate: Assessing the Risks to California, CEC-500-2006-077, Sacramento, CA. July.

[22] Brekke, L.D., et al, 2004. "Climate Change Impacts Uncertainty for Water Resources in the San Joaquin River Basin, California." Journal of the American Water Resources Association. 40(2): 149–164. Malden, MA, Blackwell Synergy for AWRA.

[23] California Department of Water Resources (DWR), 2006. Progress on Incorporating Climate Change into Management of California Water Resources, Sacramento, CA. July.

[24] Ibid.

[25] Kiparsky 2003, op. cit; DWR, 2005, op. cit.; Cayan, D., et al, 2006. Scenarios of Climate Change in California: An Overview (White Paper, CEC-500-2005-203-SF), Sacramento, CA. February.

[26] California Water Code, Section 10631(c).

Assessments (WSAs) and Water Verifications prepared for certain development projects in accordance with Cal. Water Code Section 10910, et. seq. and Cal. Government Code Section 66473.7, et. seq.

Hydrology

As discussed above, climate change could potentially affect the following: the amount of snowfall, rainfall and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. Sea level rise can be a product of global warming through two main processes -- expansion of sea water as the oceans warm and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could also jeopardize California's water supply. In particular, saltwater intrusion would threaten the quality and reliability of the state's major fresh water supply that is pumped from the southern portion of the Sacramento/San Joaquin River Delta. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $30 billion agricultural industry that produces half the country's fruits and vegetables. The California Climate Change Center (CCCC) notes that higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase, crop-yield could be threatened by a less reliable water supply, and greater ozone pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year that certain crops, such as wine grapes, bloom or ripen, and thus affect their quality.[27]

Ecosystems and Wildlife

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. In 2004, the Pew Center on Global Climate Change released a report examining the possible impacts of climate change on ecosystems and wildlife.[28] The report outlines four major ways in which it is thought that climate change could affect plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes such as carbon cycling and storage.

Regulatory Context

Global climate change is addressed through the efforts of various federal, state, regional and local government agencies as well as national and international scientific and governmental conventions and programs. These agencies work jointly, as well as individually to understand and regulate the effects of greenhouse gas emissions and resulting climate change through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies, conventions and programs focused on global climate change are discussed below.

[27] California Climate Change Center (CCCC), 2006, op. cit.

[28] Parmesan, C. and H. Galbraith, *Observed Impacts of Global Climate Change in the U.S.*, Arlington, VA: Pew Center on Global Climate Change, November 2004.

International and Federal

Kyoto Protocol

The United States participates in the United Nations Framework Convention on Climate Change (UNFCCC) (signed on March 21, 1994). The Kyoto Protocol is a treaty made under the UNFCCC and was the first international agreement to regulate GHG emissions. It has been estimated that if the commitments outlined in the Kyoto Protocol are met, global GHG emissions could be reduced by an estimated 5 percent from 1990 levels during the first commitment period of 2008–2012. It should be noted that although the United States is a signatory to the Kyoto Protocol, Congress has not ratified the Protocol and the United States is not bound by the Protocol's commitments.

Copenhagen Summit

The 2009 United Nations Climate Change Conference (Copenhagen Summit) was held in Denmark in December 2009. The conference included the 15 Conference of the Parties to the United Nations Framework Convention on Climate Change, and the fifth meeting of the Parties to the Kyoto Protocol. A framework for climate change mitigation beyond 2012 was to be agreed there. The Copenhagen Accord was drafted by the US, China, India, Brazil, and South Africa on December 18, 2009 and judged to be a "meaningful agreement" by the United Stated government. It was "taken note of" but not "adopted" in a debate of all the participating countries the next day. The document recognized that climate change is one of the greatest challenges of the present day and that actions should be taken to keep any temperature increases to below 2 degrees C. The document is not legally binding and does not contain any legally binding commitments for reducing CO2 emissions.

Climate Change Technology Program

The United States has opted for a voluntary and incentive-based approach toward emissions reductions in lieu of the Kyoto Protocol's mandatory framework. The Climate Change Technology Program (CCTP) is a multi-agency research and development coordination effort (which is led by the Secretaries of Energy and Commerce) that is charged with carrying out the President's National Climate Change Technology Initiative.[29]

U.S. Environmental Protection Agency (U.S. EPA)

To date, the U.S. EPA has not regulated GHGs under the Clean Air Act (discussed above) based on its assertion in *Massachusetts et. al. v. EPA et. al*[30] that the "Clean Air Act does not authorize it to issue mandatory regulations to address global climate change and that it would be unwise to regulate GHG emissions because a causal link between GHGs and the increase in global surface air temperatures has not been unequivocally established." However, in the same case from 2007 (*Massachusetts v. EPA*), the U.S. Supreme Court held that the U.S. EPA can, and should, consider regulating motor-vehicle GHG emissions.

In December of 2009, the EPA issued an "endangerment" finding about carbon dioxide and other greenhouse gases. The endangerment finding classified six greenhouse gases as pollutants that threaten health: carbon dioxide, methane, nitrous oxide, hydro-fluorocarbons, per-fluorocarbons and sulfur

[29] Climate Change Technology Program (CCTP), About the U.S. Climate Change Technology Program (web page), Washington, D.C., last updated April 2006, http://www.climatetechnology.gov/about/index.htm, accessed July 24, 2007.

[30] U.S. Supreme Court, Massachusetts et. al. v. EPA et. al (No. 05-1120, 415F 3d 50), April 2, 2007.

hexafluoride. These findings could potentially enable the EPA to make rules restricting greenhouse gas emissions under the Clean Air Act, but to date no such rules have been enacted.

State of California

Assembly Bill (AB) 1493

On July 1, 2002, the California Assembly passed Assembly Bill (AB) 1493 (signed into law on July 22, 2002), requiring the CARB to "adopt regulations that achieve the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." The regulations were to be adopted by January 1, 2005, and apply to 2009 and later model-year vehicles. In September 2004, CARB responded by adopting "CO_2-equivalent fleet average emission" standards. The standards will be phased in from 2009 to 2016, reducing emissions by 22 percent in the "near term" (2009–2012) and 30 percent in the "mid term" (2013–2016), as compared to 2002 fleets.

Executive Order (EO) S-3-05

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05, establishing statewide GHG emission reduction targets. This EO provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels. The Secretary of the California Environmental Protection Agency (CalEPA) is charged with coordinating oversight of efforts to meet these targets and formed the Climate Action Team (CAT) to carry out the EO.

California Assembly Bill 32 (AB 32)

On August 31, 2006, the California Assembly passed Bill 32 (AB 32) (signed into law on September 27, 2006), the California Global Warming Solutions Act of 2006. AB 32 commits California to reduce GHG emissions to 1990 levels by 2020 and establishes a multi-year regulatory process under the jurisdiction of the CARB to establish regulations to achieve these goals. The regulations shall require monitoring and annual reporting of GHG emissions from selected sectors or categories of emitters of GHGs.

On December 11, 2008, CARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. The Scoping Plan contains the main strategies California will implement to reduce CO_2e emissions to meet AB 32 targets. The 2020 emissions baseline used in the 2008 Scoping Plan is 596 MMTCO2e. This estimate of statewide 2020 emissions was developed using pre-recession 2007 data and reflects GHG emissions expected to occur in the absence of any reduction measures in 2010. CARB re-evaluated the baseline in light of the economic downturn and updated the projected 2020 emissions to 545 MMTCO2e. Two reduction measures (Pavley I and the Renewables Portfolio Standard of 20% by 2020) not previously included in the 2008 Scoping Plan baseline were incorporated into the updated baseline, further reducing the 2020 statewide emissions projection to 507 MMTCO2e. The updated forecast of 507 MMTCO2e is referred to as the AB 32 2020 baseline.[31] Reduction of an estimated 80 MMTCO2e are necessary to reduce statewide emissions to the AB 32 target of 427 MMTCO2e by 2020.

The Scoping Plan also includes recommended measures that were developed to reduce greenhouse gas emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving our natural resources, and ensuring that the impacts of the reductions are

[31] California EPA, Air Resources Board (CARB), Greenhouse Gas Inventory – 2020 Emissions Forecast, April 6, 2012, http://www.arb.ca.gov/cc/inventory/data/forecast.htm, accessed October 30, 2012

equitable and do not disproportionately impact low-income and minority communities. These measures, shown below in **Table 4.6-2** by sector, also put the state on a path to meet the long-term 2050 goal of reducing California's greenhouse gas emissions to 80 percent below 1990 levels.

Table 4.6-2: List of Recommended Actions by Sector

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
Transportation		
T-1	Pavley I and II – Light Duty Vehicle Greenhouse Gas Standards	31.7
T-2	Low Carbon Fuel Standard (Discrete Early Action)	15.0
T-3[1]	Regional Transportation-Related Greenhouse Gas Targets	5.0
T-4	Vehicle Efficiency Measures	4.5
T-5	Ship Electrification at Ports (Discrete Early Action)	0.2
T-6	Goods Movement Efficiency Measures. -Ship Electrification at Ports, System-Wide Efficiency Improvements	3.5
T-7	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)	0.93
T-8	Medium- and Heavy-Duty Vehicle Hybridization	0.5
T-9	High Speed Rail	1.0
Electricity and Natural Gas		
E-1	Energy Efficiency (32,000 GWh of Reduced Demand) - Increased Utility Energy Efficiency Programs, More Stringent Building & Appliance Standards, Additional Efficiency and Conservation Programs	15.2
E-2	Increase Combined Heat and Power Use by 30,000 GWh (Net reductions include avoided transmission line loss)	6.7
E-3	Renewables Portfolio Standard (33% by 2020)	21.3
E-4	Million Solar Roofs (including California Solar Initiative, New Solar Homes Partnership and solar programs of publicly owned utilities)	2.1
	Target of 3000 MW Total Installation by 2020	
CR-1	Energy Efficiency (800 Million Therms Reduced Consumptions) - Utility Energy Efficiency Programs, Building and Appliance Standards, Additional Efficiency and Conservation Programs	4.3
CR-2	Solar Water Heating (AB 1470 goal)	0.1
Green Buildings		
GB-1	Green Buildings	26.0
Water		
W-1	Water Use Efficiency	1.4†
W-2	Water Recycling	0.3†
W-3	Water System Energy Efficiency	2.0†
W-4	Reuse Urban Runoff	0.2†

W-5	Increase Renewable Energy Production	0.9†
W-6	Public Goods Charge (Water)	TBD†
Industry		
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	TBD
I-2	Oil and Gas Extraction GHG Emission Reduction	0.2
I-3	GHG Leak Reduction from Oil and Gas Transmission	0.9
I-4	Refinery Flare Recovery Process Improvements	0.3
I-5	Removal of Methane Exemption from Existing Refinery Regulations	0.01

†GHG emission reduction estimates are not included in calculating the total reductions needed to meet the 2020 target

While CARB has identified a GHG reduction target of 15 percent for local governments themselves, it has not yet determined what amount of GHG emissions reductions it recommends from local government land use decisions. However, the Scoping Plan does state that successful implementation of the plan relies on local governments land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. CARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors.

The Scoping Plan identified 5.0 $MMTCO_2e$ as a placeholder for what could be achieved by the Sustainable Communities and Climate Protection Act of 2008 (SB 375) through sustainable regional transportation and local land use planning. The SB 375 Staff Report identifies 3.0 $MMTCO_2e$, which is the aggregate from the regional passenger vehicle GHG reduction targets established for the 18 Metropolitan Planning Organizations approved in 2010.

California Senate Bill 97 (SB 97)

SB 97, signed by governor of California in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code, Sections 21083.05 and 21097), acknowledges climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Resources Agency by July 1,2009 guidelines for mitigating GHG emissions or the effects of GHG emissions, as required by CEQA. The California Resources Agency was required to certify and adopt these guidelines by January 1, 2010. Amendments to the CEQA Guidelines pursuant to SB 97 were adopted in March 2010.

Amendments to the CEQA Guidelines

Amendments to the CEQA Guidelines pursuant to SB 97 became effective on March 18, 2010. Among the changes included in these recent CEQA Guidelines amendments are guidance for determining the significance of impacts from greenhouse gas emissions (CEQA Guidelines §15064.4). These guidelines indicate that “The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency . . . A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project.” A lead agency shall have discretion to determine, in the context of a particular project, whether to use a model or other methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use, or whether to rely on a qualitative analysis or performance based standard.

These Guidelines also indicate that a lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

- "The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions."

In determining thresholds of significance, § 15064.7 indicates that "Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. Thresholds of significance to be adopted for general use as part of the lead agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence. When adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

Finally, in considering mitigation measures related to greenhouse gas emissions, § 15126.4 indicates that "lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:

- Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;
- Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;
- Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions; and
- Measures that sequester greenhouse gases;
- In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by-project basis. Mitigation may also include the incorporation of specific measures or policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions."

California Senate Bill 375 (SB 375)

Governor Schwarzenegger signed SB 375 into law in September 2008 (Chapter 728, Statutes of 2008). The legislation aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) that will prescribe land use allocation in the MPO's Regional Transportation Plan. The MTCs Sustainable Communities Strategy is projected to be ready for consideration of adoption in the spring of 2013. CARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects will not be eligible for funding programmed after January 1, 2012.

This bill also extends the minimum time period for the Regional Housing Needs Allocation (RNHA) cycle from 5 years to 8 years for local governments located in an MPO that meets certain requirements. City or County land use policies (e.g., General Plans) are not required to be consistent with the RTP including associated SCSs or APSs. Qualified projects consistent with an approved SCS or APS and categorized as "transit priority projects" would receive incentives under new provisions of CEQA.

California Green Building Standards Code (CALGreen).

The California Green Building Standards Code (CALGreen) supplements the California Building Standards Code (Title 24) and requires all new buildings in the state to incorporate energy saving features. New standards include the following:

- Water efficiency: New buildings must demonstrate at least a 20 percent reduction in water use over typical baseline conditions.
- Construction waste: At least 50 percent of construction waste must be recycled, reused, or otherwise diverted from landfilling.
- Interior finishes: Interior finishes such as paints, carpet, vinyl flooring, particle board, and other similar materials must be low-pollutant emitting.
- Landscape irrigation: In non-residential buildings, separate water meters must be provided for a building's indoor and outdoor water use. Large landscape projects must use moisture-sensing irrigation systems to limit unnecessary watering.
- Mandatory inspections of energy systems: In non-residential buildings over 10,000 square feet, mandatory inspections of energy systems (e.g., heat furnace, air conditioner and mechanical equipment) are required to ensure that such systems are working at their maximum capacity and according to their design efficiencies.

California Urban Water Management Planning Act

The California Urban Water Management Planning Act requires various water purveyors throughout the State of California (such as EBMUD) to prepare UWMPs, which assess the purveyor's water supplies and demands over a 20-year horizon (California Water Code, Section 10631 *et seq*.). As required by that statute, UWMPs are updated by the purveyors every five years. As discussed above, this is relevant to global climate change which may affect future water supplies in California, as conditions may become drier or wetter, affecting reservoir inflows and storage and increased river flows.[32]

Bay Area Air Quality Management District (BAAQMD)

The Project site falls within the San Francisco Bay Area Air Basin and therefore under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD adopted updated *Thresholds of Significance and California Environmental Quality Act Guidelines* to assist in the review of projects under the California Environmental Quality Act on June 2, 2010. On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the BAAQMD Thresholds and the court issued a writ of mandate ordering the BAAQMD to set aside the BAAQMD Thresholds and cease dissemination of them until the BAAQMD had complied with

[32] Brekke, 2004, op. cit.

CEQA. The court did not determine whether the Thresholds were valid on the merits. The BAAQMD CEQA Guidelines (updated May 2012) provide guidance for consideration by lead agencies, consultants, and other parties evaluating air quality impacts in the San Francisco Bay Area Air Basin conducted pursuant to CEQA. The document includes guidance on evaluating and mitigating greenhouse gas emissions impacts.

City of Oakland

Oakland Energy and Climate Action Plan

In 2009, the City Council directed staff to develop an Energy and Climate Action Plan (ECAP) using a preliminary planning GHG reduction target equivalent to 36% below 2005 GHG emissions by 2020, with annual benchmarks for meeting the target. Based on Oakland's baseline 2005 GHG inventory, totaling approximately 3 million metric tons of CO_2e emissions and current forecasts of business-as-usual emissions growth, reducing GHG emissions by the equivalent of 36% below 2005 levels by 2020 will require taking actions that cumulatively add up to approximately 1.1 million metric tons of CO_2e reductions. On December 4, 2012, the City Council adopted the ECAP which evaluates and prioritizes opportunities to reduce energy consumption and GHG emissions in its own government operations and throughout the community.

The ECAP also includes a set of actions aimed at increasing local resilience and helping Oakland adapt to the projected impacts of climate change. In addition, Oakland is participating in the regional Adapting to Rising Tides (ART) project, led by the San Francisco Bay Conservation Development Commission (BCDC) and the National Oceanic and Atmospheric Administration (NOAA). The ART project, which began in late 2010, was created to advance regional understanding of how sea level rise and other climate change impacts will affect the Bay Area and to begin to explore adaptation strategies that may benefit Oakland and the region.

City of Oakland General Plan

Land Use and Transportation Element (LUTE)

The LUTE (which includes the Pedestrian Master Plan and Bicycle Master Plan) of the Oakland General Plan contains the following policies that address issues related to GHG emissions and climate change:

> *Policy T.2.1:* Transit-oriented development should be encouraged at existing or proposed transit nodes, defined by the convergence of two or more modes of public transit such as BART, bus, shuttle service, light rail or electric trolley, ferry, and inter-city or commuter rail.
>
> *Policy T.2.2:* Transit-oriented developments should be pedestrian-oriented, encourage night and day time use, provide the neighborhood with needed goods and services, contain a mix of land uses, and be designed to be compatible with the character of surrounding neighborhoods.
>
> *Policy T3.5:* The City should include bikeways and pedestrian ways in the planning of new, reconstructed, or realigned streets, wherever possible.
>
> *Policy T3.6:* The City should encourage and promote use of public transit in Oakland by expediting the movement of and access to transit vehicles on designated "transit streets" as shown on the Transportation Plan.
>
> *Policy T4.2:* Through cooperation with other agencies, the City should create incentives to encourage travelers to use alternative transportation options.
>
> *Policy N3.2:* In order to facilitate the construction of needed housing units, infill development that is consistent with the General Plan should take place throughout the City of Oakland.

Policy T4.5: The City should prepare, adopt, and implement a Bicycle and Pedestrian Master Plan as a part of the Transportation Element of [the] General Plan.

Open Space, Conservation and Recreation Element (OSCAR)

The OSCAR Element includes policies that address GHG reduction and global climate change. Listed below are the following types of OSCAR policies: policies that encourage the provision of open space, which increases vegetation area (trees, grass, landscaping, etc.) to effect cooler climate, reduce excessive solar gain, and absorb CO2; policies that encourage stormwater management, which relates to the maintenance of floodplains and infrastructure to accommodate potential increased storms and flooding; and policies that encourage energy efficiency and use of alternative energy sources, which directly address reducing GHG emissions.

Policy OS-1.1: Conserve existing City and Regional Parks characterized by steep slopes, large groundwater recharge areas, native plant and animal communities, extreme fire hazards, or similar conditions.

Policy OS-2.1: Manage Oakland's urban parks to protect and enhance their open space character while accommodating a wide range of outdoor recreational activities.

Policy CO-5.3: Employ a broad range of strategies, compatible with the Alameda Countywide Clean Water Program. See Policy CO-12.1 under OSCAR policies that address general air quality.

Policy CO-12.3: Expand existing transportation systems management and transportation demand management strategies which reduce congestion, vehicle idling, and travel in single passenger autos. See Policy CO-12.4 under OSCAR policies that address general air quality.

Policy CO-12.5: Require new industry to use best available control technology to remove pollutants, including filtering, washing, or electrostatic treatment of emissions.

Policy CO-13.2: Support public information campaigns, energy audits, the use of energy-saving appliances and vehicles, and other efforts which help Oakland residents, businesses, and City operations become more energy efficient.

Policy CO-13.3: Encourage the use of energy-efficient construction and building materials. Encourage site plans for new development which maximize energy efficiency.

Policy CO-13.4: Accommodate the development and use of alternative energy resources, including solar energy and technologies which convert waste or industrial byproducts to energy, provided that such activities are compatible with surrounding land uses and regional air and water quality requirements.

Historic Preservation Element (HPE)

A key HPE policy relevant to climate change encourages the reuse of existing building (and building materials) resources, which could reduce landfill material (a source of methane, a GHG), avoid the incineration of materials (which produces CO2 as a by-product), avoid the need to transport materials to disposal sites (which produces GHG emissions), and eliminate the need for materials to be replaced by new product (which often requires the use of fossil fuels to obtain raw and manufacture new material).[33]

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[33] US EPA, 2006a. General Information on the Link Between Solid Waste and Greenhouse Gas Emissions (web page), October, http://www.epa.gov/climatechange/wycd/waste/generalinfo.html, accessed August 10, 2007.

Safety Element

Safety Element policies that address wildfire hazards are related to climate change in that increased temperatures could increase fire risk in areas that become drier due to climate change.[34] Also, wildfire results in the loss of vegetation; carbon is stored in vegetation, and when the vegetation burns, the carbon returns to the atmosphere.[35] The occurrence of wildfire also emits particulate matters into the atmosphere. Safety Element policies also address storm-induced flooding hazards related to the potential to accommodate potential increase in storms and flooding as a result of climate change. Pertinent safety Element policies including the following:

> *Policy FI-3:* Prioritize the reduction of the wildfire hazard, with an emphasis on prevention.
>
> *Policy FL-1:* Enforce and update local ordinances and comply with regional orders that would reduce the risk of storm-induced flooding.
>
> *Policy FL-2:* Continue or strengthen city programs that seek to minimize the storm-induced flooding hazard.

Other City of Oakland Programs and Policies

The City of Oakland has supported and adopted a number of programs and policies designed to reduce GHG emissions and continue Oakland's progress toward becoming a model sustainable city. Programs and policies of relevance to new residential development include:

Sustainable Oakland Program

Oakland's sustainability efforts are coordinated through the Sustainable Oakland program, a product of the Oakland Sustainability Community Development Initiative created in 1998 (ordinance 74678 C.M.S.)

Green Building

The City of Oakland has implemented Green Building principles through Green Building Guidelines (Resolution No. 79871, 2006) for construction and remodeling, and Green Building Education Incentives for developers. A Green Building Ordinance for private development was approved by City Council on October 19, 2010. Starting January 1, 2011 and ongoing, the ordinance requirements will be mandatory. However, because the application for the Project was deemed complete in 2010, the Green Building Ordinance is not applicable to the proposed Project.

Downtown Housing

The 10K Downtown Housing Initiative has a goal of attracting 10,000 new residents to downtown Oakland by encouraging the development of 6,000 market-rate housing units. This effort is consistent with Smart Growth principles.

Waste Reduction and Recycling

The City of Oakland has implemented a residential recycling program increasing the collection of yard trimmings and food waste. This program has increased total yard trimming collections by 46 percent

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[34] US EPA, Climate Change – Health and Environmental Effects: Health (web page), October 2006b, www.epa.gov/climatechange/effects/health.html, accessed July 24, 2007.

[35] National Aeronautics and Space Administration (NASA), El Nino-Related Fires Increase Greenhouse Gas Emissions, January 5, 2005, http://www.nasa.gov/centers/goddard/news/topstory/2004/0102firenino.html, accessed August 10, 2007.

compared to 2004, and recycling tonnage by 37 percent. Chapter 15.34, Construction and Demolition Debris Waste Reduction and Recycling Requirements, of the Oakland Municipal Code requires non-residential and apartment house demolition and new construction projects, and alterations with a valuation of $50,000 or more, to recycle 100 percent of all asphalt and concrete materials and 65 percent of all other materials.

Polystyrene Foam Ban Ordinance

In June 2006, the Oakland City Council passed the Green Food Service Ware Ordinance (Ordinance 14727, effective as of January 1, 2007), which prohibits the use of polystyrene foam disposable food service ware and requires, when cost neutral, the use of biodegradable or compostable disposable food service ware by food vendors and City facilities.

Zero Waste Resolution

In March 2006, the Oakland City Council adopted a Zero Waste Goal by 2020 Resolution (Resolution 79774 C.M.S.), and commissioned the creation of a Zero Waste Strategic Plan to achieve the goal.

Community Gardens and Farmer's Markets

Community Garden locations include Arroyo Viejo, Bella Vista, Bushrod, Golden Gate, Lakeside Horticultural Center, Marston Campbell, Temescal, and Verdese Carter. Weekly Farmer's Market locations include the Jack London Square, Old Oakland, Grand Lake, Mandela, and Temescal districts. Both efforts promote and facilitate the principal of growing and purchasing locally, which reduces truck and vehicle use, and GHG emissions.

Uniformly Applied Development Standards Imposed as Standard Conditions of Approval[36]

The City's Standard Conditions of Approval relevant to greenhouse gas emissions are listed below for reference. These Conditions of Approval will be adopted as requirements of the proposed Project if the Project is approved by the City to help ensure that no significant greenhouse gas impacts occur. As a result, they are not listed as mitigation measures.

> **SCA Trans-1: Parking and Transportation Demand Management**: *Prior to issuance of a final inspection of the building permit.* The applicant shall pay for and submit for review and approval by the City a Transportation Demand Management (TDM) plan containing strategies to:
>
> - Reduce the amount of traffic generated by new development and the expansion of existing development, pursuant to the City's police power and necessary in order to protect the public health, safety and welfare.
> - Ensure that expected increases in traffic resulting from growth in employment and housing opportunities in the City of Oakland will be adequately mitigated.
> - Reduce drive-alone commute trips during peak traffic periods by using a combination of services, incentives, and facilities.
> - Promote more efficient use of existing transportation facilities and ensure that new developments are designed in ways to maximize the potential for alternative transportation usage.

[36] The City of Oakland has a Standard Condition of Approval that is applicable to projects that generate significant levels of GHG emissions. As indicated in the following analysis, the Project does not meet the criteria for applicability of this SCA because the Project does not cause a significant net increase in GHG emissions exceeding threshold levels.

- Establish an ongoing monitoring and enforcement program to ensure that the desired alternative mode use percentages are achieved.

The applicant shall implement the approved TDM plan. The TDM plan shall include strategies to increase bicycle, pedestrian, transit, and carpools/vanpool use. All four modes of travel shall be considered, and parking management and parking reduction strategies should be included. Actions to consider include the following:

a. Inclusion of additional long term and short term bicycle parking that meets the design standards set forth in chapter five of the Bicycle Master Plan, and Bicycle Parking Ordinance, shower, and locker facilities in commercial developments that exceed the requirement.

b. Construction of and/or access to bikeways per the *Bicycle Master Plan*; construction of priority Bikeway Projects, on-site signage and bike lane striping.

c. Installation of safety elements per the *Pedestrian Master Plan* (such as cross walk striping, curb ramps, count-down signals, bulb outs, etc.) to encourage convenient and safe crossing at arterials.

d. Installation of amenities such as lighting, street trees, trash receptacles per the *Pedestrian Master Plan* and any applicable streetscape plan.

e. Construction and development of transit stops/shelters, pedestrian access, way finding signage, and lighting around transit stops per transit agency plans or negotiated improvements.

f. Direct on-site sales of transit passes purchased and sold at a bulk group rate (through programs such as AC Transit Easy Pass or a similar program through another transit agency).

g. Employees or residents can be provided with a subsidy, determined by the applicant and subject to review by the City, if the employees or residents use transit or commute by other alternative modes.

h. Provision of shuttle service between the development and nearest mass transit station, or ongoing contribution to existing shuttle or public transit services.

i. Guaranteed ride home program for employees, either through 511.org or through separate program.

j. Pre-tax commuter benefits (commuter checks) for employees.

k. Free designated parking spaces for on-site car-sharing program (such as City Car Share, Zip Car, etc.) and/or car-share membership for employees or tenants.

l. Onsite carpooling and/or vanpooling program that includes preferential (discounted or free) parking for carpools and vanpools.

m. Distribution of information concerning alternative transportation options

n. Parking spaces sold/leased separately for residential units. Charge employees for parking, or provide a cash incentive or transit pass alternative to a free parking space in commercial properties.

o. Parking management strategies; including attendant/valet parking and shared parking spaces.

p. Requiring tenants to provide opportunities and the ability to work off-site.

q. Allow employees or residents to adjust their work schedule in order to complete the basic work requirement of five eight-hour workdays by adjusting their schedule to reduce vehicle trips to the worksite.

r. Provide or require tenants to provide employees with staggered work hours involving a shift in the set work hours of all employees at the workplace or flexible work hours involving individually determined work hours.

The applicant shall submit an annual compliance report for review and approval by the City. This report will be reviewed either by City staff (or a peer review consultant, chosen by the City and paid for by the applicant). If timely reports are not submitted, the reports indicate a failure to achieve the stated policy goals, or the required alternative mode split is still not achieved, staff will work with the applicant to find ways to meet their commitments and achieve trip reduction goals. If the issues cannot be resolved, the matter may be referred to the Planning Commission for resolution. Applicants shall be required, as a condition of approval, to reimburse the City for costs incurred in maintaining and enforcing the trip reduction program for the approved Project.

SCA Air-1: Construction-Related Air Pollution Controls: *Ongoing throughout demolition, grading, and/or construction.* During construction, the project applicant shall require the construction contractor to implement all of the following applicable measures recommended by the Bay Area Air Quality Management District (BAAQMD):

a. Water all exposed surfaces of active construction areas at least twice daily (using reclaimed water if possible). Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.

b. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).

c. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

d. Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

e. Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).

f. Limit vehicle speeds on unpaved roads to 15 miles per hour.

g. Idling times shall be minimized either by shutting equipment off when not is use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485, of the California Code of Regulations. Clear signage to this effect shall be provided for construction workers at all access points.

h. All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

i. Post a publicly visible sign that includes the contractor's name and telephone number to contact regarding dust complaints. When contacted, the contractor shall respond and take corrective action within 48 hours. The telephone numbers of contacts at the City and BAAQMD shall also be visible. This information may be posted on other required on-site signage.

j. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.

k. All excavation, grading, and demolition activities shall be suspended when average wind speeds exceed 20 mph.

l. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

m. Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for one month or more).

n. Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress.

o. Install appropriate wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of the construction site to minimize windblown dust. Wind breaks must have a maximum 50 percent air porosity.

p. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.

q. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.

r. All trucks and equipment, including tires, shall be washed off prior to leaving the site.

s. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.

t. Minimize the idling time of diesel-powered construction equipment to two minutes.

u. The project applicant shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction and 45 percent particulate matter (PM) reduction compared to the most recent California Air Resources Board (CARB) fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as they become available.

v. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).

w. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NOx and PM.

x. Off-road heavy diesel engines shall meet the CARB's most recent certification standard.

SCA Util-1: Waste Reduction and Recycling. The project applicant will submit a Construction & Demolition Waste Reduction and Recycling Plan (WRRP) and an Operational Diversion Plan (ODP) for review and approval by the Public Works Agency.

a. Chapter 15.34 of the Oakland Municipal Code outlines requirements for reducing waste and optimizing construction and demolition (C&D) recycling. Affected projects include all new construction, renovations/alterations/modifications with construction values of $50,000 or more (except R-3), and all demolition (including soft demo).The WRRP must specify the methods by which the development will divert C&D debris waste generated by the proposed project from landfill disposal in accordance with current City requirements. Current standards, FAQs, and forms are available at www.oaklandpw.com/Page39.aspx or in the Green Building Resource Center. After approval of the plan, the project applicant shall implement the plan.

b. The ODP will identify how the project complies with the Recycling Space Allocation Ordinance, (Chapter 17.118 of the Oakland Municipal Code), including capacity calculations, and specify the methods by which the development will meet the current diversion of solid waste generated by operation of the proposed project from landfill disposal in accordance with current City requirements. The proposed program shall be implemented and maintained for the duration of the proposed activity or facility. Changes to the plan may be re-submitted to the Environmental

Services Division of the Public Works Agency for review and approval. Any incentive programs shall remain fully operational as long as residents and businesses exist at the project site.

SCA Aesth-2: Tree Removal Permit. *Prior to issuance of a demolition, grading, or building permit.* Prior to removal of any protected trees, per the Protected Tree Ordinance, located on the project site or in the public right-of-way adjacent to the project, the project applicant must secure a tree removal permit from the Tree Division of the Public Works Agency, and abide by the conditions of that permit.

SCA Aesth-3: Tree Replacement Plantings. *Prior to issuance of a final inspection of the building permit.* Replacement plantings shall be required for erosion control, groundwater replenishment, visual screening and wildlife habitat, and in order to prevent excessive loss of shade, in accordance with the following criteria:

a. No tree replacement shall be required for the removal of nonnative species, for the removal of trees which is required for the benefit of remaining trees, or where insufficient planting area exists for a mature tree of the species being considered.

b. Replacement tree species shall consist of Sequoia sempervirens (Coast Redwood), Quercus agrifolia (Coast Live Oak), Arbutus menziesii (Madrone), Aesculus californica (California Buckeye) or Umbellularia californica (California Bay Laurel) or other tree species acceptable to the Tree Services Division.

c. Replacement trees shall be at least of twenty-four (24) inch box size, unless a smaller size is recommended by the arborist, except that three fifteen (15) gallon size trees may be substituted for each twenty-four (24) inch box size tree where appropriate.

d. Minimum planting areas must be available on site as follows:

    For Sequoia sempervirens, three hundred fifteen square feet per tree;

    For all other species listed in #2 above, seven hundred (700) square feet per tree.

e. In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee as determined by the master fee schedule of the city may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians.

f. Plantings shall be installed prior to the issuance of a final inspection of the building permit, subject to seasonal constraints, and shall be maintained by the project applicant until established. The Tree Reviewer of the Tree Division of the Public Works Agency may require a landscape plan showing the replacement planting and the method of irrigation. Any replacement planting which fails to become established within one year of planting shall be replanted at the project applicant's expense.

SCA Aesth-4: Tree Protection During Construction. *Prior to issuance of a demolition, grading, or building permit.* Adequate protection shall be provided during the construction period for any trees which are to remain standing, including the following, plus any recommendations of an arborist:

a. Before the start of any clearing, excavation, construction or other work on the site, every protected tree deemed to be potentially endangered by said site work shall be securely fenced off at a distance from the base of the tree to be determined by the City Tree Reviewer. Such fences shall remain in place for duration of all such work. All trees to be removed shall be clearly marked. A scheme shall be established for the removal and disposal of logs, brush, earth and other debris which will avoid injury to any protected tree.

b. Where proposed development or other site work is to encroach upon the protected perimeter of any protected tree, special measures shall be incorporated to allow the roots to breathe and obtain water and nutrients. Any excavation, cutting, filing, or compaction of the existing ground surface within the protected perimeter shall be minimized. No change in existing ground level shall occur within a distance to be determined by the City Tree Reviewer from the base of any protected tree at any time. No burning or use of equipment with an open flame shall occur near or within the protected perimeter of any protected tree.

c. No storage or dumping of oil, gas, chemicals, or other substances that may be harmful to trees shall occur within the distance to be determined by the Tree Reviewer from the base of any protected trees, or any other location on the site from which such substances might enter the protected perimeter. No heavy construction equipment or construction materials shall be operated or stored within a distance from the base of any protected trees to be determined by the tree reviewer. Wires, ropes, or other devices shall not be attached to any protected tree, except as needed for support of the tree. No sign, other than a tag showing the botanical classification, shall be attached to any protected tree.

d. Periodically during construction, the leaves of protected trees shall be thoroughly sprayed with water to prevent buildup of dust and other pollution that would inhibit leaf transpiration.

e. If any damage to a protected tree should occur during or as a result of work on the site, the project applicant shall immediately notify the Public Works Agency of such damage. If, in the professional opinion of the Tree Reviewer, such tree cannot be preserved in a healthy state, the Tree Reviewer shall require replacement of any tree removed with another tree or trees on the same site deemed adequate by the Tree Reviewer to compensate for the loss of the tree that is removed.

f. All debris created as a result of any tree removal work shall be removed by the project applicant from the property within two weeks of debris creation, and such debris shall be properly disposed of by the project applicant in accordance with all applicable laws, ordinances, and regulations.

Impacts, Standard Conditions of Approval and Mitigation Measures

Criteria of Significance

As identified in Section 15064(a) of the CEQA Guidelines, "determining whether a project may have a significant effect plays a critical role in the CEQA process." In addition, as outlined in Sections 15064(h) and 15130 of the CEQA Guidelines, an environmental impact report (EIR) is required to evaluate cumulative impacts when they can be determined to be "cumulatively considerable." Global climate change effects are by their nature cumulative effects, and thus the criteria of significance used to determine potential impacts are used to measure the extent to which a project's contribution to global climate change is cumulatively significant. The current CEQA Guidelines and the CEQA Initial Study Checklist now contain provisions that specifically set forth requirements for analysis of global climate change impacts in an EIR. As stated in Section 15064(b) of the State CEQA Guidelines, "The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data."

The City of Oakland has developed thresholds of significance for GHG emissions impacts which are identified below. The City's thresholds are based on the thresholds of significance previously published and disseminated by the BAAQMD in its May 2010 Thresholds of Significance and the evidence developed by BAAQMD to support those Thresholds, and on the California Environmental Quality Act Guidelines Update. This is consistent with and authorized by CEQA Guidelines Section 15064. Oakland's thresholds of significance remain in effect, and have not been challenged. Additionally, since the

BAAQMD thresholds were originally developed for project operation impacts only, the City's methodology of combining both the construction emissions and operation emissions for comparison to the threshold, as used in this analysis, represents a conservative analysis of greenhouse gas emissions impacts.

The Project would result in a significant impact related to greenhouse gas emissions if it would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, specifically:

   a. For a project involving a stationary source[37], produce total emissions of more than 10,000 metric tons of CO_2e annually.

   b. For a project involving a land use development[38], produce total emissions of more than 1,100 metric tons of CO_2e annually **AND** more than 4.6 metric tons of CO_2e per service population[39] annually.[40]

   c. For projects that involve both a stationary source and a land use development, calculate each component separately and compare to the applicable threshold.

2. Conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing greenhouse gas emissions.

Methodology

This section describes the methodology that was used to develop the GHG emissions inventories associated with the Baseline and Project. These inventories consider five categories of GHG emissions: energy use associated with non-residential buildings, mobile sources, solid waste, water and wastewater, and refrigeration leaks. Electrical power will be supplied to the Project Site by Pacific Gas & Electric Company (PG&E). Accordingly, indirect GHG emissions from electricity usage are calculated using the PG&E's carbon-intensity factors in CalEEMod based on the 2008 Power/Utility Reporting Protocol. Legislation and rules regarding climate change, as well as the scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventories in this report are a reflection of the guidance and knowledge currently available.

The analysis presented in this EIR primarily utilizes the CalEEMod version 2011.1.1[41] to assist in quantifying the GHG emissions in the inventories presented for the Baseline and the Project. CalEEMod is a statewide program designed to calculate both criteria and GHG emissions from development projects in California. This model was developed under the auspices of the SCAQMD and received input from other California air districts including BAAQMD, and is currently supported by several lead agencies for use in quantifying the emissions associated with development projects undergoing environmental review. CalEEMod utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the United States Environmental Protection Agency (USEPA) AP-42 emission factors,[42]

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[37] Stationary sources are projects that require a BAAQMD permit to operate.

[38] Land use developments are projects that do not require a BAAQMD permit to operate.

[39] The service population includes both the residents and the employees of a proposed project.

[40] A project's impact would be considered significant if the emissions exceed **BOTH** the 1,100 metric tons threshold and the 4.6 metric tons threshold. Accordingly, the impact would be considered less than significant if a project's emissions are below **EITHER** of these thresholds.

[41] Available at: http://www.caleemod.com/. Accessed August 22, 2012

[42] The USEPA maintains a compilation of Air Pollutant Emission Factors and process information for several air

CARB's on-road and off-road equipment emission models such as the Emission FACtor model (EMFAC) and the Offroad Emissions Inventory Program model (OFFROAD), and studies commissioned by California agencies such as the California Energy Commission (CEC) and CalRecycle. This EIR uses Alameda County CalEEMod defaults in the model runs unless otherwise noted in the methodology descriptions below. Details regarding the specific methodologies used by CalEEMod can be found in the CalEEMod User's Guide and associated appendices.[43] The CalEEMod output files are provided for reference in **Appendix 4.2A**.

Approach and Conclusion to CEQA Analysis of GHG Emissions and Climate Change Impacts in this EIR

This EIR discusses estimated GHG emissions of the Project, Project-related activities that could contribute to the generation of increased GHG emissions, the Project design features that would avoid or minimize those emissions.

The approach employed in this EIR is both quantitative and qualitative. The quantitative approach is used to address the numeric significance thresholds identified above (i.e., would the Project generate GHG emissions, either directly or indirectly, that exceed adopted numeric thresholds which would result in the Project having a significant impact on the environment). The quantifiable numeric thresholds discussed above are used to determine if this threshold is met.

The qualitative approach is used to address the second threshold (i.e., would the project conflict with any applicable plan, policy or regulation adopted for the purpose of reducing greenhouse gas emissions). Theoretically, if a project implements reduction strategies identified in AB 32, the Governor's Executive Order S-3-05, or other strategies to help toward reducing GHGs to the level proposed by the governor and targeted by the City of Oakland, it could reasonably follow that the project would not conflict with any applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions. Alternatively, a project could reduce a potential cumulative contribution to GHG emissions through energy efficiency features, density and locale (e.g., compact development near transit and activity nodes of work or shopping) and by contributing to available mitigation programs such as reforestation, tree planting, or carbon trading.

However, the analysis in this EIR considers that because the City's numeric significance thresholds were formulated based on AB 32 reduction strategies, a project cannot exceed the numeric threshold without also conflicting with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of GHG. Therefore, if the proposed project does not meet the first threshold and therefore results in a significant cumulative impact because it exceeds the numeric threshold, the project would also result in a significant cumulative impact under the second threshold, even though the project may incorporate measures and have features that would reduce its contribution to cumulative GHG emissions.

Further, the methodology applied here assumes that all emission sources associated with the Project would be new sources that would combine with existing conditions. For this assessment, it is not possible to predict whether emissions sources (businesses) associated with the Project would move from outside the air basin (and thus generate "new" emissions within the air basin), or whether they are sources that already exist and are merely relocated within the air basin. Because the effects of GHGs are global, if the Project merely shifts the location of the GHG-emitting activities (locations of residences and businesses and where people drive), there would not be a net increase of emissions. It also cannot be determined until

pollution source categories. The data is based on source test data, material balance studies, and engineering estimates. More information is available at http://www.epa.gov/ttnchie1/ap42/

[43] Available at: http://www.caleemod.com. Accessed August 22, 2012

Project construction is completed whether employees and shoppers would walk, bike, or use public transit more often, instead of driving, or use overall less energy by virtue of the Project's characteristics.

GHG Emissions

Impact GHG-1: Construction and operation of the Project would not result in GHG emissions that exceed City thresholds of significance. Therefore, the Project would result in a less-than-considerable contribution to cumulative global climate change, and thus a less-than-significant impact. (**LTS**)

The following analysis includes total energy used during construction, direct emissions from a project's vehicle trip generation and area sources, as well as indirect emissions from off-site electrical and natural gas usage, water and wastewater and energy consumed through solid waste disposal. The majority of energy consumption and associated generation of GHG emissions occur during operation. Typically more than 80 percent of the total energy consumption takes place during the use of buildings and less than 20 percent is consumed during construction.[44] The City's thresholds of significance do not account for construction emissions. Therefore, including construction emissions when comparing project emissions to the threshold, as is done in this analysis, represents a conservative analysis.

General Types of GHG Emissions

Overall, the following activities associated with a typical development could contribute to the generation of GHG emissions:

Removal of Vegetation

The net removal of vegetation for construction results in a loss of the carbon sequestration in plants. However, planting of additional vegetation would result in additional carbon sequestration and lower the carbon footprint of the project.

Construction Activities

Construction equipment typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as carbon dioxide, methane and nitrous oxide. Furthermore, methane is emitted during the fueling of heavy equipment.

Gas, Electric and Water Use

Natural gas use results in the emissions of two GHGs: methane (the major component of natural gas) and carbon dioxide from the combustion of natural gas. Methane is released prior to initiation of combustion of the natural gas (as before a flame on a stove is sparked), and from the small amount of methane that is un-combusted in a natural gas flame. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy intensive. Preliminary estimates indicate that total energy used to pump and treat this water exceeds 15,000 GWh per year, or at least 6.5 percent of the total electricity used in the State per year.[45]

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[44] United Nations Environment Programme (UNEP), 2007. Buildings and Climate Change: Status, Challenges and Opportunities, Paris, France.

[45] California Energy Commission (CEC), 2004. Water Energy Use in California (online information sheet) Sacramento, CA, August 24, http://energy.ca.gov/pier/iaw/industry/water.html, accessed July 24, 2007.

Motor Vehicle Use

Transportation associated with the proposed Project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips. These trips are factored into the model, but not all emissions would be "new", since some vehicle trips are likely relocated from another area. Also, as discussed previously, the Project is designed to limit auto trips.

Baseline Emissions

While the proposed Project and all developments of similar land uses would generate GHG emissions as described above, the City of Oakland's ongoing implementation of its Sustainability Community Development Initiative (which includes an array of programs and measures, discussed previously under *Regulatory Setting*), will collectively reduce the levels of GHG emissions and contributions to global climate change attributable to activities throughout Oakland.

The Project site is currently an actively used shopping center generating GHG emissions from stationary and indirect sources such as electricity, gas and water use. It also generates GHG emissions from mobile sources including those associated with employee trips, shopping trips and deliveries. These current activities produce a baseline amount of GHG emissions against which to measure the incremental change associated with the Project. In calculating these baseline GHG emissions, a number of factors were considered and entered into the calculations.

Site-Specific Energy Consumption Data

The Project Applicant provided utility consumption data for electricity, natural gas, and water usage and also refrigerant leakage rates at the existing Safeway store. Safeway also predicted electricity and natural gas data for the new Safeway store based on the utility consumption of newer Safeway stores that were built with similar project design features as the Project. Safeway also provided Safeway Club Card data used to estimate the average trip length for existing store customers. The CalEEMod default utility consumption data were used for other commercial buildings in the shopping center.

Emission factors were used to convert the consumption data in kilowatt-hours (kWh) and therms, for electricity and natural gas, respectively, to GHG emissions in MT CO2e. Carbon intensity emission factors were used for electricity collected from the Pacific Gas and Electric (PG&E) Power/Utility Reporting Protocol.[46] [47] Natural gas emission factors used were from the California Climate Action Registry's General Reporting Protocol.[48]

Water and Wastewater

Emission factors were also used to convert from consumption data in millions of gallons (MG) water use, to equivalent electricity use, and then to GHG emissions in MT CO2e. Water use was converted to equivalent electricity consumption using the default CalEEMod energy intensity values for Northern California water use which includes the supply, conveyance, treatment, and distribution. The electricity associated with transportation, treatment and disposal of wastewater was evaluated based on CEC's 2006 report. Electricity consumption was converted to CO2e using the method described earlier. Consistent

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[46] CO2 Emission factor for electricity provided by PG&E for the year 2008. California Climate Action Registry Database. 2009. Pacific Gas and Electric 2008 PUP Report. Available at: http://www.climateregistry.org/tools/carrot/carrot-public-reports.html. Accessed August 22, 2012.

[47] CH4 and N2O emission factors for electricity from Table G.6 California Grid Average Electricity Emission Factors (1990-2004) of CARB 2008 Local Government Operations Protocol Version 1.0.

[48] Emission factors for natural gas obtained from California Climate Action Registry. 2009. General Reporting Protocol 3.1, Tables C7 and C9.

with BAAQMD guidance, GHG emissions were only calculated from electricity associated with wastewater treatment, and do not include direct biogenic GHG process emissions associated with wastewater treatment. Water usage for the existing store was provided by Safeway and that for the proposed store was estimated using the water use intensity of the newer Safeway stores that were built with similar project design features as the Project. Water usage for non-Safeway commercial buildings in the existing and new shopping center was estimated using CalEEMod default parameters.

Mobile Sources

Greenhouse gas emissions from mobile sources were calculated using the number of vehicle trips and trip lengths that are associated with baseline operations. Consistent with the transportation study, the number of existing vehicle trips was estimated using Institute of Transportation Engineers (ITE) regression equations.[49] The same pass-by trip rate used in the transportation study was applied in the CalEEMod model. The baseline trip rate for the existing CVS Pharmacy was also estimated using the ITE regression equations, but scaled by the ratio of peak trip counts from a Fehr & Peers study at the site to the peak trip counts derived from the ITE regression equations. The total vehicle miles travels (VMT) associated with Safeway store customers was calculated using the trip length provided by Safeway from Club Card data. VMT associated with all other trips was derived from CalEEMod default trip lengths.

Solid Waste Disposal

Greenhouse gas emissions from solid waste disposal were calculated using the predicted amount of waste disposed and sent to a landfill with landfill gas capture flaring. Defaults from CalEEMod were used in all instances, which is based on data from CalRecycle, the California Air Resources Board (ARB) Local Government Operations Protocol for degradation of solid waste material. The equations used have been modified from the Local Government Operations Protocol to capture all of the future GHG emissions resulting from the waste degradation in the landfill and attributing it to the year it was placed into the landfill.

Refrigerant Leakage

The use of refrigerated systems results in leakage of some of the charged refrigerant. Refrigerants are usually classified as high global warming potential gases. Safeway provided records indicating the typical leakage rates of refrigerant from the refrigerated systems at the existing store. These data along with the amount and type of refrigerant used at the store was used to estimate the total amount of refrigerant leaks from the existing store.

Table 4.6-3 presents an estimate of the baseline CO_2e emissions from the current shopping center resulting from motor vehicle trips, area sources, natural gas combustion, electricity usage (including electricity for conveyance and treatment of water and wastewater) as well and the energy demands associated with landfill needs of the existing shopping center.

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[49] ITE. 2008. Trip Generation. 8th Edition. An ITE Informational Report

Table 4.6-3: Estimated Baseline CO_2e Emissions from the Existing Center
(Metric Tons/Year of Co_2e)

Operation (Vehicle) Emissions	7,472
Area Source	1
Electricity	1,187
Natural Gas (space and water heating)	160
Water and Wastewater	37
Solid Waste	266
Refrigerants	2,325
Total Baseline CO_2e Emissions	11,447

Sources:

California Air Resources Board (ARB). 2008. Local Government Operations Protocol, For the quantification and reporting of greenhouse gas emissions inventories, Version 1.0. September 25.

California Climate Action Registry. 2009. General Reporting Protocol, Version 3.1. January. Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

EBMUD. Energy: Generating Renewable Power. Available at: http://www.ebmud.com/sites/default/files/pdfs/2010_EBMUD_Energy.pdf

Gleick, P.H.; Haasz, D.; Henges-Jeck, C.; Srinivasan, V.; Cushing, K.K.; Mann, A. 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California. Published by the Pacific Institute

Notes:

1. Electricity and natural gas use provided by Safeway.
2. Water and wastewater consumption for the existing store is provided by Safeway, and for the proposed store is estimated using the water use intensity (gal/sqft) of a newer Safeway store with similar features.
3. The average trip length for the Safeway customers is estimated based on the Safeway Club Card data, and for the store employees and people other than customers and workers are the CalEEMod defaults. The trip rates are the CalEEMod default.
4. Electricity emission factors are based on the CalEEMod default values for PG&E.
5. Natural gas emission factors obtained from California Climate Action Registry Reporting Protocol, Table C6 and C9.
6. Energy intensity value for Northern California, the default in CalEEMod, was used which includes the supply, conveyance, treatment, and distribution. Emission factor for electricity provided by Pacific Gas and Electric (PG&E). Wastewater was assumed to be an aerobic process.
7. Used 2014 vehicle emission factors for Alameda County.
8. Refrigeration leaks is provided by Safeway. This has then been converted to CO 2e based on global warming potentials for the different refrigerants.

Project Emissions

GHG emissions from construction, plus the additional vehicles and additional area sources associated the proposed Project were also calculated using CalEEMod version 2011.1.1 and using trip generation data from the Project's traffic analysis (see **Appendix 4.2A**).

The BAAQMD *CEQA Guidelines* indicates that, "when calculating project GHG emissions to compare to the thresholds, the lead agency should ensure that project design features, attributes, or local development requirements are taken into consideration as part of the project as proposed, and not viewed as mitigation measures. For example, projects that are mixed-use, infill, and/or proximate to transit service and local services would have substantially lower vehicle trip rates and associated GHG emissions than what would be reflected in standard, basin-wide average default trip rates and emission estimates."

The following design features, existing plans and policies compliance, and applicable Standard Conditions of Approval are included in the Project, effectively reducing the amount of gross GHG emissions generated during operation.

Vehicle Trips

Because the new Safeway store is larger in terms of store size and grocery service, the current store customers are expected to continue shopping at the same location. The total VMT for these customers were calculated using the ITE regression equations, the size of the existing store, and average trip length estimated based on the current store Club Card data. Net VMT have been calculated using the same methodology as for existing customers. The VMT for the employees and visitors other than customers were also calculated using the same methodology as that used for the existing store.

VMT associated with all other trips was derived from CalEEMod default trip lengths.

Water Usage

Water usage for the proposed Project was estimated using the water use intensity of newer Safeway stores built with similar design features as the Project. Water usage for non-Safeway commercial buildings in the new shopping center was estimated using CalEEMod default parameters.

Solid Waste

Greenhouse gas emissions from solid waste disposal were calculated using the predicted amount of waste disposed and sent to a landfill with landfill gas capture flaring. Defaults from CalEEMod were used in all instances, using the same methodology as was used to calculate baseline emission.

Refrigerant Leaks

The reduction in refrigerant emissions associated with Safeway's sustainability programs can be used as a source of offsetting emissions. The use of refrigerated systems results in leakage of some of the charged refrigerant. Refrigerants are usually classified as high global warming potential gases. Safeway provided records indicating the leakage rates of refrigerant from the refrigerated systems at the existing store. These data along with the amount and type of refrigerant used at the store was used to estimate the total amount of refrigerant leaks from the existing store. The amount and leak rate for the new store was estimated based on information from similar newer stores. For each refrigerant type, the global warming potential (GWP) was calculated based on the values utilized in BAAQMD Guidelines and associated recommended models for specific refrigerants identified. The global warming potential indicates, on a pound for pound basis, the potency of the chemical compared to carbon dioxide. Multiplying the pounds of refrigerant by the GWP results in the GHG emissions from refrigeration leaks in terms of carbon dioxide equivalents. For non-Safeway commercial buildings in the shopping center, it is speculative as to whether there would be refrigeration; therefore, the GHG emissions for these buildings were not calculated.

Project Setting and Design Measures

The Project site is located in an urban location within a broad mix of surrounding land uses, in an area with high pedestrian and bicycle activity, well-served by transit, and conveniently located to provide local-serving retail needs of the surrounding mixed-use neighborhood. These factors result in a reduction in vehicle trips and corresponding transportation-related GHG emissions as compared to the same type of development that may occur elsewhere in the outer Bay Area. The Project design is intended to facilitate and increase alternative modes of transportation, with improved pedestrian and bicycle access over current conditions. The Project would expand the number of convenient local-serving retail establishments over current conditions and is expected to attract a larger share of local shopping and retail entertainment users from the nearby residential neighborhoods.

Regulatory Compliance

The Project would be required to comply with applicable local, state and federal regulations associated with the generation of GHG emissions and energy conservation. In particular, construction of the Project would be required to meet California Energy Efficiency Standards for Residential and Nonresidential Buildings and the requirements of pertinent City policies as identified in the City of Oakland General Plan, helping to reduce future energy demand as well as reduce the Project's contribution to regional GHG emissions.

The Project would be required to comply with the City of Oakland's Construction and Waste Reduction Ordinance and submit a Construction and Demolition Waste Reduction Plan for review and approval. As a result, the number of trips by construction-related trucks, which primarily have diesel fueled engines, would be reduced since demolition debris hauled off site would be reused on the site. In addition, reuse of concrete, asphalt, and other debris would reduce the amount of material introduced to area landfills.

The Project would be subject to the regulatory requirements, mitigation measures and Standard Conditions of Approval indicated in this EIR that would reduce GHG emissions. These include, but are not limited to

- SCA Trans-1: Parking and Transportation Demand Management
- SCA Air-1 and SCA Air-2: Construction-Related Air Pollution Controls
- SCA Util-1: Waste Reduction and Recycling
- SCA Bio-2 through -4: Tree Removal and Replanting

Safeway Sustainability Measures

Although only one component of the Project and representing less than 25 percent of the total Project building area, the new Safeway store would be a major tenant of the Project. Safeway's subsidiary business, Property Development Centers, Inc., is the Project applicant. According to Safeway's web site, "In 2006, Safeway was the first retailer to join the Chicago Climate Exchange, making a legally binding commitment to reduce our greenhouse gas emissions (GHG) by 6% below our year 2000 baseline by the end of 2010. We recently completed the verification process for our 2008 emissions, and successfully reduced our greenhouse gas emissions by 9%, far surpassing our legally binding agreement. Safeway remains the only retailer to have made a legally binding commitment to reduce its carbon footprint."[50] As a corporation, Safeway promotes the following sustainability practices:

- Safeway buys enough wind energy to power all of its fuel stations and all of its stores in San Francisco, Boulder, Colorado and its Pleasanton corporate offices.
- In 2009, Safeway recycled more than 500,000 tons of cardboard, plastics and compostable material. 85% of the solid waste from all California stores is recycled.
- All of Safeway's fleet of 900 delivery trucks runs on biodiesel fuel.
- Safeway buildings are constructed of sustainable masonry, concrete, and steel products. They contain recycled material, often locally produced and reusable as demolition recycled material when the buildings are either remodeled or replaced.

[50] http://csrsite.safeway.com/planet/sustainability-initiatives/

- During construction, almost all waste materials are managed and diverted from landfills to recycling centers or in some cases re-used.
- Light colored, “cool roofing” materials are used at all new Safeway stores to reflect heat from the building and reduce the heat island effect.
- Internal finish materials used in new Safeway stores have low volatile organic compounds (i.e., low-VOC paints).
- Safeway stores monitor, control and adjust indoor air, energy use, lighting level and refrigeration efficiency using sophisticated electronic management systems.
- Heat reclaimed from refrigeration systems is used to condition the air in the store.
- Low flow plumbing fixtures and faucets are used throughout the building to reduce water usage.
- Exterior Safeway signs use energy efficient LED lights.
- Safeway’s parking areas include shade trees to reduce heat build-up during the day.
- Safeway’s landscaping is designed to be drought tolerant. Irrigation for some sites utilizes condensate water produced from the store instead of city water.
- Urban designs focus on pedestrian and bicycle access as well as connectivity to public transportation
- Bicycle parking spaces are provided at Safeway stores for customer and employee use.
- Parking lots include special parking for carpools and hybrid cars.
- Roughly 30% of the produce sold by Safeway annually is locally supplied. Buying locally grown fruits and vegetables reduces greenhouse gas emissions by limiting transportation miles.
- One of the newer Safeway brands, *O Organics*, consists only of products that are USDA-certified organic, grown without the use of synthetic pesticides, genetic modification, growth hormones or antibiotics. Another of the Safeway product lines, *Bright Green* home care products, features cleaning and laundry products made with naturally derived and biodegradable ingredients, paper products made from 100% recycled content, trash bags made from recycled plastic, high-efficiency light bulbs and reusable stainless steel water bottles.

Construction GHG Emissions

Greenhouse gas emissions from construction of the Project were calculated using default assumptions regarding the number of off-road construction equipment, worker commute trips, and vendor trips. Emissions were calculated from construction equipment using the CalEEMod defaults based on the 15 acre Project site and the amount of building demolition, at a total of 185,500 square feet.

CalEEMod is based upon ARB-approved Off-Road and On-Road Mobile-Source Emission Factor models (OFFROAD and EMFAC, respectively), and is designed to estimate construction emissions for land use development projects and allows for the input of project specific information. OFFROAD is an emissions factor model used to calculate emission rates from off-road mobile sources (e.g., construction equipment, agricultural equipment). EMFAC is an emissions factor model used to calculate emissions rates from on-road vehicles (e.g., passenger vehicles, haul trucks). Where project-specific data were not available (e.g. equipment horsepower and load factors), default assumptions from CalEEMod were used to estimate construction emissions.[51] The off-road diesel emission factors used by CalEEMod are based on the Air Resources Board (ARB) OFFROAD2007 program. As such, an adjustment to the load factors was used based on a 33% reduction from the final mass emissions reported by CalEEMod. The total one-time GHG

[51] CalEEMod model output files are provided as Appendix 4.2A

emissions for construction, including off-road equipment, worker commuting, vendor trips, and hauling for the Project are calculated to be 1,754 MT CO2e. The annualized construction emissions over a 40-year period are 43.8 MT.

Summary

In light of these Project design features, site attributes and local development requirements, the GHG emissions associated the Project were calculated, including adjustments to account for the reduction in emissions that would likely be achieved based on the unique features and attributes of the Project and its location. When calculating the adjusted emission levels, no reductions associated with implementation of applicable regulations were accounted for unless such were above and beyond those already considered by BAAQMD. These Project-related GHG emissions are presented below in **Table 4.6-4**.

Comparison of Project vs. Baseline GHG Emissions

Several adjustments were made by the model to these emissions:

- CO_2 emissions are converted to metric tons and then converted to CO_2e by multiplying by 100/95 (to account for the contribution of other GHGs such as CH4, N_2O, and HFCs from leaking air conditioners). CO_2 emissions represent more than 90 percent of the Project's contribution of GHG emissions.
- CO_2e transportation emissions are adjusted to account for the low carbon fuels rule (i.e., the "Pavley" regulations).
- The Projects total construction emissions (annual emissions projected over each year of the construction period) were annualized over a period of 40 years and added to the expected emissions during operation. The 40-year period is used because 40 years is considered the average life expectancy of a building before it is remodeled with considerations for increased energy efficiency. Since the significance thresholds were developed for project operation impacts only, including construction-period emissions represents a conservative analysis.

Table 4.6-4: Estimated CO_2e Emissions from the Proposed Project
(Metric Tons/Year of Co_2e)

	Baseline Emissions	Projected Future Emissions	Net Change in Emissions (Project)
Vehicle Emissions	7,472	9,123	1,650
Electricity	1,187	1,413	225
Natural Gas (space and water heating)	160	200	40
Water and Wastewater	37	59	22
Solid Waste	266	276	9
Refrigerants	2,325	228	-2,096
Subtotal GHG Emissions, Operation	11,447	11,298	-149
Annualized Construction Emissions		45	45
Total CO_2e Emissions	11,447	11,343	-104
Percent Change Compared to Baseline			-1%

Source: Lamphier-Gregory, 2010.

As indicated in **Table 4.6-4**, the Project is anticipated to result in an overall decrease of approximately 150 metric tons per year of CO2e emissions as compared to current, or Baseline conditions. This approximately1% decrease in total GHG emissions associated with the Project is primarily attributed to the large reductions in refrigerant leakage that would occur with the new Safeway store. As a net decrease in comparison to the Baseline, the Project would not exceed the 1,100 metric tons per year threshold, and no impact would occur.

Conflict with an Applicable Plan, Policy or Regulation Adopted for the Purpose of Reducing GHG Emissions

Impact GHG-2: Because the estimated GHG emissions of the Project would not exceed the City's numeric significance threshold as analyzed under Impact GHG-1, development and implementation of the Project would comply with applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions. **(LTS**)

The City's significance thresholds were formulated based on AB 32 reduction strategies. The numeric GHG significance thresholds are intended to serve as interim levels during the implementation of AB 32 and SB 375. Until AB 32 has been fully implemented in terms of adopted regulations, incentives, and programs, and until the Sustainable Communities Strategy or Alternative Planning Strategy required by SB 375 have been adopted or the California Air Resources Board adopts a recommended threshold, the City's significance thresholds represent substantial compliance with applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions. Therefore, if the Project were to exceed the numeric thresholds it would not comply with applicable plans, policies and regulations adopted for the purpose of reducing the GHG emissions. However, as described under Impact GHG-1 above, the Project's emissions would not exceed this numeric threshold, and the Project would thus comply with applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions.

The Project's GHG emissions generated during construction and operation would be minimized by virtue of the building characteristics and site design features that the Project proposes. The Project is well served with transit facilities, is consistent with Smart Growth principles of developing neighborhood serving retail in areas containing residential neighborhoods, and would be required to meet California and Oakland energy efficiency standards and regulations to reduce future energy demand as well as to reduce the project's contribution to regional GHG emissions. In addition, the Project is subject to all the regulatory requirements including City's Standard Conditions of Approval which would reduce GHG emissions of the Project. These include but are not limited to SCA Trans-1: Parking and Transportation Demand Management, SCA Air-1: Construction-Related Air Pollution Controls, SCA Util-1: Waste Reduction and Recycling, SCA Bio-2 through -4: Tree Removal and Replanting, and SCA Hydro-1: Minimizing post construction stormwater runoff that could affect the ability to accommodate potentially increased storms and flooding within existing floodplains and infrastructure systems.

The Oakland Energy and Climate Action Plan (ECAP) was developed to identify, evaluate and recommend prioritized actions to reduce energy consumption and GHG emissions in Oakland. The ECAP identifies energy and climate goals, clarifies policy direction, and identifies priority actions for reducing energy use and GHG emissions. On July 7, 2009, the Oakland City Council directed staff to develop the draft Oakland ECAP using a GHG reduction target equivalent to 36 percent below 2005 GHG emissions by 2020 (City of Oakland, Resolution No. 82129 C.M.S., 2009). The City adopted ECAP on December 4, 2012. The obligation of a lead agency for conducting a policy consistency analysis under CEQA is limited to "…an examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls" (Section 15063(d)(5) of the CEQA Guidelines). The ECAP is not a land use plan per se, and none of its policies and actions pertains specifically to the Project site. The Project would not be in obvious direct conflict with the policies and actions contained in the ECAP, and because the Project results in a reduction of GHG emissions as compared to the baseline, the Project is consistent with the ECAP actions to reduce energy consumption and GHG emissions in Oakland.

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4.7

Hazards and Hazardous Materials

This chapter evaluates the proposed Project's potential impacts related to hazards and hazardous materials. This section describes existing hazards and the use of hazardous materials in the vicinity of the site, and evaluates the extent to which hazards and hazardous materials may affect development of the Project site. The discussion and analysis in this section of the EIR draws from the following sources:[1]

- *Phase I Environmental Assessment*, GeoTrans Inc., April 2001
- *Phase II Environmental Assessment Report*, GeoTrans Inc., June 2001
- *Addendum to Screening Level Phase II Environmental Assessment*, GeoTrans Inc., August 2001
- *Environmental Hazards Survey Inspection for Asbestos Containing Materials*, Monte Deignan & Associates, September 2001, and
- *Investigation of Possible Underground Storage Tank*, GeoTrans Inc., October 2001
- *Addendum to Preliminary Results of Site Characterization*, Pangea, November 2006

Setting

Hazards and Hazardous Materials at the Project Site

Phase I ESA [2]

A Phase I Environmental Site Assessment (ESA) was prepared by GeoTrans, Inc. in April 2001. As part of the Phase I ESA GeoTrans reviewed historical records for the Project site. No portion of the Project site is included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Several hazardous material release sites (primarily underground storage tanks) were listed in the database search in the area around the Project site. Based on distance from the property and the groundwater flow direction, these identified sites are not expected to impact soil or groundwater conditions at the Project site.

Between 1965 and 1983, a dry cleaning business operated at 5114 Broadway (at the Project site), and conducted on-site dry cleaning operations. No information was found to indicate that a release of dry cleaning solvents had occurred during that time, but the Phase I ESA indicated that it was possible that undetected or unreported releases of dry cleaning solvents could have occurred.

The Phase I ESA also found that several retail establishments within the shopping center (Longs Drugs, Ritz Camera and Fox Photo) either used and/or stored photo-processing chemicals at the Project site. Records indicate that spent photo-processing solutions are treated through self-contained silver recovery

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[1] These reports are available for review at the City's Planning Division offices.

[2] *Phase I Environmental Assessment*, GeoTrans Inc., April 2001

systems at each of these locations. The wastewater and recovered silver are subsequently sent off-site for recycling, with no impact to soils, groundwater of the wastewater system.

No evidence of underground storage tanks (UST), above ground storage tanks (AST), groundwater supply wells or groundwater monitoring wells were identified on the site.

Aside from the potential that undetected or unreported releases of dry cleaning solvents could have occurred between 1965 and 1983, the Phase I ESA found no evidence or indication of the presence of Recognized Environmental Conditions at the property. A Phase II site assessment was recommended to determine whether on-site soil or groundwater had been impacted by the former dry cleaning business, but no further assessment activities were recommended.

Phase II Environmental Assessment[3]

The Phase II ESA conducted in June of 2001 was conducted primarily to follow-up on the Phase I ESA to further assess possible soil or groundwater conditions in the vicinity of the former dry cleaning business. Five borings (SB-1 through SB-5) were conducted to collect soil samples, and a groundwater sample was collected at the one location (SB-2) where groundwater was encountered. Low concentrations of the dry cleaning solvent tetrachloroethene (PCE) was detected in soil samples collected from SB-3 and SB-4, located near the sanitary sewer line that serviced the dry cleaning space (see **Figure 4.7-1**). This indicates that a release of PCE has occurred. The detected concentrations are very low and well below corresponding health-based action levels (U.S. EPA PRG Values). Since the soil samples were collected above the sanitary sewer, it is possible that higher concentrations of PCE occur below the depth of the pipe.

PCE was not detected in the one groundwater sample collected during the Phase II ESA. That sample was taken in an up-gradient location with respect to the dry cleaning space. Groundwater conditions down-gradient from the dry cleaning space could not be evaluated at that time due to the presence of bedrock and the lack of groundwater.

The Phase II ESA also detected low concentrations of benzene and dichlorofluoromethane (Freon 12) in the groundwater sample collected from SB-2. The benzene concentration of 1.7 ppb slightly exceeds the California Maximum Contaminant Level (MCL) and Drinking Water Standard of 1 ppb benzene. The source of benzene in groundwater at this location was not known. The detection of Freon 12 is not considered environmentally significant at the reported concentration (14 ppb), and may be the result of laboratory or field contamination.

During underground utility clearance activities performed for the Phase II ESA a magnetic anomaly consistent with an underground storage tank (UST) was detected with a metal detector adjacent to boring location SB-1. A magnetometer identified a shape consistent with an underground storage tank (UST). However, there is no surface indication of a UST and no record of a past UST or septic system on the Project site. Aside from a very low detection of gasoline range hydrocarbons (1.6 ppm), no compounds were detected in the 10-foot soil sample collected at SB-1 adjacent to the possible UST site, and there was no field indication of soil impacts at SB-1.

[3] *Phase II Environmental Assessment Report*, GeoTrans Inc., June 2001

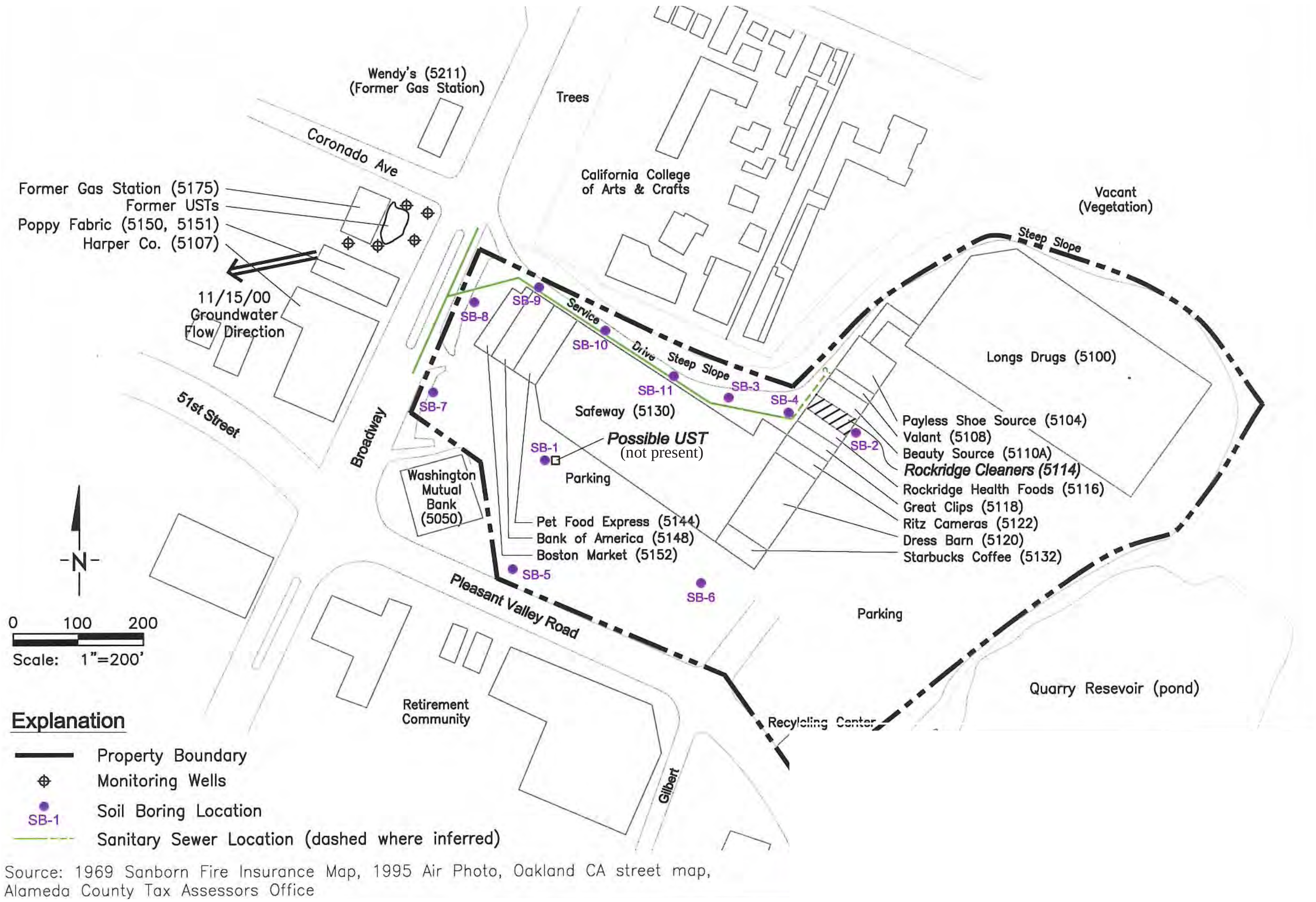

Figure 4.7-1
Environmental Site Assessment Map

Source: GeoTrans

Addendum to Screening Level Phase II Environmental Assessment [4]

An Addendum to Screening Level Phase II ESA was conducted by GeoTrans Inc. in July 2001 to gather additional soil and groundwater samples to further assess soil and groundwater conditions in the vicinity of the former dry cleaning business. Five additional soil borings (SB-6 through SB-9 and SB-11, see Figure 4.9-1) were conducted at the Project site.

A low concentration of PCE was detected in one soil sample (SB-11) at a depth of 5 feet below ground surface. PCE was not detected in any other soil samples or in samples from SB-11 at greater depth. PCE was not detected in groundwater samples. PCE is present in low concentrations in soil near the sanitary sewer line, but concentrations are below the U.S. EPA health-based Preliminary Remediation Goal value of 190 ppm for commercial uses. PCE was not found in any groundwater samples. Based on the findings from the Phase II ESA and the Addendum, significant impacts to soil or groundwater from PCE was not found, but low concentrations of PCE may have been discharged into the sanitary sewer in the past.

The groundwater sample from Boring SB-9 also had a concentration of Methyl-butyl ether (MTBE) of 48 ppb, which exceeds the California Maximum Contaminant Level (MCL) and Drinking Water Standard of 13 ppb MTBE. The source of the MTBE in the groundwater is not known.

Underground Storage Tank Investigation [5]

In October 2001 further investigation of the unidentified underground object discovered during the Phase I ESA was conducted using ground penetrating radar (GPR). Some metal objects were detected in the area; however, the pattern of detected objects did not match the typical rectangular shape of an UST. Subsequent GPR investigations were conducted over an area of approximately 400 square feet. Two known utility lines in the area were detected but not an UST. It is possible that the objects detected during the Phase I ESA using a metal detector are scrap metal or unused buried pipes. No evidence of the presence of an UST was found.

Asbestos Survey [6]

An asbestos survey was conducted at the Project site in August of 2001. A total of 58 samples were collected from representative building materials. During the inspection process, additional materials (e.g., exterior and interior paints, ceramic tile materials, older copper pipe that may contain lead solder at joints and fittings, etc.) were noted that might contain lead, which were not a specific part of this survey. The survey revealed the following likely asbestos containing materials:

- Floor tile samples (older black floor mastic found below other more recent flooring materials) were found to contain asbestos. Other yellow colored floor mastics were non-detect for asbestos content.
- Vinyl sheet flooring in older areas of the cleaners produced a positive result for asbestos. All of the other vinyl sheet flooring samples were newer and yielded no positive results for asbestos.
- Drywall compound samples from older areas of construction produced positive results. All of the original older gypsum board wallboard materials should be considered as positive for greater than 1% asbestos. In newer areas the drywall sampling yielded negative results for asbestos. It should be assumed that any older walls at the perimeter of tenant's spaces could contain asbestos.

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[4] *Addendum to Screening Level Phase II Environmental Assessment*, GeoTrans Inc., August 2001

[5] *Investigation of Possible Underground Storage Tank*, GeoTrans Inc., October 2001

[6] *Environmental Hazards Survey Inspection for Asbestos Containing Materials*, Monte Deignan & Associates, September 2001

- The built-up roof's silver roof emulsion and the #90 mineral surface roofing above the building at the main roof areas were negative for asbestos content.
- The plastic roof cements at roof locations was positive for asbestos. The sealant on parts of the HVAC ducting appears to be roof cement, which contains asbestos.

Hazardous Materials in the Vicinity of the Project Site [7]

A former Exxon gas station was located at 5175 Broadway, immediately west of Broadway from the Project site (see Figure 4.7-1). That former gas station has been identified as a source of groundwater contamination. The primary contaminants at that former Exxon site are total petroleum hydrocarbons as gasoline (TPHg) and benzene. In 1990, three 8,000 gallon UST's, one 500 gallon UST and associated piping were removed from this site, and approximately 700 tons of gasoline-contaminated soil was excavated, treated on-site and used to backfill the excavation.

The residual soil contamination following treatment and backfill was measured from 20 soil samples collected from 10 drilled soil borings at that site. Based on the results of the soil boring program at that site, residual contaminant concentrations at most locations were less than the California Regional Water Quality Control Board's (RWQCB) Environmental Screening Levels (ESLs) for residential use and for groundwater that is a potential source of drinking water. However, samples collected at a depth of 9 feet at borings B-3, B-4 and B-9 showed TPHg concentrations that exceeded the ESL standard of 100 mg/kg. Benzene concentrations that exceeded the ESL of 0.044 mg/kg were also detected at boring location B-3. Based on the results of this investigation, residual vadose zone soil contamination does not appear to be a concern at that site, although the presence of residual hydrocarbons in several soil boring samples taken close to the water table elevation suggests that a zone of capillary fringe soil contamination at concentrations slightly exceeding the ESLs is probably present.

Groundwater monitoring wells at that site also indicate that residual TPHg and benzene concentrations substantially exceed RWQCB Tier 1 Final ESLs for groundwater that is a potential source of drinking water. Secondary contaminants that also exceed ESLs are toluene, ethylbenzene, xylenes, and 1,2-dichloroethane (EDC). These observations indicate that groundwater velocities at that site are very low and that natural attenuation mechanisms have not been effective in reducing contaminant concentrations in the groundwater.

No off-site groundwater monitoring wells are present, so the downgradient extent of contamination in not currently known. The groundwater flow from that site is consistently westwards to southwestwards, away from the Project site.

Regulatory Setting

The following section provides the federal, State, and local regulatory framework for hazardous materials and waste, building materials (e.g., lead, asbestos), and worker health and safety.

The use, storage and disposal of hazardous materials, including management of contaminated soils and groundwater, is regulated by numerous local, State, and federal laws and regulations. The U.S. Environmental Protection Agency (U.S. EPA) is the federal agency that administers hazardous materials and hazardous waste regulations. State agencies include the California EPA (Cal/EPA), which include the California Department of Toxic Substances Control (DTSC), the State Water Resources Control Board (State Water Board), the California Air Resources Board (CARB) and other agencies. The San Francisco Bay Regional Water Quality Control Board (RWQCB), the Bay Area Air Quality Management District

[7] *Addendum to Preliminary Results of Site Characterization*, Pangea, November 2006

(BAAQMD), Alameda County Department of Environmental Health (ACDEH) and Oakland Fire Services Agency (OFSA) have jurisdiction on a regional or local level.

A description of each agency jurisdiction and involvement in the management of hazardous materials and wastes is provided below.

Federal Regulations

Occupational Safety and Health Administration (OSHA)

Worker health and safety is regulated at the federal level by the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). The Federal Occupational Safety and Health Act of 1970 authorizes states (including California) to establish their own safety and health programs with OSHA approval; implementation of worker health and safety in California is regulated by the California Department of Industrial Relations (DIR). The DIR includes the Division of Occupational Safety and Health (DOSH), which acts to protect workers from safety hazards through its California OSHA (Cal/OSHA) program and provides consultative assistance to employers. California standards for workers dealing with hazardous materials are contained in CCR Title 8 and include practices for all industries (General Industrial Safety Orders), specific practices for construction, and other industries.

Environmental Protection Agency (EPA)

The U.S. EPA is the federal agency responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials and hazardous waste. The federal regulations are primarily codified in Title 40 of the Code of Federal Regulations (40 CFR). The legislation includes the Resource Conservation and Recovery Act of 1976 (RCRA), the Superfund Amendments and Reauthorization Acts of 1986 (SARA), and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The U.S. EPA provides oversight for site investigation and remediation projects, and has developed land disposal restrictions and treatment standards for the disposal of certain hazardous wastes.

State

Three State agencies, described below, regulate hazardous materials and waste applicable to the proposed Project.

Department of Toxic Substances Control

In California, DTSC is authorized by U.S. EPA to enforce and implement federal hazardous materials laws and regulations. California regulations pertaining to hazardous materials are equal to or exceed the federal regulation requirements. Most State hazardous materials regulations are contained in Title 22 of the California Code of Regulations (CCR). DTSC generally acts as the lead agency for soil and groundwater cleanup projects that affect public health, and establishes cleanup levels for subsurface contamination that are equal to, or more restrictive than, federal levels. DTSC has also developed land disposal restrictions and treatment standards for hazardous waste disposal in California.

State Water Resources Control Board

The State Water Board enforces regulations on how to implement underground storage tank (UST) programs. It also allocates monies to eligible parties who request reimbursement of funds to clean up soil and groundwater pollution from UST leaks. The State Water Board also enforces the Porter-Cologne Water Quality Act through its nine regional boards, including the San Francisco Bay Regional Water Quality Control Board, described below.

California Air Resources Board

This agency is responsible for coordinating and oversight of State and local air pollution control programs in California, including implementation of the California Clean Air Act of 1988. CARB has developed State air quality standards, and is responsible for monitoring air quality in conjunction with the local air districts.

Regional Agencies

The following regional and local agencies have regulatory authority over the proposed Project's management of hazardous materials and waste on the site.

San Francisco Bay Regional Water Quality Control Board

The Project site is located within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board. The RWQCB provides for protection of State waters in accordance with the Porter-Cologne Water Quality Act of 1969. The RWQCB can act as lead agency to provide oversight for sites where the quality of groundwater or surface waters is threatened, and has authority to require investigations and remedial actions.

Bay Area Air Quality Management District

The BAAQMD has primary responsibility for control of air pollution from sources other than motor vehicles and consumer products (which is the responsibility of U.S. EPA and CARB). BAAQMD is responsible for preparing attainment plans for non-attainment criteria pollutants, control of stationary sources, and the issuing of permits for activities including asbestos demolition/renovation activities (District Regulation 11, Rule 2).

Alameda County Department of Environmental Health and Oakland Fire Services Agency

ACDEH and OFSA are the primary agencies responsible for local enforcement of State and federal laws pertaining to hazardous materials management and oversight of hazardous materials investigations and remediation in Alameda County.

In Oakland, OFSA has been granted responsibility for implementation and enforcement of many hazardous materials regulations under the Certified Unified Program Agency (CUPA) Program (California Health and Safety Code Chapter 6.11). The CUPA programs include coordination of the local hazardous waste generator programs, underground and aboveground storage tank management, and investigations of leaking underground storage tank sites. OFSA also implements the City of Oakland Hazardous Materials Assessment and Reporting Program, pursuant to City Ordinance No. 12323, which requires notification of hazardous materials storage, use and handling, and an assessment as to whether this storage, use and handling would cause a public health hazard to nearby sensitive receptors including schools, hospitals or other sensitive receptors.

The Oakland Office of Emergency Services (part of OFSA) provides emergency response to fire emergencies and hazardous materials incidents within the City of Oakland, and conducts vegetation management inspections for wildfire reduction. Oakland has entered into agreements with adjoining jurisdictions for cooperative response to fires.[8]

[8] City of Oakland, General Plan Safety Element, Fire Hazards (Chapter 4), November 2004.

Urban Land Redevelopment (ULR) Program

The ULR Program is a collaborative effort by the City of Oakland and the principal agencies charged with enforcing environmental regulations (DTSC, Water Board and ACDEH) to facilitate the cleanup and redevelopment of contaminated properties in Oakland. The program is coordinated by the City and is specific to Oakland sites. The ULR Program clarifies environmental investigation requirements and established Oakland-specific, risk-based corrective action (RBCA) standards for qualifying sites. RBCA standards are criteria that, when met, adequately address risk posed by contamination to human health. The RBCA standards were first submitted in 1999.

City of Oakland

Relevant policies and conditions from the City's General Plan, Municipal Code and Standard Conditions of Approval are described below:

City of Oakland General Plan

Safety Element. The November 2004 Safety Element of the Oakland General Plan contains the following policies and actions regarding hazards and hazardous materials and emergency response that may apply to the Project. Relevant policies from other General Plan elements are also described.

> *Policy HM-1*: Minimize the potential risks to human and environmental health and safety associated with past and present use, handling, storage and disposal of hazardous materials.
>
> *Policy HM-2*: Reduce the public's exposure to toxic air contaminants through appropriate land use and transportation strategies.
>
> *Policy HM-3*: Seek to prevent industrial and transportation accidents involving hazardous materials and enhance the city's capabilities to respond to such incidents.
>
> *Policy PS-1*: Maintain and enhance the city's capacity to prepare for, mitigate, respond to, and recover from disasters and emergencies.

OSCAR Element. The following policy statements from the Open Space, Conservation and Recreation (OSCAR) Element of the General Plan regarding hazards and hazardous materials may apply to the proposed Project:

> *Policy CO-1.2*: Soil contamination and hazards. Minimize hazards associated with soil contamination through the appropriate storage and disposal of toxic substances, monitoring of dredging activities, and clean up of contaminated sites. In this regard, require soil testing for development of any site (or dedication of any parkland or community garden) where contamination is suspected due to prior activities on the site.
>
> *Policy REC-4.2*: Encourage maintenance practices which conserve energy and water, promote recycling and minimize harmful side effects on the environment. Ensure that any application of chemical pesticides and herbicides is managed to avoid pollution of ground and surface waters.

City of Oakland Municipal Code

The City of Oakland Municipal code includes regulations for the handling of hazardous materials in the City. Title 8, Chapter 8.12 of the Oakland Municipal Code adopts the California Health and Safety Code laws (Health and Safety Code Section 25500 et seq.) related to hazardous materials. City Ordinance No. 12323 regarding hazardous materials storage, use and handling reporting requires notification of hazardous materials storage, use and handling, and an assessment as to whether this storage, use and handling would cause a public health hazard to nearby sensitive receptors including schools, hospitals or other sensitive receptors.

City of Oakland Hazardous Materials Release Response Plan Program

The City of Oakland Fire Department Fire Prevention Bureau Hazardous Materials Release Response Plan Program requires any business that handles more than a threshold quantity of a hazardous material to develop and submit to the Fire Department a Hazardous Materials Business Plan. The threshold is 30 gallons, 500 pounds or 220 cubic feet of gas. For Extremely Hazardous Substances as listed in 40 CFR, Part 355, Appendix A, the reporting quantity is the California threshold or the Federal Threshold Planning Quantity (TPQ) depending on whichever is lower. The Hazardous Materials Business Plan must include and address facility information, inventory of hazardous materials, facility map, emergency response plans and procedures, training, release reporting, underground storage tanks, and hazardous waste treatment/tiered permitting.

City of Oakland Standard Conditions of Approval

The City's Standard Conditions of Approval relevant to potential hazardous materials impacts are listed below for reference. These Standard Conditions of Approval will be adopted as requirements of the proposed Project if the Project is approved by the City to help ensure that no significant impacts occur. As a result, they are not listed as mitigation measures.

SCA Haz-1: Phase I and/or Phase II Reports. *Prior to issuance of a demolition, grading, or building permit.* Prior to issuance of demolition, grading, or building permits the project applicant shall submit to the Fire Prevention Bureau, Hazardous Materials Unit, a Phase I environmental site assessment report, and a Phase II report if warranted by the Phase I report for the project site. The reports shall make recommendations for remedial action, if appropriate, and should be signed by a Registered Environmental Assessor, Professional Geologist, or Professional Engineer.

SCA Haz-2: Environmental Site Assessment Reports/Remediation. *Prior to issuance of a demolition, grading, or building permit.* If the environmental site assessment reports recommend remedial action, the project applicant shall:

a. Consult with the appropriate local, State, and federal environmental regulatory agencies to ensure sufficient minimization of risk to human health and environmental resources, both during and after construction, posed by soil contamination, groundwater contamination, or other surface hazards including, but not limited to, underground storage tanks, fuel distribution lines, waste pits and sumps.

b. Obtain and submit written evidence of approval for any remedial action if required by a local, State, or federal environmental regulatory agency.

c. Submit a copy of all applicable documentation required by local, State, and federal environmental regulatory agencies, including but not limited to: permit applications, Phase I and II environmental site assessments, human health and ecological risk assessments, remedial action plans, risk management plans, soil management plans, and groundwater management plans.

SCA Haz-3: Radon or Vapor Intrusion from Soil or Groundwater Sources. *Ongoing*. The project applicant shall submit documentation to determine whether radon or vapor intrusion from the groundwater and soil is located on-site as part of the Phase I documents. The Phase I analysis shall be submitted to the Fire Prevention Bureau, Hazardous Materials Unit, for review and approval, along with a Phase II report if warranted by the Phase I report for the project site. The reports shall make recommendations for remedial action, if appropriate, and should be signed by a Registered Environmental Assessor, Professional Geologist, or Professional Engineer. Applicant shall implement the approved recommendations.

SCA Haz-4: Lead-Based Paint/Coatings, Asbestos, or PCB Occurrence Assessment. *Prior to issuance of any demolition, grading or building permit.* The project applicant shall submit a comprehensive assessment report to the Fire Prevention Bureau, Hazardous Materials Unit, signed by a qualified environmental professional, documenting the presence or lack thereof of asbestos-containing materials (ACM), lead-based paint, and any other building materials or stored materials classified as hazardous waste by State or federal law.

SCA Haz-5: Site Review by the Fire Services Division. *Prior to the issuance of demolition, grading or building permit.* The project applicant shall submit plans for site review and approval to the Fire Prevention Bureau Hazardous Materials Unit. Property owner may be required to obtain or perform a Phase II hazard assessment.

SCA Haz-6: Hazards Best Management Practices. *Prior to commencement of demolition, grading, or construction.* The project applicant and construction contractor shall ensure that Best Management Practices (BMPs) are implemented as part of construction to minimize the potential negative effects to groundwater and soils. These shall include the following:

a. Follow manufacture's recommendations on use, storage, and disposal of chemical products used in construction;

b. Avoid overtopping construction equipment fuel gas tanks;

c. During routine maintenance of construction equipment, properly contain and remove grease and oils;

d. Properly dispose of discarded containers of fuels and other chemicals.

e. Ensure that construction would not have a significant impact on the environment or pose a substantial health risk to construction workers and the occupants of the proposed development. Soil sampling and chemical analyses of samples shall be performed to determine the extent of potential contamination beneath all UST's, elevator shafts, clarifiers, and subsurface hydraulic lifts when on-site demolition, or construction activities would potentially affect a particular development or building.

f. If soil, groundwater or other environmental medium with suspected contamination is encountered unexpectedly during construction activities (e.g., identified by odor or visual staining, or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered), the applicant shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and the applicant shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notification of regulatory agency(ies) and implementation of the actions described in the City's Standard Conditions of Approval, as necessary, to identify the nature and extent of contamination. Work shall not resume in the area(s) affected until the measures have been implemented under the oversight of the City or regulatory agency, as appropriate.

SCA Haz-7: **Other Materials Classified as Hazardous Waste**. *Prior to issuance of any demolition, grading or building permit.* If other materials classified as hazardous waste by State or federal law are present, the project applicant shall submit written confirmation to Fire Prevention Bureau, Hazardous Materials Unit that all State and federal laws and regulations shall be followed when profiling, handling, treating, transporting and/or disposing of such materials.

SCA Haz-8: Best Management Practices for Soil and Groundwater Hazards. *Ongoing throughout demolition, grading, and construction activities*. The project applicant shall implement all of the following Best Management Practices (BMPs) regarding potential soil and groundwater hazards.

a. Soil generated by construction activities shall be stockpiled onsite in a secure and safe manner. All contaminated soils determined to be hazardous or non-hazardous waste must be adequately profiled (sampled) prior to acceptable reuse or disposal at an appropriate off-site facility. Specific sampling and handling and transport procedures for reuse or disposal shall be in accordance with applicable local, state and federal agencies laws, in particular, the Regional Water Quality Control Board (RWQCB) and/or the Alameda County Department of Environmental Health (ACDEH) and policies of the City of Oakland.

b. Groundwater pumped from the subsurface shall be contained onsite in a secure and safe manner, prior to treatment and disposal, to ensure environmental and health issues are resolved pursuant to applicable laws and policies of the City of Oakland, the RWQCB and/or the ACDEH. Engineering controls shall be utilized, which include impermeable barriers to prohibit groundwater and vapor intrusion into the building (pursuant to the Standard Condition of Approval regarding Radon or Vapor Intrusion from Soil and Groundwater Sources).

c. Prior to issuance of any demolition, grading, or building permit, the applicant shall submit for review and approval by the City of Oakland, written verification that the appropriate federal, state or county oversight authorities, including but not limited to the RWQCB and/or the ACDEH, have granted all required clearances and confirmed that the all applicable standards, regulations and conditions for all previous contamination at the site. The applicant also shall provide evidence from the City's Fire Department, Office of Emergency Services, indicating compliance with the Standard Condition of Approval requiring a Site Review by the Fire Services Division pursuant to City Ordinance No. 12323, and compliance with the Standard Condition of Approval requiring a Phase I and/or Phase II Reports.

SCA Haz-10: Lead-Based Paint Remediation. *Prior to issuance of any demolition, grading or building permit.* If lead-based paint is present, the project applicant shall submit specifications to the Fire Prevention Bureau, Hazardous Materials Unit signed by a certified Lead Supervisor, Project Monitor, or Project Designer for the stabilization and/or removal of the identified lead paint in accordance with all applicable laws and regulations, including but not necessarily limited to: Cal/OSHA's Construction Lead Standard, 8 CCR1532.1 and DHS regulation 17 CCR Sections 35001 through 36100, as may be amended.

SCA Haz-11: Health and Safety Plan per Assessment. *Prior to issuance of any demolition, grading or building permit.* If the required lead-based paint/coatings, asbestos, or PCB assessment finds presence of such materials, the project applicant shall create and implement a health and safety plan to protect workers from risks associated with hazardous materials during demolition, renovation of affected structures, and transport and disposal.

The following Standard Conditions of Approval identified in Chapter 4.1 (Air Quality) would also ensure no significant hazards and hazardous materials impacts occur:

SCA Air-1: Construction-Related Air Pollution Controls (Dust and Equipment Emissions). *Ongoing throughout demolition, grading, and/or construction.* During construction, the project applicant shall require the construction contractor to implement all of the following applicable measures recommended by the Bay Area Air Quality Management District (BAAQMD):

a. Water all exposed surfaces of active construction areas at least twice daily (using reclaimed water if possible). Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.

b. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).

c. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

d. Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

e. Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).

f. Limit vehicle speeds on unpaved roads to 15 miles per hour.

g. Idling times shall be minimized either by shutting equipment off when not is use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485, of the California Code of Regulations. Clear signage to this effect shall be provided for construction workers at all access points.

h. All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

i. Post a publicly visible sign that includes the contractor's name and telephone number to contact regarding dust complaints. When contacted, the contractor shall respond and take corrective action within 48 hours. The telephone numbers of contacts at the City and BAAQMD shall also be visible. This information may be posted on other required on-site signage.

j. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.

k. All excavation, grading, and demolition activities shall be suspended when average wind speeds exceed 20 mph.

l. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

m. Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for one month or more).

n. Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress.

o. Install appropriate wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of the construction site to minimize wind blown dust. Wind breaks must have a maximum 50 percent air porosity.

p. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.

q. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.

r. All trucks and equipment, including tires, shall be washed off prior to leaving the site.

s. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.

t. Minimize the idling time of diesel-powered construction equipment to two minutes.

u. The project applicant shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction and 45 percent particulate matter (PM) reduction compared to the most recent California Air Resources Board (CARB) fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as they become available.

v. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).

w. All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NOx and PM.

x. Off-road heavy diesel engines shall meet the CARB's most recent certification standard.

SCA Air-3: Asbestos Removal in Structures. *Prior to issuance of a demolition permit.* If asbestos-containing materials (ACM) are found to be present in building materials to be removed, demolition and disposal, the project applicant shall submit specifications signed by a certified asbestos consultant for the removal, encapsulation, or enclosure of the identified ACM in accordance with all applicable laws and regulations, including but not necessarily limited to: California Code of Regulations, Title 8; Business and Professions Code; Division 3; California Health & Safety Code 25915-25919.7; and Bay Area Air Quality Management District, Regulation 11, Rule 2, as may be amended.

The following Standard Condition of Approval is identified in Chapter 4.11 (Transportation, Circulation and Parking):

SCA Trans-2: Construction Traffic and Parking. *Prior to the issuance of a demolition, grading or building permit*, the project applicant and construction contractor shall meet with appropriate City of Oakland agencies to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project and other nearby projects that could be simultaneously under construction. The project applicant shall develop a construction management plan for review and approval by the Planning and Zoning Division, the Building Services Division, and the Transportation Services Division. The plan shall include at least the following items and requirements:

a. A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes.

b. Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur.

c. Location of construction staging areas for materials, equipment, and vehicles at an approved location.

d. A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager. The manager shall determine the cause of the complaints and shall take prompt action to correct the problem. Planning and Zoning shall be informed who the Manager is prior to the issuance of the first permit issued by Building Services.

e. Provision for accommodation of pedestrian flow.

Major Project Cases:

f. Provision for parking management and spaces for all construction workers to ensure that construction workers do not park in on-street spaces.

g. Any damage to the street caused by heavy equipment, or as a result of this construction, shall be repaired, at the applicant's expense, within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to issuance of a final inspection of the building permit. All damage that is a threat to public health or safety shall be repaired immediately. The street shall be restored to its condition prior to the new construction as established by the City Building Inspector and/or photo documentation, at the applicant's expense, before the issuance of a Certificate of Occupancy.

h. Any heavy equipment brought to the construction site shall be transported by truck, where feasible.

i. No materials or equipment shall be stored on the traveled roadway at any time.

j. Prior to construction, a portable toilet facility and a debris box shall be installed on the site, and properly maintained through project completion.

k. All equipment shall be equipped with mufflers.

l. Prior to the end of each work day during construction, the contractor or contractors shall pick up and properly dispose of all litter resulting from or related to the project, whether located on the property, within the public rights-of-way, or properties of adjacent or nearby neighbors.

Impacts, Standard Conditions of Approval and Mitigation Measures

Criteria of Significance

The Project would result in a significant impact related to hazards and hazardous materials if it would:

1. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
2. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
3. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
4. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
5. Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and would result in a safety hazard for people residing or working in the project area;
6. Be located within the vicinity of a private airstrip, and would result in a safety hazard for people residing or working in the project area;
7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
8. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Cortese List / Presence of Hazardous Materials Contamination

Impact Haz-1: No portion of the Project site is included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Environmental Site Assessments prepared for the Project site do not indicate the presence of on-site soil or groundwater contamination at significant levels, and do not indicate that off-site contamination of soil or groundwater presents a concern to construction or operation of the Project. On-site building assessments do indicate that asbestos-containing materials are present in older portions of the shopping center. Implementation of City of Oakland Standard Conditions of Approval and compliance with all applicable state and federal laws will ensure that any potential exposure to existing hazardous material contamination will be less than significant. (**LTS with SCA**)

Soil and Groundwater Contamination

Phase I and Phase II Environmental Site Assessments (ESA) and an Addendum have been prepared. The results of these studies indicate that dry cleaning solvents (PCE) are present in low concentrations in soil near the sanitary sewer line, but concentrations are below the U.S. EPA health-based Preliminary Remediation Goal value of 190 ppm for commercial uses. PCE was not found in any groundwater samples. Based on these findings, significant impacts to soil or groundwater from PCE was not found.

Groundwater samples also indicate a concentration of Methyl-butly ether (MTBE) of 48 ppb, which exceeds the California Maximum Contaminant Level (MCL) and Drinking Water Standard of 13 ppb MTBE. The source of the MTBE in the groundwater is not known.

Standard Conditions of Approval

City of Oakland SCA Haz-2 requires that any remedial actions as may be recommended in the Phase I or Phase II ESA be implemented after consultation and approval by appropriate local, state and federal agencies. Although no further actions were specifically recommended in the Phase II ESA and Addendum, these reports do have suggestions for possible further investigation.

To implement SCA Haz-2, the following recommendations from the Phase II Environmental Site Assessment and its Addendum would be required:

Soil Sampling.

a. Soil and grab-groundwater samples shall be sought from along the sanitary sewer line further west, behind the existing Safeway store and toward Broadway. Based on the presence of groundwater within approximately 15 feet in depth at the former gas station at 5175 Broadway, it appears that field conditions may be more favorable for encountering groundwater closer to Broadway. Also, additional attempts to collect grab-groundwater samples could be made west of Boring SB-1. If grab-groundwater samples are successfully collected, then the laboratory results will also aid in evaluating the significance of the benzene detection at SB-2.

b. Additional sampling activities for evidence of PCE impacts could be focused on the interior of the dry cleaning lease space. Further sampling across the site was not recommended because of the lack of laterally continuous groundwater, the lack of PCE in groundwater at SB-2 and SB-9, and the limited access along the sanitary sewer line behind the lessee spaces.

c. If these investigations disclose any hazards for which remediation is warranted, the Project shall implement such remediation as recommended by a Registered Environmental Assessor, Professional Geologist, or Professional Engineer.

Further, SCA Haz-3 requires sufficient documentation to determine whether radon or vapor intrusion from the groundwater or soil occurs, and whether remediation may be required. If remediation is required, Best Management Practices (BMPs) shall be implemented during such remediation to ensure environmental and health issues are resolved and no residual environmental effects would occur.

Underground Storage Tank

Ground penetrating radar (GPR) was used to search for a possible previously undiscovered UST, but no such tank was discovered and no evidence of the presence of an UST was found. No further investigations or mitigation measures are required.

Asbestos and Lead Based Paint

An Environmental Hazards Survey performed in 2001 (consistent with the requirements of SCA Haz-4) does indicate the presence of asbestos-containing materials and lead based paint within portions of the shopping center. All of the floor tiles are considered as asbestos containing material (ACM), due to the difficulty of separating and/or removing the asbestos containing mastic component. All of the original or older gypsum board assemblies are considered asbestos containing construction material (ACCM), and all of the roof cements are considered as asbestos containing material (ACM) due to the difficulty of separating and/or removing the asbestos containing mastic component.

Standard Conditions of Approval

City of Oakland SCA Air-2 and Haz-10 requires that any remedial actions as may be recommended from such a survey be implemented after consultation and approval by appropriate local, state and federal agencies. With demolition and removal of all existing structures, all asbestos-containing materials and lead based paint would be removed (see discussion below regarding asbestos removal practices).

Mitigation Measures

None needed

Creation of Hazards through Disposal, Transport, Upset or Use of Hazardous Materials

Impact Haz-2: Construction workers, future commercial tenants and shoppers at the Project site may be exposed to hazardous materials during site demolition and construction phases. Implementation of City of Oakland Standard Condition of Approval and compliance with all state and federal laws regarding hazardous materials will reduce such potential exposure to a level of less than significant. (**LTS with SCA**)

Asbestos Removal

During the demolition phases of the Project, portions of the existing shopping center with asbestos-containing materials will be handled and removed. The handling and disposal of such material could potentially result in release of asbestos fibers into the air, potentially exposing those nearby to increased risk.

Standard Conditions of Approval

SCA Haz-7 requires that all state and federal laws must be followed when profiling, handling, treating, testing, transporting and/or disposing of any hazardous materials. SCA Air-2 and Haz-10 specifically require adherence to all applicable laws and regulations particular to asbestos removal and lead-based paint remediation.

To implement SCA Air-2, the following recommendations from the Phase II Environmental Site Assessment and its Addendum would be required:

Asbestos Removal.

a. The floor tile and mastic materials that were positive must be removed using floor abatement practices for asbestos in areas scheduled for renovation. All of the original and older floor tiles are considered asbestos containing material (ACM) due to the difficulty of separating and/or removing the asbestos containing mastic component. Any removal shall be performed using Wet methods, following all applicable regulatory guidelines. During the removal of any carpet floorings, areas of black mastic should be treated as asbestos containing.

b. The drywall materials that were positive must be removed using abatement practices for > 1% asbestos, in areas scheduled for renovation. All of the original or older gypsum board assemblies are considered asbestos containing construction material (ACCM), requiring the use of contractors, registered for asbestos-related work. Any removal shall be performed using Wet methods, following all applicable regulatory guidelines.

c. The roofing materials that were positive must be removed using roofing abatement practices for asbestos, in areas scheduled for renovation. All of the roof cements are considered as asbestos containing material (ACM), due to the difficulty of separating and/or removing the asbestos containing mastic component. Any removal shall be performed using Wet methods, following all applicable regulatory guidelines.

d. Renovation or demolition work in areas that are not specifically covered by this report shall be re-inspected prior to any disturbance of suspect materials.

Removal/Remediation of Other Hazardous Materials

Other than asbestos and lead-based paint, no other hazardous materials have been identified that would require removal/remediation that could substantially affect the demolition and construction process for the Project. Nonetheless, should the additional sampling activities required to further implement SCA Haz-2 and implementation of SCA Haz-3 as described under Impact Haz-1 above indicate the need for treatment, remediation and/or disposal of identified hazardous materials, compliance with all Standard Conditions of Approval and compliance with all state and federal regulations would be required. Compliance actions would include:

- A Remedial Action Plan, Soil Management Plan and Groundwater Management Plan are required to address issues such as dust suppression, protection of surface waters and storm drainage outfalls, noise attenuation, etc. The BAAQMD may also impose specific requirements to protect ambient air quality from dust, lead, hydrocarbon vapors or other airborne contaminants during site remediation activities.
- A Risk Management Plan and a Site Health and Safety Plan in conformance with federal and California Occupational Safety and Health Administration (Cal/OSHA) regulations will also be required. These plans would include identification of chemicals of concern, potential hazards, personal protection clothing and devices, and emergency response procedures as well as required fencing, dust control or other site control measures needed during excavation to protect health and safety of workers and the public. OSHA requirements also mandate an initial training course and subsequent annual training. Site-specific training may also be required for some workers.
- With regards to transportation impacts, the remediation contractor would be required to follow state and federal regulations for manifesting the wastes, using licensed waste haulers, and disposing of the materials at a permitted disposal or recycling facility.

These requirements fully address the potential health impacts associated with any necessary remediation activities, including potential transportation impacts from such removal and/or remedial activities.

Use of Hazardous Materials during Construction

During the construction phase of the Project small quantities of hazardous materials will likely be used. These materials include gasoline, solvents, diesel fuel, oil and grease, hydraulic fluid, ethylene glycol, welding gases, and paint. These materials are routinely used in construction or commercial operations. However, improper management of such hazardous materials or an accidental release could pose a substantial hazard to human health and the environment.

Standard Conditions of Approval

SCA Haz-7 requires that all state and federal laws must be followed when profiling, handling, treating, testing, transporting and/or disposing of any hazardous materials. Additionally, SCA Haz-6 requires Best Management Practices be implemented during construction to minimize the potential negative effects to groundwater and soils. The risks of exposure to construction workers and, commercial tenants and visitors from the routine use of hazardous materials during construction would be reduced through implementation of these conditions. Furthermore, SCA Haz-11 requires preparation of a Health and Safety Plan to protect workers from the risks of exposure during demolition and construction activities. Implementation of these standard conditions of approval would ensure that risk of exposure to hazardous materials remains at a level of less than significant.

Mitigation Measures

None needed

Emission/Handling of Hazardous Materials Near Schools

Impact Haz-3: The Project site is located within one-quarter mile of Oakland Technical High School and Emerson Elementary School. As described under Impacts Haz-1 and Haz-2 above, with implementation of Standard Conditions of Approval, potential hazardous materials impacts during the demolition and construction phases of the Project would be less than significant. (**LTS**)

Operation of the Project would not reasonably be anticipated to emit hazardous emissions or to result in the need to handle hazardous or acutely hazardous materials, substances or waste that may impose a health or safety hazard to persons who would attend or would be employed at these schools. The Project would be occupied by retail uses and new office uses similar to those that currently exist on the site and in the surrounding area. Any business that handles more than a threshold quantity of a hazardous material must develop and submit to the Fire Department a Hazardous Materials Business Plan in compliance with the City of Oakland Hazardous Materials Release Response Plan Program and Standard Conditions of Approval, and comply with all other applicable federal, State and local regulations. The City has carried out consultation with the school districts regarding the potential impact of the Project on these schools as required by CEQA Guidelines Section 15186(b)(1) and (2). The impacts of the Project related to emission and handling of hazardous materials near schools would be less than significant.

Mitigation Measures

None needed

Hazards near Airport/Airstrip

Impact Haz-4: The project site is not located near any public airport, within an airport plan area or near a private airstrip (**No Impact**).

Mitigation Measures

None needed

Interference with Emergency Response Plan or Emergency Evacuation Plan

Impact Haz-5: With implementation of SCA Trans-2, the requirement to obtain an encroachment permit for work within street rights-of-way, and standard construction period notification requirements to first responders, potential Project impacts related to interference with an emergency response plan or emergency evacuation plan would be less than significant. (**LTS with SCA**)

According to Figure 2.1 of the Oakland Safety Element, Broadway is classified as an emergency evacuation route. The Project would not interfere with use of this main City thoroughfare and would not impair use of this route during an emergency. The Project would be required to obtain an encroachment permit for all changes to existing pedestrian and vehicular intersections with Broadway, which would include review by the Fire Department. The Oakland Fire Department is the first responder in an emergency. Standard notification procedures required by the City are designed to ensure that the Fire Department is notified if construction traffic would block any City streets. Specifically, the job site supervisor is required to call the Fire Department's dispatch center any day construction vehicles would partially or completely block a City street during construction. In addition, SCA Trans-2 would require development of a construction management plan, which addresses construction period traffic and parking. Therefore, Project construction would not significantly interfere with emergency response plans (e.g., the City of Oakland's Multi-Hazard Functional Plan).

Mitigation Measures

None needed

Wildland Fires

Impact Haz-6: The Project site is located within a heavily urbanized portion of Oakland. There are no wildlands at the Project site and adjacent areas have been developed (e.g., as a college campus, a golf course and cemeteries) and would not pose a risk of wildland fires. (**No Impact**)

The Project site is located in an urbanized area of Oakland and, according to Figure 4.1 of the Oakland Safety Element, the site is more than ½ mile outside of the Fire Prevention and Assessment District boundary, which indicates that it is not subject to significant wildfire hazard.

Mitigation Measures

None needed

Cumulative Hazards/Hazardous Materials Impacts

Cumulative Impact Haz-7: Hazards and hazardous materials impacts are generally site-specific and/or have limited mobility. Thus, the Project would not be expected to have cumulatively considerable effects. (**LTS**)

The geographic area considered for potential cumulative public health or hazards impacts consists of an area within ¼-mile of the Project site, and the area along transportation routes used during demolition and construction activities associated with the Project.

Development activities in this area could increase the exposure of persons to hazardous materials, including contaminated soil, groundwater, hazardous construction materials, and lead and asbestos. However, the use, storage and disposal of hazardous materials has been increasingly regulated by local, State and federal laws and regulations. The historical trend within the regulatory community has been to strengthen the standards regarding the use, handling and transport of hazardous materials, therefore minimizing the risk to public health, safety and welfare. Many past projects have been, all present projects are, and all future projects including the proposed Project will be subject to these more rigorous controls for site remediation and development. The current and future handling of hazardous materials within the City of Oakland (including the Project) will be subject to these escalating regulations and the City's Standard Conditions of Approval and, as a result, cumulative hazardous materials risks will not be significant. Moreover, it is unlikely that any potential hazardous materials exposure from the Project's construction activities would combine with other surrounding activities that may involve hazardous material exposure because there is no evidence that other construction activities will be occurring in the immediate area surrounding the Project site at the same time. Additionally, compliance with the strict regulatory requirements associated with handling of hazardous materials would reduce the potential for any cumulatively considerable contribution from the Project to any potential cumulative impact.

Therefore, implementation of the proposed Project together with the impact of other past, present, existing, current and reasonably foreseeable future development would not result in any significant cumulative public health or hazards impacts.

Mitigation Measures

None needed

4.8

Hydrology and Water Quality

This section evaluates the proposed Project's potential impacts related to hydrology and water quality. This section describes the existing hydrology and water quality conditions in the vicinity of the site and evaluates the extent to which development of the Project as proposed may affect hydrology and water quality. Information in this section is drawn from the Project's geotechnical analysis and hazardous materials assessments and other sources, referenced fully in their respective sections of this EIR.

Physical Setting

Regional Hydrology

Regional Drainage Patterns

The Project site lies in the South Bay Hydrologic Basin within the San Francisco Bay hydrologic region. San Francisco Bay provides a topographic separation between the northern and southern coastal mountain ranges. The San Francisco Bay estuarine system conveys the waters of the San Joaquin and Sacramento rivers into the Pacific Ocean. These rivers enter the San Francisco Bay at the eastern end of Suisun Bay. The Project area is part of the Oakland Super-Planning Watershed in Alameda County, within the San Francisco Bay hydrologic region.[1]

Regional Groundwater

The California Department of Water Resources (DWR) delineates state groundwater basins based on geologic and hydro-geologic conditions. According to the DWR, the Project site is located within the East Bay Plain Subbasin of the Greater Santa Clara Valley Groundwater Basin. The East Bay Subbasin has a surface area of approximately 122 square miles and trends northwest from Hayward to San Pablo Bay. The primary groundwater-bearing formation in the sub-basin is comprised of unconsolidated sediments of Quaternary age. Some portions of the sub-basin have been identified as areas of major groundwater contamination associated with fuels and solvents. However, contamination in these areas is considered to be restricted to the upper 50 feet of the subsurface.[2] The regional direction of groundwater flow is generally southwestward toward San Francisco Bay.

Flooding

The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Mapping (FIRM) program designates areas where flooding could occur during a 1% annual chance (100-year floodplain) or a 0.2% annual chance flood events (500-year floodplain). The Project site is not located in an area determined to be within either of these potential flood zones. The nearest flood zone is located along Line B of the Glen

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1 California Department of Fish and Game, 2004

2 DWR, 2003

Echo Creek (approximately 1,000 feet to the southeast of the Project site), in which the 1% annual chance flood discharge is contained within the creek channel (see **Figure 4.8-1**).[3]

Oakland does not have large rivers or open coastline that can result in devastating storm-induced flooding. Flooding from tsunamis (waves caused by an underwater earthquake, landslide, or volcanic eruption) could affect low-lying areas along the Oakland Estuary and San Francisco Bay, but would not affect property at higher elevations in Oakland, such as at the Project site. Flooding from seiches (waves in a lake, reservoir or harbor) in Oakland is unlikely.[4]

The California Department of Water Resources, Division of Safety of Dams (DSOD) oversees the construction of dams that are over 25 feet high and which impound over 15 acre-feet of water, or those that are over 6 feet high and impound over 50 acre-feet of water. The DSOD requires dam owners to develop maps designating potential dam failure. According to maps compiled by ABAG,[5] the Project site is not at risk for dam failure inundation.

Local Hydrology

Surface Water

There are no surface water features (creeks, ponds or watercourses) on the Project site.

To the northeast of the Project site is the Rockridge branch of Glen Echo Creek, part of the ACFCWCD flood control facilities also known as Line B-1. Line B-1 is approximately 2.5 miles in length and originates in the vicinity of Broadway Terrace and Romany Road, beginning as a natural creek meandering through the Claremont Golf Course, and then flowing into a large multi-purpose quarry pond located along the southern tip of the Claremont Country Club immediately adjacent to the Project site (see **Figure 4.8-2**). An inverted-bell spillway carries overflow into a closed culvert that exits the property across Pleasant Valley Avenue at the southern boundary. The Rockridge branch joins the Broadway branch near 42nd Street and Broadway, and then joins the main stem at 30th Street and Richmond Boulevard, which flows into Lake Merritt at the northwest inlet, which flows into San Antonio Creek and ultimately into San Francisco Bay.

The quarry pond, also known as Claremont Pond or Old Quarry Pond, is a remnant from previous quarry operations at that site and is owned by the Claremont Country Club. It currently serves mainly as a water storage facility to supply the irrigation needs for the golf course. Within the pond is an existing concrete inlet structure that regulates and controls the amount of water allowed to flow from the pond into the downstream culverts. The inlet structure is maintained by the District and was recently improved to increase the pond's storage capacity, to improve the efficiency of the inlet structure to control and regulate the flow downstream to reduce flooding potential, and to improve maintenance access to the inlet structure. [6]

None of these hydrology and flood control features are on the Project site.

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[3] Federal Emergency Management Agency, *Flood Insurance Rate Map Number 06001C0080G*, August 2009.

[4] City of Oakland, *Oakland General Plan Safety Element*, November 2004.

[5] Association of Bay Area Governments, *Dam Failure Inundation Hazard Map for North Oakland/Piedmont/Emeryville* http://www.abag.ca.gov/cgi-bin/pickdamx.pl

[6] Alameda County Flood Control and Water Conservation District, *2008 Capital Improvement Program*, 2008.

Figure 4.8-1
FEMA Flood Map

Source: FEMA Flood Insurance Rate Map 06001C0080G

Figure 4.8-2
Old Quarry Pond

Source: AECOM

On Site Drainage Patterns

The Project site lies in a highly urbanized area of Oakland that is served by the City's storm drainage system. The Project site is generally flat and almost entirely covered by impervious surfaces consisting of commercial buildings, paved areas and parking lots. The current site is graded such that all storm flows drain either inward to the center of the site, or southwest toward Pleasant Valley Road and Broadway. Storm water runoff from the Project site originates as overland sheet flow across the parking lots and collected in drop inlets within the parking lot or in the surrounding curb and gutter system along Broadway and Pleasant Valley Road. From there, it is delivered through drop inlets to the City's below ground storm drain and culvert system, which includes an existing 54-inch storm drain line in Pleasant Valley Avenue. The City's storm drain lines eventually discharge to the Oakland Estuary.

The Alameda County Flood Control and Water Conservation District (ACFCWCD) is responsible for the construction, operation and maintenance of major storm drain trunk lines and flood control facilities in Oakland. The Oakland Public Works Agency (PWA) is responsible for maintenance of the local storm drainage system within Oakland's public areas and roads.

Groundwater

Phase II Environmental Assessments conducted in June[7] and August of 2001[8] assessed soil and groundwater conditions at the site. A total of ten borings were drilled at various locations within the Project site (see prior Figure 4.8-2). These borings provided data regarding the presence of groundwater beneath the site. The results from these borings include the following:

- A laterally continuous source of groundwater throughout the site was not encountered, based on borings drilled to a maximum depth of approximately 20 feet below ground surface (bgs).
- Groundwater was encountered in two of the ten borings (B-2 at approximately 17 feet bgs, and B-9 at approximately 9 feet bgs), but was not encountered in the other eight borings. The two locations where groundwater was encountered were toward the center of the site.
- Perched water was encountered in Boring B-3 (in the northerly portion of the site) at about 15 feet, and in Boring B-6 (in the southerly portion of the site) at about 5 feet. Boring B-6 was located adjacent to an existing planter, and the water was likely originating from the planter.

Based on the lithography and general lack of groundwater encountered during the majority of the 2001 borings, the local groundwater flow beneath the Project site may be governed by preferential pathways or more permeable material (course textured fill/soil or fractured bedrock), as opposed to flowing within homogeneous sediments.

Based on data from other surrounding sites (5157 Broadway) and assumptions based on surface topography, the direction of groundwater flow that does exist on site is expected to be to the west or southwest at a depth of 20 feet or more. It is unlikely that groundwater would be encountered in any planned excavations for the Project, except for possible isolated zones of perched water that might require localized dewatering during excavation.

Local Water Quality

There are no surface water features on the Project site. The current storm drain system at the Project site consists of drop inlets which catch surface runoff from the parking lot and conveys flow directly into the City storm drainage system. There are no known storm water filters or treatment facilities on the site.

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[7] GeoTrans, *Phase II Environmental Assessment Report*, June 29, 2001

[8] GeoTrans, *Addendum to Screening Level Phase II Environmental Assessment*, August 10, 2001

The presence of groundwater contaminants is fully addressed in Chapter 4.9 of this EIR, Hazards and Hazardous Materials.

Regulatory Setting

Federal, state, and local agencies regulate activities that could affect hydrological and water quality features in the Project area. This section describes the regulatory framework that would apply to the Proposed Project.

Federal

Clean Water Act

The CWA established the basic structure for regulating discharges of pollutants into the waters of the U.S. and gave the USEPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA sets water quality standards for all contaminants in surface waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The Corps has jurisdiction over all waters of the U.S. including, but not limited to, perennial and intermittent streams, lakes, and ponds, as well as wetlands in marshes, wet meadows, and side hill seeps. Under Section 401 of the CWA every applicant for a federal permit or license for any activity which may result in a discharge to a water body must obtain State Water Quality Certification that the proposed activity will comply with state water quality standards.

The National Pollutant Discharge Elimination System (NPDES) permit program under the CWA controls water pollution by regulating point and non-point sources that discharge pollutants into “waters of the U.S.” California has an approved state NPDES program. The USEPA has delegated authority for NPDES permitting to the California State Water Resources Control Board (SWRCB), which has nine regional boards. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates water quality in the Project area.

Section 303(d) of the CWA requires that each state identify water bodies or segments of water bodies that are “impaired” (i.e., not meeting one or more of the water quality standards established by the state). These waters are identified in the Section 303(d) list as waters that are polluted and need further attention to support their beneficial uses. Once the water body or segment is listed, the state is required to establish Total Maximum Daily Load (TMDL) for the pollutant causing the conditions of impairment. TMDL is the maximum amount of a pollutant that a water body can receive and still meet water quality standards. Generally, TMDL is the sum of the allowable loads of a single pollutant from all contributing point and non-point sources. The intent of the Section 303(d) list is to identify water bodies that require future development of a TMDL to maintain water quality.

In accordance with Section 303(d), the San Francisco Bay RWQCB has identified impaired water bodies within its jurisdiction, along with the pollutant or stressor responsible for impairing the water quality.[9] In the San Francisco Bay region, the RWQCB has designated the South Basin of San Francisco Bay as an impaired water body. Pollutants that contribute to this impairment are chlordane, DDT, diazinon, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, polychlorinated biphenyls, and selenium.[10] Lake Merritt is listed as an impaired water body for organic enrichment/low dissolved oxygen, bacteria, and trash.

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[9] RWQCB, 2007b

[10] RWQCB, 2007a

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, Division 7 of the California Water Code, allows the SWRCB to adopt statewide water quality control plans. The purpose of the plans is to establish water quality objectives for specific water bodies. The act also authorizes the NPDES program under the CWA, which establishes water quality requirements for discharges to waters of the state. Most of the implementation of SWRCB's responsibilities is delegated to nine regional boards. The San Francisco Bay RWQCB has established permit requirements for stormwater runoff for the Project area (see *Regional Regulatory Setting* below).

State Water Resources Control Board

Stormwater discharges from construction activities on one acre or more are regulated by the State Water Resources Control Board (SWRCB) and are subject to the permitting requirements of the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). The SWRCB established the General Construction Permit program to reduce surface water impacts from construction activities. The proposed Project would be required to comply with the current NPDES permit requirements to control stormwater discharges from the construction site (see *Alameda County Regulations* below).

The General Construction Permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for construction activities. The SWPPP must be prepared before the construction begins, and in certain cases before demolition begins. The SWPPP must include specifications for best management practices (BMPs) that would be implemented during construction to control degradation of surface water by preventing soil erosion or the discharge of pollutants from the construction area. The SWPPP must also describe measures to prevent or control runoff after construction is complete, and identify procedures for inspecting and maintaining facilities or other elements. Required elements of a SWPPP include:

- Site description addressing the elements and characteristics specific to the site
- Descriptions of BMPs for erosion and sediment controls;
- BMPs for construction waste handling and disposal;
- Implementation of approved local plans;
- Proposed post-construction controls; and
- Non-stormwater management.

Examples of typical construction BMPs include scheduling or limiting activities to certain times of year, installing sediment barriers such as silt fence and fiber rolls, maintaining equipment and vehicles used for construction, tracking controls such as stabilizing entrances to the construction site, and developing and implementing a spill prevention and cleanup plan. Non-stormwater management measures include installing specific discharge controls during certain activities such as paving operations, vehicle and equipment washing and fueling.[11]

[11] California Stormwater Quality Association (CASQA), *California Storm Water Best Management Practice Handbook*, 2003.

California Toxics Rule

Under the California Toxic Rule, the USEPA has proposed water quality criteria for priority toxic pollutants for inland surface waters, enclosed bays, and estuaries. These federally promulgated criteria create water quality standards for California waters. The California Toxic Rule satisfies CWA requirements and protects public health and the environment. The USEPA and the SWRCB have the authority to enforce these standards. However, the Proposed Project would not discharge toxic pollutants directly into the inland surface waters, such as Lake Merritt, or San Francisco Bay, therefore the California Toxic Rule would not apply.

Regional

Regional Water Quality Control Board

The San Francisco Bay RWQCB is responsible for the protection of beneficial uses and the water quality of water resources within the San Francisco Bay region. The San Francisco Bay RWQCB prepared the *San Francisco Bay Basin Water Quality Control Plan* (Basin Plan) for San Francisco Bay. The Basin Plan contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the region and describes beneficial uses of major surface waters and their tributaries. The Basin Plan lists a number of beneficial uses for both the South Basin of San Francisco Bay and for Lake Merritt. The RWQCB is responsible for regulating construction activities to ensure the protection of these beneficial uses.

The San Francisco Bay RWQCB also administers the NPDES stormwater permitting program and regulates stormwater in the San Francisco Bay region. The City of Oakland is a permittee under the NPDES Municipal Stormwater Permit for the Alameda Countywide Clean Water Program (see below for detailed discussion). Project Applicants are required to apply for a NPDES General Permit for discharges associated with project construction activities of greater than one acre.

General Permit

Stormwater discharges from construction activities on one acre or more are regulated by the RWQCB and are subject to the permitting requirements of the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). The RWQCB established the General Construction Permit program to reduce surface water impacts from construction activities. The proposed Project would be required to comply with the current NPDES permit requirements to control stormwater discharges from the construction site (see *Alameda County Regulations* below).

The General Construction Permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for construction activities. The SWPPP must be prepared before the construction begins, and in certain cases before demolition begins. The SWPPP must include specifications for best management practices (BMPs) that would be implemented during construction to control degradation of surface water by preventing soil erosion or the discharge of pollutants from the construction area. The SWPPP must also describe measures to prevent or control runoff after construction is complete, and identify procedures for inspecting and maintaining facilities or other elements. Required elements of a SWPPP include:

- Site description addressing the elements and characteristics specific to the site
- Descriptions of BMPs for erosion and sediment controls;
- BMPs for construction waste handling and disposal;
- Implementation of approved local plans;

- Proposed post-construction controls; and
- Non-stormwater management.

Examples of typical construction BMPs include scheduling or limiting activities to certain times of year, installing sediment barriers such as silt fence and fiber rolls, maintaining equipment and vehicles used for construction, tracking controls such as stabilizing entrances to the construction site, and developing and implementing a spill prevention and cleanup plan. Non-stormwater management measures include installing specific discharge controls during certain activities such as paving operations, vehicle and equipment washing and fueling.[12]

Dewatering Permit

Excavation and trenching activities in areas with shallow groundwater often requires dewatering (the removal of groundwater by pumping), which is subject to the RWQCB construction dewatering permit requirements and regulated under state requirements for stormwater pollution prevention and control. Discharge of non-stormwater from a trench or excavation that contains sediments or other pollutants to sanitary sewer, storm drain systems, creek beds (even if dry), or receiving waters is prohibited. Discharge of uncontaminated groundwater from dewatering is a conditionally exempted discharge by the RWQCB. However, the removed water could potentially be contaminated with chemicals released from construction equipment or sediments from excavation. Therefore, disposal of dewatering discharge would require permits either from the RWQCB for discharge to surface creeks and groundwater or from local agencies for discharge to storm or sanitary sewers. The discharge of water resulting from dewatering operations would require an NPDES Permit, or a waiver (exemption) from the RWQCB, which would establish discharge limitations for any specific chemicals known to exist in the dewatering flows.

Alameda County Regulations

The Alameda County Flood Control & Water Conservation District (ACFCWCD) and the City of Oakland Public Works Agency share responsibility for maintaining drainage facilities in Oakland. The Project site lies within the jurisdiction of Zone 12 of the ACFCWCD, covering the areas of Oakland and Emeryville.

Alameda Countywide Clean Water Program

The Alameda Countywide Clean Water Program (ACCWP) includes 17 member agencies that work together to protect creeks, wetlands and San Francisco Bay. The City of Oakland and ACFCWCD are two of the agencies that participate in the ACCWP. The member agencies have developed performance standards to clarify the requirements of the stormwater pollution prevention program, adopted stormwater management ordinances, conducted extensive education and training programs, and reduced stormwater pollutants from industrial areas and construction sites.[13] In the Project area, the ACCWP administers the stormwater program to meet CWA requirements by controlling pollution in the local storm drain sewer systems.

NPDES Permit

On October 14, 2009, the San Francisco Bay Regional Water Quality Control Board adopted a Municipal Regional Stormwater Permit (MRP) pursuant to the National Pollutant Discharge Elimination System

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[13] Alameda County Clean Water Program, 2009

(NPDES).[14] This permit includes ACCWP members (including the City of Oakland) as well as 59 other municipal stormwater permittees in the Bay Area. The permit incorporates updated state and federal requirements related to the quantity and quality of post-construction stormwater discharges from new development and redevelopment projects, and serves as a framework for identification and implementation of water quality control measures or BMPs.

The MRP includes Provision C.3 that governs storm drain systems and regulates post construction stormwater runoff. The provision requires new development and redevelopment projects to incorporate post-construction treatment measures and other appropriate source control and site design features to reduce the pollutant load in stormwater discharges and to manage runoff flows. “Redevelopment” is defined as a project on a previously developed site that results in the addition or replacement of impervious surface. For projects that create and/or replace 10,000 square feet or more of impervious surface and would result in an increase of, or replacement of, more than 50 percent of the impervious surface of a previously existing development, and the existing development was not subject to stormwater treatment measures, the entire project must be included in a treatment system design. For projects that meet this definition, site design must incorporate low impact development (LID) source control measures, and stormwater treatment onsite or at a joint stormwater treatment facility. Site design must minimize impervious surfaces, and incorporate means for infiltration, evapotranspiration, or bio-treatment of stormwater. MRP provision C.3 also requires that certain projects which would create and/or replace one acre or more of impervious surface, and would increase impervious surface area over the pre-project condition must meet the Hydro-modification Management Standard. In compliance with this standard, the increases in runoff flow and volume associated with a project must be managed so that post-project runoff will not exceed estimated pre-project rates and durations if the increased runoff is likely to increase erosion of creeks, increase the generation of silt, or cause other adverse impacts.

The Project will be required to demonstrate compliance with the applicable provisions of the MRP. Specifically construction and post-construction activities associated with the proposed Project would be subject to the MRP requirements for stormwater management and discharges.

Local – City of Oakland

Oakland has jurisdiction over and/or maintenance responsibility for its municipal separate storm drain systems and/or watercourses in the city.

Municipal Code

The City of Oakland Municipal Code implements the following regulations to protect water quality and water resources:

Creek Protection, Stormwater Management, and Discharge Control Ordinance (part of Title 13 of the Oakland Municipal Code)

The ordinance establishes comprehensive guidelines for the regulation of discharges to the city’s storm drain system and the protection of surface water quality, prohibiting activities that would result in the discharge of pollutants to Oakland's waterways or would result in damage to creeks, creek functions or habitat. The ordinance identifies BMPs and other protective measures for development projects. Under the ordinance, the City of Oakland Public Works Agency issues permits for storm drainage facilities that would be connected to existing city drainage facilities.

[14] NPDES Permit No. CAS612008, Order No. R2-2009- 0074

In 1997, the ordinance was amended to include the requirement for a creek protection permit for any construction or related activity on creek-side property. The ordinance includes enforcement provisions to provide more effective methods to deter and reduce the discharge of pollutants to the storm drain system, local creeks, and San Francisco Bay. The provisions also list clear guidelines for creek-side residents to protect creeks and habitat.

Applicability of the Creek Protection Ordinance:

Development and site work in areas containing or immediately adjacent to creeks within the City of Oakland is specifically regulated by Chapter 13.16 of the Oakland Municipal Code, known as the "*City of Oakland Creek Protection, Storm Water Management and Discharge Control Ordinance*." As indicated in Section 13.16.020, the purpose of this ordinance is to ensure the future health, safety, and general welfare of City of Oakland citizens by:

- eliminating non-storm water discharges to the municipal separate storm sewer;
- controlling the discharge to municipal separate storm sewers from spills, dumping or disposal of materials other than storm water;
- reducing pollutants in storm water discharges to the maximum extent practicable;
- safeguarding and preserving creeks and riparian corridors in a natural state;
- preserving and enhancing creekside vegetation and wildlife;
- preventing activities that would contribute significantly to flooding, erosion or sedimentation, or that would destroy riparian areas or would inhibit their restoration;
- enhancing recreational and beneficial uses of creeks;
- controlling erosion and sedimentation;
- protecting drainage facilities; and
- protecting the public health and safety, and public and private property.

According to the definitions contained within this ordinance, a "creek" is defined as follows:

> *"Creek: a Watercourse that is a naturally occurring swale or depression, or engineered channel which carries fresh or Estuarine water either seasonally or year round within the City boundaries, as identified on the "Watershed Map of Oakland and Berkeley Area" and the "Creek and Watershed Map of Hayward and San Leandro," published by the Oakland Museum of California and as modified by the City and/or any area identified through field investigation by the Environmental Services Manager as meeting the above criteria."*

A "watercourse" is further defined as follows:

> *Watercourse: any conduit or natural or man-made channel through which water flows continuously or intermittently in a definite direction and course or alternating directions and course under the influence of tides <u>or any appurtenant structure thereof which is used for the holding, delay or storage of water</u>, except enclosed public water delivery and storm sewer system conduits.*

According to Section 13.16.120, "*No person shall commit or cause development or work within the boundaries of a creekside property, or within the public right of way fronting a creekside property, unless a Creek Protection Permit has first been obtained from the Chief of Building Services*." Depending on the type and location of development or work, a Creek Protection Permit may fall into the following categories.

- Category I: Any indoor development or work. Although development or work indoors should not affect the quality of the creek environment, this is an opportunity for the City to distribute brochures regarding creek protection and overall quality of water that drains to the bay. Best Management Practices recommended in those brochures to protect water quality must be followed.
- Category II: Any exterior development or work that does not include earthwork, and is more than 100 feet from the center line of the Creek to the location of the development or work. Category II provides the City with an opportunity to educate residents about Creek protection and overall quality of water that drains to the Bay. Best Management Practices recommended in those brochures to protect water quality must be followed.
- Category III: Any exterior development or work that may adversely impact the creek, beyond the 20 foot setback from the top of bank of the creek, and is within 100 feet of the centerline of the creek, that may or may not require any other development related permit including without limitation; landscape walls, fences, patios, decks, private drainage improvements, irrigation systems, or trenching work. Additionally, any work or development that includes earthwork beyond the 20 foot setback from the top of the bank of the creek.
- Category IV: Any exterior development or work that is conducted from the centerline of the creek to the 20 foot setback from the top of bank of the creek that may or may not require any other development related permits including without limitation; earthwork, landscape walls, fences, patios, decks, private drainage improvements, irrigation systems, or trenching work.

As the Project site is located immediately adjacent to a City-defined creek (Rockridge branch of Glen Echo Creek, part of the ACFCWCD flood control facilities also known as Line B-1), the Project would be subject to the provisions of the Creek Protection ordinance and a permit would be required.

Grading Ordinance (part of Title 15 of the Oakland Municipal Code)

The Grading Ordinance requires a permit for grading activities on private or public property for projects in which the volume of excavated material would exceed 50 cubic yards, resulting grade would have a 20 percent slope or greater, or the depth of excavation would exceed five feet at any location. During Project construction, the grading operation could exceed any or all of these criteria, such that the Project sponsor will be required to apply for a grading permit and to prepare a grading plan, erosion and sedimentation control plan, and drainage plan pursuant to the provisions and requirements of this ordinance.

General Plan

The following objectives, policies, and actions from City of Oakland's General Plan are applicable to the Proposed Project:

Open Space, Conservation and Recreation (OSCAR), Chapter 3-Conservation, Water Resources

> *Objective CO-5: Water Quality*: To minimize the adverse effects of urbanization on Oakland's groundwater, creeks, lakes, and near-shore waters.
>
> *Policy CO-5.1*: Encourage groundwater recharge by protecting large open space areas, maintaining setbacks along creeks and other recharge features, limiting impervious surfaces where appropriate, and retaining natural drainage patterns within newly developing areas
>
> *Policy CO5-2: Improvements to Groundwater Quality*. Support efforts to improve groundwater quality, including the use of non-toxic herbicides and fertilizers, the enforcement of anti-litter laws, the clean-up of sites contaminated by toxics, and on-going monitoring by the Alameda County Flood Control and Water Conservation District

Safety Element, Chapter 6-Flooding Hazards

Policy FL-1: Enforce and update local ordinance, and comply with regional orders that would reduce the risk of storm-induced flooding

Action FL-1.4: Continue to enforce the grading, erosion, and sedimentation ordinance by prohibiting the discharge of concentrated stormwater flows by other than approved methods.

Policy FL-2: Continue or strengthen city programs that seek to minimize the storm-induced flooding hazard.

Policy FL-3: Seek the cooperation and assistance of other government agencies in managing the risk of storm-induced flooding.

Policy FL-4: Minimize further the relatively low risks from non-storm-related forms of flooding.

Storm Drainage Design Guidelines[15]

The City of Oakland's Public Works Agency has prepared a design manual which provides computational techniques and criteria for the design of storm water runoff and drainage facilities and procedures to determine the required storage volume for detention and retention basins. Procedures in this manual apply to the design of typical facilities. The City of Oakland's Storm Drainage Design Guidelines have been prepared using the *Hydrology and Hydraulics Manual* published by the Alameda County Flood Control and Water Conservation District as the primary source of information.

According to these Guidelines, detention basins shall be designed to store urban runoff from sites such that post-project discharge rate is maintained less than or equal to the pre-project peak discharges. In certain cases, a maximum allowable outflow rate may be specified by the City. Otherwise, follow the procedures stated below for the design of detention basis.

- To the extent possible, for commercial and multi-unit development projects less than 50 acres, the City recommends the Modified Triangular Hydrograph Method with the goal of reducing the peak runoff into the City's storm drains by 25%.[16]

Standard Conditions of Approval (SCA) and Uniformly Applied Development Standards

The City of Oakland's SCAs relevant to reducing hydrology and water quality impacts due to the proposed Project are listed below. If the Project is approved by the City, then all applicable SCA would be adopted as conditions of approval and required of the proposed Project to ensure no significant impacts related to hydrology and water quality occur. The SCA are incorporated and required as part of the Project, so they are not listed as mitigation measures.

SCA Hydro-1: Stormwater Pollution Prevention Plan (*Prior to and ongoing throughout demolition, grading, and/or construction activities):* The project applicant must obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) issued by the State Water Resources Control Board (SWRCB). The project applicant must file a notice of intent (NOI) with the SWRCB. The project applicant will be required to prepare a stormwater pollution prevention plan (SWPPP) and submit the plan for review and approval by the Planning and Zoning Division and the Building Services Division. At a minimum, the SWPPP shall include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; site-specific erosion and sedimentation control practices; a list of provisions to

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[15] City Of Oakland Public Works Agency, Public Works Agency Standards, *Storm Drainage Design Guidelines*, July 2006

[16] Ibid, pg. 28

eliminate or reduce discharge of materials to stormwater; Best Management Practices (BMPs), and an inspection and monitoring program. Prior to the issuance of any construction-related permits, the project applicant shall submit a copy of the SWPPP and evidence of approval of the SWPPP by the SWRCB to the Building Services Division. Implementation of the SWPPP shall start with the commencement of construction and continue though the completion of the project. After construction is completed, the project applicant shall submit a notice of termination to the SWRCB.

SCA Hydro-2: Post-construction Stormwater Pollution Management Plan (*Prior to issuance of building permit or other construction-related permit)*. The applicant shall comply with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES) permit issued to the Alameda Countywide Clean Water Program. The applicant shall submit with the application for a building permit (or other construction-related permit) a completed Stormwater Supplemental Form for the Building Services Division. The project drawings submitted for the building permit (or other construction-related permit) shall contain a stormwater pollution management plan, for review and approval by the City, to limit the discharge of pollutants in stormwater after construction of the project to the maximum extent practicable.

a. The post-construction stormwater pollution management plan shall include and identify the following:

   i. All proposed impervious surface on the site;

   ii. Anticipated directional flows of on-site stormwater runoff; and

   iii. Site design measures to reduce the amount of impervious surface area and directly connected impervious surfaces; and

   iv. Source control measures to limit the potential for stormwater pollution; and

   v. Stormwater treatment measures to remove pollutants from stormwater runoff.

b. The following additional information shall be submitted with the post-construction stormwater pollution management plan:

c. Detailed hydraulic sizing calculations for each stormwater treatment measure proposed; and

   i. Pollutant removal information demonstrating that any proposed manufactured/mechanical (i.e., non-landscape-based) stormwater treatment measure, when not used in combination with a landscape-based treatment measure, is capable of removing the range of pollutants typically removed by landscape-based treatment measures. All proposed stormwater treatment measures shall incorporate appropriate planting materials for stormwater treatment (for landscape-based treatment measures) and shall be designed with considerations for vector/mosquito control. Proposed planting materials for all proposed landscape-based stormwater treatment measures shall be included on the landscape and irrigation plan for the project. The applicant is not required to include on-site stormwater treatment measures in the post-construction stormwater pollution management plan if he or she secures approval from Planning and Zoning of a proposal that demonstrates compliance with the requirements of the City's Alternative Compliance Program.

d. *Prior to final permit inspection.* The applicant shall implement the approved stormwater pollution management plan.

SCA Hydro-3: Maintenance Agreement for Stormwater Treatment Measures (*Prior to final zoning inspection)*. For projects incorporating stormwater treatment measures, the applicant shall enter into the "Standard City of Oakland Stormwater Treatment Measures Maintenance Agreement," in accordance with Provision C.3.e of the NPDES permit, which provides, in part, for the following:

a. The applicant accepting responsibility for the adequate installation/construction, operation, maintenance, inspection, and reporting of any on-site stormwater treatment measures being incorporated into the project until the responsibility is legally transferred to another entity; and

b. Legal access to the on-site stormwater treatment measures for representatives of the City, the local vector control district, and staff of the Regional Water Quality Control Board, San Francisco Region, for the purpose of verifying the implementation, operation, and maintenance of the on-site stormwater treatment measures and to take corrective action if necessary. The agreement shall be recorded at the County Recorder's Office at the applicant's expense.

The following additional Standard Conditions of Approval were previously identified in Chapter 4.3: Biological Resources, and also pertain to hydrology and water quality issues:

SCA Bio-2: Creek Protection Plan (*Prior to and ongoing throughout demolition, grading, and/or construction activities*):

a. The approved creek protection plan shall be included in the project drawings submitted for a building permit (or other construction-related permit). The project applicant shall implement the creek protection plan to minimize potential impacts to the creek during and after construction of the project. The plan shall fully describe in plan and written form all erosion, sediment, stormwater, and construction management measures to be implemented on-site.

b. If the plan includes a stormwater system, all stormwater outfalls shall include energy dissipation that slows the velocity of the water at the point of outflow to maximize infiltration and minimize erosion. The project shall not result in a substantial increase in stormwater runoff volume or velocity to the creek or storm drains.

SCA Bio-3: Regulatory Permits and Authorizations (*Prior to issuance of a demolition, grading, or building permit within vicinity of the creek)*. Prior to construction within the vicinity of the creek, the project applicant shall obtain all necessary regulatory permits and authorizations from the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), California Department of Fish and Game, and the City of Oakland, and shall comply with all conditions issued by applicable agencies. Required permit approvals and certifications may include, but not be limited to the following:

a. U.S. Army Corps of Engineers (Corps): Section 404. Permit approval from the Corps shall be obtained for the placement of dredge or fill material in Waters of the U.S., if any, within the interior of the project site, pursuant to Section 404 of the federal Clean Water Act.

b. Regional Walter Quality Control Board (RWQCB): Section 401 Water Quality Certification. Certification that the project will not violate state water quality standards is required before the Corps can issue a 404 permit, above.

c. California Department of Fish and Game (CDFG): Section 1602 Lake and Streambed Alteration Agreement. Work that will alter the bed or bank of a stream requires authorization from CDFG.

SCA Bio-4: Creek Monitoring (*Prior to issuance of a demolition, grading, or building permit within vicinity of the creek)*. A qualified geotechnical engineer and/or environmental consultant shall be retained and paid for by the project applicant to make site visits during all grading activities; and as a follow-up, submit to the Building Services Division a letter certifying that the erosion and sedimentation control measures set forth in the Creek Protection Permit submittal material have been instituted during the grading activities.

SCA Bio-5: Creek Landscaping Plan (*Prior to issuance of a demolition, grading, or building permit within vicinity of the creek)*. The project applicant shall develop a final detailed landscaping and irrigation plan for review and approval by the Planning and Zoning Division prepared by a licensed landscape architect or other qualified person. Such a plan shall include a planting schedule, detailing plant types and locations, and a system for temporary irrigation of plantings.

a. Plant and maintain only drought-tolerant plants on the site where appropriate as well as native and riparian plants in and adjacent to riparian corridors. Along the riparian corridor, native plants shall not be disturbed to the maximum extent feasible. Any areas disturbed along the riparian corridor shall be replanted with mature native riparian vegetation and be maintained to ensure survival.

b. All landscaping indicated on the approved landscape plan shall be installed prior to the issuance of a Final inspection of the building permit, unless bonded pursuant to the provisions of Section 17.124.50 of the Oakland Planning Code.

c. All landscaping areas shown on the approved plans shall be maintained in neat and safe conditions, and all plants shall be maintained in good growing condition and, whenever necessary replaced with new plant materials to ensure continued compliance with all applicable landscaping requirements. All paving or impervious surfaces shall occur only on approved areas.

The following additional Standard Condition of Approval was previously identified in Chapter 4.5: Geology and Soils, and also pertains to hydrology issues:

SCA Geo-1: Erosion and Sedimentation Control Plan

a. *Prior to any grading activities.* The project applicant shall obtain a grading permit if required by the Oakland Grading Regulations pursuant to Section 15.04.780 of the Oakland Municipal Code. The grading permit application shall include an erosion and sedimentation control plan for review and approval by the Building Services Division. The erosion and sedimentation control plan shall include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. The plan shall include, but not be limited to, such measures as short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Off-site work by the project applicant may be necessary. The project applicant shall obtain permission or easements necessary for off-site work. There shall be a clear notation that the plan is subject to changes as changing conditions occur. Calculations of anticipated stormwater runoff and sediment volumes shall be included, if required by the Director of Development or designee. The plan shall specify that, after construction is complete, the project applicant shall ensure that the storm drain system shall be inspected and that the project applicant shall clear the system of any debris or sediment.

b. *Ongoing throughout grading and construction activities.* The project applicant shall implement the approved erosion and sedimentation plan. No grading shall occur during the wet weather season (October 15 through April 15) unless specifically authorized in writing by the Building Services Division.

Impacts, Standard Conditions of Approval and Mitigation Measures

Significance Criteria

The Project would result in a significant impact related to hydrology if it would:

Groundwater

1. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level

(e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or proposed uses for which permits have been granted);

Flooding:

2. Result in substantial flooding on- or off-site;
3. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, that would impede or redirect flood flows;
4. Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
5. Expose people or structures to a substantial risk of loss, injury or death involving flooding;
6. Result in inundation by seiche, tsunami, or mudflow;

Storm Drainage/Runoff:

7. Create or contribute substantial runoff which would exceed the capacity of existing or planned stormwater drainage systems;
8. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course, or increasing the rate or amount of flow, of a creek, river or stream in a manner that would result in substantial erosion, siltation, or flooding, both on- or off-site;

Erosion:

9. Result in substantial erosion or siltation on- or off-site that would affect the quality of receiving waters;

Water Quality

10. Violate any water quality standards or waste discharge requirements;
11. Create or contribute substantial runoff which would be an additional source of polluted runoff;
12. Otherwise substantially degrade water quality;

Creek Protection Ordinance:

13. Fundamentally conflict with elements of the City of Oakland Creek Protection (OMC Chapter 13.16) ordinance intended to protect hydrologic resources. Although there are no specific, numeric/quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of water quality through;
    a. discharging a substantial amount of pollutants into a creek;
    b. significantly modifying the natural flow of the water or capacity;
    c. depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability; or
    d. substantially endangering public or private property or threatening public health or safety.

Depletion of or Interference with Groundwater Supplies

Impact Hydro-1: The Project site is already fully developed and/or paved, and is served with water from the East Bay Municipal Utility District. Redevelopment of the Project site as proposed would not result in any change in existing groundwater recharge, and would not deplete groundwater resources. (**LTS**)

Groundwater was measured at a depth of about 20 feet in the central and northerly portion of the site. However, based on the geotechnical investigations conducted for the site, it is unlikely that a laterally continuous source of groundwater would be encountered during any planned excavation with the exception of possible isolated zones of perched water that might require localized dewatering during excavation. Should dewatering become necessary, such activity would be subject to the RWQCB construction dewatering permit requirements and the discharge of water resulting from dewatering operations would require an NPDES Permit (or a waiver/exemption) from the RWQCB to establish discharge limitations for any specific chemicals known to existing in the dewatering flows.

The groundwater at the Project site is not considered potable, and is not used as a public drinking water supply.

Mitigation Measures

None needed

Flooding

Impact Hydro-2: The Project site is not subject to potential flooding, and redevelopment of the Project site as proposed would not subject off-site areas to increased flood potential. (**No Impact**)

No portion of the site is within the 100-year or 500-year flood hazard area as mapped on Federal Flood Hazard Boundary or Flood Insurance Rate Maps or other flood hazard delineation maps. The Project would not place any structures within a 100-year flood hazard area that might impede or redirect flood flows, or expose people or structures to a substantial risk of loss, injury or death involving flooding, seiche, tsunami, or mudflow.

The Rockridge branch of Glen Echo Creek is part of the ACFCWCD flood control facilities. It originates in the vicinity of Broadway Terrace and Romany Road as a natural creek meandering through the Claremont Golf Course, and then flows into the quarry pond, and then through a spillway which carries flow into a closed culvert that exits across Pleasant Valley Avenue at the Project site's southern boundary. These is no mapped floodplain for this creek or the pond, but these facilities are located at a substantially lower elevation than the Project site and no on-site flooding of the site from flows in the Rockridge branch of the Glen Echo Creek could occur. Line B of the Glen Echo Creek, which flows through the adjacent cemetery, is shown (see **Figure 4.8-1**) as having a narrow 500-year flood plain, but this creek is substantially removed from the Project site.

Mitigation Measures

None needed

Increased Runoff Exceeding Stormwater Drainage System Capacity

Impact Hydro-3: The Project site currently has very little pervious surface and is almost entirely covered by buildings and paved areas. Redevelopment of the site as proposed would not substantially increase impervious surface area and thus would not increase stormwater runoff. (**LTS**)

The Project site is currently almost entirely covered with impervious surfaces (buildings and paved areas), with only minor landscaping along Pleasant Valley Road and small isolated landscape areas. Thus, virtually all stormwater falling on the Project site results in surface runoff, with no retention or detention prior to entering into the City's storm drain system.

The Project proposes to construct a number of bio-retention storm water treatment areas on-site to capture and treat storm water runoff from all building rooftops. The total area of bio-retention as proposed is approximately 8,890 square feet. As stormwater is captured in these bio-retention areas, the water will be filtered through natural medium (grasses and dirt) and a portion of this runoff will be retained and percolate into the ground. The reduction in impervious surfaces associated with these bio-retention storm water treatment areas, coupled with the time for the flows to work their way through the various BMP's will serve to reduce overall site runoff. As such, the amount of surface runoff leaving the site post Project construction will be less than current runoff volumes, and no increase in stormwater flows entering the City's storm drainage system will occur.

The Project would not increase stormwater runoff beyond current runoff volumes and therefore would not lead to an exceedance of the capacity of existing stormwater drainage systems. This impact would be less than significant.

Mitigation Measures

None needed.

Erosion and Sedimentation During the Construction Period

Impact Hydro-4: Site preparation and construction activity associated with the proposed Project could result in soil erosion, which could have adverse effects on water quality. During site preparation and construction activity at the site, potentially significant soil erosion impacts would be reduced to a level of less than significant through the effective implementation of City of Oakland Standard Conditions of Approval. (**LTS with SCA**)

The Project site has been previously developed and paved, and there is little or no visible topsoil remaining. However, site grading and construction activity would expose underlying soils. If left unprotected during construction, such exposed soils could be carried via stormwater runoff into the storm drain system and/or into adjacent surface water, resulting in increased sedimentation.

Standard Conditions of Approval

Pursuant to SCA Geo- 1, the Project applicant will be required to obtain a grading permit, including an approved Erosion and Sedimentation Control Plan, from the Building Services Division. The Erosion and Sediment Control Plan must include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. Such measures will include but will not be limited to short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins.

Effective implementation of SCA Geo-1 during site preparation and construction activity at the site would ensure that potentially significant soil erosion and sedimentation impacts remain at a level of less than significant.

Mitigation Measures

None needed

Degradation of Water Quality During Construction

Impact Hydro-5: Site preparation and construction activity associated with the proposed Project site could result in degradation of stormwater quality. This potential impact would be reduced to a level of less than significant through the effective implementation of City of Oakland Standard Conditions of Approval. (**LTS with SCA**)

Potential pollutants associated with construction activities are likely to include minor quantities of paint, solvents, oil and grease, and petroleum hydrocarbons. If such pollutants were allowed to enter into the storm water runoff from the site, they would contribute to the potential degradation of downstream receiving waters.

Standard Conditions of Approval

Pursuant to SCA Hydro-1, the Project applicant will be required to obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) issued by the State Water Resources Control Board (SWRCB). Coverage under this permit requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) for review and approval by the Planning and Zoning Division and the Building Services Division of the City of Oakland, and evidence of approval of the SWPPP by the SWRCB. At a minimum, the SWPPP will include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; a list of provisions to eliminate or reduce discharge of materials to stormwater; Best Management Practices (BMPs), and an inspection and monitoring program.

Effective implementation of SCA Hydro-1 during site preparation and construction activity would ensure that potentially significant water quality impacts during construction remain at a level of less than significant.

Mitigation Measures

None needed

Degradation of Water Quality During Project Operations

Impact Hydro-6: Operational activities such as vehicular use, landscaping maintenance and other operational activities could potentially introduce pollutants into stormwater runoff, resulting in degradation of downstream water quality. This potential impact would be reduced to a level of less than significant through the effective implementation of City of Oakland Standard Conditions of Approval. (**LTS with SCA**)

Operational activities at the Project site that may generate and or result in the pollution of stormwater runoff include motor oil and other automotive fluids from spills and leaks, and metals from brake pad dust gathered in the parking lots; pesticides, fertilizers and herbicides used in on-site landscaping; air pollutants deposited on roof tops and decomposition of roofing and roof gutter materials and other building materials; trash and excess irrigation water. If allowed to be captured during storm events, these pollutants enter the storm drainage system and eventually contribute to surface water quality degradation.

Standard Conditions of Approval

Pursuant to SCA Hydro-2, the Project applicant will be required to demonstrate compliance with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES). These provisions require preparation and approval of a Stormwater Pollution Management Plan (SMP) to limit the discharge of pollutants in stormwater after construction of the Project to the maximum extent practicable. The SMP shall identify all proposed impervious surface on the site and anticipated directional flows of on-site stormwater runoff; design measures to reduce the amount of impervious surface area and directly connected impervious surfaces; and source control measures to limit the potential for stormwater pollution and stormwater treatment measures to remove pollutants from stormwater runoff. Treatment BMPs whose primary mode of action depends on flow capacity (such as swales and sand filters, see below) should be sized to treat 10% of the 50-year peak flow rate, or the flow runoff produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the applicable area, or the flow of runoff resulting from a rain event equal to at least 0.2 inches per hour intensity.

As part of the Project application, the applicants have submitted a preliminary post-construction SMP (see **Figure 4.8-3**). This preliminary SMP includes the following components:

- All roof down spouts and at-grade areas such as parking, sidewalks, plazas, patios, etc. are discharged to a landscaped area containing bio-retention media. These bio-retention areas are dispersed throughout the site so as to be proximate to the numerous proposed building sites. The bio-retention areas are sized to treat a total of 4 percent of the entire Project drainage area, and to meet the required treatment levels of 0.2 inches per hour using a standard treatment soil with 5-inch per hour percolation rates.
- All on-site storm drain inlets would be marked with “No Dumping! Flows to the Bay”

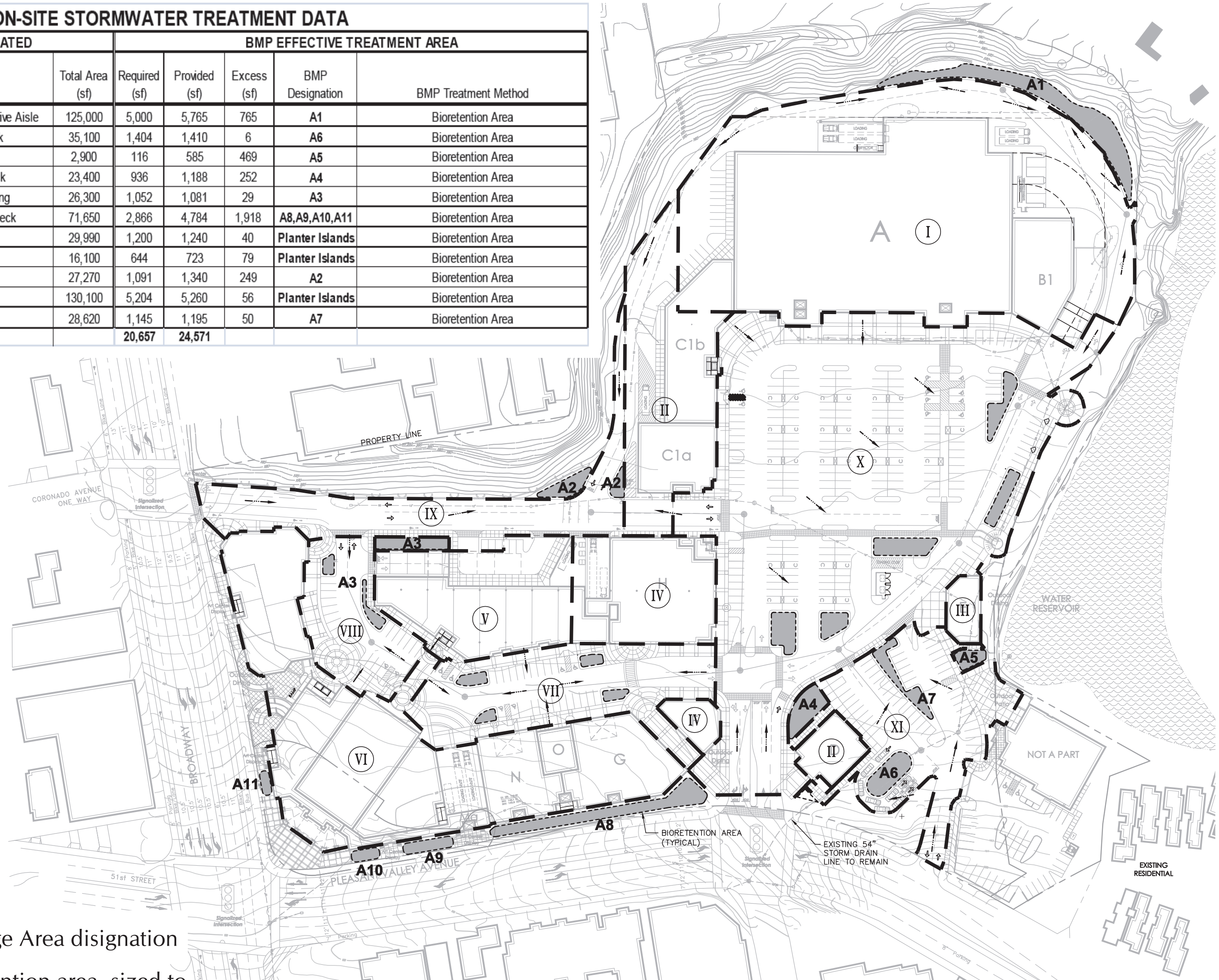
Additionally, SCA Hydro-3 requires the Project applicant to enter into a maintenance agreement accepting responsibility for the adequate installation/construction, operation, maintenance, inspection and reporting of all stormwater treatment measures being incorporated into the Project. Effective implementation of SCA Hydro-3 and Hydro-4 would ensure that potentially significant water quality impacts during Project operations remain less than significant.

Mitigation Measures

None needed

ON-SITE STORMWATER TREATMENT DATA

DRAINAGE AREA TO BE TREATED			BMP EFFECTIVE TREATMENT AREA				
Drainage Area Designation	Description	Total Area (sf)	Required (sf)	Provided (sf)	Excess (sf)	BMP Designation	BMP Treatment Method
I	Bldgs 'A' & 'B' Roof/Upper Deck & Drive Aisle	125,000	5,000	5,765	765	A1	Bioretention Area
II	Bldg 'C' & 'D' Roof/Upper Deck	35,100	1,404	1,410	6	A6	Bioretention Area
III	Bldg 'E' Roof	2,900	116	585	469	A5	Bioretention Area
IV	Bldgs 'F' & 'H' Roof/Upper Deck	23,400	936	1,188	252	A4	Bioretention Area
V	Bldg 'J' Roof/Upper Deck Parking	26,300	1,052	1,081	29	A3	Bioretention Area
VI	Bldgs 'L', 'N', & 'G' Roof/Upper Deck	71,650	2,866	4,784	1,918	A8,A9,A10,A11	Bioretention Area
VII	Parking Lot	29,990	1,200	1,240	40	Planter Islands	Bioretention Area
VIII	Parking Lot	16,100	644	723	79	Planter Islands	Bioretention Area
IX	Parking Lot	27,270	1,091	1,340	249	A2	Bioretention Area
X	Parking Lot	130,100	5,204	5,260	56	Planter Islands	Bioretention Area
XI	Parking Lot	28,620	1,145	1,195	50	A7	Bioretention Area
	TOTAL		20,657	24,571			



Drainage Area disignation

Bio-retention area, sized to treat 4% of drainage area

Figure 4.8-3
Project Post-Construction Stormwater Management Plan

Source: BKF Engineers

Conflict with Oakland Creek Protection Ordinance

Impact Hydro-7: Although the proposed Project would be subject to the provisions of the City of Oakland Creek Protection Ordinance, there is nothing about the Project that would fundamentally conflict with elements of the ordinance intended to protect hydrologic resources. The Project would not discharge a substantial amount of pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it substantially endanger public or private property or threaten public health or safety. (**LTS with SCA**)

The Rockridge branch of Glen Echo Creek begins as a natural creek meandering through the Claremont Golf Course and clearly meets this definition of a "creek". The creek then flows into a large multi-purpose quarry pond located immediately adjacent to the Project site, which serves mainly as a water storage facility to supply the irrigation needs for the golf course. The pond itself meets the definition of a "watercourse" as it is an appurtenant structure to the creek used for the holding, delay and storage of water. Based on these definitions, the Claremont Pond is a feature specifically regulated under the City of Oakland's Creek Protection, Storm Water Management and Discharge Control Ordinance.

Currently, the Project site's boundaries adjacent to the Claremont Pond are marked with a chain link fence which separates the shopping center parking lot from the quarry pond. This fence sits at approximately the top of a steep bank which slopes directly into the pond. The steep bank is vegetated with disturbed grasses and shrubs adjacent to the shopping center.

Based on review of the proposed Project's site plan, no development or work is proposed within the daylighted section of the Rockridge branch of Glen Echo creek or on the downside slope of the quarry pond. However, the area adjacent to the pond is proposed for amenity improvements including new landscaping and a public access trail (see **Figure 4. 8-4**). Portions of this landscaping and trail are within 20 feet of the top of bank and would thus qualify for a Category IV permit.

Potential Conflicts with the Ordinance

The detailed elements of the appropriate Creek Protection Permit will be required pursuant to subsequent submittals for the Project, as required by SCA Bio-2, -3, -4 and -5. For purposes of this CEQA analysis, the question is whether the proposed Project would fundamentally conflict with elements of the ordinance intended to protect hydrologic resources. These relevant elements of the ordinance are addressed below.

Would the Project discharge a substantial amount of pollutants into the creek or watercourse?

> The hardscape portions of the trail and small gazebo sites are pitched such they drain westerly back toward the parking lot rather than eastward toward the pond. Thus, stormwater runoff potentially carrying pollutants from the trail will not discharge toward the pond or the creek.

Would the Project significantly modify the natural flow of water?

> Since no development or work is proposed within the daylighted section of the Rockridge branch of Glen Echo creek or on the downside slope of the quarry pond, the Project would not significantly modify the natural flow of water within the creek or the pond.

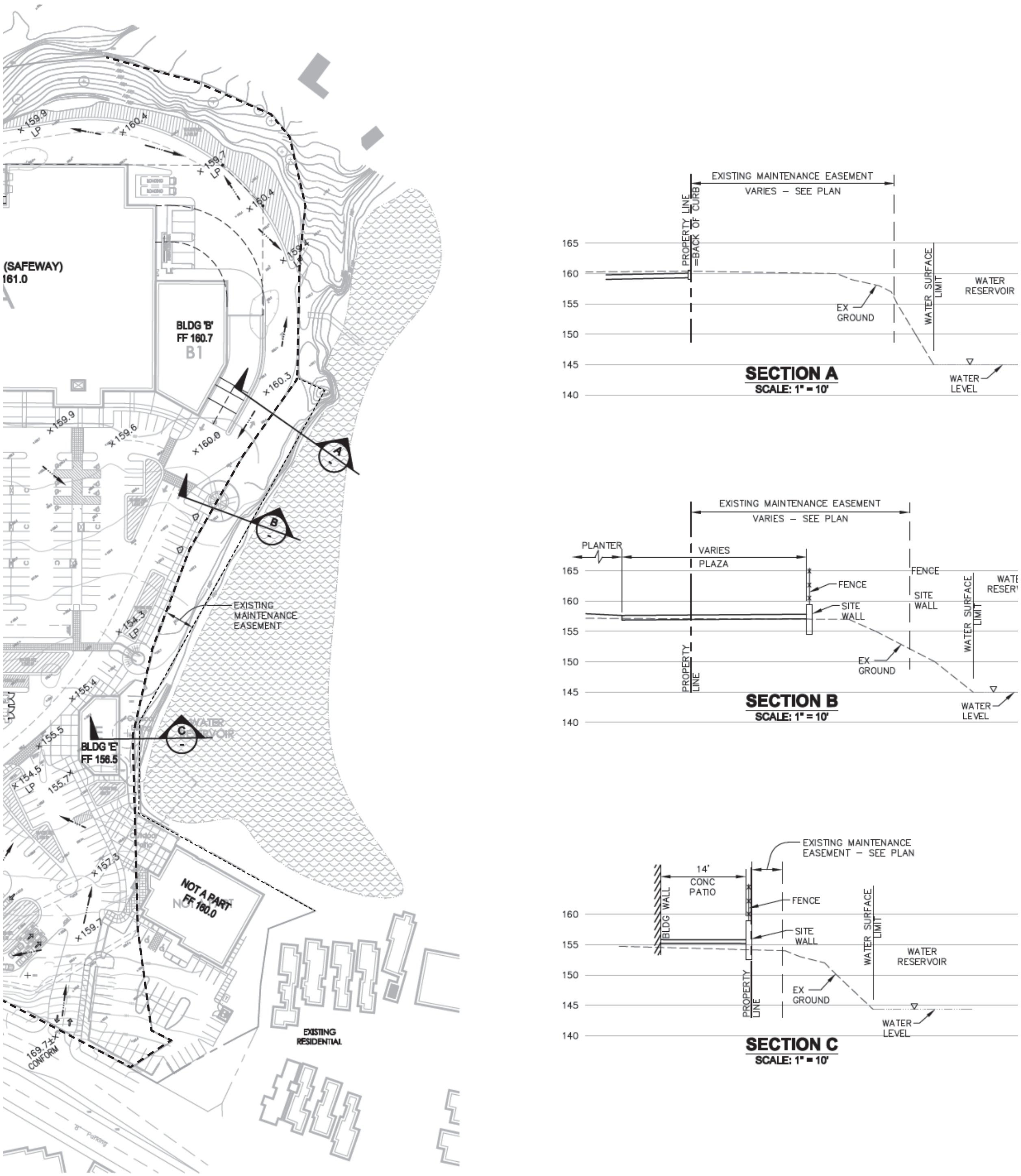


Figure 4.8-4
Construction Near Old Quarry Pond

Source: BKF Engineers

Would the Project deposit substantial amounts of new material into the creek or cause substantial bank erosion or instability?

> Pursuant to SCA Geo-1 and Bio-2 through -5, the Project applicant will be required to submit an Erosion and Sedimentation Control Plan, a Creek Protection Plan and a detailed Landscape Plan, obtain all regulatory permits and authorizations, and provide for an on-site monitor during construction to ensure compliance with all applicable Best Management Practices (BMPs) to avoid and reduce the potential for dust, erosion and sedimentation. Compliance with these plans would ensure that the Project would not deposit a substantial amount of new material into the pond or cause substantial bank erosion.

Would the Project substantially endanger public or private property or threaten public health or safety?

> The proposed pedestrian trail is located on land which is currently paved and used as a parking lot, and it is reasonable to assume that this property provides a suitable and stable base for the trail to be located. The trail will be separated from the steep banks of the pond by a tall wrought-iron fence. All improvements would be made within the existing maintenance easement adjacent to the pond and thus would not involve significant construction or maintenance safety hazards. Thus, the trail will not substantially endanger public or private property or threaten public health or safety.

With implementation of Standard Conditions of Approval Geo-1 and Bio-2 through -5, the Project will comply with the requirements of the City's Creek Protection Permit and will not fundamentally conflict with those elements of the Creek Protection Ordinance intended to protect hydrological resources and water quality.

Mitigation Measures

None needed

Cumulative Hydrology and Water Quality Impacts

Cumulative Impact Hydro-8: Implementation of the Project, combined with other past, present, existing, pending and reasonably foreseeable projects would not result in significant adverse changes to hydrology and/or water quality. (**LTS with SCA**)

Geographic Context

The geographic area considered for the hydrology and water quality cumulative analysis consists of the area within the City of Oakland whose storm sewers discharge to the San Francisco Bay.

Stormwater and Water Quality

Stormwater runoff entering the storm sewers within the Project's cumulative geographic area discharges to the San Francisco Bay. The stormwater contains urban-type pollutants from past, present and existing projects which have contributed to impairment of the quality of the San Francisco Bay. Applicable stormwater regulations have become progressively more rigorous since the adoption of the Federal Clean Water Act in 1977, with requirements imposed and enforced by the State Water Resources Control Board and Regional Water Boards through the NPDES permitting process. Stormwater runoff is treated in accordance with NPDES requirements. These requirements have resulted in polices and regulations which mandate greater levels of protection to water quality. Recently approved, currently pending and future projects, including the proposed Project, would continue to discharge stormwater during construction and operation. However, these future projects will be subject to current and any subsequent NPDES permitting requirements to reduce pollutant loading in the stormwater runoff. Therefore, no significant adverse cumulative impacts are expected, and stormwater runoff quality would be expected to cumulatively improve.

Hydrology and Creeks

City of Oakland Creek Protection ordinance is intended to protect the City's hydrologic resources including creeks and watercourses. The ordinance establishes comprehensive guidelines for the regulation of discharges to the city's storm drain system and for the protection of surface water quality that could otherwise result in damage to creeks, creek functions or habitat. In 1997, the ordinance was amended to include the requirement for a creek protection permit for any construction or related activity on creek-side property. This permit is applicable to all cumulative development within the City of Oakland that has the potential to adversely affect creeks and surface waters. The provisions of the permit list clear guidelines for all creek-side residents to protect creeks and habitat. Effective implementation of the City's Creek protection permit program (including at the Project site) addresses potentially adverse cumulative effects on creeks and City hydrologic resources

Mitigation Measures

None needed

4.9

Land Use, Plans and Policies

This chapter describes the existing land uses, adopted General Plan land use classifications, and zoning designations on and around the Project site. This chapter also describes the applicable plans and policies that guide development in the Project area and evaluates the Project's consistency with these plans and policies and other existing land use regulations.

This chapter also identifies any potentially significant land use impacts and, if necessary, appropriate mitigation measures and/or applicable Standard Conditions of Approval to avoid or reduce such impacts. Pursuant to the City of Oakland General Plan as well as Section 15358(b) of the CEQA Guidelines, mitigation measures are proposed only to address physical impacts that may result from the Project.

Setting

The Project site is located in the northerly portion of the City of Oakland, on the northeast corner of the intersection of Pleasant Valley Avenue and Broadway, less than one mile west of the City of Piedmont boundary.

General Plan Land Use Classifications and Zoning

The applicable General Plan land use classification and zoning for the Project site and surrounding area as shown on the City of Oakland General Plan and Zoning Map are presented in **Figure 4.9-1**.

General Plan

The Project site is currently designated on the General Plan Land Use and Transportation Element (LUTE) Diagram as Community Commercial. The Community Commercial classification is intended to "identify, create, maintain and enhance areas suitable for a wide variety of commercial and institutional operations along the City's major corridors and in shopping districts or centers." Community commercial uses may include neighborhood center uses and larger scale retail and commercial uses, and can be complimented by the addition of urban residential development and compatible mixed-use development. The maximum floor -to-area ratio (FAR) for this land use classification is 5.0.

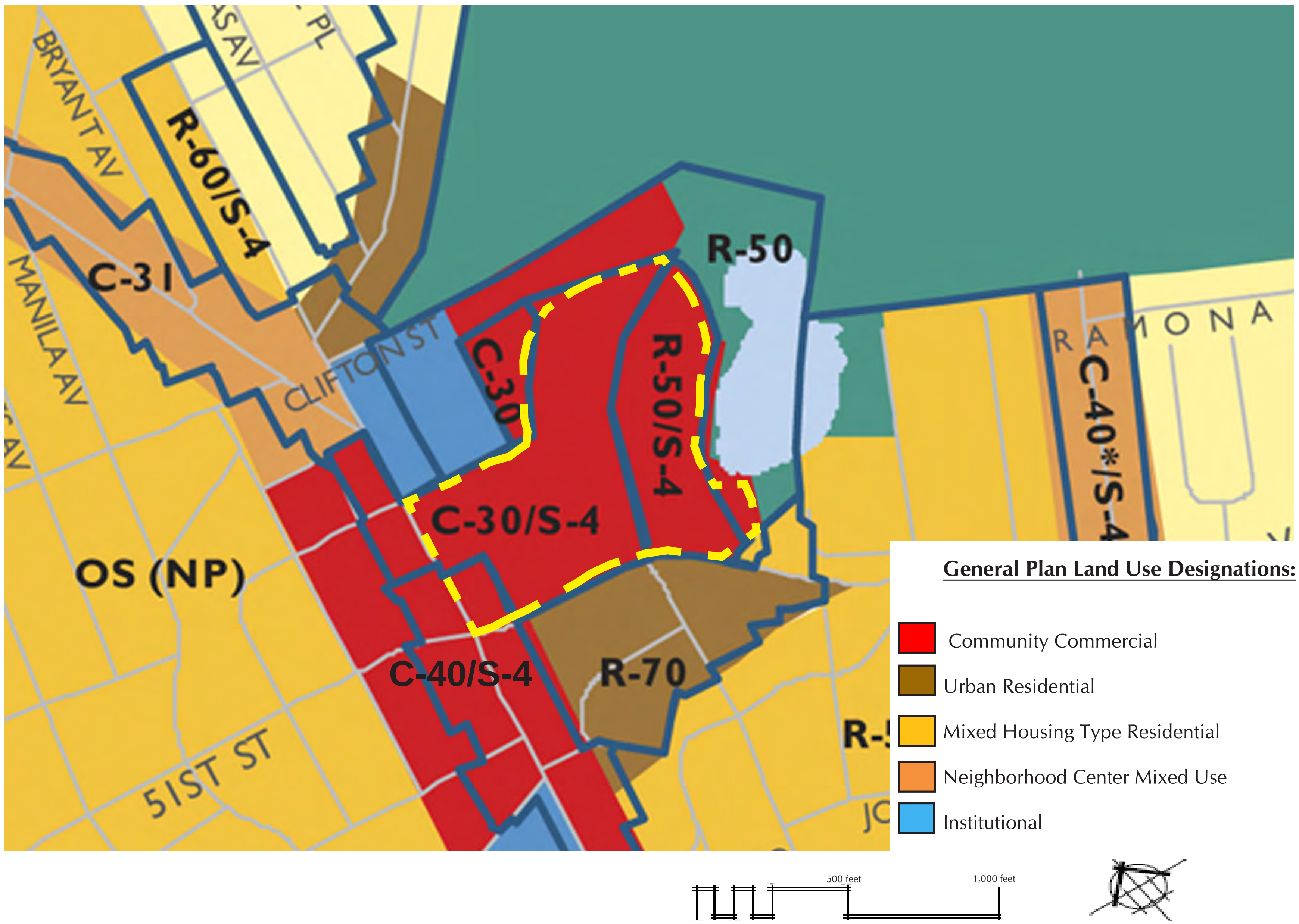


Figure 4.9-1
Applicable General Plan Designation and Zoning

Source: City of Oakland

Zoning

The zoning applicable to the Project site at the time the Project application was deemed complete in 2010 determines the zoning regulations applied to the Project. At that time, the site was split into three different zoning districts:

- The southwestern comer of the site, roughly equal to the location of the Chase bank building, was located in the C-40 Community Thoroughfare Commercial Zone
- The central portion of the site was located in the C-30 District Thoroughfare Commercial Zone.
- The eastern portion of the site was located in the R-50 Medium Density Residential Zone.
- The entire site is located in the S-4 Design Review Combining Zone.

The portion of the site located in the R-50 Zone would not normally allow the proposed commercial uses at the site. However, the R-50 Zone is not consistent with the underlying General Plan’s Community Commercial land use designation. Pursuant to the City's Guidelines for Determining Project Conformity with the General Plan and Zoning Regulations, an interim conditional use permit is required in order to apply the policies of the General Plan to the portion of the site in the R-50 residential zone. In May 2009 the City made a similar determination in conjunction with the review of a proposal to remodel the adjacent Emil Villa's restaurant building. When reviewing the conditional use permit at that site, the City applied the standards of the C-30/S-4 Zone as the "best-fit" zone, meaning the C-30/S-4 Zone contained the most appropriate zoning standards to use when reviewing that proposal because the standards best implemented the policies of the General Plan’s Community Commercial land use designation. A similar “best fit” determination for the Project site is required.

A new zoning map and accompanying new zoning regulations for the City's residential and commercial areas became effective as of April 14, 2011. Under the new zoning map, the entire Project site is zoned CC-2: Community Commercial-2 (see **Figure 4.9-2**). The new zoning is not applicable to the Project because the Project application was deemed complete prior to the new zoning becoming effective.

Design Review

The S-4 Zone is an overlay zone that requires design review for the construction and alteration of buildings. The Project site is located in the S-4 Design Review Combining Zone. All new construction in the S-4 zone is subject to the City’s Design Review procedures.

Surrounding Land Uses

The Project site and its surrounding land uses are shown on **Figure 4.9-3**. The Project site is immediately adjacent to the major transportation corridor of Broadway which connects downtown Oakland to Highway 24, and Pleasant Valley Avenue which connects between Broadway and Grand Avenue in Piedmont. Broadway connects to Highway 24 approximately 1 mile to the north of the Project site. When Pleasant Valley Avenue crosses Broadway it becomes 51^{st} Street, which also connects to Highway 24 approximately 2/3 of a mile to the east. These major corridors also provide access to a variety of commercial activities and urban mixed-use/mixed-density residential neighborhoods.

Northwest of the Project site is the eastern terminus of College Avenue, a popular business district extending between the cities of Oakland and Berkeley characterized by cafes, boutiques, antique stores, bookstores and professional offices.

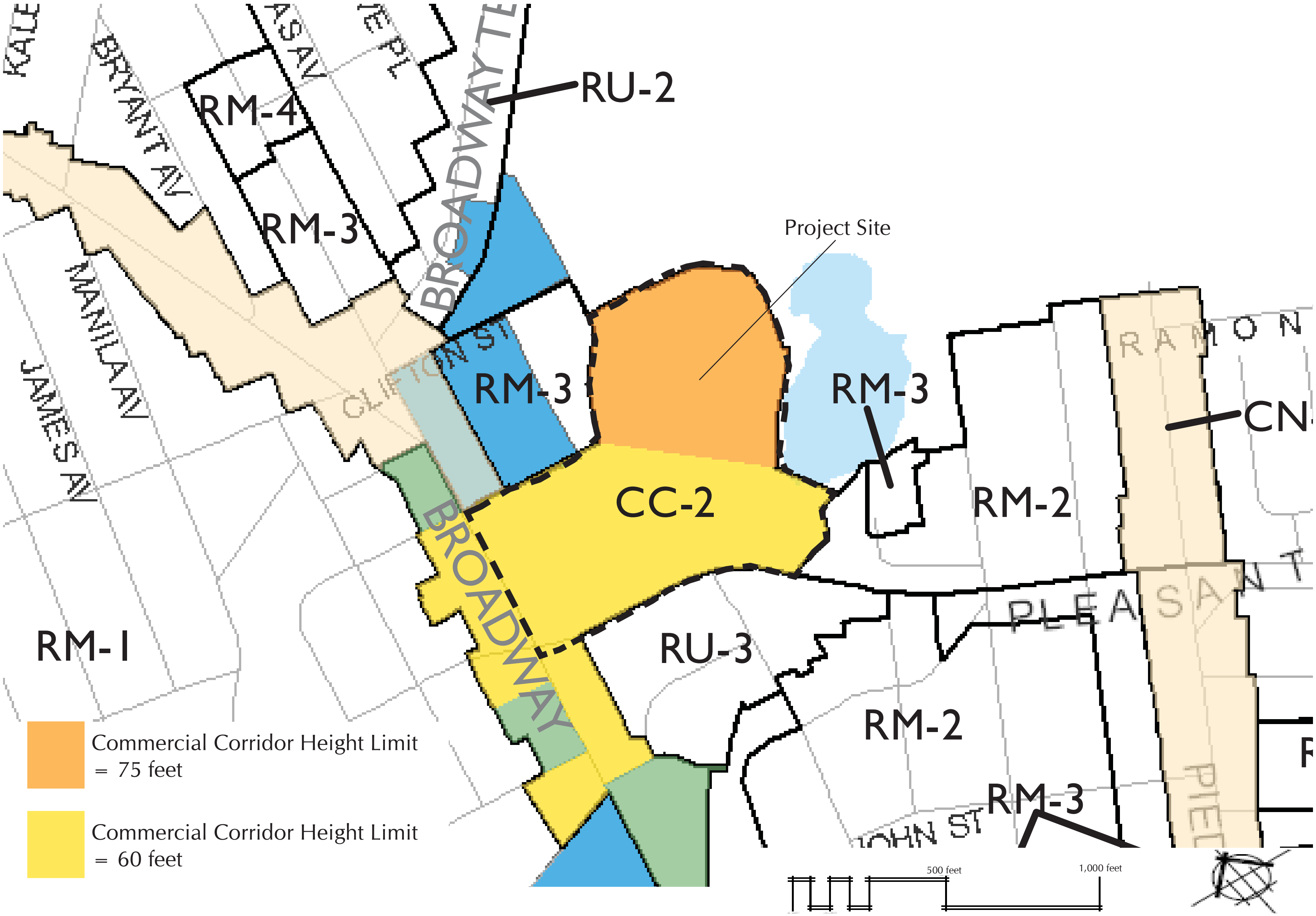


Figure 4.9-2
Currently Effective Zoning Map (as of April 2011)

Source: City of Oakland

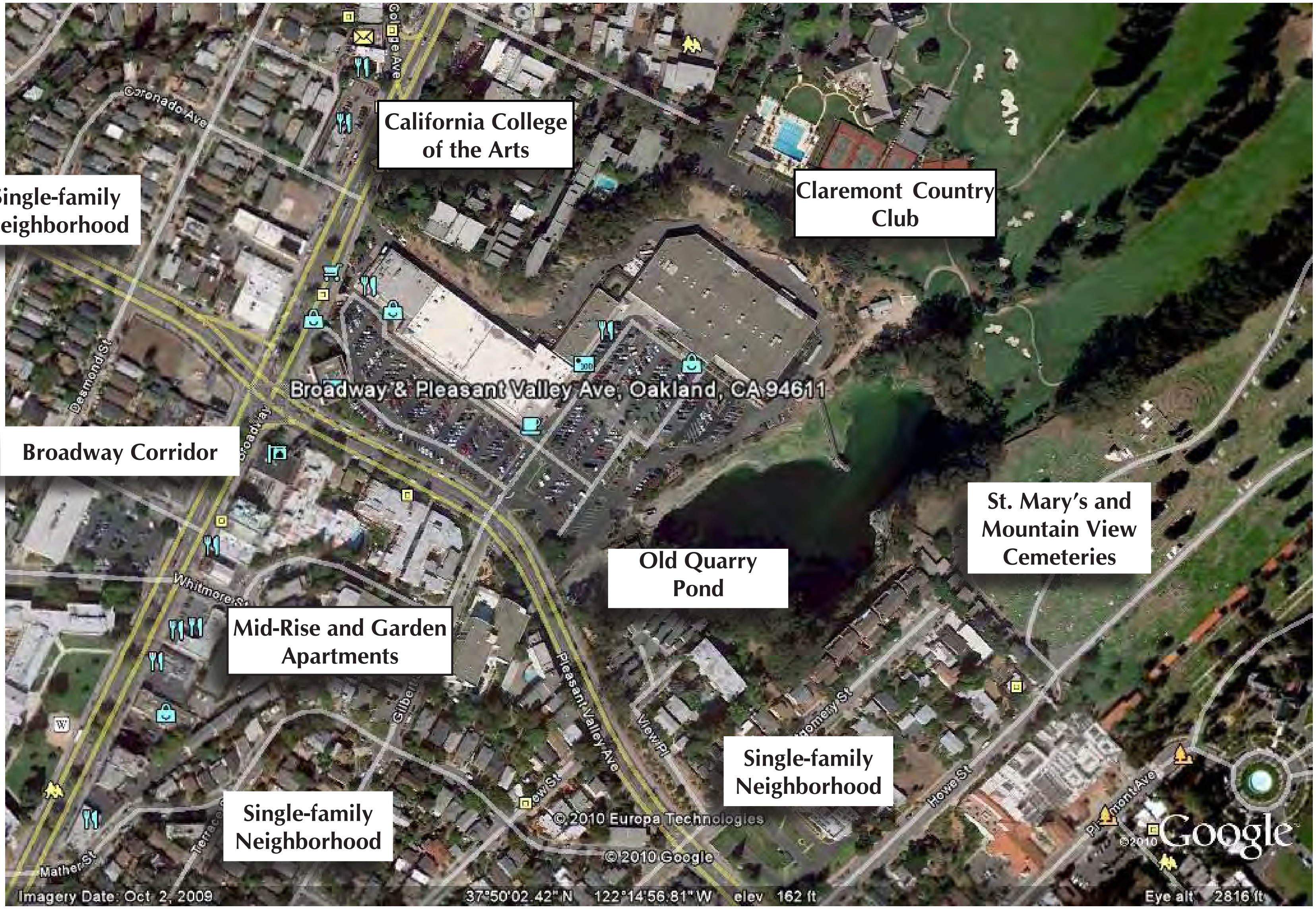


Figure 4.9-3
Surrounding Land Uses

Source: Google Earth

West of the Project Site

Broadway forms the westerly boundary of the Project site and is a major business corridor with local retail, restaurants and commercial office buildings and apartments. In the Project site vicinity most buildings are one, two and three stories in height. Specific uses along Broadway immediately west of the site include the Wendy's drive-through restaurant, several currently unoccupied commercial buildings and several vacant commercial lots. Further to the west and behind the Broadway commercial corridor is primarily single family residential neighborhoods.

South of the Project Site

Land uses directly south of the Project site (across Pleasant Valley Avenue) consist primarily of mid-rise and garden apartments, including the 7-story Monarch Place senior assisted living apartment building. The neighborhood further to the south is a mix of older single family homes, townhomes and garden apartments. South of the Pleasant Valley Avenue/51st Street intersection at Broadway is a Kaiser medical office building and the Oakland Technical High School. Along Broadway and further south of the Project site (from 42nd Street to Grand Avenue) is Oakland's Broadway Auto Row, a two mile stretch of used and new car dealer facilities. The City of Oakland is currently engaged in a planning process to develop a Specific Plan for redevelopment of this area as a corridor-based, higher density mixed-use area.

East of the Project Site

Directly east of the Project Site is property owned by the Claremont Country Club. The immediately adjacent property to the east contains a large pond known as Claremont Pond or Old Quarry Pond, which is a remnant from previous quarry operations currently serving as a water storage facility to supply the irrigation needs for the adjacent golf course. The golf course continues northeast of the Project site along Broadway Terrace. The AAA office is located immediately east of the Project site fronting on Pleasant Valley Avenue, at the southern edge of Old Quarry Pond.

Farther to the east, beyond the Old Quarry Pond is a primarily single-family residential neighborhood located off of Montgomery Street. View Place is a cul-de-sac branching off of Montgomery with a mix of single family homes, townhomes and garden apartments. There is no physical connection (roadway or pedestrian path) which connects these neighborhoods to the Project site.

East of Montgomery Street is the St. Mary's Cemetery and the Mountain View Cemetery.

North of the Project Site

Uses north of the Project site include the California College of the Arts fronting along Broadway, and the Claremont Country Club behind and along Broadway Terrace. Both of these adjacent uses are located atop a large, steeply inclined hill which separates them from the Project site. The California College of the Arts (CCA) is an inter-disciplinary college offering studies in undergraduate and graduate programs in fine arts, architecture, design, and writing. The historic four-acre campus includes the college's undergraduate programs in art, first-year studios, residence halls, and the Center for Art and Public Life which hosts a community arts gallery. The Claremont Country Club is a private club with golf, tennis and club house facilities. The tennis courts are located immediately north of the Project site, as is the club house and swimming pool. The 18-hole golf course extends northeast from the Old Quarry Pond and then opens up between Mountain View Cemetery and Broadway Terrace. Also adjacent to the Project site to the north are multi-family residential apartments.

Project Site Land Use

The Project site is an existing shopping center constructed in the mid-1960s, primarily fronting along Pleasant Valley Avenue (see **Figure 4.9-4**). The site contains six separate buildings, five of which are set back from Pleasant Valley Avenue, forming an "L" shape in the northerly portion of the site, and one building which is a free-standing bank building located directly on the northeast corner of Pleasant Valley Avenue and Broadway. The current tenants at the shopping center include Chase Bank, Boston Market restaurant, Bank of America, Pet Food Express, Safeway, Starbucks, Dress Barn, Ritz Camera PayLess Shoes, Jamba Juice, Game Stop, 1st Title Credit Union, Rockridge Cleaners, a health food store, Great Clips hair salon and CVS Pharmacy.

In total, the Project site contains approximately 185,465 square feet of commercial building space. With the exception of the Chase Bank building, all existing structures are 1-sory in height, although their high ceilings make them stand approximately 20 to 25 feet tall. The Chase Bank building is a 2-sory structure.

City Plans, Policies and Regulations

Applicable planning policies and zoning regulations that pertain to the Project site are presented below, followed by a discussion of the Project's consistency or inconsistency with each.

Potential conflicts with planning policies contained in the General Plan do not inherently result in a significant effect on the environment. Instead, "*effects analyzed under CEQA must be related to a physical change in the environment*" (CEQA Guidelines Section 15358(b)). CEQA Guidelines Section 15125(d) further provides that an EIR shall discuss any inconsistencies between a proposed project and the applicable general plan in the setting section of the document rather than as an impact. Further, the City of Oakland's thresholds of significance (modeled after Appendix G of the CEQA Guidelines) indicates that a project would result in a significant impact related to land use and plans if it would "*fundamentally conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) <u>adopted for the purpose of avoiding or mitigating an environmental effect and resulting in a physical change in the environment</u>*" (emphasis added). Therefore, while this section of the EIR provides an analysis of the Project's consistency with applicable plans, policies and regulations, any physical impacts that may result from such conflicts are analyzed elsewhere in this EIR.

The Oakland General Plan establishes comprehensive, long-term land use policies for the City. The Oakland General Plan includes the following Elements:

- Land Use and Transportation Element
- Historic Preservation Element
- Open Space, Conservation, and Recreation (OSCAR) Element
- Safety Element
- Housing Element
- Noise Element
- Bicycle Master Plan
- Pedestrian Master Plan
- Scenic Highways Element
- Estuary Policy Plan

Figure 4.9-4
Current Project Site

Source: PD Centers

Each of these General Plan Elements and the Project's consistency with their key policy direction is discussed below. The Housing Element and Estuary Policy Plan are not addressed since the Project does not include nor would it remove any housing units, and since the Project is not located in proximity to the Oakland waterfront/Estuary.

Land Use and Transportation Element

The City adopted the Land Use and Transportation Element (LUTE) of the General Plan and certified its associated EIR in 1998. The LUTE identifies policies for utilizing Oakland's land as change takes place and sets forth an action program to implement the land use policy through development controls and other strategies. The LUTE Land Use Diagram shows the Project site within the Community Commercial classification (see previous Figure 4.9-1).

Community Commercial Land Use

The desired character and uses within Community Commercial areas may include neighborhood center uses and larger scale retail and commercial uses such as auto related businesses, business and personal services, health services and medical uses, educational facilities, and entertainment uses. Community Commercial areas can be complemented by the addition of urban residential development and compatible mixed use development. The maximum FAR for this classification is 5.0 and the maximum residential density is 125 units per gross acre.[1]

Community Commercial areas have historically served Oakland's major shopping, service and employment needs, and should continue to do so in the future. Pedestrian-oriented design is encouraged, but these areas may also accommodate larger-scale, auto-oriented developments which require sizable off-street parking areas, such as Rockridge Shopping Center *(the Project site)*, Acorn Shopping Center, and Foothill Square. The higher end of the allowable density/intensity range is most appropriate on arterials.

Project Consistency Assessment

The proposed Project is specifically designed to provide new space for neighborhood center uses and larger-scale retail and commercial uses. The re-design of the shopping center would improve pedestrian access and includes many pedestrian-oriented design features, but would also continue to be an auto-oriented development with sizable off-street parking requirements. Much of this parking demand has been designed to be accommodated on roof-top parking spaces and in areas that would be less visible than the current surface parking lot along Pleasant Valley Avenue. The floor-area-ratio (FAR) for the Project is approximately 0.42 (279,000 square feet on approximately 15 acres), far less than the maximum FAR of 5.0. No residential units are proposed.

Neighborhood Objectives and Policies

Objective N-1: Provide for healthy, vital and accessible commercial areas that meet local consumer needs in the neighborhoods.

> *Policy N1.1: Concentrating Commercial Development*. Commercial development in the neighborhoods should be concentrated in areas that are economically viable and provide opportunities for smaller scale, neighborhood-oriented retail.
>
> *Policy N1.2: Placing Public Transit Stops*. The majority of commercial development should be accessible by public transit. Public transit stops should be placed at strategic locations in

[1] City of Oakland, *Land Use and Transportation Element* (LUTE), March 1998, pg 150

Neighborhood Activity Centers and Transit-Oriented Districts to promote browsing and shopping by transit users.

Policy N1.4: Locating Large-Scale Commercial Activities. Commercial uses which serve long term retail needs or regional consumers and which primarily offer high volume goods should be located in areas visible or amenable to high volumes of traffic. Traffic generated by large scale commercial developments should be directed to arterial streets and freeways and not adversely affect nearby residential streets.

Policy N1.5: Designing Commercial Development. Commercial development should be designed in a manner that is sensitive to surrounding residential uses.

Policy N1.8: Making Compatible Development. The height and bulk of commercial development in Neighborhood Mixed-Use Centers and Community Commercial areas should be compatible with that allowed for residential development.

Objective N-10: Support and create social, informational, cultural, and active economic centers in neighborhoods. Some of the most vital areas of the City of Oakland are the neighborhood activity centers where local residents shop, meet, and have a cup of coffee or an ice cream cone. The pedestrian activity, unique shops and services, and older buildings provide the City with a character that stands apart from the homogeneity of much suburban development found today. These activity centers need to be supported through pedestrian amenities such as trees and benches, and recognition of the areas' history.

Policy N10.1: Identifying Neighborhood "Activity Centers". Neighborhood Activity Centers should become identifiable commercial, activity and communication centers for the surrounding neighborhood. The physical design of neighborhood activity centers should support social interaction and attract persons to the area. Some of the attributes that may facilitate this interaction include plazas, pocket parks, outdoor seating on public and private property, ample sidewalk width, and street amenities such as trash cans and benches, and attractive landscaping.

Project Consistency Assessment

The proposed Project is both a neighborhood-based and larger-scale retail center specifically intended to improve the economic viability of the current shopping center and to provide opportunities for smaller scale, neighborhood-oriented retail tenants. The Project site is located along the main commercial corridor of Broadway at the intersection of 51st Street, both of which have direct connections within 1 mile of the site to Highway 24. Primary traffic flow would occur on Broadway, Pleasant Valley Avenue and 51st Street, all of which are arterial streets. The height and bulk of the proposed Project is larger than the existing shopping center, but is generally compatible with the nearby two and three-story garden apartment complexes and other surrounding commercial structures.

The design of the proposed Project is intended to create a neighborhood activity center that better supports social interaction and attracts more people to the area than does the current shopping center. Some of the Project attributes that may facilitate this interaction include plazas, pedestrian ways and small pocket parks designed internal to the site and along the site edge near the Old Quarry Pond, and street amenities including benches and attractive landscaping.

Industry and Commerce Objectives and Policies

Objective I/C-1: Expand and retain Oakland's job base and economic strength. A series of measures for improving Oakland's economic strength is outlined in the Mayor's 1997 Economic Development Strategy for Oakland and is also reflected in this policy framework. Capturing emerging industries such as biotechnology, telecommunications, and computer and multi-media industries is important to Oakland, as are continued efforts to retain jobs for Oakland residents working in employment sectors such as service, retail trade, and manufacturing. In general, the City is striving to attract more jobs in a diverse range of businesses that can capitalize on Oakland's prime location, superior communications infrastructure, multi-modal transportation system and distinctive and attractive neighborhoods.

Policy I/C-1.1: Attracting New Business. The City will strive to attract new businesses to Oakland which have potential economic benefits in terms of jobs and/or revenue generation. This effort will be coordinated through a citywide economic development strategy/marketing plan which identifies the City's existing economic base, the assets and constraints for future growth, target industries or activities for future attraction, and geographic areas appropriate for future use and development.

Policy I/C-1.2: Retaining Existing Business. Existing businesses and jobs within Oakland which are consistent with the long-range objectives of this Plan should, whenever possible, be retained.

Policy I/C-1.3: Supporting Economic Development Expansion through Public Investment. The public investment strategy of the City should support economic development expansion efforts through such means as identifying target "catalyst projects" for investment which will support the employment or revenue base of the city and providing infrastructure improvements to serve key development locations or projects which are consistent with the goals and objectives of this Plan.

Objective I/C-3: Ensure that Oakland is adequately served by a wide variety of commercial uses, appropriately sited to provide for competitive retail merchandising and diversified office uses, as well as personal and professional services. Oakland has a rich and diverse range of neighborhood commercial centers, which serve the local needs of residents, business, and visitors. Some commercial centers are in need of assistance, and some neighborhoods have no viable commercial activity at all. Community- and region-serving retail businesses have been under-represented in Oakland. The Element envisions an increase in shopping opportunities so that Oakland can capture an appropriate share of spending dollars and provide convenient, quality shopping for residents and workers.

Policy I/C-3.1: Locating Commercial Business. Commercial uses, which serve long term retail needs of regional consumers and which primarily offer durable goods, should be located in areas adjacent to the 1-880 freeway or at locations visible or amenable to high volumes of vehicular traffic, and accessible by multiple modes of transportation.

Policy I/C-3.2: Enhancing Business Districts. Retain and enhance clusters of similar types of commercial enterprises as the nucleus of distinctive business districts, such as the existing new and used automobile sales and related uses through urban design and business retention efforts.

Policy I/C-3.3: Clustering Activity in "Nodes". Retail uses should be focused in "nodes" of activity characterized by geographic clusters of concentrated commercial activity, along corridors that can be accessed through many modes of transportation.

Policy 1/C-3.4: Strengthening Vitality. The vitality of existing neighborhood mixed use and community commercial areas should be strengthened and preserved.

Project Consistency Assessment

According to the *Oakland Retail Enhancement Strategy*,[2] “Oakland retail stores only capture $1 out of every $3 of the City resident’s expenditure potential for comparison goods, before taking into account the sales potential to its visitors and employees for goods purchased at department, specialty, home furnishings, and apparel stores. Comparison goods sales lost as leakage amount to $1 billion annually. In 2006 dollars ($2006), grocery store sales were $232 million less than the grocery store expenditure potential of City residents, thus imposing an inconvenience to residents who travel to other cities for their

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[2] Conley Consulting Group, *Oakland Retail Enhancement Strategy Implementation Plan*, June 2008, pg. 12

weekly food supplies. Less mobile residents may suffer serious health consequences, including diabetes and obesity, from inadequate access to affordable and healthy foods. The estimated grocery store leakage would support five new, full-sized supermarkets in Oakland."

The proposed Project includes the retention of existing businesses and jobs from the current shopping center tenants and the addition of new jobs. Currently, approximately 325 people are employed at the shopping center. Employment projections indicate the total employment at buildout of the Project to be approximately 555 people, an increase of approximately 230 employees over existing conditions. The Project also provides the opportunity to expand retail choices with space available for new "major anchors" and retails shops within a distinctive "node" of commercial development. Redevelopment and revitalization of the existing shopping center provides an opportunity to capture a greater share of retail expenditures within the City. The proposed Project is fully privately funded with no reliance on public investment or economic support.

Historic Preservation Element (HPE)

The Historic Preservation Element (HPE) was originally adopted by the City in 1994 and amended in 1998. The HPE provides a broad, multi-faceted historic preservation strategy that for addresses a wide variety of properties and is intended to help revitalize Oakland's districts and neighborhoods and secure other preservation benefits. The HPE sets forth goals, objectives, policies and actions that encourage preservation and enhancement of Oakland's older buildings, districts, and other physical environmental features having special historic, cultural, educational, architectural or aesthetic interest or value.

Project Consistency Assessment

Although there are numerous examples of historic, cultural, educational, architectural or aesthetically interesting or valuable buildings and areas in the vicinity of the Project site (e.g., the California College of Arts and the Oakland Technical High School), the Project site itself does not contain any such resources. Originally constructed in the mid-1960's, the current buildings on the site are neither old enough to be considered historic resources (not 50 years old), nor do they represent notable examples of post-World War II architecture. The Project's potential effects on historic resources are fully addressed in Chapter 4.11 of this EIR (Effects Found to be Less than Significant). Based on this analysis, the Project would not adversely affect historic resources, and no conflicts with the HPE would occur.

Open Space, Conservation and Recreation Element (OSCAR)

The City adopted the Open Space, Conservation and Recreation Element (OSCAR) and certified its associated EIR in 1996. The OSCAR Element addresses the management of open land, natural resources and parks. Many of the policies directly relate to significance criteria, and where applicable, the Project's consistency with those policies are summarized here and referenced to the appropriate impact analysis section in this EIR.

Open Space and Conservation Policies

Open Space policies from the OSCAR Element that apply to the Project include those listed and discussed below:

> *Policy OS-10.2*: New development should minimize adverse visual impacts and take advantage of opportunities for new vistas and scenic enhancement.
>
> *Policy CO-7.4: Tree Removal*. Discourage the removal of large trees on already developed sites unless removal is required for biological, public safety, or public works reasons.

Policy CO-1.1: Soil Loss in New Development. Regulate new development in a manner that protects soil from degradation and misuse or other activities, which significantly reduce its ability to support plant and animal life. Design all construction activities to ensure that soil is well secured so that unnecessary erosion, siltation of streams, and sedimentation of water bodies does not occur.

Policy CO-1.2: Soil Contamination Hazards. Minimize hazards associated with soil contamination through the appropriate storage and disposal of toxic substances, monitoring of dredging activities, and clean up of contaminated soils. In this regard, require soil testing for development of any site (or dedication of any parkland or community garden) where contamination is suspected due to prior activities on the site.

Policy CO-4.1: Water Conservation. Emphasize water conservation and recycling strategies in efforts to meet future demand.

Policy CO-4.2: Drought-Tolerant Landscaping. Require use of drought-tolerant plants to the greatest extent possible and encourage the use of irrigation systems, which minimize water consumption.

Policy CO-5.1: Protection of Groundwater Recharge. Encourage groundwater recharge by protecting large open space areas, maintaining setbacks along creeks and other recharge features, limiting impervious surface where appropriate, and retaining natural drainage patterns within newly developing areas.

Policy CO-5.3: Control of Urban Runoff. Employ a broad range of strategies, compatible with the ACCWP, to: (a) reduce water pollution associated with stormwater runoff; (b) reduce water pollution associated with hazardous spills, runoff from hazardous material areas, improper disposal of household hazardous wastes, illicit dumping, and marina “live-aboards”; and (c) improve water quality in Lake Merritt to enhance the lake’s aesthetic, recreational, and ecological functions. Actions are pretreatment of runoff, storm drain maintenance, litter and debris removal, street sweeping improvements, mitigation of road construction and dredging impacts, hazardous spills prevention, cleanup of estuary hot spots, litter law enforcement, public education of urban runoff hazards, Lake Merritt catch basins and trash receptacles, improved sewage collection and treatment, and intergovernmental coordination.

Policy CO-12.1: Land Use Patterns which Promote Air Quality. Promote land use patterns and densities which help improve regional air quality conditions by: a) minimizing dependence on single passenger autos; (b) promoting projects which minimize quick auto starts and stops, such as live-work development, and office development with ground-floor retail space; (c) separating land uses which are sensitive to pollution from the sources of air pollution; and (d) supporting telecommuting, flexible work hours, and behavioral changes which reduce the percentage of people in Oakland who must drive to work on a daily basis.

Policy CO-12.4: Design of Development to Minimize Air Quality Impacts. Require that development projects be designed in a manner that reduces potential adverse air quality impacts. This may include: a) the use of vegetation and landscaping to absorb carbon monoxide and to buffer sensitive receptors; b) the use of low –polluting energy sources and energy conservation measures; c) designs which encourage transit use and facilitate bicycle and pedestrian travel.

Policy CO-13.3: Construction Methods and Materials. Encourage the use of energy-efficient construction and building materials. Encourage site plans for new development that maximize energy efficiency.

Project Consistency Assessment

As indicated above, this chapter of the EIR provides an analysis of the Project's consistency with applicable plans, policies and regulations, whereas any physical impacts that may result from such conflicts are analyzed elsewhere in this EIR.

- As indicated in the Aesthetics chapter of this EIR (Chapter 4.2), implementation of the proposed Project would change the visual character of the site, making it more urban in character than its current suburban style, with denser development, taller buildings, newer architecture and an internal street pattern, as well as landscaping improvements adjacent to and enhanced views of the quarry pond. These changes would improve rather than degrade the existing visual character and quality of the site. The proposed landscaping plan would enhance the scenic quality of the site.
- As indicated in the Biology chapter of this EIR, the Project proposes removal of four (4) "protected trees" to accommodate new buildings, six (6) protected trees within roadway medians, and two (2) non-protected Monterey pines for improved access to the adjacent quarry pond. Compliance with the provisions of the Oakland Tree Protection Ordinance and related City Standard Conditions of Approval would ensure consistency with Policy CO-7.4.
- As indicated in the Geology and Soils chapter of this EIR, site preparation and construction activity associated with the proposed Project could result in soil erosion. Compliance with the City Standard Conditions of Approval requiring preparation and implementation of a Sediment and Erosion Control Plan would ensure consistency with Policy CO-1.1.
- As indicated in the Hazards and Hazardous Materials chapter of this EIR, Environmental Site Assessments prepared for the Project site do not indicate the presence of on-site soil or groundwater contamination at significant levels, and do not indicate that off-site contamination of soil or groundwater presents a concern to construction or operation of the Project. Implementation of City Standard Conditions of Approval regarding hazardous materials investigation, remediation, handling and disposal (where warranted) and compliance with all applicable state and federal laws regarding the same will minimize potential exposure to hazardous material contamination, consistent with Policy CO-1.2.
- As indicated in the Utilities chapter of this EIR, the Project would not result in a new significant increase in water usage and would not, by itself, require new or expanded water entitlements. However, a condition of Project approval is recommended in this EIR to incorporate water conservation measures into the Project plans to ensure that the Project's water demands are reduced to the extent reasonable as a means of addressing drought-year water shortages. Compliance with these water conservation recommendations would ensure consistency with Policy CO-4.1 and -4.2.
- As indicated in the Hydrology chapter of this EIR, City Standard Conditions of Approval will require the Project applicant to obtain a General Construction Permit from the SWRCB that includes a Stormwater Pollution Prevention Plan itemizing those measures capable of eliminating or reduce discharge of materials to stormwater during construction. Additional standard conditions of approval require preparation, approval and implementation of a Stormwater Pollution Management Plan (pursuant to provisions C.3 of the NPDES permit) to limit the discharge of pollutants in stormwater after construction of the Project to the maximum extent practicable. The Project will also be subject to the provisions of the City's Creek Protection Ordinance to protect hydrologic resources. Compliance with these standard conditions of approval would ensure consistency with Policy CO-5.1 and -5.3.
- As indicated in the Air Quality chapter of this EIR, the Project's net increase in emissions would not exceed the applicable thresholds. The Project's emissions would be even further reduced with implementation of the required Parking and Traffic Management Plan capable of further reducing

single-occupant vehicle use at the site through a variety of strategies including enhancement and promotion of transit and other alternative modes of travel.

- As indicated in the Greenhouse Gas Emissions chapter of this EIR, the Project site is located in an urban location with a broad mix of surrounding land uses, in a city with a very high walking rate because the neighborhoods are densely populated and well-served by transit, and the Project itself is a local-serving retail development with a sizable nearby residential population base. Because of these factors, the Project would benefit from pedestrian, bicycle and transit trips from the local and surrounding neighborhoods, resulting in a reduction in vehicle trips and corresponding energy use as compared to the same type of development that may occur elsewhere in the outer Bay Area. Furthermore, the Project would be required to comply with all applicable local, state and federal regulations associated with the generation of GHG emissions and energy conservation. In particular, construction of the proposed Project would be required to meet California Energy Efficiency Standards for Residential and Nonresidential Buildings and the requirements of pertinent City policies, helping to reduce future energy demand.

Planning Area Strategies

The OSCAR Element indicates that, "North Oakland is one of the most heavily urbanized parts of Oakland and, with a few exceptions, lacks undeveloped natural areas. Like West Oakland and the dense neighborhoods east of Lake Merritt, it is landlocked. However, because North Oakland is physically closer to the hillside open spaces, it is perceived as having greater access to open space than some of the other flat land districts. The hills are clearly visible from most of North Oakland and several of the regional parks (Lake Temescal, Claremont Canyon, etc.) are close by and accessible by bus or bicycle."

The OSCAR Element includes a summary of major recommendations for the North Oakland area, and the only recommendation pertinent to the Project site is the following:

- Consider the recreational potential of the old quarry pond adjacent to the Rockridge Shopping Center on Pleasant Valley Avenue. [3]

Project Consistency Assessment

The Old Quarry Pond is located on private property owned by the Claremont Country Club, and not under the control of the Project sponsor. The Project includes a landscaped parkway along the edge of the site adjacent to the Old Quarry Pond which will include a pedestrian path and two smaller plazas which will serve as scenic outlooks over the Pond and small shelters away from the large parking lot. The Project thus maximizes the potential recreational and aesthetic value of this resource, consistent with the OSCAR element strategy.

Oakland Safety Element

The November 2004 Safety Element of the Oakland General Plan contains the following policies and actions regarding geology and soils issues that apply to the Project.

> *Policy GE-1*: Develop and continue to enforce and carry out regulations and programs to reduce seismic hazards and hazards from seismically triggered phenomena.
>
> *Action GE-1.1*: Continue to enforce the geologic reports ordinance by requiring site-specific geologic reports for development proposals in the Hayward fault Special Studies Zone, and restricting the placement of structures for human occupancy within fifty feet of the trace.

[3] City of Oakland, *Open Space, Conservation and Recreation (OSCAR) Element* of the General Plan, 1996, pg 5-2

Action GE-1.2: Enact regulations requiring the preparation of site-specific geologic or geotechnical reports for development proposals in areas subject to earthquake-induced liquefaction, settlement or severe ground shaking, and conditioning project approval on the incorporation of necessary mitigation measures.

Policy GE-2: Continue to enforce ordinances and implement programs that seek specifically to reduce landslide and erosion hazards.

Action GE-2.1: Continue to enforce provisions under the subdivision ordinance requiring that, under certain conditions, geotechnical reports be filed and soil hazards investigations be made to prevent grading from creating unstable slopes, and that any necessary corrective actions be taken.

Action GE-2.2: Continue to enforce the grading, erosion and sedimentation ordinance by requiring, under certain conditions, grading permits and plans to control erosion and sedimentation.

Action GE-2.3: Continue to enforce provisions under the creek protection, storm water management and discharge control ordinance designed to control erosion and sedimentation.

Project Consistency Assessment

The Project would not conflict with any of the above Safety Element policies. As indicated in the Geology and Soils chapter of this EIR, City Standard Conditions of Approval require the Project applicant to submit a detailed soils report along with detailed engineering drawings to ensure that the buildings are designed and constructed in conformance with the requirements of all applicable building code regulations to minimize the risks of injury and structural damage from seismic ground shaking and seismic ground failure, and requires preparation of a soils report to ensure that site stability (landslide potential) is adequately addressed and any necessary corrective actions are prescribed at locations where land stability problems exist. Compliance with these standard conditions of approval would ensure consistency with the Safety Element.

Noise Element

The City's 2005 Noise Element analyzes and quantifies current and projected noise levels from various sources that contribute to the community noise environment. The Noise Element contains policies and actions that direct efforts to implement noise policies. The following policies regarding noise apply to the Project.

Policy 1: Ensure the compatibility of existing and, especially, of proposed development projects, not only with neighboring land uses, but also with their surrounding noise environment.

Project Consistency Assessment

The Project Site is generally located in a noise environment along major transportation corridors, including Interstate 580 (I-580), Interstate 880 (I-880), Interstate 980 (I-980) and State Route 24 (SR 24). The noise analysis provided in Chapter 4.7: Noise of this EIR finds that increased noise resulting from the Project (traffic related and operational) would result in a less-than-significant impact. Consistent with the City's Noise Ordinance and the Oakland Noise Element, Standard Conditions of Approval would be implemented to the extent feasible that would reduce temporary construction impacts to less than significant levels.

Bicycle Master Plan and Pedestrian Master Plan

The 2007 Oakland Bicycle Master Plan (BMP) and the 2002 Pedestrian Master Plan are separate parts of the Land Use and Transportation Element. The Bicycle Master Plan indicates that the only existing bicycle facility in the Project vicinity is a Class 3 Bike Route on Broadway Terrace leading to Mountain Boulevard north of Highway 13. The Bicycle Master Plan calls for the implementation of the following bikeway network improvements in the vicinity of the Project site (see Figure 4.11-4):

- Class 2 Bike Lane for the full length of Broadway, including along the Project site frontage. Class 2 Bicycle Lanes are striped lanes on streets, designated with specific signage and stencils for the use of bicyclists.
- Class 3A Arterial Bike route on Pleasant Valley Avenue, including along the Project site frontage Class 3A Bicycle Routes are used on arterial streets where bicycle lanes are not feasible. They promote shared use with lower posted speed limits, shared lane bicycle stencils, wide curb lanes and signage.
- Class 3A Arterial Bike Route on the lower portion of Broadway Terrace, leading into a Class 2 Bike Lane
- Class 3A Arterial Bike route on College Avenue

The Pedestrian Master Plan identifies policies and implementation measures for achieving LUTE policies to promote a walk-able city. The Pedestrian Master Plan designates a pedestrian network throughout Oakland, and identifies Broadway (including along the Project site frontage) as a City Route and Pleasant Valley Avenue (including along the Project site frontage) as a District route. City Routes designate streets that are destinations in themselves – places to live, work, shop, socialize, and travel. They provide the most direct connections between walking and transit and connect multiple districts in the City. District Routes have a more local function as the location of schools, community centers and smaller scale shopping. They are often located within a single district and help to define the character of that district.

Project Consistency Assessment

The proposed Project includes the following bike and pedestrian features which provide consistency with the Bicycle Master Plan and Pedestrian Master Plan:

- The Project includes a re-design of the public right-of-way in Broadway along the Project site frontage to provide Class 2 bicycle lanes on both sides of Broadway between College Avenue and just south of 51st Street/Pleasant Valley Avenue. The *Broadway Corridor Bikeway Feasibility Study* (March 2007) proposed to accommodate the Class 2 bicycle lanes on Broadway by reducing the number of automobile lanes from three to two in each direction. To the extent feasible, the roadway modifications proposed for the Project are consistent with the *Broadway Corridor Bikeway Feasibility Study*. It is anticipated that City of Oakland will install Class 2 bicycle lanes on Broadway in conjunction with a resurfacing project expected in 2013. Several bike and pedestrian routes connecting Broadway and Pleasant Valley Avenue internally to the shopping center are provided. Additionally, the Project would provide for all the short-term and long-term bicycle parking facilities that would be required.

Scenic Highways Element

The 1974 Scenic Highways Element establishes designated and potential scenic highways and routes throughout the City, and provides policies preserving the scenic quality of these routes.

Project Consistency Assessment

The Project site is not located within a scenic corridor, nor would it obstruct panoramic vistas or view sheds through the site. The nearest designated scenic highway is State Highway 24, located approximately one mile to the north and west of the Project site. Therefore, the Project would be consistent with the City's Scenic Highways Element.

Oakland Public Transit and Alternative Modes of Travel Policy

The 1996 Public Transit and Alternative Modes ("Transit First") resolution recognizes the importance of striking a balance between economic development opportunities and the mobility needs of those who travel by means other than the private automobile. The policy favors modes of travel that have the potential to provide the greatest mobility for people, rather than vehicles.

Project Consistency Assessment

New employees and shoppers at the Project would increase the demand for transit service in the area. As discussed in Chapter 4.11: Transportation, Circulation and Parking, the Project will enhance existing pedestrian and bicycle facilities and improve access to public transit, consistent with the City's policy.

City of Oakland Standard Conditions of Approval and Uniformly Applied Development Standards

The City of Oakland has no Standard Conditions of Approval specific to land use.

Impacts, Standard Conditions of Approval and Mitigation Measures

Significance Criteria

The Project would result in a significant impact related to land use and plans if it would:

1. Physically divide an established community;
2. Result in a fundamental conflict between adjacent or nearby land uses;
3. Fundamentally conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect and result in a physical change in the environment; or
4. Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan

Physically Divide an Established Community

Impact Land Use-1: The proposed Project would redevelop the existing shopping center located at 51st Street/Broadway with a new shopping center, and would not result in the physical division of an existing community. (**No Impact**)

The Project site is near several existing residential neighborhoods. These neighborhoods are located to the south across Pleasant Valley Road, to the east on the other side of the Old Quarry Pond and east of two private cemeteries, and to the west across Broadway. However, the current shopping center provides very limited physical connections (either via vehicle, bicycle or pedestrian paths) that link the site to these surrounding neighborhoods. The only existing vehicular connections to the surrounding community are the several driveways off of Pleasant Valley Road and Broadway. There are no established vehicular or pedestrian connections through the site that would link the surrounding community.

The Project would redevelop the site with new buildings, generally taller and with greater overall square footage than the current shopping center. Construction of the new retail buildings would require demolition of the existing buildings and re-design of the internal circulation system. The Project's design would not further divide or limit connections to the surrounding community, either to or through the site, but would instead create improved connections from the site with the surrounding community. A continuous, meandering sidewalk merging into public plaza space would ring the entire site; separated pedestrian and vehicle access into the site would be provided at each of the main entry point; a new pedestrian connection would be established at the Pleasant Valley Avenue/Broadway intersection; and a new internal roadway would function much like an urban street, providing improved connections for vehicles, pedestrians and bicycles through the site. Further, the Project proposes to develop publicly accessible gathering spaces including smaller plazas, wide sidewalks for outdoor cafes and public seating, and scenic outlooks over the Pond offering shelter away from the large parking lot. No aspect of the proposed Project would result in any further division, physically or perceptually, of the established community.

Mitigation Measures

None required

Land Use Compatibility / Change in Environment

Impact Land Use-2: The Project would not be incompatible with surrounding land uses and would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. (**LTS**)

Conflicts between a Project and applicable policies do not constitute significant physical environmental impacts in and of themselves. A policy inconsistency is considered a significant adverse environmental impact only when it is related to a policy adopted for the purpose of avoiding or mitigating an environmental effect and it is anticipated that the inconsistency would result in a significant adverse physical impact based on the established significance criteria. Furthermore, the Project need not be consistent with every General Plan policy to be considered consistent under CEQA, as explained by the General Plan:

> The General Plan contains many policies which may in some cases address different goals, policies and objectives and thus some policies may compete with each other. The Planning Commission and City Council, in deciding whether to approve a proposed project, must decide whether, on balance, the project is consistent (i.e., in harmony) with the General Plan. The fact that a specific project does not meet all General Plan goals, policies, and objectives does not inherently result in a significant effect on the environment within the context of CEQA.[4]

The land uses proposed by the Project are consistent with the General Plan designations and applicable zoning on the Project site. The Project would not exceed the maximum development intensity allowed under the General Plan or zoning. Although portions of the Project are taller than existing buildings, the increased height would not result in significant adverse physical impacts such as shadowing off-site

[4] City of Oakland, City Council Resolution No. 79312 C.M.S.; adopted June 2005

locations or substantially blocking important view sheds or vistas, as more fully discussed in Chapter 4.2: Aesthetics.

The Project would not conflict with any land use policies adopted for the purpose of avoiding or mitigating an environmental effect, as explained in the Project's consistency statements earlier in this chapter. As a result, no significant land use impacts related to the Project's consistency with land use policies would occur.

Mitigation Measures

None required

Habitat and Natural Community Conservation Plans

Impact Land Use-3: The proposed Project would not result in a fundamental conflict with any applicable habitat conservation plan or natural community conservation plan. (**No Impact**)

The Project site is not located within or near an area guided by a Habitat Conservation Plan or Natural Community Conservation Plan. Therefore, the Project would not conflict with conservation land uses addressed by any plans for the surrounding vicinity.

Mitigation Measures

None required

Cumulative Impact

Cumulative Impact Land Use-4: The proposed Project, in combination with other past, present, pending and reasonably foreseeable development would not result in a significant cumulative land use impact related to the physical division of an established community, cumulative conflicts with adjacent or nearby land uses, or cumulative conflicts with applicable land use plans, policies or regulations adopted for the purpose of avoiding or mitigating environmental effect. (**LTS**)

Geographic Context

The geographic area considered for the cumulative analysis of land use issues includes the area in close proximity to the Project site including the upper Broadway corridor, the "lower" College Avenue corridor and the surrounding north Oakland neighborhoods. This area was defined because it includes the Project site, the immediately surrounding neighborhoods, and a larger context for the Project. This area does not include any other major projects identified on the City's Major Projects List as of July 2012.[5]

Impacts

As analyzed throughout this section, the Project would not result in a significant land use impact by potentially physically dividing an established community; or conflicting with adjacent or nearby land uses; or conflicting with applicable land use plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental effect. The Project is not located in or near an area guided by a habitat conservation plan or natural community conservation plan. The Project is consistent with the City's General Plan Land Use designation for the site. Thus, the Project would not combine with, or add to any potential adverse land use impacts that may be associated with other cumulative development. A

[5] http://www2.oaklandnet.com/oakca/groups/ceda/documents/report/oak025453.pdf

review of cumulative development in the defined geographic area, including past, present, existing, pending and reasonably foreseeable future development does not reveal any significant adverse cumulative impacts in the area. Cumulative development in the area consists of residential, commercial and other typical urban uses.

Cumulative development, in combination with the Project, has and would continue to result in the development and redevelopment of infill or vacant sites throughout the area, particularly along the Broadway corridor. However, much of the focus of redevelopment along the Broadway corridor is centered on portions of Broadway that are ten to twelve blocks further south (nearer to Downtown) than the Project site. Redevelopment of smaller vacant lots and underutilized properties in closer proximity to the Project site along Broadway can be anticipated in the future. Such infill projects would allow for capitalization of existing infrastructure and would minimize impacts to sensitive resources that would likely be degraded if developed on a greenfield site in farther outlying portions of the city.

The proposed Project would contribute to higher density of development in the area, as anticipated in the City General Plan. The Project is generally consistent with adopted plans and the overall vision for the area. Based on the information in this land use section and for the reasons summarized above, the Project would not contribute to any significant adverse cumulative land use impacts when considered together with past, present, pending and reasonably foreseeable development.

Mitigation Measures

None required

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4.10

Noise and Vibration

This chapter evaluates potential noise impacts that would result from the Rockridge Shopping Center Redevelopment Project proposed on the northeast corner of the intersection of Pleasant Valley Avenue and Broadway in Oakland, California. This chapter is based on technical work prepared by Illingworth & Rodkin, Inc. as incorporated herein, and includes a Setting section outlining the fundamentals of environmental acoustics, a description of the existing baseline conditions at receivers bordering the Project site, and applicable noise regulations and guidelines. The Impacts and Mitigation Measures section identifies the potential noise impacts resulting from the construction and operation of the Project and includes mitigation measures and/or Standard Conditions of Approval that would reduce identified noise impacts to less-than-significant levels.

Setting

Fundamentals of Environmental noise

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. Decibels and other technical terms are defined in **Table 4.10-1**.

Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting that reflects the facts that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency mid-range. This is called "A" weighting, and the decibel level so measured is called the A-weighted sound level (dBA). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Typical A-weighted levels measured in the environment and in industry are shown in **Table 4.10-2** for different types of noise.

Table 4.10-1: Definitions of Acoustical Terms Used in this Report

Term	Definitions
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, Leq	The average A-weighted noise level during the measurement period. The hourly Leq used for this report is denoted as dBA Leq (h).
Lmax, Lmin	The maximum and minimum A-weighted noise level during the measurement period.
L01, L10, L50, L90	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, Ldn or DNL	The equivalent noise level for a continuous 24-hour period with a 10-decibel penalty imposed during nighttime and morning hours. (10:00 pm to 7:00 am).
Community Noise Equivalent Level, CNEL	CNEL is the equivalent noise level for a continuous 24-hour period with a 5-decibel penalty imposed in the evening (7:00 pm to 10:00 pm) and a 10-decibel penalty imposed during nighttime and morning hours (10:00 pm to 7:00 am).
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

Table 4.10-2 Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	110 dBA	
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		Vacuum cleaner
Gas lawn mower, 100 feet	70 dBA	
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Suburban daytime		Active office environment
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
		Bedroom at night, concert hall (background)
Quiet rural nighttime		
	20 dBA	
Wilderness area	20 dBA	
		Broadcast/recording studio
	0 dBA	

Source: Technical Noise Supplement (TeNS), Caltrans, November 2009.

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources which create a relatively steady background noise in which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise descriptors, L_{01}, L_{10}, L_{50}, and L_{90}, are commonly used. They are the A-weighted noise levels equaled or exceeded during 1%, 10%, 50%, and 90% of a stated time period. A single number descriptor called the L_{eq} is also widely used. The L_{eq} is the average A-weighted noise level during a stated period of time.

In determining the daily level of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes very noticeable. Further, most people sleep at night and are very sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, a descriptor, DNL (day/night average sound level), was developed. The DNL divides the 24-hour day into the daytime of 7:00 AM to 10:00 PM and the nighttime of 10:00 PM to 7:00 AM. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Community Noise Equivalent Level (CNEL) is another 24-hour average that includes both an evening and nighttime weighting.

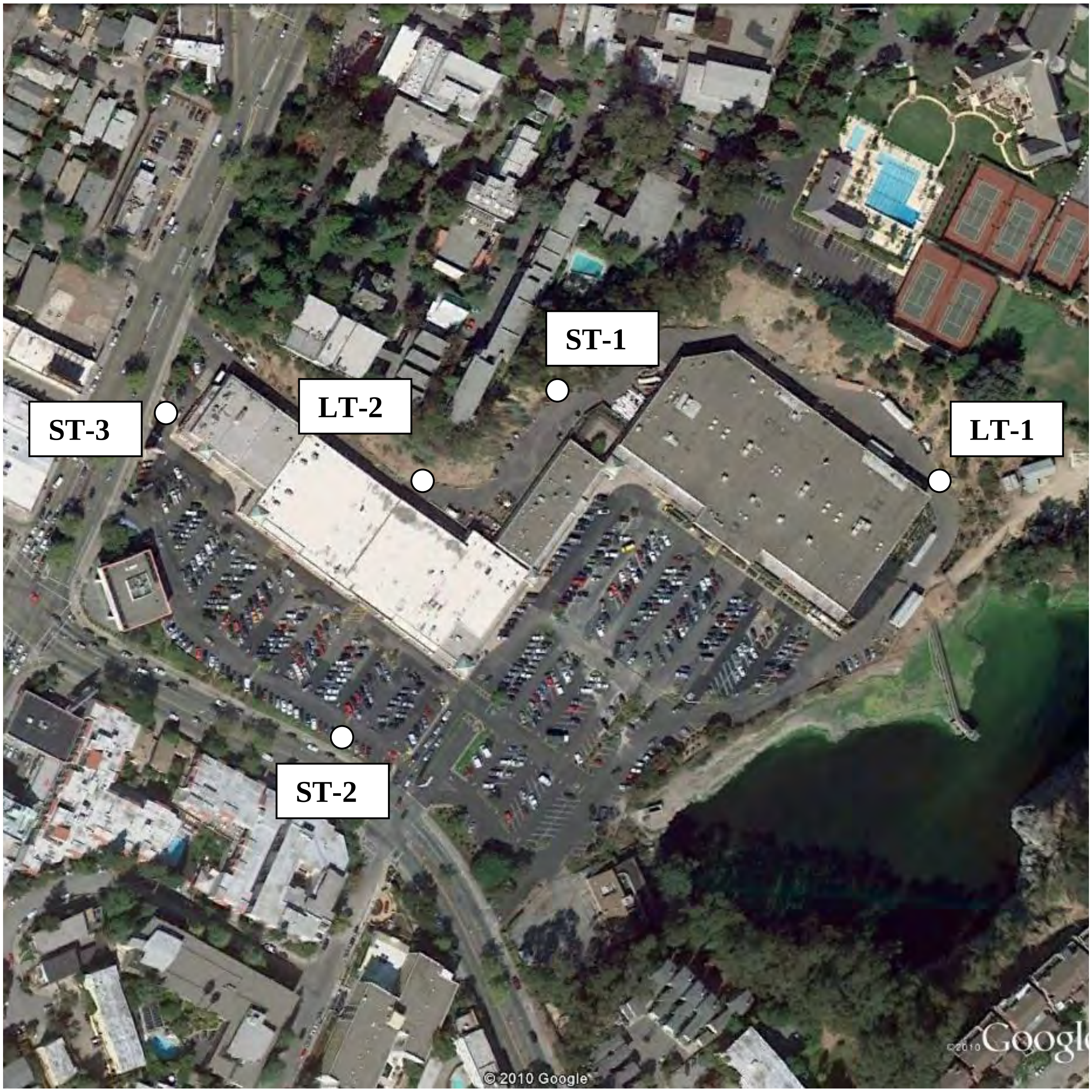
Existing Noise Environment

The Project site is located at the northeast corner of the intersection of Pleasant Valley Avenue and Broadway in Oakland, Ca. The Project site currently contains a CVS, Safeway grocery store, and various other small commercial uses. Land uses in the vicinity of the Project site include commercial, residential, cemetery, and recreational/golf course uses.

A noise monitoring survey was conducted from October 12, 2010 to October 15, 2010 to quantify the existing noise environment at the site and in the Project vicinity. The noise monitoring survey included two long-term noise measurements (LT-1 and LT-2), and 3 short-term measurements (ST-1 through ST-3) as indicated on **Figure 4.10-1**. The long-term noise measurements provide an indication of how noise levels vary throughout the day and night. The short-term measurements that are attended by a technician provide an indication of the instantaneous noise levels caused by noise sources in the area. The average A-weighted noise levels at short-term monitoring sites can be approximated by correlating to corresponding periods at long-term sites, thus providing useful comparative noise data for this analysis. The noise environment at the site results primarily from local traffic noise generated along arterial streets serving the Project site and operational noise associated with the existing shopping center including parking lot noise, truck deliveries, and trash compactors. **Appendix 4.10** shows the daily trend in noise levels for the long-term noise measurements.

Noise measurement location LT-1 was approximately 40 feet from the eastern portion of the existing CVS store. This noise measurement location represented the noise environment from occasional truck deliveries and distant parking lot noise. Hourly average noise levels typically ranged from 50 to 64 dBA L_{eq} during the day, and from 47 to 60 dBA L_{eq} at night. The day-night average noise level at this measurement location ranged from 61 to 64 dBA L_{dn}. Noise measurement location LT-2 was approximately 90 feet from the existing Safeway loading docks located at the rear of the building. This noise measurement location represented the noise environment from truck deliveries and unloading of goods. Hourly average noise levels typically ranged from 50 to 67 dBA L_{eq} during the day, and from 43 to 58 dBA L_{eq} at night. The day-night average noise level at this measurement location ranged from 61 to 62 dBA L_{dn}.

Short-term (ten-minute) noise measurements were made at three additional locations around the Project site to complete the noise monitoring survey. Short-term noise measurement ST-1 was made behind the existing Safeway and CVS stores, near additional loading/unloading areas. The ten-minute average noise level was 66 dBA L_{eq}. Short-term noise measurement ST-2 was approximately 45 feet from the center of Pleasant Valley Avenue. The ten minute average noise level was 67 dBA L_{eq}. Short-term noise measurement ST-3 was approximately 60 feet from the center of Broadway. The ten-minute average noise level was 76 dBA L_{eq}. **Table 4.10-3** summarizes the results of these measurements.



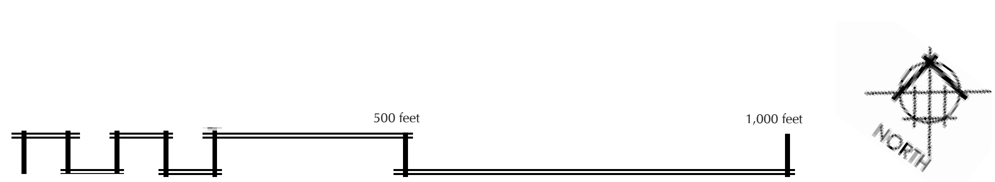


Figure 4.10-1
Noise Measurement Locations

Source: Illingworth & Rodkin, Inc.

Table 4.10-3 Summary of Short-Term Noise Measurement Data

Noise Measurement Location	L_{max}	$L_{(2)}$	$L_{(8)}$	$L_{(17)}$	$L_{(33)}$	L_{eq}	L_{dn}
ST-1: Between Safeway and CVS. (10/15/2010, 9:40-9:50 a.m.)	85	77	66	61	56	66	66
ST-2: ~ 45 feet from the center of Pleasant Valley Avenue. (10/15/2010, 10:10-10:20 a.m.)	79	75	71	69	67	67	69
ST-3: ~ 60 feet from the center of Broadway. (10/15/2010, 10:30-10:40 a.m.)	99	76	73	71	69	76	72

Note: L_{dn} approximated by correlating to corresponding period at long-term site.

Regulatory Setting

The State of California and the City of Oakland establish guidelines, plans, and policies designed to limit noise exposure at noise sensitive land uses. The State CEQA Guidelines, Appendix G and the policies contained in the City of Oakland General Plan and Municipal Code are used as significance criteria in the impact assessment. Applicable criteria are as follows:

City of Oakland

General Plan

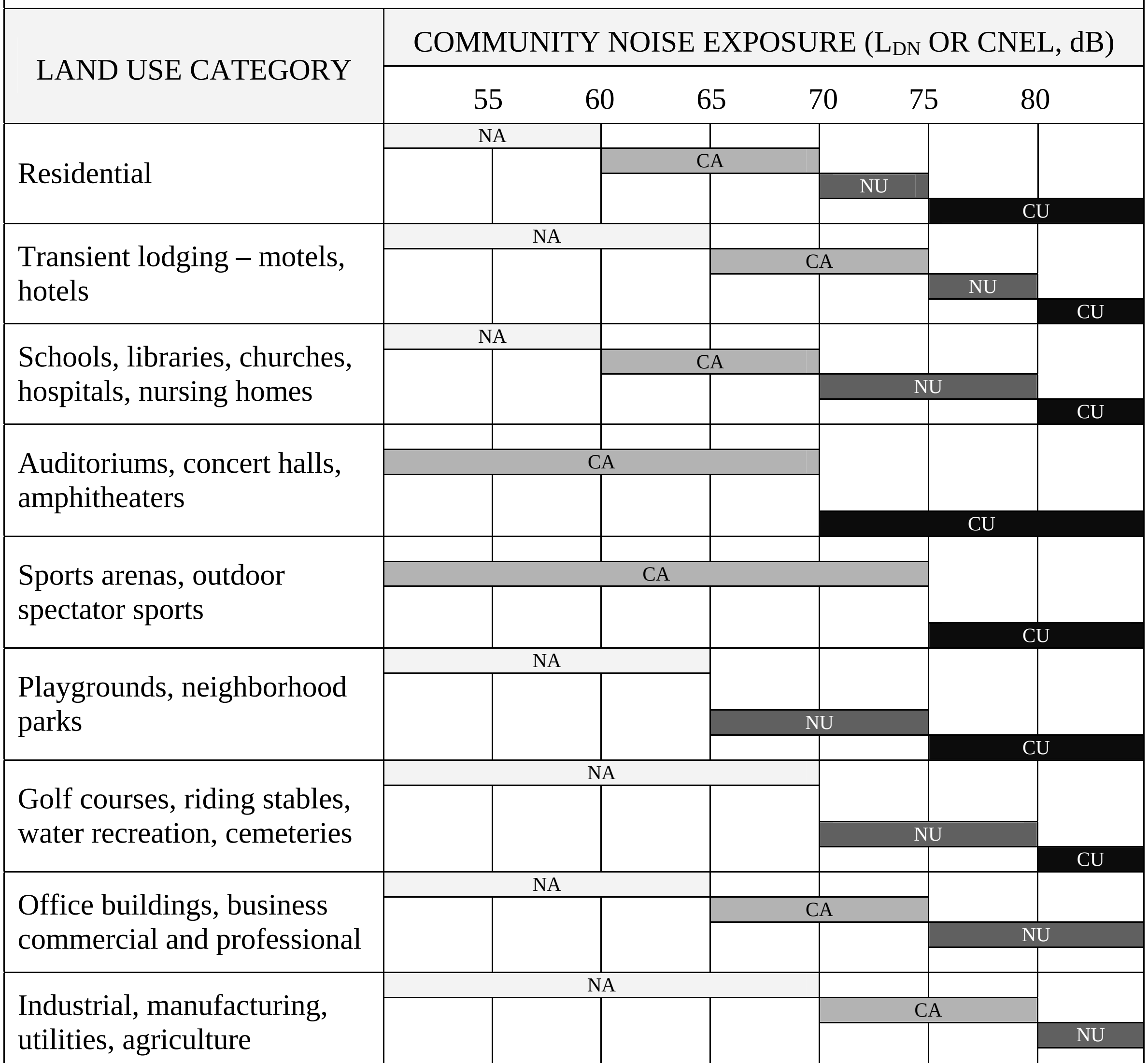
The Noise Element of the City of Oakland General Plan identifies noise and land use compatibility standards for various land uses, as shown in **Figure 4.10-2**.[1] These land use compatibility standards were derived from the California Department of Health Services' receiver-based noise-compatibility guidelines matrix. The matrix illustrates the degree of acceptability of exposing specified land uses to a range of ambient-noise levels. The matrix is used by the City when considering proposed development projects in order to gauge the acceptability of a proposed project (that is, its compatibility with noise levels at the proposed site).

The following are the maximum interior noise levels generally considered acceptable for various common land uses:

- 45 dB: residential, hotels, motels, transient lodging, institutional (churches, hospitals, classrooms, libraries), movie theaters
- 50 dB: professional offices, research and development, auditoria, meeting halls
- 55 dB: retail, banks, restaurants, sports clubs
- 65 dB: manufacturing, warehousing

[1] City of Oakland, Noise Element City of Oakland General Plan, June 2005, p. 21.

Land Use Compatibility Guidelines



NA	NORMALLY ACCEPTABLE: Development may occur without an analysis of potential noise impacts *to the proposed development* (though it might still be necessary to analyze noise impacts that the project might have *on its surroundings*).
CA	CONDITIONALLY ACCEPTABLE: Development should be undertaken only after an analysis of noise-reduction requirements is conducted and if necessary noise-mitigating features are included.
NU	NORMALLY UNACCEPTABLE: Development should generally be discouraged; it may be undertaken only if a detailed analysis of the noise-reduction requirements is conducted, and if highly effective noise mitigation features are included.
CU	CLEARLY UNACCEPTABLE: Development should not be undertaken.

Figure 4.10-2
General Plan Noise and Land Use Compatibility Standards

Source: City of Oakland, CEQA Thresholds of Significance, August 2011

Taking residential uses as an example, the matrix indicates that an ambient noise level of 60 dB is the threshold of a “normally acceptable” environment for residences. This assumes a maximum interior noise level of 45 dB, plus an average noise mitigation of 15 dB for use of conventional contemporary construction methods and materials. Higher ambient noise levels would require detailed noise analyses, sound-rated construction methods or materials, mechanical ventilation systems (so that windows may be kept closed), or noise shielding features such as sound walls, street setbacks and thoughtful site planning and building orientation. Within “conditionally acceptable areas”, development should be undertaken only after an analysis of noise-reduction requirements is conducted, and if necessary noise mitigating features are included in the design. Conventional construction will usually suffice as long as it incorporates air conditioning or forced fresh-air supply systems, though it will likely require that project occupants maintain their windows closed.

The City’s goal is to, “...protect Oakland’s quality of life and the physical and mental well-being of residents and others in the City by reducing the community’s exposure to noise; and to safeguard Oakland’s economic welfare by mitigating noise incompatibilities among commercial, industrial and residential land uses”.

> *Policy 1*: Ensure the compatibility of existing and, especially, of proposed development projects not only with neighboring land uses but also with their surrounding noise environment.
>
> *Policy 2*: Protect the noise environment by controlling the generation of noise by both stationary and mobile noise sources.
>
> *Policy 3*: Reduce the community’s exposure to noise by minimizing the noise levels that area received by Oakland residents and others in the City.[2]

Oakland Noise Ordinance

The City of Oakland regulates noise levels through enforcement of its Noise Ordinance (Chapters 8.18 and 17.120 of the Oakland Municipal Code). Section 8.18.020 of the OMC states the following:

“The persistent maintenance or emission of any noise or sound produced by human, animal or mechanical means, between the hours of 9:00 p.m. and 7:00 a.m., which shall disturb the peace or comfort or be injurious to the health of any person, shall constitute a nuisance. Failure to comply with the following provisions shall constitute a nuisance.

a. All construction equipment powered by internal combustion engines shall be properly muffled and maintained.

b. Unnecessary idling of internal combustion engines is prohibited.

c. All stationery noise-generating construction equipment such as tree grinders and air compressors are to be located as far as is practical from existing residences.

d. Quiet construction equipment, particularly air compressors, are to be selected whenever possible.

e. Use of pile drivers and jack hammers shall be prohibited on Sundays and holidays, except for emergencies and as approved in advance by the Building Official.”

Section 17.120.050 of the Oakland Planning Code regulates operational noise from stationary sources. **Table 4.10-4** presents the maximum allowable receiving noise standards applicable to long-term exposure

[2] City of Oakland, Noise Element City of Oakland General Plan, June 2005, pp. 23-25.

for residential and civic land uses, for noise from stationary noise sources (not transportation noise). During construction, noise from a stationary source would be limited by the standards in **Table 4.10-5**.

Table 4.10-4: City of Oakland Operational Noise Standards at Receiving Property Line (dBA) [1]

Receiving Land Use	Cumulative No. of Minutes in a 1-Hr Period2	Maximum Allowable Noise Level (dBA) Daytime 7 a.m.-10 p.m.	Maximum Allowable Noise Level (dBA) Nighttime 10 p.m.-7 a.m.
Residential and Civic[3]	20 (L_{33})	60	45
	10 ($L_{16.7}$)	65	50
	5 ($L_{8.3}$)	70	55
	1 ($L_{1.7}$)	75	60
	0 (L_{max})	80	65
		Anytime	
Commercial	20 (L_{33})	65	
	10 ($L_{16.7}$)	70	
	5 ($L_{8.3}$)	75	
	1 ($L_{1.7}$)	80	
	0 (L_{max})	85	
Manufacturing, Mining, and Quarrying	20 (L_{33})	70	
	10 ($L_{16.7}$)	75	
	5 ($L_{8.3}$)	80	
	1 ($L_{1.7}$)	85	
	0 (L_{max})	90	

Notes:
1. These standards are reduced 5 dBA for simple tone noise, noise consisting primarily of speech or music, or recurring impact noise. If the ambient noise level exceeds these standards, the standard shall be adjusted to equal the ambient noise level.
2. L_x represents the noise level that is exceeded X percent of a given period. L_{max} is the maximum instantaneous noise level.
3. Legal residences, schools and childcare facilities, health care or nursing home, public open space, or similarly sensitive land uses.

Source: OMC Section 17.120.050.

Table 4.10-5: City of Oakland Construction Noise Standards at Receiving Property Line, dBA[1]

Receiving Land Use	Maximum Allowable Noise Level (dBA) Weekdays 7 a.m.-7 p.m.	Weekends 9 a.m.-8 p.m.
	Less than 10 days	
Residential	80	65
Commercial, Industrial	85	70
	More than 10 Days	
Residential	65	55
Commercial, Industrial	70	60

Notes:
1. If the ambient noise level exceeds these standards, the standard shall be adjusted to equal the ambient noise level.

Source: OMC Section 17.120.050.

Section 17.120.060 of the Oakland Planning Code regulates vibration, "All activities, except those located within the IG or the M-40 zone, or in the IG or M-30 zone more than four hundred (400) feet from any residential zone boundary, shall be so operated as not to create a vibration which is perceptible without instruments by the average person at or beyond any lot line of the lot containing such activities. Ground vibration caused by motor vehicles, trains, and temporary construction or demolition work is exempted from this standard."

Uniformly Applied Development Standards Imposed as Standard Conditions of Approval

The City of Oakland's Standard Conditions of Approval relevant to reducing noise and vibration impacts due to the proposed Project are listed below. If the Project is approved by the City, then all applicable SCA would be adopted as conditions of approval and required of the Project to help ensure no significant impacts related to noise and vibration occur. The SCA are incorporated and required as part of the Project, so they are not listed as mitigation measures.

SCA Noise-1: Days/Hours of Construction Operation (*Ongoing throughout demolition, grading, and/or construction*). The project applicant shall require construction contractors to limit standard construction activities as follows:

a. Construction activities are limited to between 7:00 AM and 7:00 PM Monday through Friday, except that pile driving and/or other extreme noise generating activities greater than 90 dBA shall be limited to between 8:00 a.m. and 4:00 p.m. Monday through Friday.

b. Any construction activity proposed to occur outside of the standard hours of 7:00 am to 7:00 pm Monday through Friday for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened and such construction activities shall only be allowed with the prior written authorization of the Building Services Division.

c. Construction activity shall not occur on Saturdays, with the following possible exceptions:

i. Prior to the building being enclosed, requests for Saturday construction for special activities (such as concrete pouring which may require more continuous amounts of time), shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened. Such construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division.

ii. After the building is enclosed, requests for Saturday construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division, and only then within the interior of the building with the doors and windows closed.

d. No extreme noise generating activities (greater than 90 dBA) shall be allowed on Saturdays, with no exceptions.

e. No construction activity shall take place on Sundays or Federal holidays.

f. Construction activities include but are not limited to: truck idling, moving equipment (including trucks, elevators, etc.) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.

g. Applicant shall use temporary power poles instead of generators where feasible.

SCA Noise-2: Noise Control (*Ongoing throughout demolition, grading, and/or construction*). To reduce noise impacts due to construction, the project applicant shall require construction contractors to implement a site-specific noise reduction program, subject to the Planning and Zoning Division and the Building Services Division review and approval, which includes the following measures:

a. Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).

b. Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible.

c. Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.

d. If feasible, the noisiest phases of construction shall be limited to less than 10 days at a time.

SCA Noise-3: Noise Complaint Procedures (*Ongoing throughout demolition, grading, and/or construction*). Prior to the issuance of each building permit, along with the submission of construction documents, the project applicant shall submit to the Building Services Division a list of measures to respond to and track complaints pertaining to construction noise. These measures shall include:

a. A procedure and phone numbers for notifying the Building Services Division staff and Oakland Police Department; (during regular construction hours and off-hours);

b. A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign shall also include a listing of both the City and construction contractor's telephone numbers (during regular construction hours and off-hours);

c. The designation of an on-site construction complaint and enforcement manager for the project;

d. Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity; and

e. A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

SCA Noise-4: Interior Noise (*Prior to issuance of a building permit*). If necessary to comply with the interior noise requirements of the City of Oakland's General Plan Noise Element and achieve an acceptable interior noise level, noise reduction in the form of sound-rated assemblies (i.e., windows, exterior doors, and walls) shall be incorporated into project building design, based upon recommendations of a qualified acoustical engineer and submitted to the Building Services Division for review and approval. Final recommendations for sound-rated assemblies will depend on the specific building designs and layout of buildings on the site and shall be determined during the design phase.

SCA Noise-5: Pile Driving and Other Extreme Noise Generators (*Ongoing throughout demolition, grading, and/or construction*). To further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dBA, a set of site-specific noise attenuation measures shall be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures shall be submitted for review and approval by the Planning and Zoning Division and the Building Services Division to ensure that maximum feasible noise attenuation will be achieved. This plan shall be based on the final design of the project. A third-party peer review, paid for by the project applicant, may be required to assist the City in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the project applicant. A special inspection deposit is required to ensure compliance with the noise reduction plan. The amount of the deposit shall be determined by the Building Official, and the deposit shall be submitted by the project applicant concurrent with submittal of the noise reduction plan. The noise reduction plan shall include, but not be limited to, an evaluation of the following measures. These attenuation measures shall include as many of the following control strategies as feasible:

a. Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;

b. Implement "quiet" pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;

c. Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;

d. Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example; and

e. Monitor the effectiveness of noise attenuation measures by taking noise measurements.

Impacts, Standard Conditions of Approval and Mitigation Measures

Significance Criteria

The Project would result in a significant impact related to noise if it would:

1. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code section 17.120.050) regarding construction noise, except if an acoustical analysis is performed that identifies recommend measures to reduce potential impacts;[3]
2. Generate noise in violation of the City of Oakland nuisance standards (Oakland Municipal Code section 8.18.020) regarding persistent construction-related noise;
3. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise;
4. Generate noise resulting in a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or, if under a cumulative scenario where the cumulative increase results in a 5 dBA permanent increase in ambient noise levels in the project vicinity (i.e., the cumulative condition including the project compared to existing conditions), and a 3dBA permanent increase is attributable to the project;
5. Expose persons to interior Ldn or CNEL greater than 45 dBA for multi-family dwellings, hotels, motels, dormitories and long-term care facilities (and may be extended by local legislative action to include single family dwellings) per California Noise Insulation Standards (CCR Part 2, Title 24);
6. Expose the project to community noise in conflict with the land use compatibility guidelines of the Oakland General Plan after incorporation of all applicable Standard Conditions of Approval;
7. Expose persons to or generate noise levels in excess of applicable standards established by a regulatory agency (e.g., occupational noise standards of the Occupational Safety and Health Administration [OSHA]);
8. During either project construction or project operation, expose persons to or generate groundborne vibration that exceeds the criteria established by the Federal Transit Administration (FTA);
9. Be located within an airport land use plan and would expose people residing or working in the project area to excessive noise levels; or
10. Be located within the vicinity of a private airstrip, and would expose people residing or working in the project area to excessive noise levels.

The Project does not include development of new noise sensitive uses described in criterion 5 above. The Project site is not located within the vicinity of a private airstrip nor is it located within the land use plan area for Oakland Airport or any other airport. Therefore, impacts associated with criteria 5, 9 and 10 are not discussed further in this EIR.

[3] The acoustical analysis must identify, at a minimum, (a) the types of construction equipment expected to be used and the noise levels typically associated with the construction equipment and (b) the surrounding land uses including any sensitive land uses (e.g., schools and childcare facilities, health care and nursing homes, public open space). If sensitive land uses are present, the acoustical analysis must recommend measures to reduce potential impacts.

Construction Noise and Vibration

Impact Noise-1: Noise generated by construction activities at the site would not be expected to violate the City of Oakland Noise Ordinance or violate the City of Oakland Noise Ordinance regarding nuisance of persistent construction-related noise, provided that standard construction noise controls are implemented at the site. (**LTS with SCA)**

Project construction activities would occur in two phases.

- Phase I would include the demolition of the existing CVS store and adjacent retail buildings and construction of a new Safeway store and adjacent smaller retail stores, the redesign and construction of a portion of the surface parking lot, and landscaping improvements. Phase I construction is anticipated to have an approximately 10 month duration, from July 2013 to April 2014.
- Phase II would occur after the Safeway store is relocated. During this phase, all remaining buildings on the site would be demolished, and construction of the new retail/restaurant space, internal access improvements, and additional parking throughout the site would occur. Phase II would last approximately 10 months, from May of 2014 to March of 2015.

Construction-related noise levels are normally highest during the demolition phase and during construction of project infrastructure. These phases of construction require heavy equipment that normally generates the highest noise levels over extended periods of time. Typical hourly average noise levels generated by commercial construction activities are about 77 to 89 dBA L_{eq} measured at a distance of 50 feet from the center of the activity during busy construction periods (e.g., earth moving equipment, impact tools, etc.). Construction-related noise levels are normally less during building framing, finishing, and landscaping phases when less heavy equipment is present on site. Less intense construction periods would yield hourly average noise levels ranging from about 71 to 83 dBA L_{eq} at a distance of 50 feet. Noise generated by interior work would be much lower outdoors and would not affect community noise levels.

There would be variations in construction noise levels on a day-to-day basis depending on the actual activities occurring at the site. Noise emission levels and potential annoyance also depends upon the condition of the equipment, the type of operation, its duration and the time of day.

Table 4.10-6 presents the typical range of hourly average noise levels generated by different phases of construction measured at a distance of 50 feet.

Table 4.10-6 Typical Noise Level Range at 50 Feet from Construction Sites (dBA L_{eq})

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I - All pertinent equipment present at site.

II - Minimum required equipment present at site.
Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

Construction generated noise levels drop off at a rate of about 6 to 7.5 dBA per doubling of distance between the noise source and receptor. Thus, at the conservative scale of 6 dBA reduction per doubling of distance, a sensitive noise receiver would be subject to maximum noise levels of about 89 dBA Leq at 50 feet from the construction site, noise levels of about 83 dBA Leq at 100 feet from the construction site, noise levels of about 77 dBA Leq at 200 feet from the construction site, and 71 dBA Leq at 400 feet from the construction site. Without noise control measures, the buffer distance from noisy construction necessary to meet the City of Oakland's day-time noise limit for long-term construction activities is typically around 800 feet.

Noise Levels at Nearest Sensitive Receptors

The nearest noise-sensitive land uses are the apartments and the Monarch Place assisted living facility for seniors south of Pleasant Valley Avenue located approximately 130 feet south of the Project site, the California College of the Arts (CCA) (considered a noise sensitive use as a school, even though the school is for adults rather than children) and an apartment building located approximately 120 feet north of the site; and single family residences located along View Place approximately 150 feet east of the Project site.

Phase I

During Phase I construction, which generally occurs at the location of the existing CVS Pharmacy toward the rear of the site, noise levels from diesel-powered demolition, excavation and construction equipment operating under maximum load would be as follows, at the nearest sensitive receptors:

- The single family residences along Montgomery Street and homes and apartments on View Place would be approximately 500 feet from the Phase I construction site, and Phase I construction noise levels would be approximately 71 dBA Leq.

- The apartment building north of the site would be approximately 200 feet from the Phase I construction site. Assuming no noise attenuation from the intervening hillside between the apartment and the Project site, noise levels would be approximately 77 dBA Leq.
- The California College of the Arts located northwest of the site would be approximately 300 feet from the Phase I construction site. Similarly assuming no noise attenuation from the intervening hillside between the College and the Project site, noise levels would be approximately 74 dBA Leq.
- The nearest apartment buildings and senior assisted living facility across (south of) Pleasant Valley Avenue would be approximately 700 feet from the Phase I construction site, and construction noise levels would not be noticeably greater than existing ambient conditions (approximately 67 dBA Leq) along Pleasant Valley Avenue.

At those sensitive noise receptor locations in the vicinity of the site identified above, Phase I construction noise levels would exceed Oakland's 65 dBA daytime noise limit for long-term construction activities, assuming no noise attenuation from the intervening hillside or noise control measures.

Phase II

During Phase II construction, which generally occurs along the edges of Pleasant Valley Road and Broadway, noise levels from diesel-powered demolition, excavation and construction equipment operating under maximum load would be as follows at the nearest sensitive receptors:

- The single family residences along Montgomery Street and homes and apartments on View Place would be between 500 and 800 feet from the construction site, and Phase II construction noise levels would, at times, exceed the City's day-time noise limit for long-term construction activities, ranging from 65 to 69 dBA Leq.
- The apartment building north of the site would be approximately 125 feet from the nearest edge of the Phase II construction site and a minimum distance of 380 feet from the centerline of the construction site. The apartment buildings are also located atop a high sloped hill to the rear of the site, which acts to attenuate noise for portions of the apartment building. Assuming no noise attenuation from the intervening hillside between the apartment and the Project site, noise levels would be approximately 81 dBA Leq.
- The California College of the Arts, located northwest of the site, would be only approximately 75 feet from the Phase II construction site. Similarly assuming no noise attenuation from the intervening hillside between the CCA and the Project site, noise levels would be approximately 86 dBA Leq.
- The nearest apartment buildings and senior assisted living facility across (south of) Pleasant Valley Avenue would be approximately 100 feet from the nearest edge of the Phase II construction site but about 400 feet from the center of the construction site, and noise levels at the nearest units would be approximately 83 dBA Leq.

At the single residences along Montgomery Street, and at the apartment buildings and senior assisted living facility located across (south of) Pleasant Valley Avenue, and at the apartments and the CCA north of the site, Phase II construction noise levels would exceed Oakland's 65 dBA day-time noise limits for long-term construction activities assuming no noise attenuation from noise control measures. Other noise sensitive receptors in the vicinity would not be subject to noise levels exceeding the day-time limit during Phase II.

Standard Conditions of Approval

Significant noise impacts do not normally result when standard construction noise control measures are enforced and when the duration of the noise generating construction period (when community noise levels would be elevated) is limited to one construction season, typically one year or less.

Construction noise associated with the Project would not occur for a period greater than one year under each phase of construction, but overall, construction activities would occur over a 20-month period. There would be several months of less intensive construction work, and work within the buildings that would not generate noise levels exceeding 65 dBA L_{eq} at nearby residential land uses, but construction-period noise levels would exceed Oakland's 65 dBA day-time noise limits for long-term construction activities at the CCA and the apartment building for a substantial portion of the 20-month full construction period, and at the apartment buildings and senior assisted living facility located south of Pleasant Valley Avenue during Phase II construction.

Construction noises associated with projects of this type are disturbances that are necessary for the construction or repair of buildings and structures in urban areas. SCA Noise-1 provides reasonable regulation of the hours of construction. SCA Noise-2 requires preparation of a Noise Reduction Program for the Project that addresses the design, use, location and shielding of construction vehicles and equipment that would ensure that maximum feasible noise attenuation would be achieved. To implement SCA Noise-2, the Project applicant would be required to have a qualified acoustical consultant prepare a noise reduction implementation plan for City review and approval. The purpose of the plan will be to reduce noise impacts during construction to below City standards. The project applicant would be required to implement the approved plan, which may include, but would not be limited to such elements or strategies as identified in SCA Noise-2 (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible). With implementation of SCA Noise-2, a noise reduction program would be developed and implemented, reducing temporary construction noise levels below 65 dBA for nearby sensitive uses to the extent reasonable and feasible.

SCA Noise-3 requires measures to respond to and track complaints. SCA Noise-5 requires further measures to reduce noise from construction activities, if any, generating extreme noise exceeding 90 dBA. With implementation of the City of Oakland's Standard Conditions of Approval, the noise impact resulting from Project construction would be less than significant.

Mitigation Measures

No additional measures are required.

Permanent Increase in Ambient Traffic Noise

Impact Noise-2: The Project would not result in a substantial increase in the permanent outdoor ambient noise levels in the Project vicinity above levels existing without the Project. (**LTS**)

Based on the noise measurements taken at the Project site, the ambient noise environment results primarily from local traffic noise generated along arterial streets, and the operational noise associated with the existing shopping center including parking lot noise, truck deliveries, and trash compactors. Operational noise is addressed in greater detail below.

Project traffic data was reviewed to calculate the relative change in ambient traffic noise levels expected with the operation of the Project. Project traffic volumes under the "Existing", "Near-Term", and "Near-Term plus Project" traffic scenarios were compared and the relative increase in traffic noise attributable to the proposed Project calculated. The Project's contribution of traffic to Pleasant Valley Avenue and Broadway in the immediate vicinity of the Project site is shown below in Table 4.10-7.

Table 4.10-7: Project Contribution of Traffic at Immediate Roadway Segments

	Existing plus Project Traffic	Project Traffic	Project, % Increase
Pleasant Valley, east of Gilbert	1,765	121	6%
Pleasant Valley, between Broadway and Gilbert	2,057	227	10%
Broadway, between Pleasant Valley and Coronado	1,699	142	8%

Source: Chapter 4.11, Transportation of this EIR

According to the information presented in this table, the Project's contribution of traffic to roadways in the immediate vicinity of the site would be approximately a 10% increase or less. The energy average noise levels (Leq, Ldn) resulting from vehicular traffic are a logarithmic function of the average numbers of vehicles on the roadway. The analysis of increased traffic noise assumes the distribution of vehicle types (cars, trucks, buses, motorcycles) and the hour by hour variance in traffic volumes throughout the day and night would be unchanged in the future. Only the total volume of traffic would increase. Given these assumptions, a traffic increase of 10% is calculated to cause a noise increase of less than 1 dBA Ldn. The Project's increased traffic, at 10% or less, would result in an increased noise level of less than 1 dBA Ldn. Vehicular traffic generated by the Project would not increase noise levels substantially because the Project traffic makes up a small percentage of the total traffic along area roadways. Vehicular traffic noise levels are not expected to increase measurably above existing levels or future baseline levels as a result of the Project. Based on the standard of significance which indicates that a permanent increase in ambient noise levels in the Project vicinity of 5 dBA above levels existing without the Project would be considered significant, the Project's generation of less than a 1 dBA increase in traffic noise would be less than significant.

Mitigation Measures

None required.

Conflict with Land Use Compatibility Guidelines

Impact Noise-3: The Project would not result in a conflict with land use compatibility guidelines used to determine the acceptability of noise for a commercial land use. (**LTS**)

Commercial uses such as those proposed under the Project are considered to be "normally acceptable in environments with ambient noise levels of up to 65 dB L_{dn} and "conditionally acceptable environments with ambient noise levels of up to 75 dB L_{dn}. The existing noise environment along Pleasant Valley Avenue is approximately 69 dB L_{dn}, and along Broadway approximately 72 dB L_{dn}. Thus, existing ambient noise levels at the Project site are within the "conditionally acceptable" range for the Project's proposed uses, where conventional construction methods will usually provide adequate noise attenuation provided that air conditioning or forced fresh-air supply systems are incorporated and that windows facing the street remain closed. Like most all businesses along Broadway, the Project would include these features.

Mitigation Measures

None required.

Operational Noise in Excess of Oakland Noise Ordinance Standards

Impact Noise-4: The Project's operation will not result in new or exacerbated operational noise levels that would exceed the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise. (**LTS**)

Many of the noise sources that will be part of the Project are currently in place at the existing shopping center (e.g., parking lots, delivery bays, roof-top mechanical equipment, commercial/retail space, etc.). The overall square footage of commercial/retail use will increase as a result of the Project and the Project would result in a new configuration of uses on the site. The effects of these changes on operational noise levels in the vicinity of the site are discussed below.

Mechanical Equipment Noise

Roof-top mechanical equipment typically includes heating, ventilating, air conditioning, and refrigeration equipment. Noise typically generated by rooftop mounted mechanical equipment varies significantly depending upon the equipment type and size. Based on equipment specifications provided for roof-top fluid coolers anticipated to be located on the Safeway store, the worst case noise level produced by the equipment is 82 dBA at 5 feet from the top of the unit. The nearest noise-sensitive land uses (the apartments located north of the site, at the top of the hillside) are located approximately 200 feet from the rear of the Safeway store. Without noise attenuation, noise levels at this receptor would be approximately 50 dBA (assuming no noise reduction for the intervening hillside). This noise level is well below the daytime noise standard set forth in the City of Oakland Noise Ordinance, but could exceed the night-time standard of 45 dBA for periods of 20 or more minutes per hour.

Project mechanical equipment specifics have not been determined for the remainder of retail/commercial buildings located on the Project site. The precise noise impacts of Project mechanical equipment cannot be determined without detailed system design specifications regarding location, type, size, capacity, enclosure design, etc. These details are typically provided during later phases of a project's design and development review along with other more detailed project engineering specifications. When specific project information is not available during environmental review, an acceptable evaluation methodology is to use data from similar facilities. Noise measurements and analyses for other similar commercial centers indicate that noise levels of 60 to 70 dBA at 15 feet can be expected from external mechanical systems, and similar noise levels can be anticipated from the Project. Some of the residential land uses located to the south of the proposed commercial buildings would not have line-of-sight to any roof-top mechanical equipment placed adjacent to Pleasant Valley Avenue, thus reducing mechanical equipment noise by approximately 10 dBA. Based on these generic data and accounting for the effects of acoustical shielding and distance, noise generated by Project mechanical equipment is calculated to range from 31 to 41 dBA at the nearest residential properties to the south, and would not exceed the daytime and nighttime hourly standards set forth in the City of Oakland Municipal Code.

Although noise from unshielded roof-top mechanical equipment may be loud enough to exceed City thresholds without further attenuation, the operation of all roof-top or other mechanical equipment is subject to the City's Noise Ordinance standards. Noise levels from such equipment must comply with the performance standards of Chapter 17.120 and Chapter 8.18 of the Oakland Municipal Code. The applicable design standard is 45 dBA at adjacent residences, taking into account all operational noise. As indicated in the Project Description (Chapter 3 of this EIR), the Project applicant has proposed that all mechanical equipment used during operation of the Project will be designed and used, with shielding or other noise attenuation as necessary, in a manner that complies with these standards. The types of shielding that may be required will be dependent upon the specific mechanical equipment used, and will be determined prior to City approval of mechanical building permits. Therefore, the noise impacts associated with roof-top and other mechanical equipment on adjacent sensitive receptors would be less than significant.

Trash Compactor Noise

Trash compactors are located at the rear of the proposed Safeway building and internal to the commercial building along Pleasant Valley Avenue. Trash compactors typically generate maximum noise levels of 50 to 55 dBA at 100 feet, depending on the power rating and enclosure characteristics. Noise generated by the operation of trash compactors at the rear of the Safeway store would be expected to be well below ambient noise levels at the nearest residential land uses to the north, south and east. Trash compactors contained within the commercial structure along Pleasant Valley Avenue would not be audible due to the enclosures. The operation of the trash compactor would not be audible or measurably increase day-night average noise levels at nearby sensitive land uses.

Loading Dock Noise

The primary noise sources associated with grocery store loading docks are the trucks entering and leaving the docks and traveling along neighborhood streets, the unloading of smaller vendor trucks utilizing pallet jacks or rolling vendor carts, and people's voices. Based on data gathered at similar sized grocery stores, it is assumed that the proposed Safeway store would require deliveries from two to four large trucks, and six to ten vendor trucks per day. The large trucks would most likely access loading bays for the Safeway store from Broadway and travel along the rear of the shopping center. Other loading bays will be located throughout the Project site to serve the other commercial/retail buildings, but none of them will have line-of-sight to adjacent residential uses.

The Safeway loading dock is proposed at the northeast corner of the Safeway building, approximately 450 feet from the apartment building to the north, and approximately 600 feet from the nearest residential land uses along Montgomery Street to the east. The four loading bays (two on either side of the loading dock) would accommodate heavy-duty trucks (53' trailer). These loading bays will be enclosed and deliveries would occur directly out of the truck into the market. The roll-down shutter doors would be closed when the loading dock is not in use. Very little loading noise escapes into the community when activities are contained in this manner. The highest noise levels would be generated when heavy trucks pull into or out of the loading area. Based on measurements taken at other Safeway stores and the current truck noise limits in California (80 dBA at 50 feet distance), maximum noise levels of approximately 60 dBA could be expected at the apartment building to the north, and maximum noise levels of up to 59 dBA could be expected at the nearest residences along Montgomery Street to the east. These noise levels would comply with the 75 to 80 dBA daytime limit of the Oakland Noise Ordinance for sporadic noise events (0 to 1 minute per hour) and would also comply with corresponding noise standards of 60 to 65 dBA for night-time activities. The loading docks would be located underneath the upper floor parking deck, and the parking deck will partially enclose the loading bays. Since the residential uses to the north and east of the site are located high above the site at the top of the hill, the parking deck will further reduce loading dock noise below the daytime and nighttime limits.

It can be expected that vendor deliveries will occur throughout the Project site at various time throughout the day. Vendor trucks would typically park at the rear of commercial buildings and loading and unloading activities would occur directly out of the truck. Wheeled carts, fork lifts, hand-trucks or pallet-jacks would be used to transfer products into the store interior. Noise in such a loading area arrangement is generated as truck doors are opened and closed as products are loaded onto carts and transported into the store. Noise levels generated by these activities are not anticipated to be audible at nearby residential land uses because of the shielding provided by the commercial/retail buildings.

Operational Noise Sources Combined

The potential impact all of the Project's operational noise sources (i.e., on-site traffic, deliveries, mechanical equipment, trash compactors, garbage collection, parking lot sweepers, shopping cart noise, generators, etc.) was also considered. All of these noise sources are currently operational at the existing shopping center. While the overall square footage of commercial uses would increase as a result of the Project, operational noise levels have been calculated to increase by up to 1 dBA Ldn. Noise levels generated by the collective noise sources associated with the Project would not be measurably greater than existing noise levels, and would not exceed the City's 5 dBA L_{dn} threshold for increased noise.

Mitigation Measures

None required.

Vibration

Impact Noise-5: Temporary project construction activities would not expose adjacent residences to groundborne vibration at levels that could cause cosmetic or structural damage to structures or improvements, and Project occupancy and operation would not generate groundborne vibration at levels that would be perceptible beyond the property boundaries. (**LTS**)

Vibration Caused by Construction

Groundborne vibration levels rarely affect human health. Instead, most people consider groundborne vibration to be an annoyance that may affect concentration or disturb sleep.

High levels of groundborne vibration can damage fragile buildings. The current Federal Transit Administration (FTA) transit noise and vibration impact assessment has established ground-borne vibration levels of 0.2 inches per second (94 VdB) as the construction vibration damage criterion for non-engineered timber and masonry buildings.. Equipment anticipated to be used during construction includes flatbed delivery trucks, drill rigs, excavators, dump trucks, front-end loaders, bobcats, jackhammers, concrete trucks, and portable generators. The operation of heavy-duty construction equipment (e.g., a large bulldozer) generates vibration levels of 0.089 inches per second (87 VdB) at a distance of 25 feet. Construction activity involving heavy-duty construction equipment would occur at distances of much greater than 25 feet from adjacent structures. The vibration exposure level at these distances would be far less than the 0.2 inches per second (94 VdB) FTA limit for non-engineered timber and masonry buildings, and would be less than significant.

Standard Conditions of Approval

Implementation of the City of Oakland's Standard Conditions of Approval related to construction period noise would also address construction period vibration. SCA Noise-1 provides reasonable regulation of the hours of construction. SCA Noise-3 requires measures to respond to and track construction period noise complaints.

Vibration Caused by Operation

Section 17.120.060 of the Oakland Planning Code regulates vibration, requiring that activities shall be so operated as not to create a vibration which is perceptible without instruments by the average person at or beyond any lot line of the lot containing such activities. Ground vibration caused by motor vehicles and temporary construction or demolition work is exempted from this standard. The Project would not include significant sources of operational groundborne vibration. Operational groundborne vibration would be generated by additional vehicular travel on local roadways. The FTA has stated that rubber-tired vehicles do not typically generate perceptible groundborne vibration. Therefore, the Project would result in a less-than-significant impact related to operational vibration.

Mitigation Measures

None required.

Cumulative Noise Impacts

Cumulative Impact Noise-6: Cumulative increases in noise within the vicinity of the Project area would not result in a 5 dBA L_{dn} permanent increase in ambient noise levels above noise levels without the Project, and the Project's contribution to the cumulative increase in noise would not result in a 3 dBA L_{dn} permanent increase attributable to the Project. Cumulative noise impacts would be less than significant. (**LTS**)

The geographic area considered for cumulative noise analysis includes areas close to the Project site and roadways examined in the transportation impact analysis. Longer-term noise from cumulative development would primarily come from motor vehicle traffic. Cumulative traffic noise level increases were calculated by comparing "Cumulative (2035) Plus Project" peak hour traffic volumes to existing peak hour traffic volumes as presented in Chapter 4.11: Transportation, Circulation and Parking of this EIR. The combination of Project and cumulative traffic would increase traffic levels on Pleasant Valley Avenue near the Gilbert Street intersection from approximately 2,600 vehicles during the peak hour today, to approximately 3,600 vehicles during the peak hour by 2035 cumulative conditions. This represents an approximately 37 percent increase in traffic volumes, corresponding to a less than 2 dBA noise increase. Similarly, the combination of Project and cumulative traffic would increase traffic on Broadway across the Project frontage from approximately 2,400 vehicles during the peak hour to approximately 3,650 vehicles during the peak hour. This represents an approximately 56 percent increase in traffic volumes, corresponding to approximately a 2 dBA increase in traffic noise. This increase in noise would not exceed the 5dBA threshold, nor would the Project's contribution exceed the significance criteria or a 3 dBA contribution, and would not be considered substantial.

There are no other identified projects under construction or planned within 1,000 feet of the Project, and it is not anticipated that there would be cumulative construction noise impacts in the Project area. Thus, cumulative construction noise impacts would be less than significant.

Mitigation Measures

None required.

4.11

Transportation, Circulation and Parking

This section describes the transportation, circulation, and parking conditions, including transit services and pedestrian and bicycle facilities on the Project site and its vicinity, and provides an analysis of the proposed Project's potential impacts. **Figure 4.11-1** illustrates the location of the proposed Project and the local and regional street system. The analysis evaluates the traffic-related impacts of the proposed Project during the weekday evening and Saturday midday and evening peak hours. The analysis was conducted in compliance with City of Oakland and Alameda County Transportation Commission (ACTC), formerly known as Alameda County Congestion Management Agency (ACCMA), guidelines.

Traffic conditions are assessed at 27 critical intersections in the study area under the following six scenarios:

- Existing: Represents existing conditions with volumes obtained from recent traffic counts and the existing roadway system.
- Existing Plus Project Buildout: Represents existing conditions plus Project-related traffic.
- Near-Term (2015) No Project: Future conditions with planned population and employment growth and planned transportation system improvements for the year 2015. This scenario assumes no traffic growth at the existing Project site. Traffic projections were developed using the Alameda Countywide Travel Demand Model provided by the ACTC (ACTC Model).
- Near-Term (2015) Plus Project Buildout: Future forecasted conditions for the year 2015, as determined in the 2015 No Project scenario, plus Project-related traffic.
- Cumulative (2035) No Project: Future conditions with planned population and employment growth and planned transportation system improvements for the year 2035. This scenario assumes no traffic growth at the existing Project site. Traffic projections were developed using the ACTC Model.
- Cumulative (2035) Plus Project Buildout: Future forecasted conditions for the year 2035, as determined in the 2035 Without Project scenario, plus Project-related traffic.

Existing Setting

The existing transportation-related context in which the proposed Project would be constructed is described below, beginning with a description of the study area and the street network that serves the Project site. Existing transit service, bicycle and pedestrian facilities, and on- and off-street parking in the vicinity of the Project site are also described. Intersection and roadway levels of service are defined and current conditions for roadways and intersections in the Project vicinity are summarized.

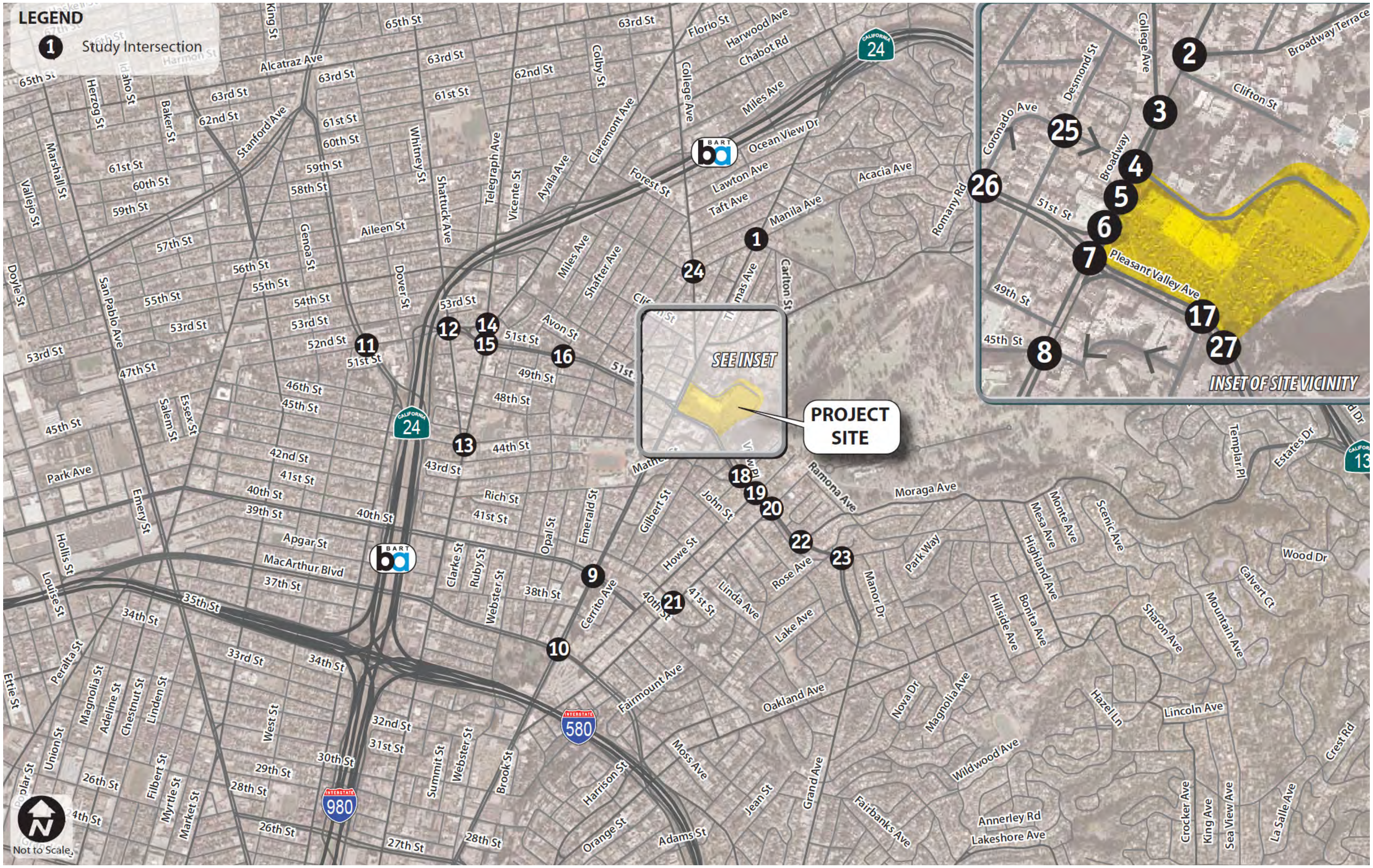


Figure 4.11-1
Project Study Area

Source: Fehr & Peers

Study Intersections

Intersection operations at 27 intersections in the vicinity of the Project site (listed below) were evaluated during the weekday evening (4:00 to 6:00 PM), Saturday midday (11:00 AM to 3:00 PM), and Saturday evening (4:00 to 7:00 PM) peak periods for Existing, 2015 and 2035 conditions.

1. Broadway/Manila Avenue/Monroe Avenue
2. Broadway/Broadway Terrace
3. Broadway/College Avenue
4. Broadway/Coronado Avenue/ Project Driveway
5. Broadway/Center Project Driveway
6. Broadway/South Project Driveway
7. Broadway/51st Street/Pleasant Valley Avenue
8. Broadway/45th Street
9. Broadway/40th Street/40th Street Way
10. Broadway/West MacArthur Boulevard
11. Martin Luther King Jr. Way/52nd Street
12. Shattuck Avenue/52nd Street
13. Telegraph Avenue/Shattuck Avenue
14. Telegraph Avenue/52nd Street/Claremont Avenue
15. Telegraph Avenue/51st Street
16. Shafter Avenue/51st Street
17. Gilbert Street/Project Driveway/Pleasant Valley Avenue
18. Montgomery Street/Pleasant Valley Avenue
19. Howe Street/Pleasant Valley Avenue
20. Piedmont Avenue/Pleasant Valley Avenue
21. Piedmont Avenue/41st Street
22. Moraga Avenue/Pleasant Valley Avenue
23. Grand Avenue/Arroyo Avenue/Pleasant Valley Avenue
24. Hudson Street/Manila Avenue/College Avenue
25. Desmond Street/Coronado Avenue
26. Coronado Avenue/51st Street
27. Project Driveway/Pleasant Valley Avenue

These intersections were selected in consultation with City of Oakland staff. In general, study intersections were selected where the proposed Project would increase volumes by 30 or more peak hour vehicle trips, or by 10 or more peak hour vehicle trips at intersections already operating at unacceptable conditions during the peak hours. Figure 4.11-1 shows the location of the 27 study intersections.

Existing Roadway Network

Regional access to the site is provided by State Route 24 (SR 24). Direct access to the Project site is provided from 51st Street/Pleasant Valley Avenue, Broadway and Gilbert Street. Other major roadways providing access to the site from the surrounding neighborhoods include Broadway Terrace, and College, Shattuck, Telegraph, Claremont, and Piedmont Avenues. These and other major roadways in the study area are described below.

State Route 24 (SR 24)

State Route 24 (SR 24) is an east-west regional freeway located about one mile north of the Project site, extending between Walnut Creek in the east and downtown Oakland in the west. SR 24 becomes Interstate 980 (I-980) west of the I-580 interchange. This freeway generally provides four lanes in each direction near the Project site. Average daily traffic on SR 24 between Broadway and Claremont Avenue ramps is about 142,000 vehicles per day.[1] Access between the Project site and SR 24 is provided via ramps on Broadway.

51st Street/Pleasant Valley Avenue

51st Street/Pleasant Valley Avenue is a major east-west arterial bordering the Project site to the south. The street is called 51st Street west of Broadway and Pleasant Valley Avenue east of Broadway. 51st Street/Pleasant Valley Avenue generally provides four travel lanes and extends from Shattuck Avenue to Oakland Avenue.

Broadway

Broadway is a major north-south arterial between Jack London Square in the south and State Route 24 in the north. Broadway borders the Project site to the west. In the Project study area, Broadway provides six travel lanes south of Broadway Terrace, and four lanes to the north.

Broadway Terrace

Broadway Terrace is an east-west two-lane collector connecting Broadway in the east and SR 13 in the west.

College Avenue

College Avenue is a north-south arterial that extends between Broadway in Oakland and the University of California campus in Berkeley. College Avenue provides one lane of traffic in each direction.

40th Street

40th Street is an east-west arterial that extends between Shellmound Avenue in Emeryville and Piedmont Avenue in Oakland. Within the study area, it provides four travel lanes.

West MacArthur Boulevard

West MacArthur Boulevard is a major east-west road that extends from Hollis Street in West Oakland/ Emeryville generally paralleling I-580 to San Leandro in the south and beyond (as MacArthur Boulevard). It provides six travel lanes in the vicinity of the Project site.

Martin Luther King Jr. Way

Martin Luther King Jr. Way is a north-south arterial that extends between West Grand Avenue in Downtown Oakland and Hopkins Street in Berkeley. Martin Luther King Jr. Way generally provides four travel lanes.

Shattuck Avenue

Shattuck Avenue is a north-south street between Telegraph Avenue at 45th Street in Oakland and Indian Rock Avenue in North Berkeley. In the vicinity of the Project, it provides two travel lanes.

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[1] Caltrans Traffic Volumes on the State Highway System, 2009.

Telegraph Avenue

Telegraph Avenue is a north-south arterial that extends from the University of California campus in Berkeley to Broadway in downtown Oakland. Telegraph Avenue provides two lanes of traffic in each direction.

Claremont Avenue

Claremont Avenue is a northeast-southwest arterial that extends from Telegraph Avenue in Oakland to Grizzly Peak Boulevard in Berkeley Hills. Claremont Avenue provides two lanes of traffic in each direction in the vicinity of the Project site.

Piedmont Avenue

Piedmont Avenue is a north-south two-lane minor arterial between Broadway and Pleasant Valley Avenue.

Moraga Avenue

Moraga Avenue is an east-west two-lane collector between Pleasant Valley Avenue and SR 13.

Existing Transit Service

Transit service providers in the Project vicinity include Alameda-Contra Costa Transit District (AC Transit) which provides local and Transbay bus service with connections to the Transbay Terminal in San Francisco and Bay Area Rapid Transit (BART) which provides regional rail service. **Figure 4.11-2** shows the existing transit services provided near the Project site. Each service is described below.

AC Transit

The Alameda-Contra Costa Transit District (AC Transit) is the primary bus service provider in 13 cities and adjacent unincorporated areas in Alameda County and Contra Costa County, with Transbay service to destinations in San Francisco, San Mateo and Santa Clara Counties. Five AC Transit bus routes currently operate within a quarter mile of the Project site. **Table 4.11-1** summarizes the characteristics of the AC Transit routes operating in the Project area. The nearest bus stops to the Project site are on eastbound and westbound Pleasant Valley Avenue west of Gilbert Street and on northbound Broadway north of 51st Street and on southbound Broadway south of Pleasant Valley Avenue. Some of the bus stops in the Project vicinity provide a bench but none provide a shelter.

Figure 4.11-2
Existing Transit Routes Near Project Site

Source: Fehr & Peers

Table 4.11-1
Ac Transit Service Summary

Line	Route	Nearest Stop	Weekday Hours	Weekday Frequency	Weekend Hours	Weekend Frequency
Local Routes						
12	Berkeley BART to Downtown Oakland	Pleasant Valley Ave at Gilbert St	6:00 AM to 11;00 PM	20 to 30 minutes	6:00 AM to 11:00 PM	30 minutes
51A	Rockridge BART to Fruitvale BART	Broadway at 51st Street	5:00 AM to 1:00 AM	10 to 30 minutes	5:20 AM to 12:30 AM	15 to 20 minutes
Night Routes						
851	Downtown Berkeley to Broadway	Broadway at Whitmore St.	12:15 AM to 5:00 AM	60 minutes	12:15 AM to 5:00 AM	60 minutes
Transbay Routes						
CB	Broadway Terr. to San Francisco	Broadway at 51st Street	6:30 AM to 9:00 AM and 5:00 PM to 7:00 PM	20-30 minutes	Weekend Service Not Provided	
V	Broadway and Broadway Terr. via Broadway Terr., Moraga Ave., Park Blvd. and I-580	College Avenue at Broadway	5:40 AM to 9:00 AM and 4:10 PM to 8:30 PM	15 to 30 minutes	Weekend Service Not Provided	

Source: AC Transit, August, 2012

Table 4.11-2 shows the capacity and loads (passengers) of AC Transit routes at stops nearest to the Project site; average and maximum load factors are also shown. Load factor is defined as the ratio of occupied seats to the number of seats on the bus. A load factor of 100 percent or more indicates that the bus operates at or above its seated capacity. In general, AC Transit considers a load factor of 125 percent (i.e., 25 percent of the passengers would be standing) to be acceptable.

As shown in Table 4.11-2, the two local bus routes serving the Project site have an average load factor of 31 percent or less. Line 12 has a maximum daily load factor of 50 percent or less; however, the maximum load factor on Line 51A exceeded 100 percent in both directions at the stops near the Project site.

Table 4.11-2
AC Transit Load Factors

Bus Line	Stop Location	Direction	Average Capacity (Seats)	Avg. Load[1]	Avg. Load Factor[2]	Maximum Load[3]	Max. Load Factor[4]	Boardings (On's)[5]	Alightings (Off's)[6]
12	Pleasant Valley at Gilbert Street	EB	40	5.9	15%	20	50%	40	13
		WB		5.8	15%	13	33%	25	55
	51st Street at Broadway	EB	40	5.3	13%	15	38%	19	49
	51st Street at Desmond Street	WB	40	6.2	16%	14	35%	24	5
51A	Broadway at Pleasant Valley Avenue/51st Street	NB	32	10.0	31%	33	**103%**	56	131
		SB	32	7.6	24%	33	**103%**	119	53

Bold indicates maximum load factor above seating capacity.
1. Number of passengers on the bus averaged on a typical weekday.
2. Average load divided by average seated capacity.
3. Maximum number of passengers on the bus observed on a typical weekday.
4. Maximum load divided by average seated capacity.
5. Total number of passengers boarding the bus at this location on a typical weekday.
6. Total number of passengers alighting the bus at this location on a typical weekday.

Source: Spring 2010 data provided by Howard Der, AC Transit, June 2010.

Bay Area Rapid Transit (BART)

BART provides regional rail transit service to Alameda, San Francisco, Contra Costa, and San Mateo Counties. Weekday service is provided from 4:00 AM to 1:00 AM, while Saturday and Sunday service is provided from 6:00 AM to 1:00 AM, and 8:00 AM to 1:00 AM, respectively. Trains have a typical headway of 15 minutes on weekdays and 20 minutes on Saturday and Sundays. The nearest BART station to the Project site is the Rockridge station, which is about 0.7 miles north of the Project site.

Existing Pedestrian Network

The City of Oakland's *Pedestrian Master Plan,* November 2002 (PMP) designates Broadway and 51st Street/Pleasant Valley Avenue as City Routes, Broadway Terrace and Piedmont Avenue as District Routes, and Clifton Street, 45th Street and Shafter Avenue as Neighborhood Routes. The *PMP* (page 48) provides the following descriptions about these types of routes:

> *"City routes designate streets that are destinations in themselves – places to live, work, shop, socialize and travel. They provide the most direct connections between walking and transit and connect multiple districts in the City."*

> *"District routes have a more local function as the location of schools, community centers, and smaller scale shopping. They are often located within a single district and help to define the character of that district."*

> *"Neighborhood routes are local streets that connect schools, parks, recreational centers, and libraries. They are places for people to meet and they provide the basis for neighborhood life. They are used for walking to school, walking for exercise, and safe walking at night."*

Pedestrian facilities include sidewalks, crosswalks, pedestrian signals and pedestrian paths. **Figure 4.11-3** shows pedestrian facilities in the Project vicinity. Sidewalks are provided on all of the existing streets in the study area. Signalized intersections in the vicinity of the Project provide striped crosswalks and pedestrian signal heads on at least one approach. As shown on Figure 4.11-3, some signalized intersections also provide pedestrian push-buttons and audible signals.

Just west of the Project site, a pedestrian path provides access between Broadway and Hemphil Place.

Existing Bicycle Network

The City of Oakland's 2007 *Bicycle Master Plan Update (BMP)* identifies the following bicycle facilities:

Class 1 Paths

These facilities are located off-street and can serve both bicyclists and pedestrians. Recreational trails can be considered Class I facilities. Class I paths are typically 8 to 10 feet wide excluding shoulders and are generally paved.

Class 2 Bicycle Lanes

These facilities provide a dedicated area for bicyclists within the paved street width through the use of striping and appropriate signage. These facilities are typically 5 to 6 feet wide.

Class 3 Bicycle Routes

These facilities are found along streets that do not provide sufficient width for dedicated bicycle lanes. The street is then designated as a bicycle route through the use of signage informing drivers to expect bicyclists.

Class 3A Arterial Bicycle Routes

These facilities are found along some arterial streets where bicycle lanes are not feasible and parallel streets do not provide adequate connectivity. Speed limits as low as 25 mph, shared lane bicycle stencils, wide curb lanes and signage are used to encourage shared use.

Class 3B Bicycle Boulevard

These facilities are found along residential streets with low traffic volumes. Assignment of right-of-way to the route, traffic calming measures and bicycle traffic signal actuation are used to prioritize through-trips for bicycles.

Based on the BMP, **Figure 4.11-4** shows existing and planned bicycle facilities in the Project vicinity. Currently, Broadway Terrace and Shafter Avenue-48th Street-Webster Street are designated Class 3 Bicycle Routes.

Figure 4.11-3
Existing Pedestrian Facilities Near Project SIte

Source: Fehr & Peers

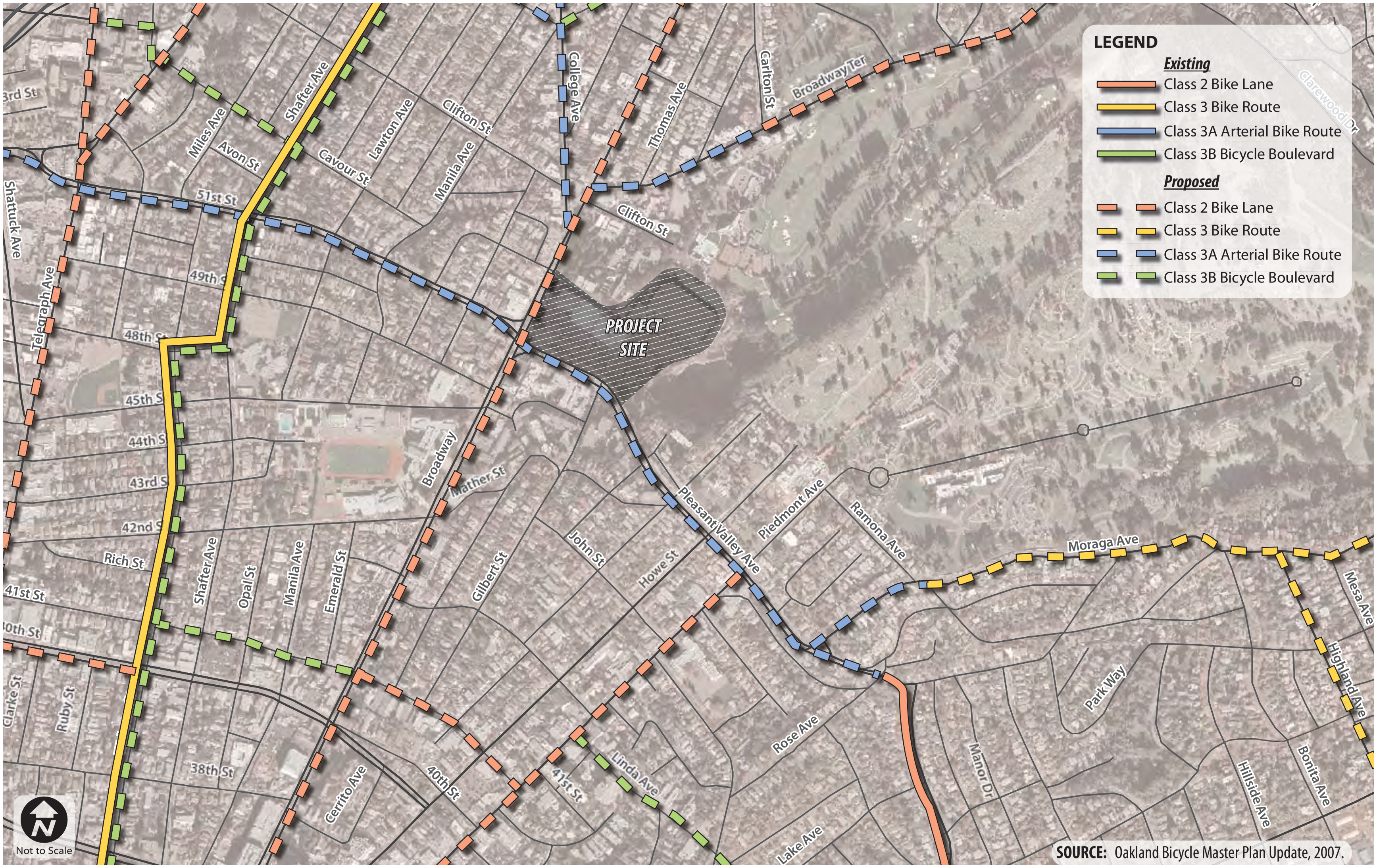

Figure 4.11-4
Existing and Proposed Bicycle Facilities

Source: Oakland Bicycle Master Plan Update, 2007, Fehr & Peers

Existing Parking Characteristics

Data was collected to assess current parking conditions in the off-street parking lot on the Project site and on-street parking spaces in the vicinity. Both on-site and on-street parking are discussed in detail below.

Off-Street Parking

Fehr & Peers surveyed the existing surface lot at the Safeway store to determine the parking supply and peak parking demand. The Project site was surveyed during the peak periods on Friday, June 6, 2008 and on Saturday, June 7, 2008. Both days were sunny with local schools in normal session. **Table 4.11-3** shows the parking supply and the weekday and Saturday demand during the survey periods. The existing surface lot was surveyed again in October 2011. As shown in Table 4.3-3, parking occupancies in October 2011 were lower than in June 2008; therefore the June 2008 results are used to present a more conservative analysis.

Table 4.11-3
Peak Period On-Site Parking Supply and Demand

Time	Parking Supply	Parking Demand[1]	Vacant Spaces	Percent Occupied
2008, Weekday[1]				
5:00 PM	615	186	429	30%
5:30 PM	615	261	354	42%
6:00 PM	615	283	332	46%
6:30 PM	615	328	287	53%
7:00 PM	615	365	250	59%
7:30 PM	615	287	328	47%
2008, Saturday[2]				
4:00 PM	615	261	354	42%
4:30 PM	615	275	340	45%
5:00 PM	615	268	347	44%
5:30 PM	615	307	308	50%
6:00 PM	615	331	284	54%
6:30 PM	615	381	234	62%
7:00 PM	615	334	281	54%
2011[3]				
Weekday, 7:00 PM	615	308	307	50%
Saturday, 6:30 PM	615	269	346	44%

1. Parking survey conducted on Friday, June 6, 2008.
2. Parking survey conducted on Saturday, June 7, 2008.
3. Parking surveys conducted in October 2011.

Source: Fehr & Peers, 2012.

The site currently provides 615 parking spaces, including 23 spaces designated for use by persons with disabilities. The peak demand on weekdays was at 7:00 PM when about 59 percent of parking spaces were occupied. The peak demand on Saturday was at 6:30 PM when about 62 percent of parking spaces were occupied. The parking lot was about 40 percent vacant during both weekday and Saturday periods. Most of the available parking spaces were near the south end of the parking lot, away from the existing shops. Considering that the parking lot currently has about 40 percent vacancy during the peak demand periods and the distance, restrictions, and occupancy of on-street parking, it is unlikely that shopping center customers or employees currently park on-street. In addition, the shopping center parking lot may also be used by others because the parking lot usage is currently not controlled.

On-Street Parking

Fehr & Peers also surveyed on-street parking occupancy within two-blocks of the Project site. **Figure 4.11-5** summarizes parking supply around the Project site. On-street parking along the Project frontage on Broadway and Pleasant Valley Avenue is generally prohibited. Parking along other segments of Broadway is generally metered or restricted to two-hours, and parking along other segments of 51st Avenue/Pleasant Valley Avenue is free with no restrictions. On-street parking in the surrounding residential neighborhoods is generally free with no restrictions, except near the College Avenue commercial district where on-street parking on some residential streets is controlled by Residential Parking Permits (RPP), which limit parking by non-residents to two hours or less during business hours on weekdays and Saturdays. Overall, about 680 on-street parking spaces are provided in the study area, including 33 metered spaces along Broadway.

Fehr & Peers conducted peak hour parking occupancy counts on Thursday, May 13, 2010 between 5:15 PM and 6:15 PM, and Saturday, May 15, 2010 between 5:15 PM and 6:15 PM. **Figure 4.11-6** and **Figure 4.11-7** present the peak parking occupancies on Thursday and Saturday, respectively. The overall on-street parking occupancy in the study area was generally about 60 percent on both days.

The effective capacity of on-street parking is around 90 percent, above which drivers search, circulate and wait for vacant spaces. This is not only an inconvenience, but also can cause congestion and potential blockage of vehicles on the public street system while waiting for an available space. In general, parking occupancy for the metered spaces along Broadway is about 50 percent or less on both weekdays and Saturdays. Parking occupancy along most blocks along 51st Street/Pleasant Valley Avenue is also less than 50 percent on both days. Parking occupancy along the residential streets varies from less than half to near capacity. The streets near the College Avenue commercial district have higher parking occupancies.

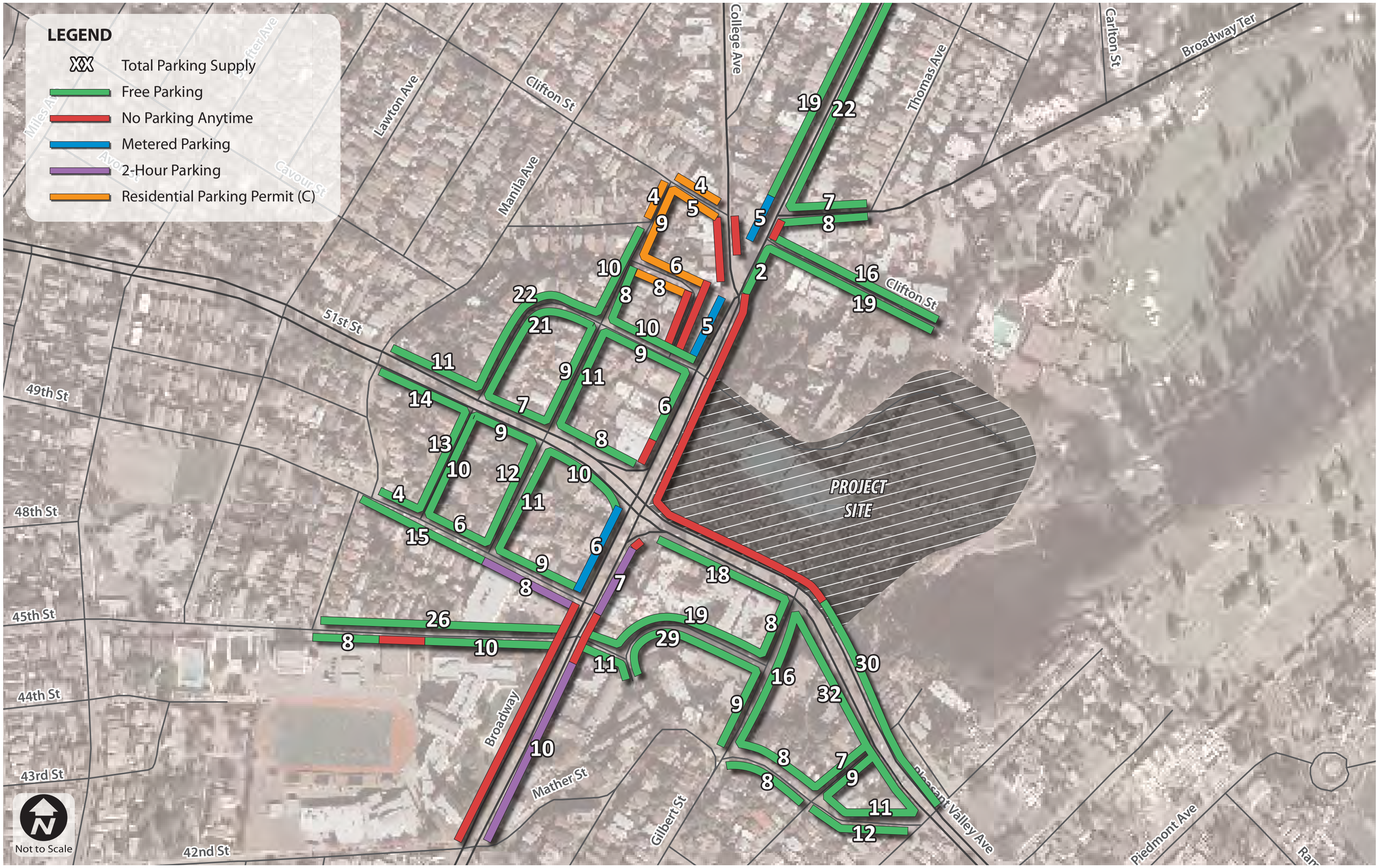

Figure 4.11-5
Existing On-Street Parking Supply

Source: Fehr & Peers

Figure 4.11-6
Existing Weekday PM Peak On-Street Parking Occupancy

Source: Fehr & Peers

Figure 4.11-7
Existing Saturday Peak On-Street Parking Occupancy

Source: Fehr & Peers

Existing Traffic Conditions

Intersection automobile and bicycle turning movement counts, as well as pedestrian counts, were collected at most of the study intersections between Tuesday, May 11 and Thursday, May 13, 2010, and on Saturday May 8, and Saturday May 15, 2010. Additional data was collected in November 2010. All study intersections were counted on Saturday October 27 2012, for the Saturday midday period.[2] The count data were collected on clear days, while area schools were in normal session. The traffic data collection was conducted from 4:00 PM to 6:00 PM on weekdays, from 11:00 AM to 3:00 PM on Saturdays, and from 4:00 PM to 7:00 PM on Saturdays. These time periods were selected because trips generated by the proposed Project, in combination with background traffic, are expected to represent typical worst traffic conditions. Within the peak periods, the peak hours (i.e., the hour with the highest traffic volumes observed in the study area) are from 5:00 to 6:00 PM on weekdays (Weekday PM peak hour), from 12:45 to 1:45 PM on Saturdays (Saturday midday peak hour) and from 4:00 to 5:00 PM on Saturdays (Saturday PM peak hour).[3]

Field reconnaissance was also performed in which intersection lane configurations and signal operations data were collected. Intersection operations were also observed at the study intersections. In addition, the City of Oakland provided signal timing data for the signalized study intersections. **Figure 4.11-8** shows the intersection vehicle turning movements, **Figure 4.11-9** shows the intersection lane configurations and traffic controls, and **Figure 4.11-10** shows the pedestrian and bicycle volumes at the study intersections. **Appendix 4.11B** provides the detailed traffic count data sheets.

Analysis Methodologies and Level of Service Standards

Intersection operations are described using the term "Level of Service" (LOS). Level of Service is a qualitative description of traffic operations from the vehicle driver perspective and consists of the delay experienced by the driver at the intersection. It ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delays. Different methods are used to assess signalized and unsignalized (stop-controlled) intersections.

Signalized Intersections

Signalized intersection operations are evaluated using methods provided in the 2000 *Highway Capacity Manual* (HCM) and the Synchro traffic analysis software program. These methods evaluate average control delays and then assign an LOS. Control delay is defined as the delay associated with deceleration, stopping, moving up in the queue, and acceleration experienced by drivers at an intersection. **Table 4.11-4** provides descriptions of various LOS and the corresponding ranges of delays for signalized intersections.

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[2] During the Saturday midday data collection period, segments of Piedmont Avenue were closed due to a Halloween event. The street closure affected traffic patterns at study intersection along Piedmont Avenue and at the intersections of Pleasant Valley Avenue with Montgomery Street and Howe Street. The Saturday midday peak hour traffic volumes at these intersections were adjusted, based on comparative relationships to traffic counts at other nearby intersections, to account for the special event and the temporary street closure.

[3] See **Appendix 4.11A** for additional explanation of why the DEIR analyzes traffic impacts during these peak periods and why other time periods such as weekday AM was not selected for analysis.

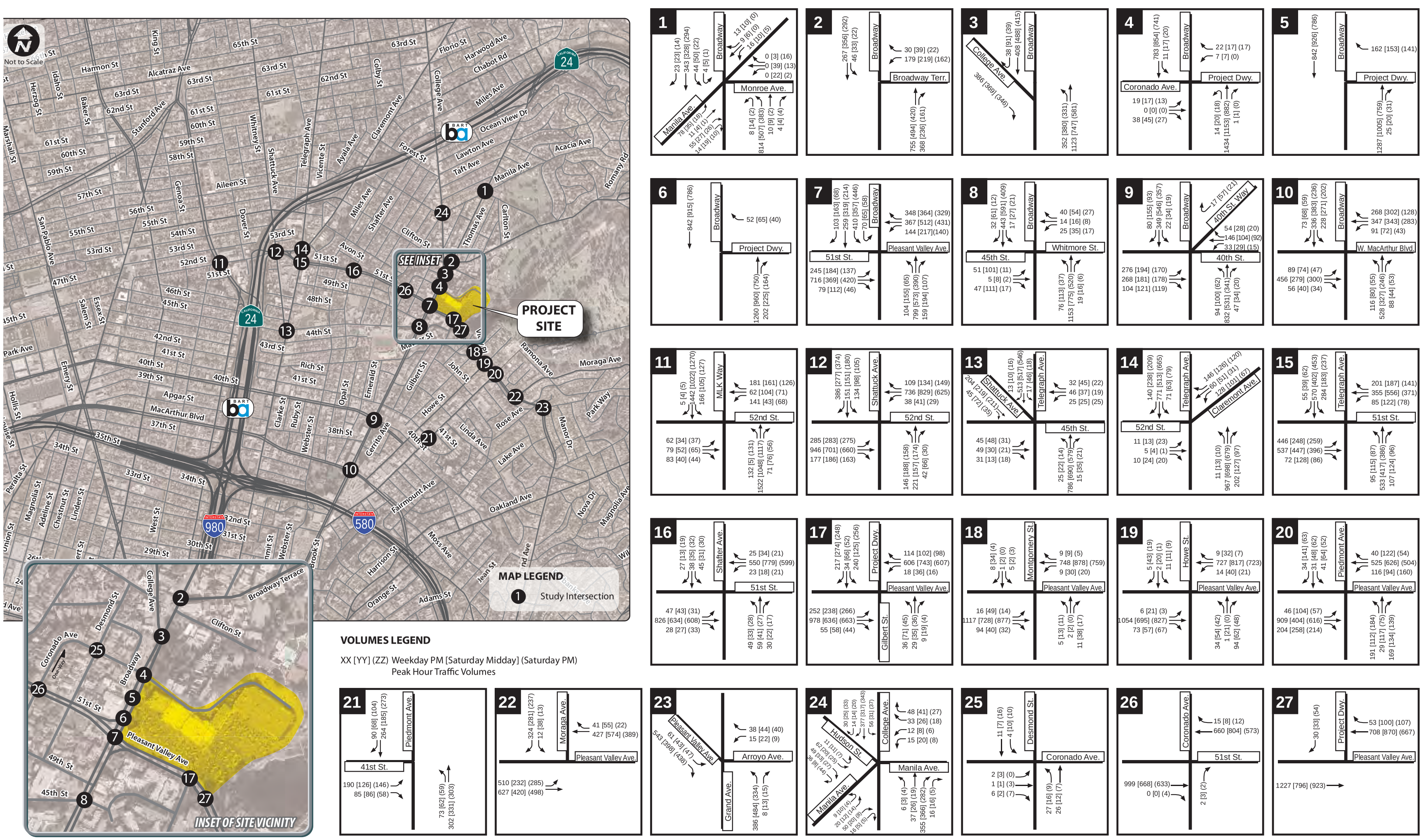

Figure 4.11-8
Existing Peak Hour Traffic Volumes

Source: Fehr & Peers

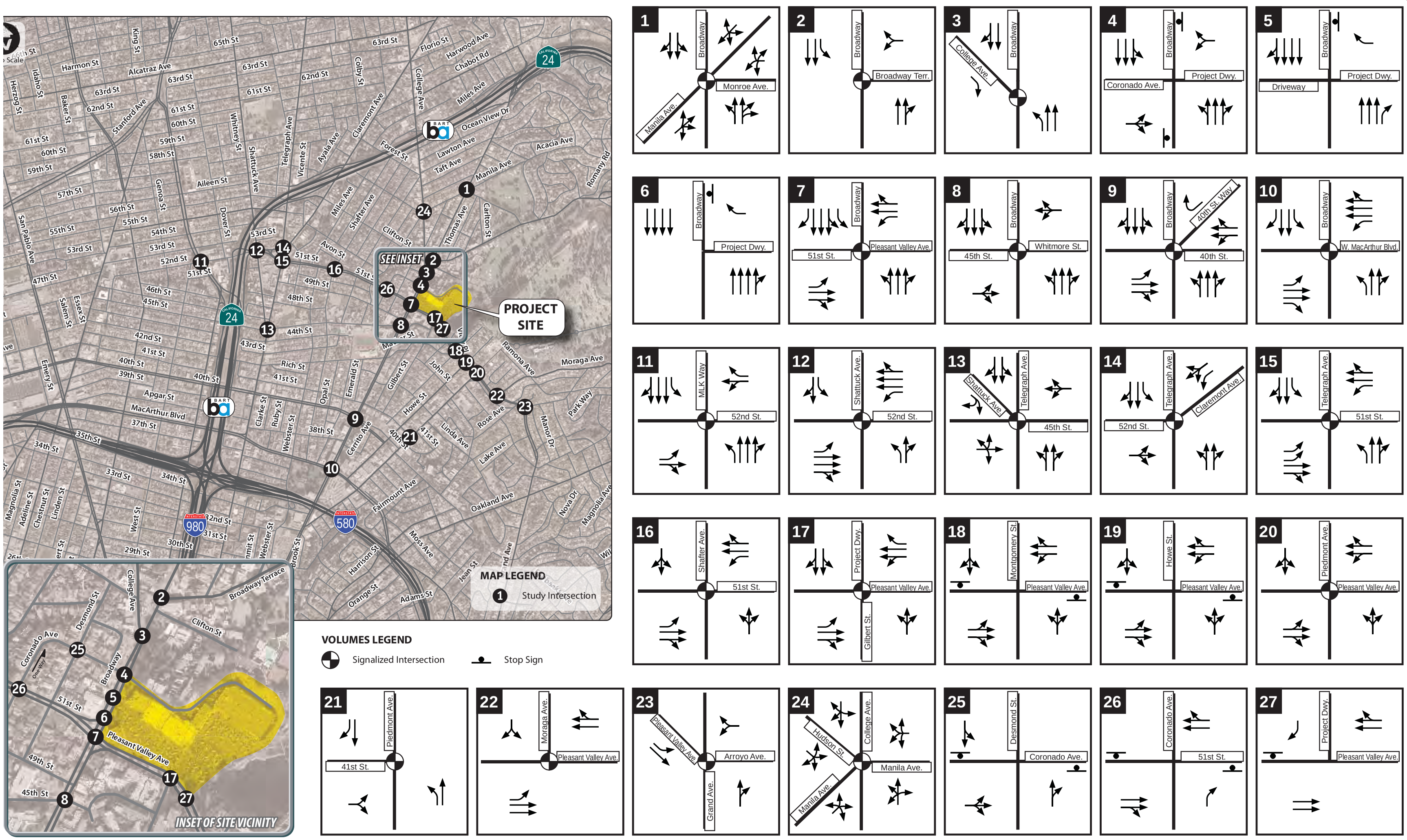

Figure 4.11-9
Existing Intersection Lane Configurations and Traffic Controls

Source: Fehr & Peers

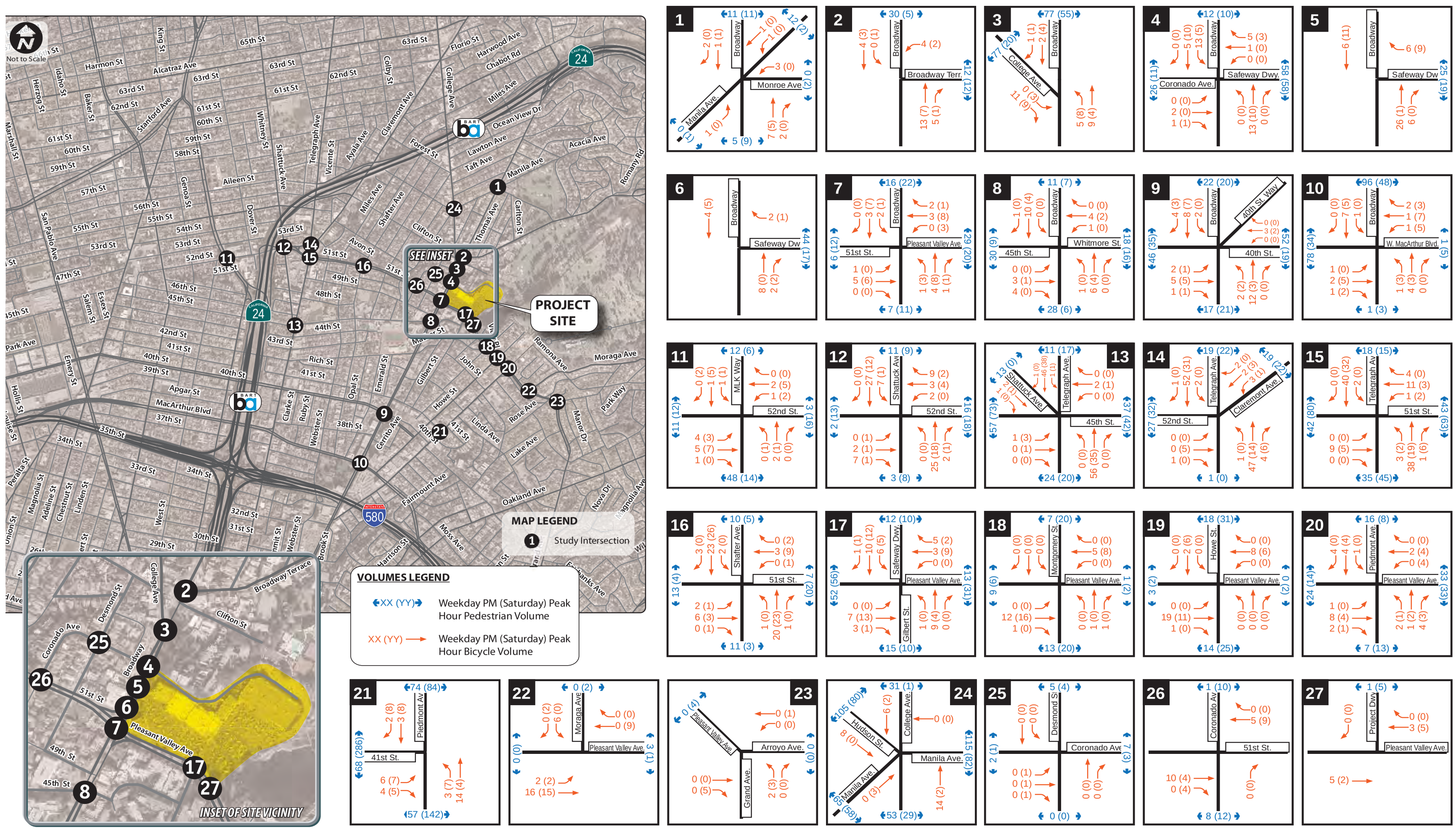

Figure 4.11-10
Existing Peak Hour Bicycle and Pedestrian Volumes

Source: Fehr & Peers

Unsignalized Intersections

Unsignalized intersection LOS is also analyzed using the 2000 HCM and Synchro software. Delay is calculated for movements that are controlled by a stop sign or that must yield the right-of-way. The movement or approach with the highest delay is reported. The LOS ranges for unsignalized intersections are shown in **Table 4.11-4**. They are lower than the delay ranges for signalized intersections because drivers will generally tolerate more delay at signals.

Existing Intersection Operations

Existing operations were evaluated for the weekday PM and Saturday mid-day and evening peak hours at the study intersections. The existing vehicle and pedestrian volumes were used with the existing lane configurations and signal timing parameters as inputs into the LOS calculations to evaluate current operations. **Table 4.11-5** summarizes the intersection analysis results. The following six intersections currently operate at an unacceptable LOS (i.e., LOS E or LOS F):

- #4 The side-street stop controlled westbound approach at the unsignalized Broadway/Coronado Avenue/Safeway Driveway intersection currently operates at LOS E in the westbound approach during the weekday PM and Saturday midday peak hours.
- #7 The signalized Broadway/51st Street/Pleasant Valley Avenue intersection currently operates at LOS E during the Saturday midday peak hour.
- #12 The signalized Shattuck Avenue/52nd Street intersection currently operates at LOS E during the Saturday PM peak hour.
- #15 The signalized Telegraph Avenue/51st Street intersection currently operates at LOS E during the weekday PM peak hour.
- #18 The side-street stop controlled northbound approach at the unsignalized Montgomery Avenue/ Pleasant Valley Avenue intersection currently operates at LOS E during the weekday PM peak hour.
- #19 The side-street stop controlled northbound approach at the unsignalized Howe Street/ Pleasant Valley Avenue intersection currently operates at LOS F during the weekday PM and Saturday midday peak hours and at LOS E during the Saturday PM peak hour.
- #20 The signalized Piedmont Avenue/Pleasant Valley Avenue intersection currently operates at LOS E during the weekday PM peak hour.

Appendix 4.11C presents detailed intersection LOS calculation worksheets.

Table 4.11-4
Intersection Level of Service Definitions

Unsignalized Intersections			Signalized Intersections	
Description	Average Total Vehicle Delay (Seconds)	Level of Service Grade	Average Control Vehicle Delay (Seconds)	Description
No delay for stop-controlled approaches.	≤10.0	A	≤10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
Operations with minor delay.	>10.0 and ≤15.0	B	>10.0 and ≤20.0	Stable Operation or Minimal Delays: Generally occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
Operations with moderate delays.	>15.0 and ≤25.0	C	>20.0 and ≤35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
Operations with increasingly unacceptable delays.	>25.0 and ≤35.0	D	>35.0 and ≤55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
Operations with high delays, and long queues.	>35.0 and ≤50.0	E	>55.0 and ≤80.0	Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.	>50.0	F	>80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.

Table 4.11-5
Intersection Level of Service, Summary Existing Conditions

#	Study Intersection	Traffic Control1	Peak Hour	Delay (seconds) 2	Level of Service
1.	Broadway/Manila Avenue/Monroe Avenue	Signal	Weekday PM	6.8	A
			Saturday MD	23.5	C
			Saturday PM	19.6	B
2.	Broadway/Broadway Terrace	Signal	Weekday PM	10.6	B
			Saturday MD	9.5	A
			Saturday PM	7.6	A
3.	Broadway/College Avenue	Signal	Weekday PM	9.8	A
			Saturday MD	12.9	B
			Saturday PM	12.5	B
4.	Broadway/Coronado Avenue/ Safeway Driveway	SSSC	Weekday PM	1.4 **(47.4)**	A **(E)**
			Saturday MD	1.5 **(40.6)**	A **(E)**
			Saturday PM	0.7 (19.6)	A (C)
5.	Broadway/Center Safeway Driveway	SSSC	Weekday PM	1.2 (16.5)	A (C)
			Saturday MD	1.0 (13.1)	A (B)
			Saturday PM	0.9 (11.4)	A (B)
6.	Broadway/South Safeway Driveway	SSSC	Weekday PM	0.3 (14.1)	A (B)
			Saturday MD	0.4 (12.2)	A (B)
			Saturday PM	0.2 (10.7)	A (B)
7.	Broadway/51st Street/Pleasant Valley Avenue	Signal	Weekday PM	49.3	D
			Saturday MD	**55.7**	**E**
			Saturday PM	47.1	D
8.	Broadway/45th Street	Signal	Weekday PM	9.7	A
			Saturday MD	11.1	B
			Saturday PM	7.5	A
9.	Broadway/40th Street/40th Street Way	Signal	Weekday PM	18.3	B
			Saturday MD	18.7	B
			Saturday PM	18.5	B
10.	Broadway/West MacArthur Boulevard	Signal	Weekday PM	34.6	C
			Saturday MD	36.7	D
			Saturday PM	31.9	C
11.	Martin Luther King Jr. Way/52nd Street	Signal	Weekday PM	26.3	C
			Saturday MD	13.7	B
			Saturday PM	16.9	B

Table 4.11-5
Intersection Level of Service, Summary Existing Conditions

#	Study Intersection	Traffic Control1	Peak Hour	Delay (seconds) 2	Level of Service
12.	Shattuck Avenue/52nd Street	Signal	Weekday PM	40.9	D
			Saturday MD	41.7	D
			Saturday PM	54.6	D
13.	Telegraph Avenue/Shattuck Avenue	Signal	Weekday PM	7.3	A
			Saturday MD	6.5	A
			Saturday PM	5.1	A
14.	Telegraph Avenue/52nd Street/ Claremont Avenue	Signal	Weekday PM	17.3	B
			Saturday MD	15.8	B
			Saturday PM	12.5	B
15.	Telegraph Avenue/51st Street	Signal	Weekday PM	**63.3**	**E**
			Saturday MD	50.1	D
			Saturday PM	47.2	D
16.	Shafter Avenue/51st Street	Signal	Weekday PM	11.9	B
			Saturday MD	11.4	B
			Saturday PM	10.8	B
17.	Gilbert Street/ Safeway Driveway/ Pleasant Valley Avenue	Signal	Weekday PM	12.8	B
			Saturday MD	14.8	B
			Saturday PM	15.2	B
18.	Montgomery Street/Pleasant Valley Avenue	SSSC	Weekday PM	0.8 **(40.8)**	A **(E)**
			Saturday MD	2.1 (32.1)	A (D)
			Saturday PM	0.9 (28.6)	A (D)
19.	Howe Street/Pleasant Valley Avenue	SSSC	Weekday PM	4.5 **(59.7)**	A **(F)**
			Saturday MD	12.4 (137.8)	B **(F)**
			Saturday PM	2.8 **(43.1)**	A **(E)**
20.	Piedmont Avenue/Pleasant Valley Avenue	Signal	Weekday PM	**55.7**	**E**
			Saturday MD	33.5	C
			Saturday PM	39.4	D
21.	Piedmont Avenue/41st Street	Signal	Weekday PM	10.3	B
			Saturday MD	10.3	B
			Saturday PM	9.6	A
22.	Moraga Avenue/Pleasant Valley Avenue	Signal	Weekday PM	24.2	C
			Saturday MD	20.4	C
			Saturday PM	16.3	B

Table 4.11-5
Intersection Level of Service, Summary Existing Conditions

#	Study Intersection	Traffic Control1	Peak Hour	Delay (seconds) 2	Level of Service
23.	Grand Avenue/ Arroyo Avenue/ Pleasant Valley Avenue	Signal	Weekday PM	7.6	A
			Saturday MD	7.3	A
			Saturday PM	5.8	A
24.	Hudson Street/Manila Avenue/ College Avenue	Signal	Weekday PM	31.0	C
			Saturday MD	20.2	C
			Saturday PM	18.5	B
25.	Desmond Street/Coronado Avenue	SSSC	Weekday PM	8.2 (9.3)	A (A)
			Saturday MD	8.3 (9.2)	A (A)
			Saturday PM	7.3 (9.2)	A (A)
26.	Coronado Avenue/51st Street	SSSC	Weekday PM	0.0 (11.2)	A (B)
			Saturday MD	0.0 (10.9)	A (B)
			Saturday PM	0.0 (10.8)	A (B)
27	Project Driveway/Pleasant Valley Avenue	SSSC	Weekday PM	0.2 (11.5)	A (B)
			Saturday MD	0.2 (13.4)	A (B)
			Saturday PM	0.4 (11.9)	A (B)

Bold indicates intersection operating at LOS E or LOS F.

1. Signal = signalized intersection; SSSC = side-street stop controlled intersection
2. For side-street stop controlled intersections, delay is reported as: intersection average (worst minor street approach); for signalized intersection, the average intersection delay is reported; for signalized intersections operating with high delay, volume-to-capacity (v/c) ratio is also reported. LOS for both unsignalized and signalized intersections based on 2000 HCM.

Source: Fehr & Peers, 2012.

Existing Signal Warrant Analysis

To assess consideration for signalization of stop-controlled intersections, the California *Manual of Uniform Traffic Control Devices* (CA MUTCD) (California Department of Transportation, 2010), presents eight signal warrants.

Generally, meeting one of the signal warrants could justify signalization of an intersection. However, meeting one or more of the signal warrants does not mean that the intersection must be signalized. Therefore, an evaluation of all applicable warrants should be conducted and additional factors (e.g., congestion, approach conditions, collision record) should be considered before the decision to install a signal is made. This EIR evaluates the peak hour vehicular volume warrant (Warrant 3) for urban conditions using the existing traffic count data because this warrant is one of the criteria of significance used by City of Oakland to determine if a project causes a significant impact. **Table 4.11-6** shows the results of the traffic signal warrant analysis. **Appendix 4.11D** provides detailed signal warrant assessments.

As shown in Table 4.11-6, the urban peak hour volume traffic signal warrant is currently satisfied at only the Howe Street/Pleasant Valley Avenue (#19) intersection, which meets the peak hour signal warrant during the weekday PM and Saturday midday peak hours. The northbound approach of the intersection also operates at LOS F during both weekday PM and Saturday midday peak hours.

Table 4.11-6
Existing Peak Hour Signal Warrant Analysis

Intersection		Current Control[1]	Peak Hour Warrant Met?
4.	Broadway/Coronado Avenue	SSSC	No
5.	Broadway/Center Safeway Driveway	SSSC	No
6.	Broadway/South Safeway Driveway	SSSC	No
18.	Montgomery Street/Pleasant Valley Avenue	SSSC	No
19.	Howe Street/Pleasant Valley Avenue	SSSC	Yes
25.	Desmond Street/Coronado Avenue	SSSC	No
26.	Coronado Avenue/51st Street	SSSC	No
27.	Project Driveway/Pleasant Valley Avenue	SSSC	No

1. SSSC = side-street stop-controlled intersection
Source: Fehr & Peers, 2012.

ACTC Analysis of Existing Conditions

The ACTC conducts periodic monitoring of the freeways and major roadways in Alameda County. The most recent *Level of Service Monitoring on the Congestion Management Program Roadway Network* was released in September 2010. The ACTC monitoring report assesses existing freeway operations through "floating car" travel time surveys, which are conducted on all freeway segments during the PM peak hours (4:00 PM to 6:00 PM), and on selected freeway segments during the AM peak hours (7:00 AM to 9:00 AM). Based on the results of these surveys, ACTC assigns a LOS grade to each segment according to the method described in the 1985 HCM. Any segment with an average speed less than 30 miles per hour is assigned LOS F. Freeway interchanges with speeds below 50 percent of free flow speed are assigned LOS F. The travel time surveys concluded that 24 freeway segments, nine arterial segments and two freeway-to-freeway connectors within Alameda County operate at LOS F during the PM peak hours, including the following eight freeway and freeway-to-freeway connector segments in the Project vicinity:

- I-580 eastbound: I-80 to I-980 (grandfathered segment)
- I-580 eastbound: Harrison Street to Lakeshore Drive
- I-980 eastbound: I-880 to I-580/SR 24 junction (grandfathered segment)
- SR 13 southbound: Hiller Drive to Moraga Avenue
- SR 13 southbound: Redwood Road to I-580 eastbound merge
- SR 24 eastbound: I-580 to Broadway/SR 13 (grandfathered segment)
- SR 24 eastbound: Broadway/SR 13 to Caldecott Tunnel (grandfathered segment)
- SR 13/SR 24 Interchange: SR 13 northbound to SR 24 eastbound (grandfathered segment)

Five of these segments operated at LOS F during the initial ACTC data collection effort in 1991, and are therefore "grandfathered," meaning that they are exempt from LOS standards. The other three segments are not exempt meaning that they operate at unacceptable conditions based on ACTC standards. .

Collision Characteristics

Five years (2005-2009) of collision data was collected from the California Highway Patrol (CHP) for Broadway between 40th Street and Manila Avenue and 51st Street/Pleasant Valley Avenue between Telegraph and Piedmont Avenues. **Table 4.11-7** summarizes the collision history for both corridors.

Table 4.11-7
Study Area Collision Data Summary[1]

	Broadway [2]		Pleasant Valley Avenue/ 51st Street[3]	
Metric	**Number**	**Percent**	**Number**	**Percent**
Total Collisions	128	--	107	--
Collisions Involving Only Vehicles	108	84%	97	91%
Collisions Involving Pedestrians and Vehicles	7	5%	4	4%
Collisions Involving Bicyclists and Vehicles	13	10%	6	6%
Collisions that Resulted in Injury	30	23%	22	21%
Vehicle Only Collisions Resulting in Injury[4]	15	14%	14	14%
Pedestrian/Vehicle Collisions Resulting in Injury[5]	5	71%	2	50%
Bicycle/Vehicle Collisions Resulting in Injury[6]	10	77%	6	100%
Collisions that Resulted in Fatality	1	< 1%	0	0%

1. Collision history data summarized for the five year period between 2005 and 2010
2. Broadway between 40th Street and Manila Avenue
3. Pleasant Valley Avenue/ 51st between Telegraph and Piedmont Avenues
4. Percentage reflects the number of vehicle/vehicle collisions resulting in injury divided by the total number of vehicle/vehicle collisions
5. Percentage reflects the number of pedestrian/vehicle collisions resulting in injury divided by the total number of pedestrian/vehicle collisions
6. Percentage reflects the number of bicycle/vehicle collisions resulting in injury divided by the total number of bicycle/vehicle collisions

Source: California Highway Patrol SWITRS data between 2005 and 2009.

As shown in Table 4.11-7, 128 collisions were reported along Broadway and 107 collisions were reported along Pleasant Valley Avenue/51st Street. Out of the 128 reported collisions along Broadway, seven (about five percent) involved pedestrians and thirteen (ten percent) involved bicyclists.

About 23 percent of all collisions along Broadway resulted in injury, including 71 percent of collisions involving pedestrians and 77 percent of collisions involving bicyclists. In contrast, about 14 percent of vehicle-vehicle collisions resulted in injury. One fatal collision was reported along this segment of Broadway during the five-year period. The fatal collision occurred on a Saturday in November 2008 at Broadway/Ridgeway Avenue intersection when a vehicle collided with a pedestrian in the crosswalk across Broadway in rainy conditions during daytime.

Out of the 107 collisions reported along 51st Street/Pleasant Valley Avenue, four (about four percent) involved pedestrians and six (six percent) involved bicyclists. About 21 percent of all collisions along

51st Street/Pleasant Valley Avenue resulted in injury, including 50 percent of collisions involving pedestrians and 100 percent of collision involving bicyclists. In contrast, about 14 percent of vehicle-vehicle collisions resulted in injury. No fatalities were reported along 51st Street/Pleasant Valley Avenue for the five-year period.

Table 4.11-8 summarizes collisions by location along Broadway and 51st Street/Pleasant Valley Avenue for years 2005 through 2009. As shown in Table 4.3-8, the highest number of collisions was reported at the 51st Street/Telegraph Avenue intersection, with a total of 25 collisions over the five-year period, with four resulting in injuries. Although fewer overall collisions were reported at the 40th Street/Broadway intersection, more collisions (seven) resulted in injury than other intersections.

Vehicle collisions with pedestrians and bicycles accounted for about 13 percent of reported collisions in the study area. The Broadway/ Ridgeway Avenue intersection had the highest number of collisions involving pedestrians and bicyclists over the five year period.

Table 4.11-8 also summarizes collision rates per million vehicles at locations where existing traffic volumes are available. This analysis assumes that the average daily traffic volumes are ten times the PM peak hour volume. The average collision rate in the study area is about 0.20 collisions per million vehicles. The highest collision rates occurred at the 40th Street/Broadway and 51st Street/Telegraph Avenue intersections, where the collision rates were 0.45 and 0.41 collisions per million vehicles, respectively.

Table 4.11-8
Study Area Collision Location Summary[1]

Location	Total Collisions	Collisions Involving Pedestrians	Collisions Involving Bicyclists	Collisions Resulting in Injury	Collisions Resulting in Fatality	Collision Rate[2]
Broadway/Manila Avenue/Monroe Avenue intersection	6	0	0	1	0	0.23
Broadway between Manila Avenue and Ada Street	1	0	0	0	0	0.05
Broadway/Napa Street	1	0	0	0	0	N/A
Broadway between Napa Street and Broadway Terrace	7	1	1	2	0	0.35
Broadway/Broadway Terrace intersection	5	0	1	1	0	0.17
Broadway/Clifton Street intersection	1	0	0	0	0	N/A
Broadway/College Avenue intersection	1	0	0	0	0	0.02
Broadway/Coronado Ave intersection	2	0	0	0	0	0.05
Broadway between Coronado Avenue and 51st Street	6	0	1	1	0	0.15
Broadway between Pleasant Valley Avenue and 49th Street	8	1	2	4	0	0.28
Broadway/49th Street intersection	4	1	0	1	0	N/A
Broadway/45th Street intersection	4	0	0	0	0	0.11

Table 4.11-8
Study Area Collision Location Summary[1]

Location	Total Collisions	Collisions Involving Pedestrians	Collisions Involving Bicyclists	Collisions Resulting in Injury	Collisions Resulting in Fatality	Collision Rate[2]
Broadway between 45th Street and 42nd Street	7	0	0	1	0	0.22
Broadway/42nd Street/Mather Street intersection	9	0	0	2	0	N/A
Broadway/Garnet Street intersection	2	0	0	0	0	N/A
Broadway/Ridgeway Avenue intersection	9	2	3	4	1	N/A
Broadway between 41st Street and Ridgeway Avenue	7	0	1	1	0	0.24
Broadway/41st Street intersection	21	0	1	3	0	N/A
Broadway/40th Street intersection	19	2	2	7	0	0.45
51st Street/Telegraph Ave intersection	25	2	2	4	0	0.41
51st Street/Clarke Street intersection	5	0	0	0	0	N/A
51st Street/Miles Avenue intersection	1	0	0	0	0	N/A
51st Street/Webster Street intersection	3	0	0	1	0	N/A
51st Street/Shafter Avenue intersection	10	1	0	4	0	0.31
51st Street/Manila Avenue intersection	4	0	0	1	0	N/A
51st Street between Manila and Coronado Avenues	1	0	0	0	0	0.03
51st Street/Pleasant Valley Avenue/ Broadway intersection	14	0	1	3	0	0.20
Pleasant Valley Avenue between Broadway and Gilbert Street	9	0	2	3	0	0.23
Pleasant Valley Avenue/Gilbert Street intersection	8	0	0	1	0	0.17
Pleasant Valley Avenue/ Montgomery Street intersection	3	1	0	1	0	0.08
Pleasant Valley Avenue between Montgomery and Howe Streets	8	0	0	0	0	0.23
Pleasant Valley Avenue/Howe Street intersection	8	0	0	2	0	0.22
Pleasant Valley Avenue/Piedmont Avenue intersection	8	0	1	2	0	0.19

1. Collision history data summarized for the five year period between 2005 and 2009
2. Collision rate per million vehicles entering the intersection or roadway segment.

Source: California Highway Patrol SWITRS data between 2005 and 2009 as summarized by Fehr & Peers, 2012.

Planned Transportation Network Changes

A review of the available information indicates that several changes are planned for the various transportation modes in the study area, as described below. However, not all of these changes have finalized design plans, full approvals, and/or are not funded. Changes lacking final design, full approval and full funding are not available to mitigate any deficient conditions in the No Project conditions, and therefore are not assumed in the analysis.

Planned Roadway Changes

The following roadway modifications have been recently implemented or are currently planned at the study intersections:

- Broadway/40th Street (#9) intersection – The following improvements were implemented in summer 2012:
  - Modify northbound approach from the current configuration which provides one shared through/right lane, one through lane, and one shared through/left-turn lane to provide one shared right-turn/through lane, one through lane, and one left-turn lane.
  - Modify traffic signal equipment to provided protected/permissive phasing for the northbound left-turn movement.

  This improvement was designed, approved, and implemented after the NOP for this EIR was published. Therefore, it is not included in the Existing or Existing Plus Project conditions. However, it is included in the analysis of future conditions. In addition, the improvement has negligible effect on intersection operations.
- Broadway/West MacArthur Boulevard (#10) intersection – The following improvements are designed, approved, and scheduled to be implemented in 2013 as part of the Kaiser Medical Center Project:
  - Modify eastbound approach from the current configuration which provides one right-turn lane, two through lanes, and one left-turn lane to provide one shared through/right lane, two through lanes, and one left-turn lane.
  - Modify northbound approach from the current configuration which provides one shared through/right lane, one through lane, and one left-turn lane to provide one right-turn lane, two through lanes, and one left-turn lane.

No other roadways changes are currently planned in the study area. However, transit, and bicycle and pedestrian improvements that would change roadway configurations are discussed in the sections below.

Planned Transit Changes

AC Transit is currently planning the Route 51 Transit Performance Initiative which will consist of improvements along Broadway to increase bus travel speeds. These improvements may include traffic signal coordination, transit priority at traffic signals, relocation of bus stops, providing bus bulbouts, left or right turn lanes, and/or queue jump lanes. The project has full funding and is expected to be completed in 2014. However, the specific improvements and the exact locations are not known at this time. Therefore, these improvements are not included in the analysis of future conditions.

In 2012, AC Transit certified the *Environmental Impact Statement/Environmental Impact Report* for the implementation of Bus Rapid Transit (BRT) on Telegraph Avenue and International Boulevard connecting Berkeley, Oakland, and San Leandro. The proposed system would dedicate one travel lane in each direction to bus operations only, allowing buses to provide a quicker and more reliable service than regular bus service today. AC Transit is proceeding with the segment of the project between Downtown Oakland and San Leandro. Currently, there are no plans to implement BRT along Telegraph Avenue. Since the segment of BRT that would be implemented would not affect the study intersections, this EIR assumes that the BRT Project will not be provided in the study area.

Planned Bicycle/Pedestrian Changes

Planned bicycle facilities in the Project vicinity include:

- City of Oakland completed bicycle facilities on 41st Street between Webster Street and Piedmont Avenue in March 2012. The project installed amenities such as sharrows and signage consistent with Class 3B bicycle boulevards, with the exception of the segment between Montgomery Street and Piedmont Avenue, which provides Class 2 bicycles lanes. Since the project did not modify the existing travel lane configurations or controls at any of the existing study intersections, it does not change traffic patterns in the area or affect the intersection operations analysis. This project is not included in the Existing or Existing plus Project conditions analysis because it was designed, approved, and implemented after the NOP for this EIR was published; however, it is assumed in the analysis of future conditions.
- City of Oakland upgraded the existing Class 3 bicycle route on the Shafter Avenue-48th Street-Webster Street corridor between 29th Street Berkeley City limits to Class 3B bicycle boulevard in May 2012 by installing amenities such as sharrows and signage. Since the project did not modify the existing travel lane configurations or controls at any of the existing study intersections, it does not change traffic patterns in the area or affect the intersection operations analysis. This project is not included in the Existing or Existing plus Project conditions analysis because it was designed, approved, and implemented after the NOP for this EIR was published; however, it is assumed in the analysis of future conditions.
- City of Oakland has completed design for Class 2 bicycle lanes on Piedmont Avenue between MacArthur Boulevard and Pleasant Valley Avenue. Since the project would not modify the existing travel lane configurations or controls at any of the existing study intersections, it would not affect the intersection operations analysis. This project is approved, fully funded, and scheduled to be completed in 2013. Therefore, this project is assumed in the analysis of future conditions.
- City of Oakland is currently designing Class 2 bicycle lanes on Broadway between 38th Street and SR 24. The project would accommodate the bicycle lanes by generally eliminating one travel lane in each direction of Broadway. The project is fully funded, and the segment between 38th Street and Broadway Terrace has been approved. Although the project is not assumed in the analysis of future conditions because it was neither approved nor funded in 2009 when the NOP for the Safeway Redevelopment Project was published, **Appendix 4.11E** provides an analysis of future conditions with the proposed Broadway bike lanes and with and without the proposed project.
- City of Oakland is designing a Class 3A arterial bicycle route on College Avenue between Broadway and Berkeley City limits. Since the project would not modify the existing travel lane configurations or controls at any of the existing study intersections, it would not affect the intersection operations analysis. This project is approved, fully funded, and scheduled to be completed in the next few years. Therefore, this project is assumed in the analysis of future conditions.
- City of Oakland is designing a combination of Class 2 bicycle lanes and Class 3A arterial bicycle routes on Shattuck Avenue between Telegraph Avenue and City of Berkeley. Since the project would not modify the existing travel lane configurations or controls at any of the existing study intersections, it would not affect the intersection operations analysis. This project is approved, fully

funded, and scheduled to be completed in 2013. Therefore, this project is assumed in the analysis of future conditions.

In addition, The City of Oakland's 2007 *Bicycle Master Plan Update* identifies the following streets in the project vicinity for future bicycle improvements (see Figure 4.11-4):

- Class 2 Bicycle Lanes on Broadway Terrace east of Carlton Street.
- Class 3A Arterial Bicycle Routes on 51st Street/Pleasant Valley Avenue, and Broadway Terrace west of Carlton Street.

None of these improvements are currently planned for implementation, have finalized design plans, or are fully funded. Thus, this EIR assumes that these changes will not be provided in the study area.

According to the City Oakland's *Pedestrian Master Plan*, there are no planned pedestrian improvements in the vicinity of the project site.

The Caldecott Tunnel Improvement Project Settlement Agreement

The Caldecott Tunnel Improvement Project Settlement Agreement provides funds to the Fourth Bore Coalition, and Cities of Oakland and Berkeley to ameliorate the impacts of adding a fourth bore to the Caldecott Tunnel in the greater community surrounding the SR 24 corridor between I-580 and Caldecott Tunnel, and improve pedestrian, bicycle, transit, and local circulation.

City of Oakland finalized and approved a list of 37 improvement projects in March 2011 based on public input and preliminary conceptual designs and cost estimates. The cost of all improvements projects in the City of Oakland's final project list exceeds the funding provided by the Settlement Agreement. Thus, the project list has been prioritized with 21 improvement projects expected to be funded. This EIR assumes that improvement projects expected to be funded that do not require approvals by other jurisdictions would be completed regardless of the proposed 51st and Broadway Center project and are included in the analysis of future conditions. In addition, these improvement projects are also discussed as part of potential project mitigation measures at locations where the proposed project causes a significant impact. Out of the 37 improvement project approved in March 2011, five are located in the study area. These final improvement projects in the study area and their current status are described below:

- Broadway/Manila Avenue/Monroe Avenue intersection (intersection #1) – Extend bulbouts at intersection corners, and upgrade traffic signal control equipment to allow countdown pedestrian signal heads and accessible pedestrian push-buttons. This improvement is not currently one of the 21 improvement projects expected to be funded. Therefore, it is not included in the analysis of future conditions.
- 52nd Street/Shattuck Avenue intersection (#12) - Install a traffic signal at eastbound SR 24 off-ramp on 52nd Street just west of Shattuck Avenue and coordinate with the existing signal, Tee 52nd Street into 51st Street. This improvement is currently one of the 21 improvement projects expected to be funded. Therefore, it is included in the analysis of future conditions. Since the project would not modify the existing travel lane configurations or controls at 52nd Street/Shattuck Avenue intersection, it would not affect the intersection operations analysis.
- Telegraph Avenue/52nd Street/Claremont Avenue intersection (#14) – Eliminate the slip right-turn lane from northbound Telegraph Avenue to Claremont Avenue, upgrade traffic signal control equipment to allow countdown pedestrian signal heads. This improvement is not currently one of the 21 improvement projects expected to be funded. Therefore, it is not included in the analysis of future conditions.
- Hudson Street/Manila Avenue/College Avenue intersection (#24) – Extend bulbouts on the west side of the intersection, upgrade traffic signal control equipment to allow countdown pedestrian signal heads, and provide a new north-south crosswalk along the west side of College Avenue. This

improvement is not currently one of the 21 improvement projects expected to be funded. Therefore, it is not included in the analysis of future conditions.

- Upgrade traffic signal equipment along Broadway between 40th Street and College Avenue to provide transit priority for AC Transit Route 51A buses. This improvement is not currently one of the 21 improvement projects expected to be funded at this time. Therefore, it is not included in the analysis of future conditions.

Regulatory Setting

AC Transit

Short-Range Transit Plan

AC Transit, the provider of bus transit service in the Project study area, has established goals related to transit service. These goals are documented in the *Short Range Transit Plan – Fiscal Year (FY) 2003 to FY 2012* (AC Transit, 2004). Some of the major goals of AC Transit include:

Goal 1: Provide High Quality, Useful Transit Service for Customers in the East Bay.

Goal 4: Plan and Advocate for the Funding and Implementation of Future Projects.

- Work with City and Local agencies to make transit usage as safe, secure, reliable, and quick as possible and to promote transit usage in the planning process.
- Promote "Transit First" development practices and increased funding for transit through transit mitigation funding for new developments.

AC Transit has also established a *Strategic Vision* to provide fast, frequent, reliable service on a wide variety of routes with attractive vehicles and an easy-to-use, affordable fare structure (AC Transit, 2002). Key elements of the AC Transit *Strategic Vision* include: increased frequency of buses to reduce wait time; greater frequency of service during midday, evening and owl travel times; an easy-to-use, integrated fare system; flexible routes; adequate around-the-clock service; a redesigned network that matches travel patterns and helps meet demand in the high-density urban core; gradual transition to "Bus Rapid Transit" in the highest ridership corridors; and bus stop improvements including real-time display of arrival times.

City of Oakland

The Oakland *General Plan* is comprised of numerous elements, and those containing policies relevant to transportation resources primarily are contained in the *Land Use and Transportation Element* (LUTE). The goals and policies contained in the various *General Plan* elements are often competing. In reviewing a project for conformity with the *General Plan*, the City is required to 'balance' the competing goals and policies. This Project is reviewed for compliance with the following local plans and policies:

- General Plan LUTE
- City of Oakland Pedestrian Master Plan
- City of Oakland Bicycle Master Plan
- City of Oakland Public Transit and Alternative Modes Policy
- City of Oakland Standard Conditions of Approval

General Plan

Land Use and Transportation Element (LUTE). The City of Oakland, through various policy documents, states a strong preference for encouraging use of alternative transportation modes. The following polices are included in the LUTE:

> *LUTE Policy Framework: Encouraging Alternative Means of Transportation*. "A key challenge for Oakland is to encourage commuters to carpool or use alternative modes of transportation, including bicycling or walking. The Policy Framework proposes that congestion be lessened by promoting alternative means of transportation, such as transit, biking, and walking, providing facilities that support alternative modes, and implementing street improvements. The City will continue to work closely with local and regional transit providers to increase accessibility to transit and improve intermodal transportation connections and facilities. Additionally, policies support the introduction of light rail and trolley buses along appropriate arterials in heavily traveled corridors, and expanded use of ferries in the bay and estuary." [4]
>
> *Policy T3.5, Including Bikeways and Pedestrian Walks:* The City should include bikeways and pedestrian walks in the planning of new, reconstructed, or realized streets, wherever possible.
>
> *Policy T3.6, Encouraging Transit*. The City should encourage and promote use of public transit in Oakland by expediting the movement of and access to transit vehicles on designated "transit streets" as shown on the Transportation Plan. (Policies T3.6 and T3.7 are based on the City Council's passage of "Transit First" policy in October 1996)
>
> *Policy T3.7, Resolving Transportation Conflicts:* The City, in constructing and maintaining its transportation infrastructure, should resolve any conflicts between public transit and single occupant vehicles in favor of the transportation mode that has the potential to provide the greatest mobility and access for people, rather than vehicles, giving due consideration to the environmental, public safety, economic development, health and social equity impacts.
>
> *Policy T4.1, Incorporating Design Features for Alternative Travel:* The City will require new development, rebuilding, or retrofit to incorporate design features in their projects that encourage use of alternative modes of transportation such as transit, bicycling, and walking.

Pedestrian Master Plan. In November 2002, the *Pedestrian Master Plan* (PMP) was adopted by the City Council and incorporated into the adopted *General Plan*. The PMP identifies policies and implementation measures that promote a walkable City. In the study area, the PMP designates a Pedestrian Route Network throughout Oakland and identifies Broadway and 51st Street/Pleasant Valley Avenue as City Routes, Broadway Terrace and Piedmont Avenue as District Routes, and Shafter Avenue, and Clifton and 45th Streets as Neighborhood Routes. The *PMP* includes the following relevant policies and actions:

> *Policy 1.1 Crossing Safety*: Improve pedestrian crossings in area of high pedestrian activity where safety is an issue.
>
> > *Action 1.1.1:* Consider the full range of design elements – including bulbouts and refuge islands – to improve pedestrian safety.
>
> *Policy 1.2: Traffic Signals*: Use traffic signals and their associated features to improve pedestrian safety at dangerous intersections.
>
> > *Action 1.2.7:* Consider using crossing enhancement technologies like countdown pedestrian signals at the highest pedestrian volume locations.

[4] Oakland General Plan, *Land Use and Transportation Element*, page 48.

Policy 1.3 Sidewalk Safety: Strive to maintain a complete sidewalk network free of broken or missing sidewalks or curb ramps.

Action 1.3.7. Conduct a survey of all street intersections to identify corners with missing, damaged, or non-compliant curb ramps and create a plan for completing their installation.

Policy 2.1: Route Network: Create and maintain a pedestrian route network that provides direct connections between activity centers.

Action 2.1.8. To the maximum extent possible, make walkway accessible to people with physical disabilities.

Policy 2.3: Safe Routes to Transit: Implement pedestrian improvements along major AC Transit lines and at BART stations to strengthen connections to transit.

Action 2.3.1: Develop and implement street designs (like bus bulbouts) that improve pedestrian/bus connections.

Action 2.3.3: Prioritize the implementation of street furniture (including bus shelters) at the most heavily used transit stops.

Action 2.3.4: Improve pedestrian wayfinding by providing local area maps and directional signage at major AC Transit stops and BART stations.

Policy 3.2. Land Use: Promote land uses and site designs that make walking convenient and enjoyable.

Action 3.2.1. Use building and zoning codes to encourage a mix of uses, connect entrances and exits to sidewalks, and eliminate "blank walls" to promote street level activity.

Action 3.2.2. Promote parking and development policies that encourage multiple destinations within an area to be connected by pedestrian trips.

Action 3.2.4: Require contractors to provide safe, convenient, and accessible pedestrian rights-of-way along construction sites that require sidewalk closure.

Action 3.2.8: Discourage motor vehicle parking facilities that create blank walls, unscreened edges along sidewalks, and/or gaps between sidewalks and building entrances.

Bicycle Master Plan. The Oakland City Council adopted the Oakland *Bicycle Master Plan Update* in December 2007. The adopted plan includes the following policy-supporting actions that are applicable to the proposed Project:

Policy 1A: Bikeway Network: Develop and improve Oakland's bikeway network.

Action 1A.1 – Bicycle Lanes (Class 2): Install bicycle lanes where feasible as the preferred bikeway type for all streets on the proposed bikeway network (except for the bicycle boulevards proposed for local streets with low traffic volumes and speeds).

Action 1A.3 – Bicycle Boulevards (Class 3B): Enhance bicycle routes on local streets by developing bicycle boulevards with signage, striping, and intersection modifications to prioritize bicycle travel.

Action 1A.6 – Dedicated Right Turn Lanes and "Slip Turns": Where feasible, avoid the use of dedicated right turn lanes on streets included in the bikeway network. Where infeasible, consider a bicycle through lane to the left of the turn lane or a combined bicycle lane/right turn lane.

Policy 1B: Routine Accommodation: Address bicycle safety and access in the design and maintenance of all streets.

Action 1B.2 – Traffic Signals: Include bicycle-sensitive detectors, bicycle detector pavement markings, and adequate yellow time for cyclists with all new traffic signals and in the modernization of all existing signals.

Policy 1C – Safe Routes to Transit: Improve bicycle access to transit, bicycle parking at transit facilities, and bicycle access on transit vehicles.

Action 1C.1 – Bikeways to Transit Stations: Prioritize bicycle access to major transit facilities from four directions, integrating bicycle access into the station design and connecting the station to the surrounding neighborhoods.

Policy 1D – Parking and Support Facilities: Promote secure and conveniently located bicycle parking at destinations throughout Oakland.

Action 1D.6 – Bicycle Parking Ordinance: Adopt an ordinance as part of the City's Planning Code that would require new development to include short and long-term bicycle parking.

Action 1D.7 – Development Incentives: Consider reduced automobile parking requirements in exchange for bicycle facilities as part of transportation demand management strategies in new development.

City of Oakland Public Transit and Alternative Modes Policy

The City of Oakland adopted the Public Transit and Alternative Modes Policy, also known as the "Transit-First Policy," in October 2006 (City Council Resolution 73036 C.M.S.). This resolution supports public transit and other alternatives to single occupant vehicles, and directs the LUTE to incorporate "various methods of expediting transit services on designated streets, and encouraging greater transit use."

Standard Conditions of Approval and Uniformly Applied Development Standards

If the proposed Project is approved by the City, then all applicable Standard Conditions of Approval (SCA) for construction traffic and parking would be adopted as conditions of approval and required of the Project to help ensure less-than-significant impacts (for the applicable topic). These SCAs are incorporated and required as part of the Project, so they are not listed as mitigation measures.

SCA-Trans-1: **Parking and Transportation Demand Management**. *Prior to issuance of a final inspection of the building permit.* The applicant shall pay for and submit for review and approval by the City a Transportation Demand Management (TDM) plan containing strategies to:

- Reduce the amount of traffic generated by new development and the expansion of existing development, pursuant to the City's police power and necessary in order to protect the public health, safety and welfare.
- Ensure that expected increases in traffic resulting from growth in employment and housing opportunities in the City of Oakland will be adequately mitigated.
- Reduce drive-alone commute trips during peak traffic periods by using a combination of services, incentives, and facilities.
- Promote more efficient use of existing transportation facilities and ensure that new developments are designed in ways to maximize the potential for alternative transportation usage.
- Establish an ongoing monitoring and enforcement program to ensure that the desired alternative mode use percentages are achieved.

The applicant shall implement the approved TDM plan. The TDM plan shall include strategies to increase bicycle, pedestrian, transit, and carpools/vanpool use. All four modes of travel shall be considered, and parking management and parking reduction strategies should be included. Actions to consider include the following:

a. Inclusion of additional long term and short term bicycle parking that meets the design standards set forth in chapter five of the Bicycle Master Plan, and Bicycle Parking Ordinance, shower, and locker facilities in commercial developments that exceed the requirement.

b. Construction of and/or access to bikeways per the Bicycle Master Plan; construction of priority Bikeway Projects, on-site signage and bike lane striping.

c. Installation of safety elements per the Pedestrian Master Plan (such as cross walk striping, curb ramps, count-down signals, bulb outs, etc.) to encourage convenient and safe crossing at arterials.

d. Installation of amenities such as lighting, street trees, trash receptacles per the Pedestrian Master Plan and any applicable streetscape plan.

e. Construction and development of transit stops/shelters, pedestrian access, way finding signage, and lighting around transit stops per transit agency plans or negotiated improvements.

f. Direct on-site sales of transit passes purchased and sold at a bulk group rate (through programs such as AC Transit Easy Pass or a similar program through another transit agency).

g. Employees or residents can be provided with a subsidy, determined by the applicant and subject to review by the City, if the employees or residents use transit or commute by other alternative modes.

h. Provision of shuttle service between the development and nearest mass transit station, or ongoing contribution to existing shuttle or public transit services.

i. Guaranteed ride home program for employees, either through 511.org or through separate program.

j. Pre-tax commuter benefits (commuter checks) for employees.

k. Free designated parking spaces for on-site car-sharing program (such as City Car Share, Zip Car, etc.) and/or car-share membership for employees or tenants.

l. Onsite carpooling and/or vanpooling program that includes preferential (discounted or free) parking for carpools and vanpools.

m. Distribution of information concerning alternative transportation options

n. Parking spaces sold/leased separately for residential units. Charge employees for parking, or provide a cash incentive or transit pass alternative to a free parking space in commercial properties.

o. Parking management strategies; including attendant/valet parking and shared parking spaces.

p. Requiring tenants to provide opportunities and the ability to work off-site.

q. Allow employees or residents to adjust their work schedule in order to complete the basic work requirement of five eight-hour workdays by adjusting their schedule to reduce vehicle trips to the worksite.

r. Provide or require tenants to provide employees with staggered work hours involving a shift in the set work hours of all employees at the workplace or flexible work hours involving individually determined work hours.

The applicant shall submit an annual compliance report for review and approval by the City. This report will be reviewed either by City staff (or a peer review consultant, chosen by the City and paid for by the applicant). If timely reports are not submitted, the reports indicate a failure to achieve the stated policy goals, or the required alternative mode split is still not achieved, staff will work with the applicant to find ways to meet their commitments and achieve trip reduction goals. If the issues cannot be resolved, the matter may be referred to the Planning Commission for resolution. Applicants shall be required, as a condition of approval, to reimburse the City for costs incurred in maintaining and enforcing the trip reduction program for the approved Project.

SCA Trans-2: Construction Traffic and Parking. *Prior to the issuance of a demolition, grading or building permit,* the Project applicant and construction contractor shall meet with appropriate City of Oakland agencies to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this Project and other nearby projects that could be simultaneously under construction. The project applicant shall develop a construction management plan for review and approval by the Planning and Zoning Division, the Building Services Division, and the Transportation Services Division. The plan shall include at least the following items and requirements:

a. A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes.

b. Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur.

c. Location of construction staging areas for materials, equipment, and vehicles at an approved location.

d. A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager. The manager shall determine the cause of the complaints and shall take prompt action to correct the problem. Planning and Zoning shall be informed who the Manager is prior to the issuance of the first permit issued by Building Services.

e. Provision for accommodation of pedestrian flow.

f. Provision for parking management and spaces for all construction workers to ensure that construction workers do not park in on-street spaces.

g. Any damage to the street caused by heavy equipment, or as a result of this construction, shall be repaired, at the applicant's expense, within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to issuance of a final inspection of the building permit. All damage that is a threat to public health or safety shall be repaired immediately. The street shall be restored to its condition prior to the new construction as established by the City Building Inspector and/or photo documentation, at the applicant's expense, before the issuance of a Certificate of Occupancy.

h. Any heavy equipment brought to the construction site shall be transported by truck, where feasible.

i. No materials or equipment shall be stored on the traveled roadway at any time.

j. Prior to construction, a portable toilet facility and a debris box shall be installed on the site, and properly maintained through project completion.

k. All equipment shall be equipped with mufflers.

l. Prior to the end of each work day during construction, the contractor or contractors shall pick up and properly dispose of all litter resulting from or related to the project, whether located on the property, within the public rights-of-way, or properties of adjacent or nearby neighbors.

Project Transportation Characteristics

Project Description

The Project is located on the northeast quadrant of the Broadway and 51st Street/Pleasant Valley Avenue intersection in Oakland. The Project site currently provides 185,500 square feet of retail, including a 48,000 square-foot Safeway supermarket, an 87,200 square-foot CVS Pharmacy (formerly the Longs Drug Store), and 50,300 square-feet of other retail space. Automobile access to the existing site is currently provided through one full-access unsignalized driveway and two right-in/right-out only driveways on Broadway, as well as one full access signalized driveway and one right-in/right-out driveway on Pleasant Valley Avenue.

The proposed Project would include a total of about 293,200 square feet of space[5]. It would include demolishing the existing 87,200 square foot CVS Pharmacy, relocating the 48,000 square foot Safeway to a new 65,000 square-foot space (for a net Safeway increase of 17,000 square feet of grocery), and by increasing the amount of total other commercial space (containing a mix of retail, restaurant, and office uses) by a net new amount of approximately 177,900 square feet.

The Project proposes the following automobile access to the site:

- A full-access signalized driveway on Broadway opposite Coronado Avenue
- A full-access signalized driveway on Pleasant Valley Avenue opposite Gilbert Street
- A right-in/right-out unsignalized driveway on Pleasant Valley Avenue just east of Gilbert Street

The proposed Project would also provide 967 off-street parking spaces in the following locations:

- Deck on top of the proposed Safeway and adjacent buildings (Buildings A, B, and C) providing 267 parking spaces
- Three level parking structure in the west portion of the site (Buildings H and J) providing 362 parking spaces
- Surface parking throughout the site providing 338 parking spaces

Project Roadway Modifications

The Project proposes roadway modifications to generally improve access and circulation around the site for all travel modes and specifically provide signalized left-turn access on Broadway to and from the Project site. The City of Oakland 2007 *Bicycle Master Plan Update* identifies Broadway as a future Class 2 (dedicated bicycle lanes) and Pleasant Valley Avenue as a future Class 3A (Arterial Bike Route) facility. The *Broadway Corridor Bikeway Feasibility Study* (March 2007) proposed to accommodate the Class 2 bicycle lanes on Broadway by reducing the number of automobile lanes from three to two in each direction. The proposed modifications incorporate comments from City of Oakland and AC Transit staff.

Figure 4.11-11 and **Figure 4.11-12** show the following proposed roadway modifications on Broadway and **Figure 4.11-13** shows the proposed roadway modifications on 51st Street/Pleasant Valley Avenue.

[5] As described in Chapter 3, Project Description, the Project would consist of approximately 323,000 square feet of gross space, including approximately 293,200 square feet of gross leasable area, and approximately 29,800 square feet of common space. The 293,200 square feet of gross leasable area is the space expected to generate Project trips.

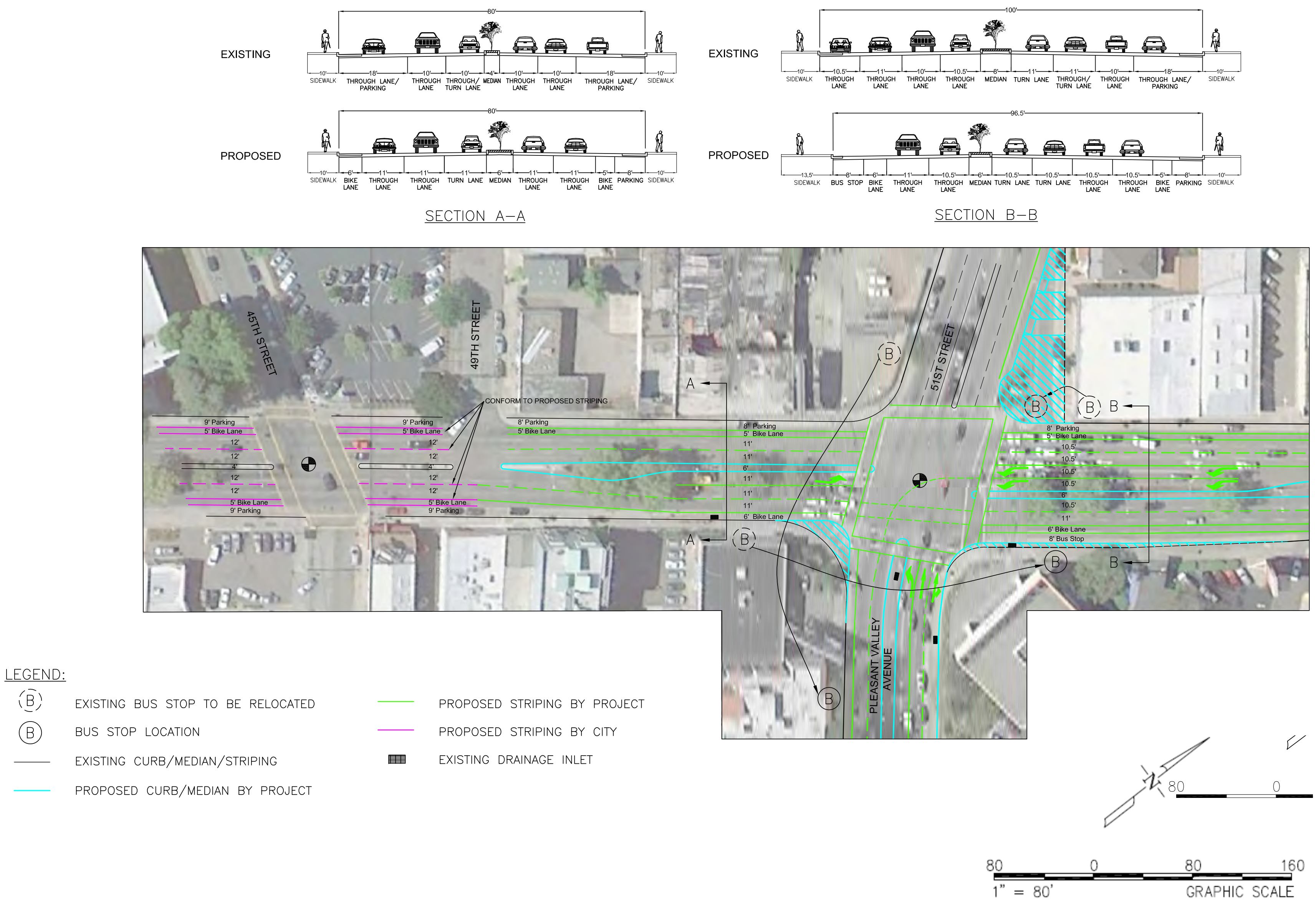

Figure 4.11-11
Proposed Conceptual Plan for Broadway, Lower Section

Source: Fehr & Peers

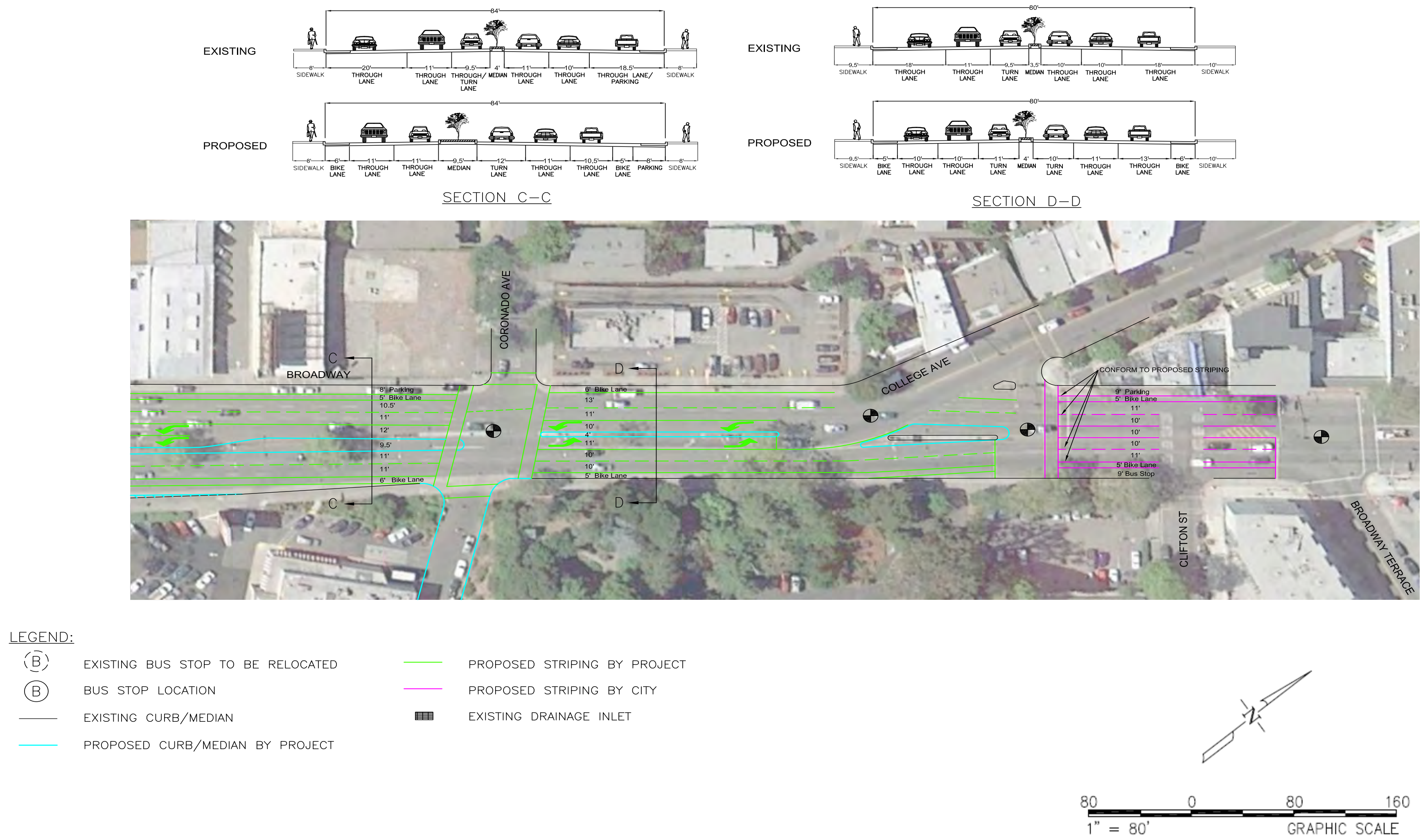

Figure 4.11-12
Proposed Conceptual Plan for Broadway, Upper Section

Source: Fehr & Peers

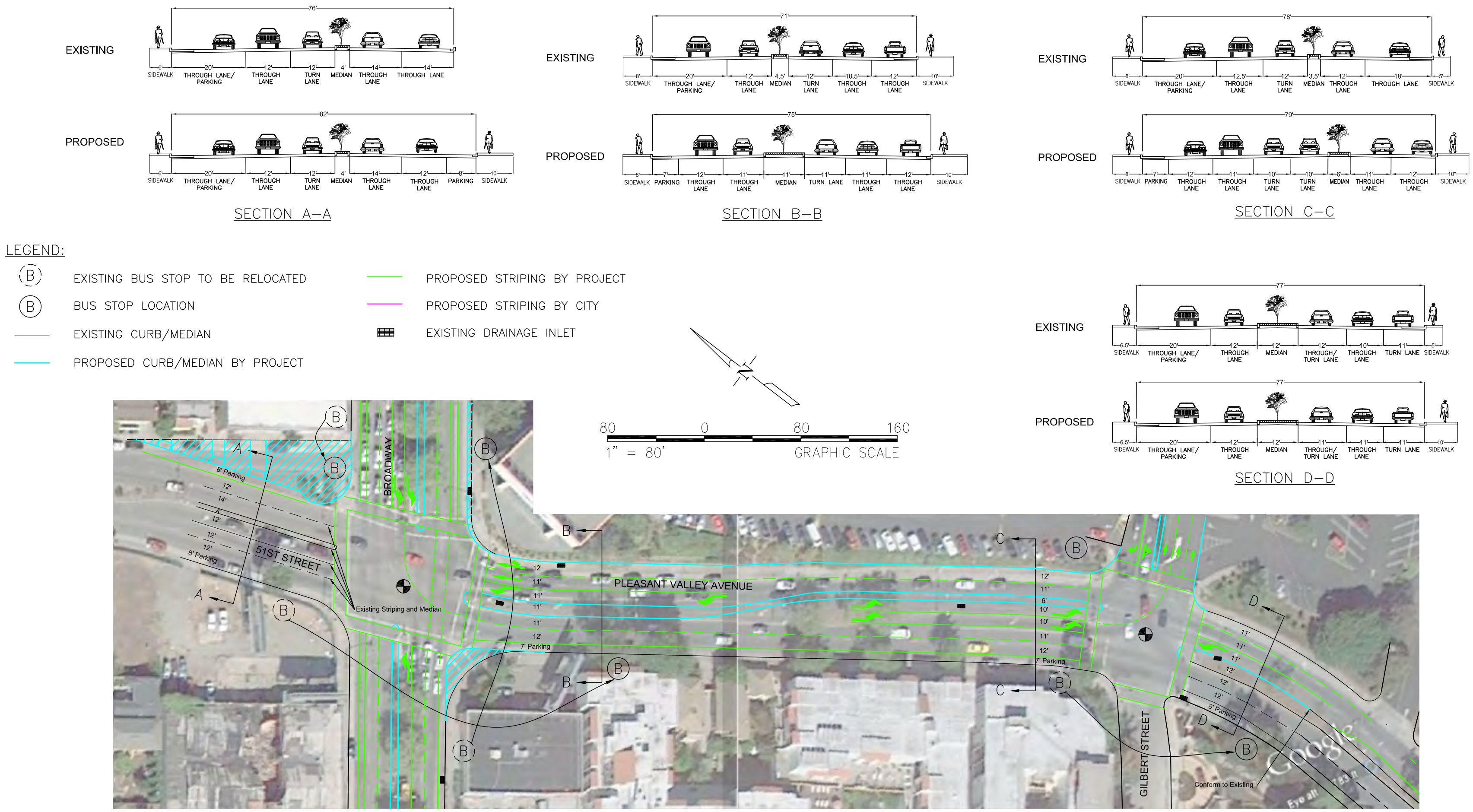

Figure 4.11-13
Proposed Conceptual Plan for Pleasant Valley Avenue

Source: Fehr & Peers

- Reduce Broadway from three through lanes to two through lanes in each direction between College Avenue and 49th Street.
- Provide Class 2 bicycle lanes on both sides of Broadway between College Avenue and just south of 51st Street/Pleasant Valley Avenue. It is anticipated that City of Oakland will install Class 2 bicycle lanes on Broadway in conjunction with a resurfacing project expected in 2013. The bicycle lanes proposed by the Project are consistent with the City project. If the City project is implemented prior to the proposed Safeway Redevelopment Project, the proposed roadway modifications associated with the Safeway Redevelopment Project must retain the same level of quality as the City improvements. For example, after the City repaves the street, the City will not accept patch repaving for utility excavations in the public right-of-way for the Safeway Redevelopment Project; utility work would either need to be trenchless or the entire street repaved to the median. If the 51st and Broadway Center Project is implemented prior to the City project, the City project would conform to the Safeway Redevelopment Project. Figure 4.11-11 illustrates the expected configuration of Broadway after the implementation of the Class 2 bicycle lanes along Broadway.
- Eliminate two existing right-in/right-out project driveways on Broadway between Pleasant Valley Avenue and Coronado Avenue.
- Signalize the project driveway on Broadway opposite Coronado Avenue to provide left-turns in and out of the Project site. The proposed signal would be coordinated with the existing signals on Broadway at 45th Street, 51st Street/Pleasant Valley Avenue, College Avenue, and Broadway Terrace. The intersection would provide an exclusive left-turn lane from southbound Broadway to the Project site. The proposed signal would also provide a protected pedestrian crossing connecting the residential neighborhood west of Broadway to the Project site.
- Eliminate the five metered on-street parking spaces on the west side of Broadway between College and Coronado Avenues. The parking meters can be replaced by converting the parking spaces on Broadway between Coronado Avenue and 51st Street/Pleasant Valley Avenue from unrestricted to metered spaces.
- Modify the northbound left-turn lane on Broadway at College Avenue in order to provide left-turn access into the existing Wendy's Restaurant. The provision for the southbound left-turn lane from Broadway into the Project site would require the elimination of the existing median break that provides access to Wendy's Restaurant from northbound Broadway.
- Following modifications at the Broadway/51st Street/Pleasant Valley Avenue intersection:
  - Modify southbound approach from the current configuration which provides one shared right/through lane, one exclusive through lane, one shared through/left lane, and one exclusive left-turn lane to provide one shared right/through lane, one through lane, and two left-turn lanes. In addition, the southbound approach would also provide a six-foot wide median pedestrian refuge island.
  - Modify northbound approach from the current configuration which provides one shared right/through lane, one through lane, and one shared through/left lane to provide one shared right/through lane, one through lane, and one exclusive left-turn lane. In addition, the northbound approach would also provide a six-foot wide median pedestrian refuge island. These modifications would result in loss of four on-street parking spaces on the east side of Broadway just south of 51st Street/Pleasant Valley Avenue.
  - Upgrade intersection signal equipment to replace the existing split phasing with protected left-turn phasing in the north/south direction, which will result in more efficient and safer signal operations.
  - Eliminate the existing northbound and southbound right-turn slip lanes and pork chop islands (northwest and southeast corners of the intersection, respectively). The reconstructed northwest

corner of the intersection would be designed to accommodate access to the three driveways that would lose their access. In addition, the reconstructed northwest corner would also be redesigned to provide four parking spaces on 51st Street to replace the five parking spaces on the slip lane that would be eliminated.

  - Widen the median on the westbound Pleasant Valley Avenue approach to provide an 11-foot wide median pedestrian refuge island.

- Following modifications at the Gilbert Street/Project Driveway/Pleasant Valley Avenue intersection:
  - Provide a second left-turn lane from eastbound Pleasant Valley Avenue into the Project site.
  - Modify westbound approach from the current configuration which provides one right-turn lane, one through lane, and one shared through/left lane to provide one shared right/ through lane, one through lane, and one exclusive left-turn lane within the current right-of-way.
  - Provide one right-turn lane and a shared through/left-turn lane on the southbound Project Driveway.
  - Upgrade intersection signal equipment to replace the existing permitted left-turn phasing with protected phasing for the westbound Pleasant Valley Avenue left-turn movement.
- Move the following bus stops from the near-side to the far-side of the intersection:
  - Northbound Broadway from just south of Pleasant Valley Avenue to north of Pleasant Valley Avenue. The proposed configuration would result in an eight-foot wide bus stop just north of Pleasant Valley Avenue. In addition, the adjacent sidewalk would also be widened by three feet.
  - Eastbound 51st Street/Pleasant Valley Avenue from just west of Broadway to about 150 feet east of Broadway. This would also result in loss of four on-street parking spaces east of Broadway which can be replaced west of Broadway. In addition, one or more trees may also need to be removed to accommodate the new bus stop.
  - Eastbound Pleasant Valley Avenue from just west to just east of Gilbert Street.

The proposed modifications along Broadway can be accommodated within the existing curb-to-curb right-of-way. Providing a second left-turn lane from eastbound Pleasant Valley Avenue into the Project site would require widening Pleasant Valley Avenue. Pleasant Valley would be widened from 71 feet (curb-to-curb) to 75 feet just east of Broadway, and from 78 feet to 79 feet just west of Gilbert Street.

Project Trip Generation

Fehr & Peers collected vehicle counts during the weekday and Saturday PM peak and midday periods at the five shopping center driveways on Broadway and Pleasant Valley Avenue to estimate the total amount of vehicle trips generated by the existing site. Fehr & Peers also counted customers at both Safeway and CVS Pharmacy and conducted in-person intercept surveys at both stores during the weekday and Saturday PM peak period. The survey included questions such as travel mode choice, amount of time at the store, and if customers visited other stores in the shopping center, to better understand the travel characteristics at the shopping center. **Appendix 4.11F** presents the sample questionnaire used in the survey. The survey included 158 Safeway customers and 166 CVS Pharmacy customers on Friday evening and 185 Safeway customers and 157 CVS Pharmacy customers on Saturday evening. This corresponds to a survey response rate of about 21 percent for Safeway and 25 percent for CVS Pharmacy.

Customer counts at the entrances of the Safeway and CVS Pharmacy stores were used to determine the trip generation specific to the Safeway, CVS Pharmacy, and other stores in the shopping center. In addition, the intercept surveys were used to estimate the total amount of trips shared between the different stores within the shopping center. **Table 4.11-9** presents the existing shopping center vehicle trip generation based on the driveway and door counts. Overall, the site generates about 1,627 vehicle trips during the weekday PM peak hour and 1,446 vehicle trips during the Saturday PM peak hour.

Counts conducted in October 2012 indicate that the vehicle trips currently generated during the Saturday midday (1,480 trips) are generally equivalent to the vehicle trips currently generated during the Saturday PM peak hour trips (1.446 trips).[6] The difference in trips between these two counting periods (roughly 2%) is within the daily fluctuations of traffic flow at the site. Based on other data, including Safeway shopping transactions and ITE trip rate assumptions, the proposed Project would reasonably be expected to generate about 14 percent fewer trips during the Saturday midday than during the Saturday PM peak hour.[7] However, the analysis conducted for this EIR assumes that the proposed Project would have a Saturday midday trip generation equivalent to the Saturday PM peak hour, in order to present a more conservative analysis.

Table 4.11- 9
Total Site, Existing Vehicle Trip Generation

Store	Size (ksf)[1]	Weekday PM Peak Hour			Saturday Midday/PM Peak Hour		
		In	Out	Total	In	Out	Total
Safeway [2]	48.0	271	281	552	267	275	542
CVS Pharmacy [2]	87.2	156	178	334	211	263	474
Other Stores [2]	50.3	468	359	827	311	245	556
Internalization [3]	*185.5*	*-43*	*-43*	*-86*	*-63*	*-63*	*-126*
Total[4]	**185.5**	**852**	**775**	**1,627**	**726**	**720**	**1,446**

1. KSF = 1,000-square feet
2. Data based on door and driveway counts conducted on June 6 and 7, 2008.
3. Based on intercept survey results, average internalization rates were five percent for weekday and eight percent for Saturday.
4. Based on driveway counts conducted on June 6 and 7, 2008.

Source: Fehr & Peers, 2011.

Safeway Store

Table 4.11-10 presents the Safeway trips generated based on the driveway/door counts and compares them to the vehicle trip generation estimates of the Institute of Transportation Engineers' (ITE) *Trip Generation, 8th Edition*. As shown in Table 4.11-10, the existing Safeway store generates a similar

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6 The current Saturday midday peak hour trips generated by the shopping center is about 2% (34 trips) higher than the Saturday PM peak hour, which is within the typical fluctuation at shopping centers. In addition, the Saturday midday counts include the traffic generated by the AAA Building, which was not occupied when the Saturday PM peak period counts were conducted in 2008. Therefore, it is assumed that the existing project site generates about the same amount of trips during the Saturday midday and Saturday PM peak hours.

7 The difference in trip generation between the Saturday midday and PM peak hours can be estimated based on the following:

- Based on hourly transaction data provided by Safeway for the existing store, about 12 percent fewer transactions occur during the midday peak hour than during the PM peak hour.
- Based on data provided in ITE *Trip Generation, 8th Edition*, typical retail uses generate about 15 percent fewer trips during the midday peak hour than the PM peak hour.

number of vehicle trips compared to a typical suburban supermarket as evidenced by a less than five percent difference between the vehicle counts and the vehicle trip generation ITE would predict for the existing Safeway supermarket. Considering that ITE data closely predict the trip generation for the current Safeway Store, and since ITE data is based on data collected at stores of various sizes including stores similar in size to the proposed store, it is a better predictor of trip generation for larger stores. Thus, to estimate the increase in Safeway trips, the trip generation equations presented in ITE *Trip Generation* were applied to the existing Safeway square footage and the proposed Safeway expansion square footage. The difference in trips derived from the ITE equations would represent the net new Safeway trips with the Project.

Table 4.11-10
Comparison of Collected Data and ITE Trip Generation at the Existing Safeway Store

Source	ITE Code	Units[1]	Weekday PM Peak Hour[2] In	Weekday PM Peak Hour[2] Out	Weekday PM Peak Hour[2] Total	Saturday Midday/PM Peak Hour[2] In	Saturday Midday/PM Peak Hour[2] Out	Saturday Midday/PM Peak Hour[2] Total
Safeway Door Counts[3]	n/a	48.0 ksf	271	281	552	267	275	542
ITE Supermarket	850[4]	48.0 ksf	281	270	551	266	255	521
Difference			*-10*	*11*	*1*	*1*	*20*	*21*

1. KSF = 1,000-square feet
2. Weekday peak hour from 5:00 PM to 6:00 PM; Saturday evening peak hour from 4:00 PM to 5:00 PM
3. Estimated vehicle trip generation based on counts collected at Safeway entrance on Friday, June 6, 2008 and Saturday, June 7, 2008
4. ITE Trip generation Equation used:
   Weekday PM: Ln(T) = 0.61 Ln(X) + 3.95; Enter = 51%, Exit = 49%
   Saturday PM: T = 10.85 (X); Enter = 51%, Exit = 49%
   Where: T = trips generated, X = 1,000 square feet, Ln = natural log

Source: *Trip Generation* (8th Edition), ITE, 2008; and Fehr & Peers, 2011.

Table 4.11-11 presents the net new trips generated by the proposed expansion of the Safeway Store. The expansion of the Safeway Store is estimated to generate 112 weekday PM peak hour trips and 184 Saturday midday and Saturday PM peak hour trips.

Table 4.11-11
Safeway Vehicle Trip Generation Estimates

Land Use	ITE Code	Units[1]	Weekday PM Peak Hour In	Weekday PM Peak Hour Out	Weekday PM Peak Hour Total	Saturday Midday/PM Peak Hour In	Saturday Midday/PM Peak Hour Out	Saturday Midday/PM Peak Hour Total
Proposed Safeway Store	850[2]	65.0 ksf	338	325	663	360	345	705
Existing Safeway Store	850[2]	48.0 ksf	-281	-270	-551	-266	-255	-521
Net New Safeway Trips			**57**	**55**	**112**	**94**	**90**	**184**

1. KSF = 1,000-square feet
2. ITE Trip generation Equation Used:
   Weekday PM: Ln(T) = 0.61 Ln(X) + 3.95; Enter = 51%, Exit = 49%
   Saturday PM: T = 10.85 (X); Enter = 51%, Exit = 49%
   Where: T = trips generated, X = 1,000 square feet, Ln = natural log

Source: *Trip Generation* (8th Edition), ITE, 2008; and Fehr & Peers, 2011.

Total Project Trip Generation

In addition to the 65,000 square-foot Safeway store, the proposed Project would also provide about 228,200 square feet of commercial space in several buildings throughout the site. The site currently provides 50,300 square-feet of commercial space. Thus, the proposed Project would provide about 177,900 square feet of net new commercial space. Although specific tenants have not yet been identified, the site is expected to be occupied by several retail, restaurant, and office tenants in various buildings throughout the site.

The ITE Shopping Center land use was used to estimate the trip generation for commercial space in the Project because it best fits the services proposed for the site. As described in *ITE Trip Generation*, Shopping Center (land use 820) represents "an integrated group of commercial establishments." Some of the sites surveyed for land use code 820 contained retail stores, as well as "office buildings, movie theaters, restaurants, banks, health clubs, and recreational facilities" and they range in size from 1,700 to 2.2 million square feet.

Table 4.11-12 presents the net new Project trips that would be added to the roadway network with the Safeway expansion, the additional commercial space, and the demolition of the CVS Pharmacy. Table 4.11-12 also accounts for pass-by and internalized trips.

Table 4.11-12
Project Trip Generation Estimates – Net New Vehicle Trips

Land Use	ITE Code	Units[1]	Weekday PM Peak Hour			Saturday Midday/PM Peak Hour		
			In	Out	Total	In	Out	Total
Net New Safeway Trips[2]	850	17 ksf	57	55	112	94	90	184
Proposed Net New Commercial[3]	820	178.0 ksf	449	487	936	648	599	1,247
Existing CVS[4]	n/a	-87.2 ksf	-156	-178	-334	-211	-263	-474
New Project Trips			*350*	*364*	*714*	*531*	*426*	*957*
Pass-By Vehicles[5]			*-121*	*-121*	*-242*	*-124*	*-124*	*-248*
Internalized Trips[6]			*-18*	*-18*	*-36*	*-38*	*-38*	*-76*
Net New Project Trips			***211***	***225***	***436***	***369***	***264***	***633***

1. KSF = 1,000-square feet
2. See Table 4.3-11
3. Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) regression equations for Shopping Center (Land Use Code 820) :
   Weekday PM: Ln(T) = 0.67 Ln(X) + 3.37; Enter = 49%, Exit = 51%
   Saturday PM: Ln(T) = 0.65 Ln(X) + 3.76; Enter = 52%, Exit = 48%
   Where: T = trips generated, X = 1,000 square feet, Ln = natural log
4. Data based on peak hour counts collected on June 6 and June 7, 2008.
5. Trip pass-by rate based on Institute of Transportation Engineers (ITE), *Trip Generation Handbook* average pass-by for Shopping Center (Land Use Code 820). Average Weekday pass-by rate: 34%; average Saturday pass-by rate: 26%.
6. Based on intercept survey results, average internalization rates were 5% for weekday and 8% for Saturday

Source: Trip Generation (8th Edition), ITE, 2008; and Fehr & Peers, 2012.

Pass-by vehicle trips are defined as trips attracted to the Project from traffic passing on adjacent roadways as an interim stop on the way to their ultimate destination. Pass-by trips consist of vehicles that would be on the roadway network regardless of the Project; therefore, these trips result in changed travel patterns but do not add *new* vehicle traffic to the roadway network. According to the ITE *Trip Generation Handbook*, the average pass-by trip reduction for a shopping center is 34 percent during the weekday PM peak period and 26 percent during the Saturday peak period. The pass-by rate for shopping center was also applied to the new Safeway trips. This is a conservative assumption because the ITE weekday PM peak hour pass-by rate for shopping center is slightly lower than the pass-by rate for grocery store (36 percent compared to 34 percent). In addition, ITE does not provide Saturday pass-by rate for a grocery store.

Internalized vehicle trips are defined as trips made internal to the Project site without using the external major street system. Based on the intercept survey results, the average internalization rate between the Safeway Store and the rest of the shopping center is about five percent for Friday and eight percent for Saturday.

Overall, the proposed Project is estimated to generate 436 net new weekday PM peak hour trips and 633 net new Saturday midday and Saturday PM peak hour trips.

Mode Share Characteristics

Because ITE trip generation estimates only quantify vehicle trips, a customer mode choice survey was conducted at the existing Safeway store to estimate the net new non-automobile trips (See Appendix 4.11F for sample). Based on the survey, about 85 percent of Safeway trips are made using personal vehicles, while about 15 percent are transit, walking, or biking trips.

The results of the mode choice survey were applied to the net new vehicle trips shown in Table 4.11-12. **Table 4.11-13** presents the mode share and the estimated net new non-automobile trips to the site. As shown, an additional 78 pedestrian and five bicycle trips are expected during the weekday PM peak hour; an additional 60 pedestrian, seven transit, and seven bicycle trips are expected during the Saturday peak hours.[8]

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[8] Similar to the conservative assumptions regarding Saturday midday trip generation, this analysis also conservatively assumes equivalent mode splits during both Saturday midday and the Saturday PM peak hour.

Table 4.11-13
Project Mode Share Summary

Travel Mode	Mode Split Characteristics: Weekday PM Peak Hour[1]	Mode Split Characteristics: Saturday Midday/ PM Peak Hour[2]	Trip Generation: Weekday PM Peak Hour[1]	Trip Generation: Saturday Midday/ PM Peak Hour[2]
Drive	83%	89%	436	633
Walk	16%	9%	84	64
Transit	0%	1%	0	7
Bike	1%	1%	5	7
Total	**100%**	**100%**	**525**	**711**

1. Weekday evening period from 5:00 PM to 8:00 PM; data based on mode share surveys conducted June 6, 2008.
2. Saturday evening period from 4:00 PM to 7:00 PM; data based on mode share surveys conducted June 7, 2008.

Source: Fehr & Peers, 2012.

As shown in Table 4.11-12, the *ITE Trip Generation* data and methodology were used to estimate the new vehicle trips generated by the proposed Project. The supermarket and shopping center sites represented in the ITE data tend to be in suburban areas with little or no access by non-automobile modes. Conservatively, we did not assume any reductions in vehicle trips associated with pedestrian, bicycle, or transit access.

Trip Distribution and Assignment

Trip distribution is defined as the directions of approach and departure that vehicles would use to arrive at and depart from the site. Fehr & Peers estimated distribution of Project trips based on existing travel patterns, study area population density, and relative locations of other supermarkets in the area. **Figure 4.11-14** shows the population density and location of other supermarkets in the surrounding areas. The resulting distribution is presented on **Figure 4.11-15**. New trips generated by the Project were assigned to the roadway system based on these general directions of approach and departure.

The trip distribution was compared to customer spotting data (presented in **Appendix 4.11G**) provided by Safeway. The costumer spotting data presents the home location of Safeway customers over a four week period in 2010 based on Club Card data collected at the existing store. The home location of the Safeway customer is similar to the population distribution figure, with a majority of the customers originating from south and west within two miles of the Project site. Thus the trip distribution presented on Figure 4.11-14 reflects a reasonable assumption for the Project trip distribution.

The trips generated by the proposed Project, as shown in Table 4.11-12 were assigned to the roadway network according to the trip distribution shown on Figure 4.11-14. The resulting trip assignment by roadway segment is presented on **Figure 4.11-16** for the Saturday PM peak hour. **Figure 4.11-17** presents the Project-generated turning movements at the proposed study intersection.

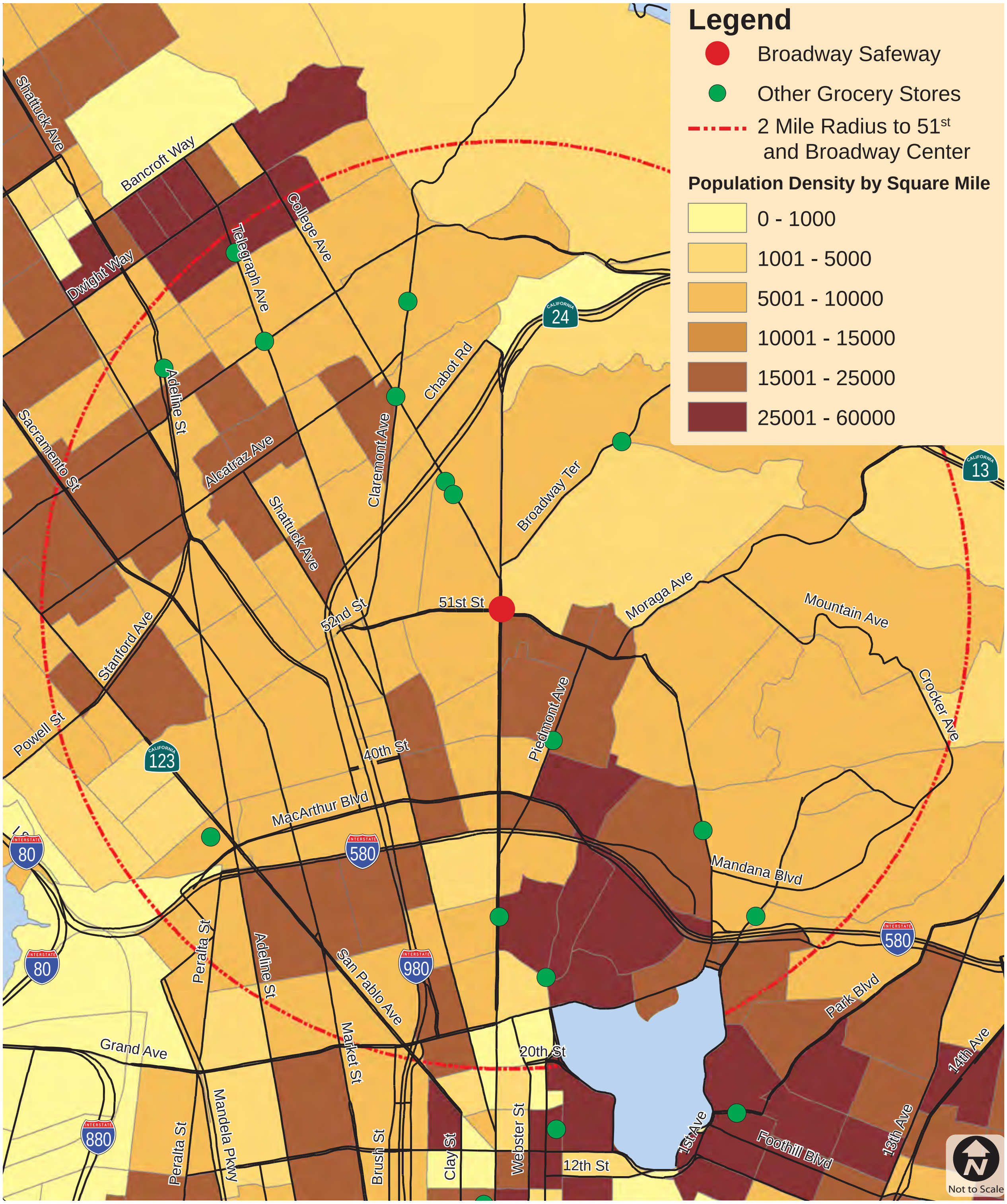

Figure 4.11-14
Population Density and Other Grocery Stores in Project Area

Source: Fehr & Peers

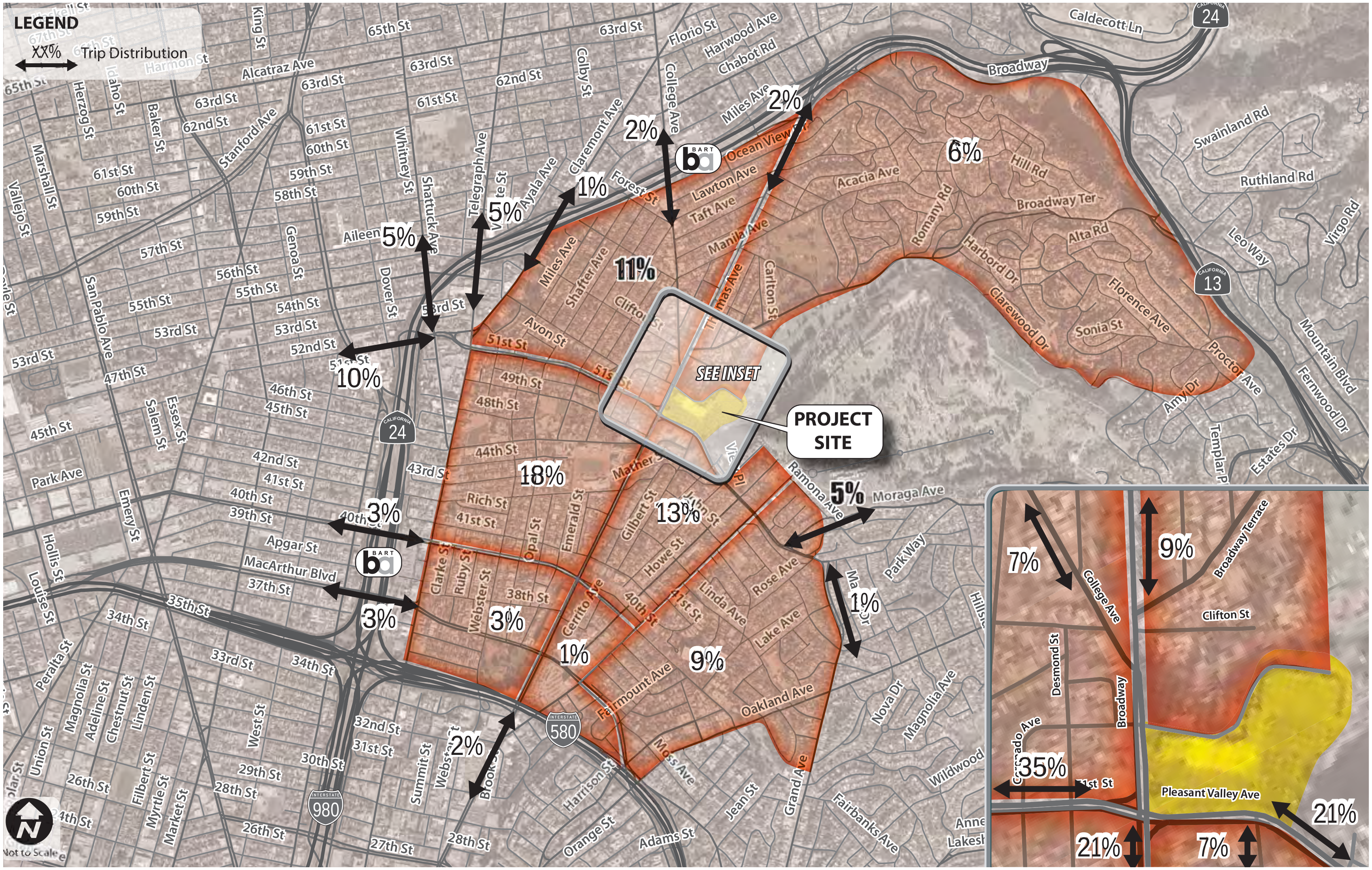

Figure 4.11-15
Project trip Distribution

Source: Fehr & Peers

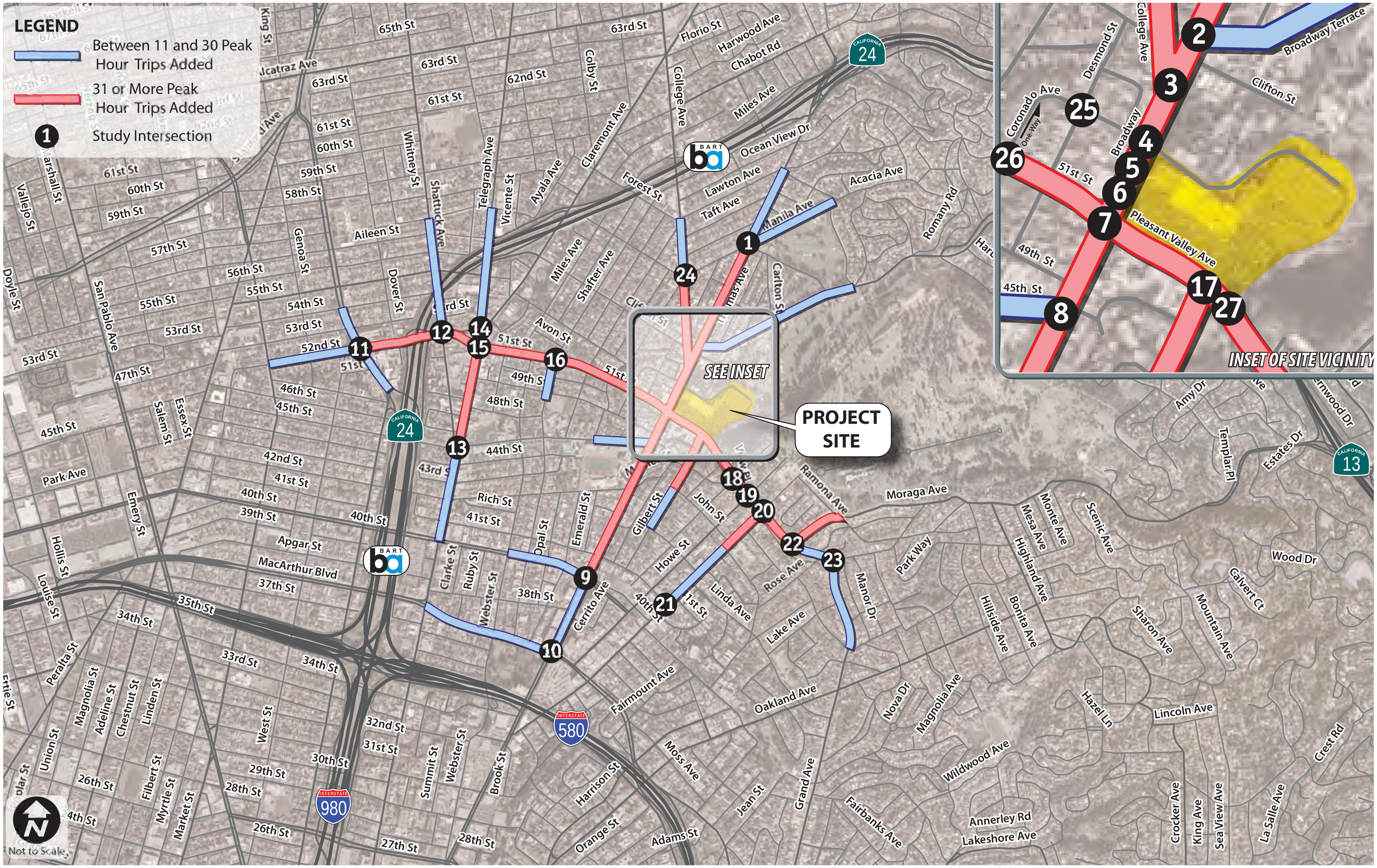

Figure 4.11-16
Saturday Peak Hour Project Trip Assignment and Proposed Study Locations

Source: Fehr & Peers

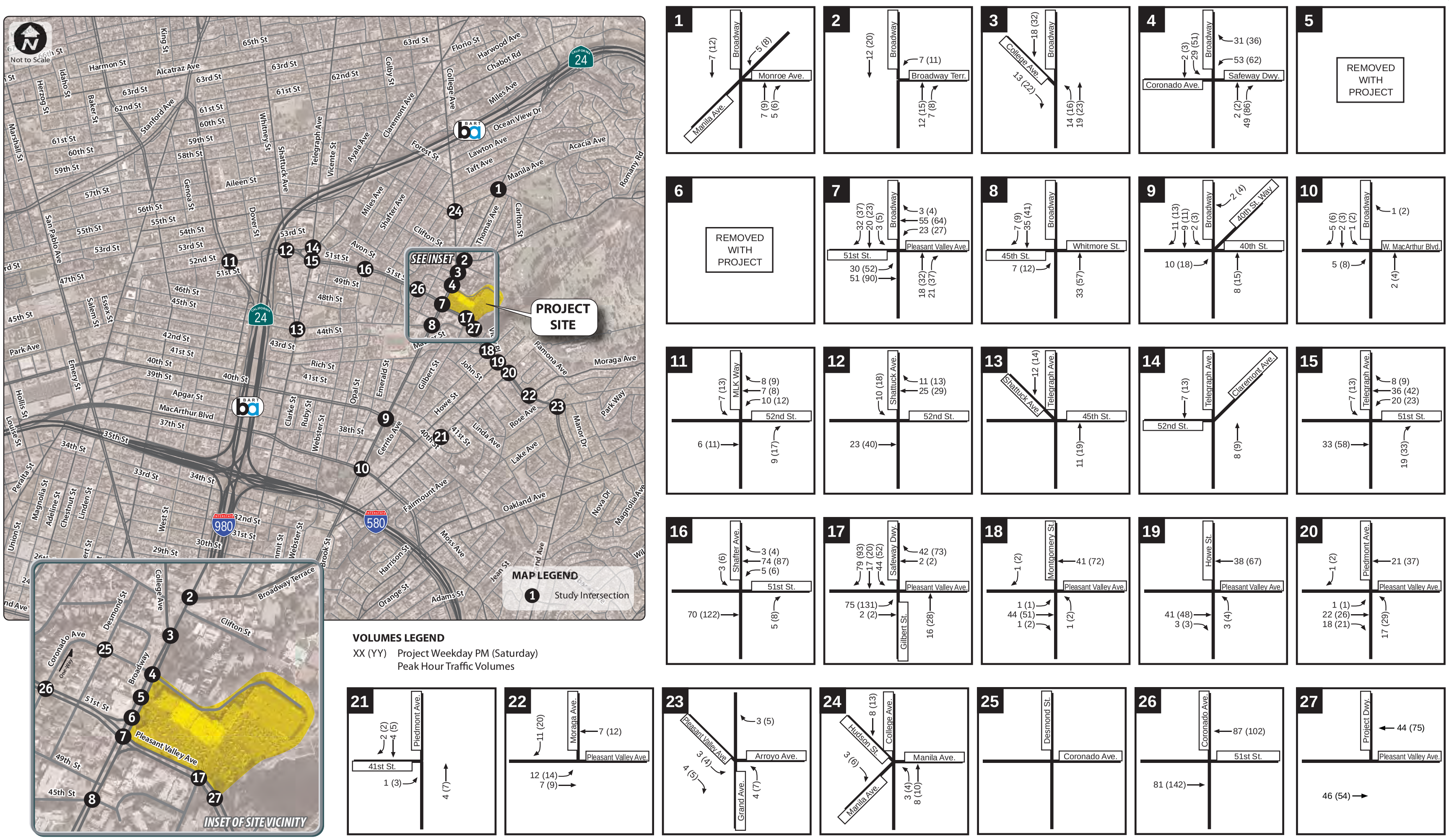

Figure 4.11-17
Project Trip Assignment

Source: Fehr & Peers

Impacts, Standard Conditions of Approval and Mitigation Measures

This section evaluates the Project's potential adverse effects related to transportation, circulation and parking, and it considers vehicles, bicycles and pedestrians. Traffic impacts are assessed at the study intersections in the study area for the following scenarios:

- Existing Plus Project
- Near-Term (2015) No Project
- Near-Term (2015) Plus Project
- Cumulative (2035) No Project
- Cumulative (2035) Plus Project

The City's assessment of traffic impacts at intersections is conducted on an intersection-by-intersection basis irrespective of whichever time period (PM peak, AM peak, mid-day) the impact occurs.

Following the intersection analysis, the Project's potential effects on: construction; vehicle, pedestrian and bicycle safety; emergency access; and consistency with local plans is presented. An assessment of non-CEQA issues such as parking, transit, and neighbor traffic intrusion are also provided.

Criteria of Significance

City of Oakland's CEQA Thresholds of Significance Guidelines, were used to determine if the Project would cause a significant impact. The Project would have a significant impact on the environment if it would:

Project Impacts

Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit, specifically:

Traffic Load and Capacity Thresholds

1. At a study, signalized intersection which is located **outside the Downtown area**,[9] the Project would cause the level of service (LOS) to degrade to worse than LOS D (i.e., LOS E);
2. At a study, signalized intersection which is located **within the Downtown area**, the Project would cause the LOS to degrade to worse than LOS E (i.e., LOS F);
3. At a study, signalized intersection **outside the Downtown area** where the level of service is LOS E, the Project would cause the total intersection average vehicle delay to increase by four (4) or more seconds, or degrade to worse than LOS E (i.e., LOS F);

[9] The Downtown area is defined in the Land Use and Transportation Element of the General Plan (page 67) as the area generally bounded by the West Grand Avenue to the north, Lake Merritt and Channel Park to the east, the Oakland Estuary to the south, and I-980/Brush Street to the west.

4. At a study, signalized intersection for **all areas** where the level of service is LOS E, the Project would cause an increase in the average delay for any of the critical movements of six (6) seconds or more, or degrade to worse than LOS E (i.e., LOS F);

5. At a study, signalized intersection for all areas where the level of service is LOS F, the Project would cause (a) the overall volume-to-capacity ("V/C") ratio to increase 0.01 or more or (b) the critical movement V/C ratio to increase 0.02 or more;

6. At a study, unsignalized intersection the Project would add ten (10) or more vehicles and after Project completion satisfy the Caltrans peak hour volume traffic signal warrant;

7. For a roadway segment of the Congestion Management Program (CMP) Network, the Project would cause (a) the LOS to degrade from LOS E or better to LOS F or (b) the V/C ratio to increase 0.03 or more for a roadway segment that would operate at LOS F without the Project [**Note**: This threshold only applies to land use development projects that generate a vehicle trip on a roadway segment of the CMP Network located in the Project study area and to transportation projects that would reduce the vehicle capacity of a roadway segment of the CMP Network];

8. Cause congestion of regional significance on a roadway segment on the Metropolitan Transportation System (MTS) evaluated per the requirements of the Land Use Analysis Program of the CMP [**Note**: This threshold only applies to a land use development project that involves either (a) a general plan amendment that would generate 100 or more PM peak hour trips above the current general plan land use designation or (b) an EIR and the project would generate 100 or more PM peak hour trips above the existing condition. Factors to consider in evaluating the potential impact include, but are not limited to, the relationship between the project and planned improvements in the Countywide Transportation Plan, the project's consistency with City policies concerning infill and transit-oriented development, the proximity of the project to other jurisdictions, and the magnitude of the project's contribution based on V/C ratios.];

9. Result in substantially increased travel times for AC Transit buses [**Note**: Factors to consider in evaluating the potential impact include, but are not limited to, the proximity of the Project site to the transit corridor(s), the function of the roadway segment(s), and the characteristics of the potentially affected bus route(s). The evaluation may require a qualitative and/or quantitative analysis depending upon these relevant factors.];

Traffic Safety Thresholds

10. Directly or indirectly cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard due to a new or existing physical design feature or incompatible uses [**Note**: Factors to consider in evaluating the potential impact to roadway users due to physical design features and incompatible uses include, but are not limited to, collision history and the adequacy of existing traffic controls.];

11. Generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard [**Note**: If the Project will generate substantial multi-modal traffic across an at-grade railroad crossing, a Diagnostic Review will be required in consultation with the California Public Utilities Commission. The Review should include roadway and rail descriptions, collision history, traffic volumes for all modes, train volumes, vehicular speeds, train speeds, and existing rail and traffic controls.];

12. Directly or indirectly result in a permanent substantial decrease in pedestrian safety [NOTE: Consider whether factors related to pedestrian safety such as, but not limited to, the following are substantial in nature:

- Degradation of existing pedestrian facilities, including the following:
    - Removal of existing pedestrian refuge islands and/or bulbouts
    - Increase of street crossing distance
    - Permanent removal or significant narrowing of an existing sidewalk, path, crossing, or pedestrian access way
    - Increase in pedestrian or vehicle volume at unsignalized or uncontrolled intersections
    - Sidewalk overcrowding
- Addition of new vehicle travel lanes and/or turn lanes
- Permanent removal of existing sidewalk-street buffering elements (e.g., on-street parking lane, planting strip, street trees)
- Addition of vehicle driveway entrance(s) that degrade pedestrian safety, with considerations given to the following:
    - Number of proposed vehicle driveway entrances
    - Location of proposed vehicle driveway entrance(s)
    - Visibility between pedestrians on the sidewalk and motorists using the proposed vehicle driveway entrance(s)];

13. Directly or indirectly result in a permanent substantial decrease in bus rider safety [**Note**: Consider whether factors related to bus rider safety such as, but not limited to, the following are substantial in nature:
    - Removal or degradation of existing bus facilities
    - Siting of bus stops in locations without crossings, with insufficient sidewalks, or in isolated or unlit areas
    - Addition of new bus riders that creates overcrowding at a bus stop];
14. Directly or indirectly result in a permanent substantial decrease in bicyclist safety [Note: Consider whether factors related to bicyclist safety such as, but not limited to, the following are substantial in nature:
    - Removal or degradation of existing bikeways
    - Addition of new vehicle travel lanes and/or turn lanes
    - Addition of vehicle driveway entrances(s) that degrade(s) bicycle safety, with consideration given to the following:
    - Number of proposed vehicle driveway entrances
    - Location of proposed vehicle driveway entrance(s)
    - Visibility between bicyclists on travelway and motorists using the proposed vehicle driveway entrance(s)];

Other Thresholds

15. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

16. Fundamentally conflict with adopted City policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities adopted for the purpose of avoiding or mitigating an environmental effect and actually result in a physical change in the environment [NOTE: Factors to consider in evaluating the potential conflict include, but are not limited to, the following:
    - Does the Project prevent or otherwise substantially adversely affect the future installation of a planned transportation improvement identified in an adopted City policy, plan, or program?
    - Does the Project fundamentally conflict with the applicable goals, policies, and/or actions identified in an adopted City policy, plan, or program?
17. Result in a substantial, though temporary, adverse effect on the circulation system during construction of the Project.

Cumulative Impacts

18. A Project's contribution to cumulative impacts is considered "considerable" (i.e., significant) when the Project exceeds at least one of the thresholds listed above in a future year scenario.

Planning-Related Non-CEQA Issues

The following transportation-related topics are not considerations under CEQA but are evaluated in order to inform decision-makers and the public about these issues.

Parking

The Court of Appeal has held that parking is not part of the permanent physical environment, that parking conditions change over time as people change their travel patterns, and that unmet parking demand created by a project need not be considered a significant environmental impact under CEQA unless it would cause significant secondary effects.[10] Similarly, the December 2009 amendments to the State CEQA Guidelines (which become effective March 18, 2010), removed parking from the State's Environmental Checklist (Appendix G of the State CEQA Guidelines) as an environmental factor to be considered under CEQA. Parking supply/demand varies by time of day, day of week, and seasonally. As parking demand increases faster than the supply, parking prices rise to reach equilibrium between supply and demand. Decreased availability and increased costs result in changes to people's mode and pattern of travel. However, the City of Oakland, in its review of the proposed Project, wants to ensure that the Project's provision of parking spaces along with measures to lessen parking demand (by encouraging the use of non-auto travel modes) would result in minimal adverse effects to Project occupants and visitors, and that any secondary effects (such as on air quality due to drivers searching for parking spaces) would be minimized. As such, although not required by CEQA, parking conditions are evaluated in this document as a non-CEQA topic for informational purposes.

Parking deficits may be associated with secondary physical environmental impacts, such as air quality and noise effects, caused by congestion resulting from drivers circling as they look for a parking space. However, the absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, shuttles, taxis, bicycles or travel by foot), may induce drivers to shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to alternative modes of travel would be in keeping with the City's Public Transit and Alternative Modes Policy (sometimes referred to as the "Transit First" policy).

[10] San Franciscans Upholding the Downtown Plan v. the City and County of San Francisco (2002) 102 Cal.App.4th 656.

Additionally, regarding potential secondary effects, cars circling and looking for a parking space in areas of limited parking supply is typically a temporary condition, often offset by a reduction in vehicle trips due to others who are aware of constrained parking conditions in a given area. Hence, any secondary environmental impacts that might result from a shortfall in parking in the vicinity of the proposed Project are considered less than significant.

This document evaluates if the Project's estimated parking demand (both Project-generated and Project-displaced) would be met by the Project's proposed parking supply or by the existing parking supply within a reasonable walking distance of the Project site. Project-displaced parking results from the Project's removal of standard on-street parking, City or Redevelopment Agency owned/controlled parking and/or legally required off-street parking (non-open-to-the-public parking which is legally required).

Transit Ridership

Transit load is not part of the permanent physical environment; transit service changes over time as people change their travel patterns. Therefore, the effect of the proposed Project on transit ridership need not be considered a significant environmental impact under CEQA unless it would cause significant secondary effects, such as causing the construction of new permanent transit facilities which in turn causes physical effects on the environment. Furthermore, an increase in transit ridership is an environmental benefit, not an impact. The City of Oakland, however, in its review of the proposed Project, wants to understand the Project's potential effect on transit ridership. As such, although not required by CEQA, transit ridership is evaluated in this document as a non-CEQA topic for informational purposes.

This document evaluates whether the Project would exceed any of the following:

- Increase the average ridership on AC Transit lines by three (3) percent at bus stops where the average load factor with the Project in place would exceed 125% over a peak thirty minute period;
- Increase the peak hour average ridership on BART by three (3) percent where the passenger volume would exceed the standing capacity of BART trains;
- Increase the peak hour average ridership at a BART station by three (3) percent where average waiting time at fare gates would exceed one minute; and

Queuing

This document evaluates the Project's potential effect on 95th percentile queuing. Would the Project cause an increase in 95th percentile queue length of 25 feet or more at a study, signalized intersection?

Traffic Control Devices

This document evaluates the need for additional traffic control devices (e.g., stop signs, street lighting, crosswalks, traffic calming devices) using the California MUTCD and applicable City standards.

Collision History

This document evaluates three years of vehicle, pedestrian, and bicycle collision data for intersections and roadway segments within three blocks of the Project site to determine if the Project would contribute to an existing problem or if any improvements are recommended in order to alleviate potential effects of the Project.

Existing Plus Project Intersection Analysis

This section analyzes the transportation system with trips associated with the proposed Project added to the existing traffic counts. This analysis presents the extent of Project impacts relative to existing conditions.

Traffic Volumes

Figure 4.11-18 shows the traffic volumes for the Existing plus Project conditions. They include existing traffic volumes plus net added traffic volumes generated by the Project.

Roadway Network

As previously described, the proposed Project would implement a number of modifications to street configurations and signal operations on Broadway and Pleasant Valley Avenue adjacent to the Project site. No other modifications to the roadway network, including signal timing optimization, are assumed for the Existing Plus Project analysis.

Existing Plus Project Intersection Operations

Intersection LOS calculations were completed with the traffic volumes and the lane configurations for the Existing Plus Project conditions. **Table 4.11-14** summarizes traffic operations at the study intersections under Existing Plus Project conditions. **Appendix 4.11H** provides the detailed intersection LOS calculation worksheets.

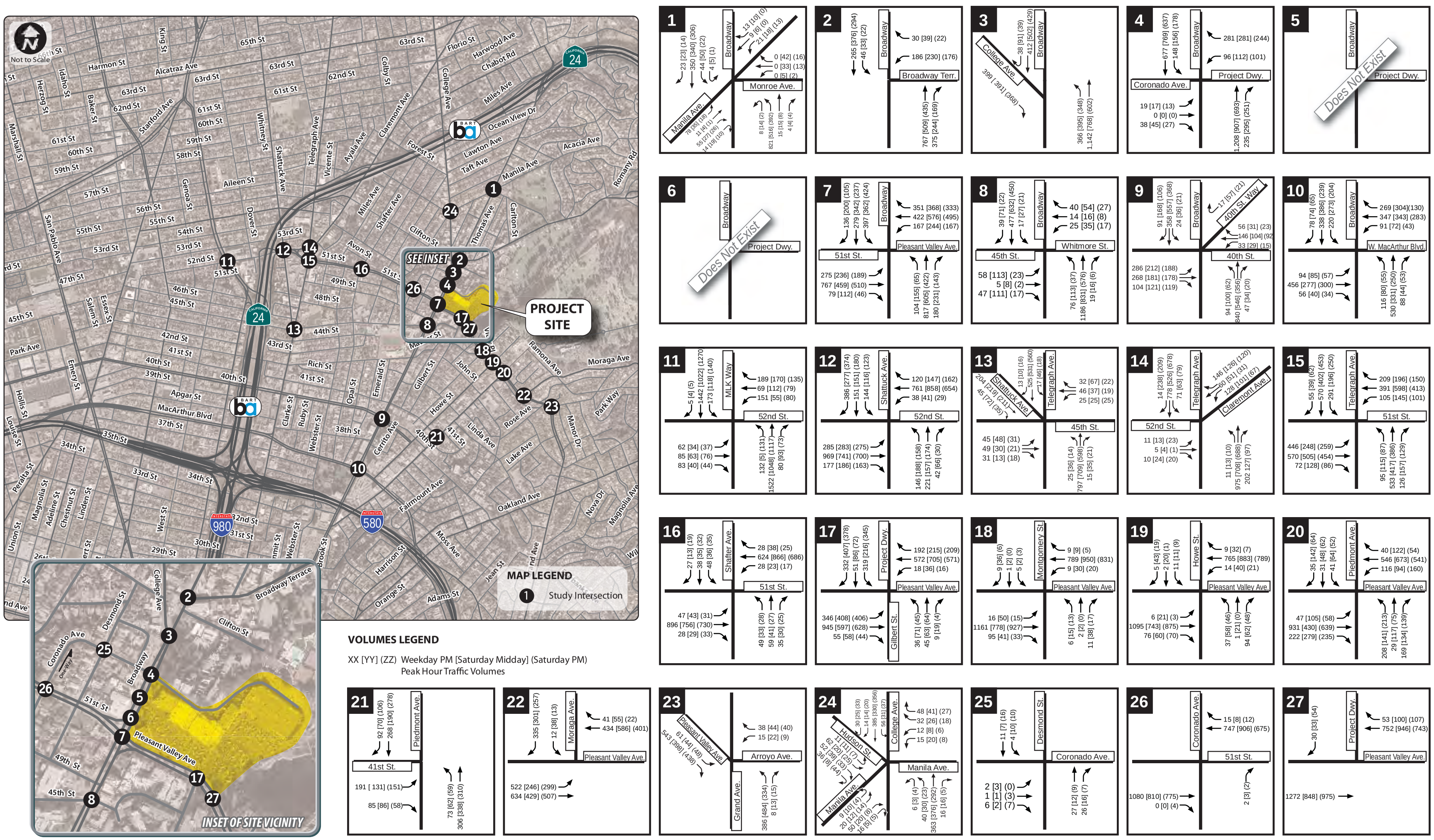

Figure 4.11-18
Existing Plus Project Conditions, Peak Hour Traffic Volumes

Source: Fehr & Peers

Table 4.11-14
Intersection LOS Summary
Existing Plus Project Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	Existing		Existing Plus Project		Significant Impact?
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	
1	Broadway/Manila Avenue/ Monroe Avenue	Signal	Weekday PM	6.8	A	6.8	A	No
			Saturday MD	23.5	C	24.1	C	No
			Saturday PM	19.6	B	19.8	B	No
2	Broadway/Broadway Terrace	Signal	Weekday PM	10.6	B	17.4	B	No
			Saturday MD	9.5	A	9.0	A	No
			Saturday PM	7.6	A	6.6	A	No
3	Broadway/College Avenue	Signal	Weekday PM	9.8	A	9.5	A	No
			Saturday MD	12.9	B	11.7	B	No
			Saturday PM	12.5	B	11.7	B	No
4	Broadway/Coronado Avenue/ North Project Driveway	SSSC/ Signal[3]	Weekday PM	1.4 **(47.4)**	A **(E)**	27.6	C	No
			Saturday MD	1.5 **(40.6)**	A **(E)**	17.0	B	No
			Saturday PM	0.7 (19.6)	A (C)	16.9	B	No
5	Broadway/Center Project Driveway	SSSC	Weekday PM	1.2 (16.5)	A (C)	Does Not Exist		No
			Saturday MD	1.0 (13.1)	A (B)			No
			Saturday PM	0.9 (11.4)	A (B)			No
6	Broadway/South Project Driveway	SSSC	Weekday PM	0.3 (14.1)	A (B)	Does Not Exist		No
			Saturday MD	0.4 (12.2)	A (B)			No
			Saturday PM	0.2 (10.7)	A (B)			No
7	Broadway/51st Street/ Pleasant Valley Avenue	Signal	Weekday PM	49.3	D	54.0	D	No
			Saturday MD	**55.7**	**E**	52.4	D	No
			Saturday PM	47.1	D	40.6	D	No
8	Broadway/45th Street	Signal	Weekday PM	9.7	A	6.6	A	No
			Saturday MD	11.1	B	13.7	B	No
			Saturday PM	7.5	A	4.6	A	No
9	Broadway/40th Street/ 40th Street Way	Signal	Weekday PM	18.3	B	15.7	B	No
			Saturday MD	18.7	B	14.7	B	No
			Saturday PM	18.5	B	13.9	B	No
10	Broadway/West MacArthur Boulevard	Signal	Weekday PM	34.6	C	35.2	D	No
			Saturday MD	36.7	D	38.6	D	No
			Saturday PM	31.9	C	32.7	C	No

Table 4.11-14
Intersection LOS Summary
Existing Plus Project Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	Existing Delay (Seconds)[2]	Existing LOS	Existing Plus Project Delay (Seconds)[2]	Existing Plus Project LOS	Significant Impact?
11	Martin Luther King Jr. Way/ 52nd Street	Signal	Weekday PM	26.3	C	27.5	C	No
			Saturday MD	13.7	B	14.6	B	No
			Saturday PM	16.9	B	17.8	B	No
12	Shattuck Avenue/ 52nd Street	Signal	Weekday PM	40.9	D	41.4	D	No
			Saturday MD	41.7	D	42.5	D	No
			Saturday PM	54.6	D	**57.3**	**E**	**Yes**[4]
13	Telegraph Avenue/Shattuck Avenue	Signal	Weekday PM	7.3	A	7.2	A	No
			Saturday MD	6.5	A	7.1	A	No
			Saturday PM	5.1	A	5.0	A	No
14	Telegraph Avenue/52nd Street/ Claremont Avenue	Signal	Weekday PM	17.3	B	17.2	B	No
			Saturday MD	15.8	B	14.6	B	No
			Saturday PM	12.5	B	12.5	B	No
15	Telegraph Avenue/51st Street	Signal	Weekday PM	**63.3**	**E**	**65.2**	**E**	**Yes**[5]
			Saturday MD	50.1	D	53.1	D	No
			Saturday PM	47.2	D	50.2	D	No
16	Shafter Avenue/51st Street	Signal	Weekday PM	11.9	B	12.1	B	No
			Saturday MD	11.4	B	11.8	B	No
			Saturday PM	10.8	B	11.2	B	No
17	Gilbert Street/Project Driveway/ Pleasant Valley Avenue	Signal	Weekday PM	12.8	B	22.8	C	No
			Saturday MD	14.8	B	27.4	C	No
			Saturday PM	15.2	B	28.3	C	No
18	Montgomery Street/Pleasant Valley Avenue	SSSC	Weekday PM	0.8 **(40.8)**	A **(E)**	0.9 **(42.4)**	A **(E)**	No[6]
			Saturday MD	2.1 (32.1)	A (D)	2.1 (32.2)	A (D)	No
			Saturday PM	0.9 (28.6)	A (D)	0.9 (30.4)	A (D)	No
19	Howe Street/Pleasant Valley Avenue	SSSC	Weekday PM	4.5 **(59.7)**	A **(F)**	2.4 (32.6)	A (D)	Yes[7]
			Saturday MD	12.4 **(137.8)**	B **(F)**	16.6 **(197.7)**	C **(F)**	Yes[7]
			Saturday PM	2.8 **(43.1)**	A **(E)**	2.3 **(38.3)**	A **(E)**	No[6]
20	Piedmont Avenue/Pleasant Valley Avenue	Signal	Weekday PM	**55.7**	**E**	**66.4**	**E**	**Yes**[8]
			Saturday MD	33.5	C	45.8	D	No
			Saturday PM	39.4	D	51.4	D	No

Table 4.11-14
Intersection LOS Summary
Existing Plus Project Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	Existing Delay (Seconds)[2]	Existing LOS	Existing Plus Project Delay (Seconds)[2]	Existing Plus Project LOS	Significant Impact?
21	Piedmont Avenue/41st Street	Signal	Weekday PM	10.3	B	10.3	B	No
			Saturday MD	10.3	B	10.3	B	No
			Saturday PM	9.6	A	9.7	A	No
22	Moraga Avenue/Pleasant Valley Avenue	Signal	Weekday PM	24.2	C	25.5	C	No
			Saturday MD	20.4	C	20.9	C	No
			Saturday PM	16.3	B	16.6	B	No
23	Grand Avenue/Arroyo Avenue/ Pleasant Valley Avenue	Signal	Weekday PM	7.6	A	7.6	A	No
			Saturday MD	7.3	A	7.4	A	No
			Saturday PM	5.8	A	5.9	A	No
24	Hudson Street/Manila Avenue/ College Avenue	Signal	Weekday PM	31.0	C	33.0	C	No
			Saturday MD	20.2	C	21.4	C	No
			Saturday PM	18.5	B	19.3	B	No
25	Desmond Street/Coronado Avenue	SSSC	Weekday PM	8.2 (9.3)	A (A)	8.2 (9.3)	A (A)	No
			Saturday MD	8.3 (9.2)	A (A)	8.3 (9.2)	A (A)	No
			Saturday PM	7.3 (9.2)	A (A)	7.3 (9.2)	A (A)	No
26	Coronado Avenue/51st Street	SSSC	Weekday PM	0.0 (11.2)	A (B)	0.0 (11.0)	A (B)	No
			Saturday MD	0.0 (10.9)	A (B)	0.0 (10.8)	A(B)	No
			Saturday PM	0.0 (10.8)	A (B)	0.0 (11.1)	A (B)	No
27	Project Driveway/Pleasant Valley Avenue	SSSC	Weekday PM	0.2 (11.5)	A (B)	0.2 (11.7)	A (B)	No
			Saturday MD	0.2 (13.4)	A (B)	0.2 (13.9)	A (B)	No
			Saturday PM	0.4 (11.9)	A (B)	0.4 (12.3)	A (B)	No

Notes: **Bold** indicates intersection operating at LOS E or LOS F

1. Signal = signalized intersection, SSSC = side-street stop controlled intersection
2. For side-street stop controlled intersections, delay is reported as: intersection average (worst minor street approach); for signalized intersection, the average intersection delay is reported; for signalized intersections operating with high delay, volume-to-capacity (v/c) ratio is also reported. LOS for both unsignalized and signalized intersections based on 2000 HCM.
3. Intersection is side-street stop-controlled under No Project conditions and signalized under Plus Project conditions.
4. The proposed Project would cause an impact at this intersection because it would degrade intersection operations from LOS D to LOS E.
5. The proposed Project would cause an impact at this intersection because it would increase delay for a critical movement by more than six seconds at an intersection already operating at LOS E.
6. The proposed Project would not cause an impact at this unsignalized intersection because the intersection would not meet the peak hour signal warrant, although it would operate at LOS E.
7. The proposed Project would cause an impact at this unsignalized intersection because it would add more than ten trips to the intersection and the intersection would meet the peak hour signal warrant.
8. The proposed Project would cause an impact at this intersection because it would increase intersection average delay by more than four seconds at an intersection already operating at LOS E.

Source: Fehr & Peers, 2012.

Intersection operations at some study intersections, such as Broadway at 45th Street (#8) and 40th Street (#9), and Pleasant Valley Avenue/Howe Street intersection (#19) that would not be modified by the proposed Project would improve after the implementation of the Project because the proposed Project would upgrade signal equipment at upstream intersections and improve traffic flow along Broadway and Pleasant Valley Avenue, respectively.

With the addition of the Project generated traffic, the following intersections would operate at an unacceptable LOS during one or more peak hours:

- #12: The signalized Shattuck Avenue/52nd Street intersection would operate at LOS E during the Saturday PM peak hour.
- #15: The signalized Telegraph Avenue/51st Street intersection would operate at LOS E during the weekday PM peak hour.
- #18: The side-street stop-controlled northbound approach at the Montgomery Street/Pleasant Valley Avenue intersection would operate at LOS E during the weekday PM peak hour. This intersection would not meet the peak-hour volume signal warrant during this peak hour.
- #19: The side-street stop-controlled northbound approach at the Howe Street/Pleasant Valley Avenue intersection would operate at LOS F during the Saturday midday peak hour and at LOS E during the Saturday PM peak hour under Existing Plus Project conditions. This intersection would not meet the peak-hour volume signal warrant during the Saturday PM peak hour; but it would meet the warrant during the weekday PM and Saturday midday peak hour.
- #20: The signalized Piedmont Avenue/Pleasant Valley Avenue intersection (# 20) would operate at LOS E during the weekday PM peak hour.

The proposed Project would cause a significant impact at the following four of these intersections:

- #12: Shattuck Avenue/52nd Street intersection
- #15: Telegraph Avenue/51st Street intersection
- #19: The side-street stop-controlled northbound approach at the Howe Street/Pleasant Valley Avenue intersection. The proposed Project would improve the northbound approach of the intersection from LOS F to LOS D during the weekday PM peak hour due to improved traffic flow along Pleasant Valley Avenue. The northbound approach at this intersection would also continue to operate at LOS F during the Saturday midday peak hour. Since the unsignalized intersection would continue to meet the peak hour signal warrant and the proposed Project would add more than ten peak hour trips to the intersection, this EIR identifies the impacts as a significant impact.
- #20: Piedmont Avenue/Pleasant Valley Avenue intersection

Although the following unsignalized intersection would operate at LOS E or LOS F, the proposed Project would not cause an impact at the intersection:

- #18 Montgomery Street/Pleasant Valley Avenue intersection would operate at an unacceptable LOS E during the weekday PM peak hour. However, the proposed Project would not cause a significant impact because the intersection would not meet the peak hour vehicle signal warrant without or with the traffic generated by the proposed Project during the weekday or Saturday PM peak hours.

Shattuck Avenue/52nd Street (Intersection #12)

Impact Trans-1: The proposed Project would degrade intersection operations from LOS D to LOS E during the Saturday PM peak hour at the signalized Shattuck Avenue/52nd Street intersection (#12). (**Significant**)

Mitigation Measures

Mitigation Measure Trans-1: Implement the following measures at the Shattuck Avenue/52nd Street intersection:

a) Optimize signal timing parameters (i.e., adjust the allocation of green time for each intersection approach)

b) Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.

To implement this measure, the Project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval:

Plans, Specifications, and Estimates (PS&E) to modify the intersection. All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals shall include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection shall be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for among other items the elements listed below:

- 2070L Type Controller
- GPS communication (clock)
- Accessible pedestrian crosswalks according to Federal and State Access Board guidelines
- City Standard ADA wheelchair ramps
- Full actuation (video detection, pedestrian push buttons, bicycle detection)
- Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines
- Signal interconnect and communication to City Traffic Management Center for corridors identified in the City's ITS Master Plan
- Signal timing plans for the signals in the coordination group.

The Project sponsor shall fund, prepare, and install the approved plans and improvements.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS D during the Saturday PM peak hour and the impact would be reduced to a level of less than significant. No secondary significant impacts would result from implementation of this measure.

The City of Oakland, as part of the Caldecott Tunnel Improvement Project Settlement Agreement is planning the following improvement at this intersection:

- Install a traffic signal at eastbound SR 24 off-ramp on 52nd Street just west of Shattuck Avenue and coordinate it with the existing signal
- Tee 52nd Street into 51st Street

These planned improvements would not mitigate the Project impacts; however, the proposed mitigation measure would not prevent implementation of the planned improvements. In addition, the planned improvements would not prevent the implementation of the proposed mitigation measure.

Telegraph Avenue/51st Street (Intersection #15)

Impact Trans-2: The signalized Telegraph Avenue/51st Street intersection currently operates at LOS E, even without increased traffic from the Project. The proposed Project would add traffic that would increase delay for the critical southbound left-turn movements by more than six seconds during the weekday PM peak hour. (**Significant**)

Mitigation Measures

Mitigation Measure Trans-2: Implement the following measures at the Telegraph Avenue/51st Street intersection:

a) Optimize signal timing parameters (i.e., adjust the allocation of green time for each intersection approach).

b) Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.

To implement this measure, the Project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval:

Plans, Specifications, and Estimates (PS&E) to modify the intersection. All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals shall include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection shall be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for among other items the elements listed below:

- 2070L Type Controller
- GPS communication (clock)
- Accessible pedestrian crosswalks according to Federal and State Access Board guidelines
- City Standard ADA wheelchair ramps
- Full actuation (video detection, pedestrian push buttons, bicycle detection)
- Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines
- Signal interconnect and communication to City Traffic Management Center for corridors identified in the City's ITS Master Plan
- Signal timing plans for the signals in the coordination group.

The Project sponsor shall fund, prepare, and install the approved plans and improvements.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS D during the weekday PM peak hour and the impact would be reduced to a level of less than significant. This mitigation measure is consistent with the mitigation measure required by the *MacArthur Transit Village Project EIR* (January

2008) at this intersection. No secondary significant impacts would result from implementation of this measure.

Howe Street/Pleasant Valley Avenue (Intersection #19)

Impact Trans-3: The proposed Project would add more than 10 trips to the Howe Street/Pleasant Valley Avenue intersection during the weekday PM and Saturday midday peak hours under Existing plus Project conditions. The intersection would meet the peak hour signal warrant during both time periods. (**Significant**)

Mitigation Measures

Mitigation Measure Trans-3: Implementing one of the following measures at the Howe Street/ Pleasant Valley Avenue intersection would reduce the impact to a less than significant level:

a) Signalize the intersection, providing actuated operation with permitted left turns and coordinate the signal timings with the adjacent intersections that would be in the same signal coordination group.

b) Prohibit on-street parking for about 80 feet along northbound Howe Street just south of Pleasant Valley Avenue to allow right-turning vehicles to bypass the queued left-turning vehicles.

c) Prohibit the left-turn movement from Howe Street to westbound Pleasant Valley Avenue during the peak commute periods.

Resulting Level of Significance

Implementing any of these three measures would improve traffic operations at this intersection and mitigate the significant impact. However, each of these three measures would result in significant and unavoidable secondary impacts:

- Signalizing the intersection is not desirable because signalization of the Howe Street/Pleasant Valley Avenue intersection would allow easier automobile access between Howe Street and Pleasant Valley Avenue, which may encourage cut-through automobiles to use Howe Street as an alternative to the congested Broadway and Piedmont Avenue corridors. Considering that this segment of Howe Street is primarily residential, potential increase in cut-through traffic is not desired.
- This segment of Howe Street is a residential area, and parking is at or near capacity on weekday evenings. A loss of on-street parking would be a secondary significant impact of this mitigation measure that cannot be mitigated.
- Prohibiting left-turn movements onto westbound Pleasant Valley Avenue would divert traffic from Howe Street to other streets such as Piedmont Avenue or Montgomery Street. Vehicles diverted to Piedmont Avenue would increase the delay and the magnitude of traffic impact identified at the Piedmont Avenue/Pleasant Valley Avenue intersection under 2035 plus Project conditions (Impact Trans-14), a significant and unavoidable traffic impact. The increase in delay at the Piedmont Avenue/Pleasant Valley Avenue intersection would be a secondary significant impact of this mitigation measure that cannot be mitigated.

Because of these secondary significant impacts associated with each of the identified mitigation measures, these measures are considered infeasible and impacts at the Howe Street/Pleasant Valley Avenue intersection are considered ***significant and unavoidable***.

Piedmont Avenue/Pleasant Valley Avenue (Intersection #20)

Impact Trans-4: The signalized Piedmont Avenue/Pleasant Valley Avenue intersection currently operates at LOS E, even without increased traffic from the Project. The proposed Project would add traffic that would increase average delay at this intersection by more than four seconds during the weekday PM peak hour. (***Significant***)

Mitigation Measures

Mitigation Measure Trans-4: Implement the following measures at the Piedmont Avenue/ Pleasant Valley Avenue intersection:

a) Convert signal control equipment from pre-timed to actuated-coordinated operations

b) Optimize signal timing parameters (i.e., adjust the allocation of green time for each intersection approach)

c) Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.

To implement this measure, the Project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval:

Plans, Specifications, and Estimates (PS&E) to modify the intersection. All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals shall include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection shall be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for among other items the elements listed below:

- 2070L Type Controller
- GPS communication (clock)
- Accessible pedestrian crosswalks according to Federal and State Access Board guidelines
- City Standard ADA wheelchair ramps
- Full actuation (video detection, pedestrian push buttons, bicycle detection)
- Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines
- Signal interconnect and communication to City Traffic Management Center for corridors identified in the City's ITS Master Plan
- Signal timing plans for the signals in the coordination group.

The Project sponsor shall fund, prepare, and install the approved plans and improvements.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS B during the weekday PM, Saturday midday, and Saturday PM peak hours and the impact would be reduced to less than significant. No secondary significant impacts would result from implementation of this measure.

Existing Plus Project Mitigated Conditions

Table 4.11-15 summarizes intersection operations after implementation of the recommended mitigation measures at the affected intersections. Mitigation measures would reduce the impacts at three of the four impacted intersections to a less than significant level. However, the impact at the Howe Street/Pleasant Valley Avenue intersection would remain significant and unavoidable.

Mitigation measures described above include signal timing optimization to minimize the delay to vehicle traffic. Signal timing optimization is adjusting the amount of green time (i.e., when the green signal light is on) assigned to each intersection approach. When signal timings are changed along a corridor, the average amount of delay experienced by drivers traveling through the corridor can be reduced by 10 to 30 percent. However, there can be unintended consequences, such as:

- Increased pedestrian delay: Reducing delay to drivers by increasing the amount of green time assigned to each lane of traffic can increase the amount of time that a pedestrian must wait to cross the street.
- Increased vehicle queues: While increasing the amount of green time assigned to each lane of traffic increases the number of cars that can pass through the intersection, it also increases the amount of time that drivers need to wait at the intersection because the other traffic must wait longer for a green light, the line of cars waiting gets longer.

Signal timing optimization may also include changing the way left-turn movements are provided the green light. One method uses a solid green ball which means that a driver can make a left-turn if there is a gap in the oncoming traffic and a pedestrian is not in the crosswalk. Traffic engineers refer to this as permitted left-turn movements. The second method uses a green arrow which means that a driver can make a left-turn without stopping because the oncoming traffic and pedestrians have a red light. The latter method is called protected left-turn movements and can improve safety by separating opposing movements, but it also tends to increase the vehicle delay at the intersection.

Because of the competing needs described above, signal timing optimization and the benefit to drivers traveling through the area needs to be balanced against the impacts to pedestrians crossing at intersections, transit riders on buses, drivers waiting in vehicle queues, and bicyclists waiting for a green light at a traffic signal.

Based on general industry practice in urban areas, changes to signal operations including timing and signal phasing are considered to mitigate impacts to less than significant levels only if the changes can be accomplished within the current cycle length or if the signal cycle length is no greater than 90 seconds. In general, longer cycle lengths are considered to cause adverse impacts to pedestrians and bicyclists because they would experience additional delay at the intersection and so do not fully mitigate intersection impacts. Additional upgrades may also be needed for the signal equipment to comply with the latest local, state, and federal requirements. These may include: providing count-down pedestrian signal heads, providing audible pedestrian signals, and providing bicycle detection at actuated signals.

Table 4.11-15
Intersection LOS Summary
Existing Plus Project Mitigated Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	Existing		Existing Plus Project		Existing Plus Project Mitigated		Significance after Mitigation
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	
12	Shattuck Avenue/ 52nd Street	Signal	Weekday PM	40.9	D	41.4	D	41.4	D	Less than Significant
			Saturday MD	41.7	D	42.5	D	42.5	D	
			Saturday PM	54.6	D	**57.3**	**E**	43.5	D	
15	Telegraph Avenue/ 51st Street	Signal	Weekday PM	**63.3**	**E**	**65.2**	**E**	47.8	D	Less than Significant
			Saturday MD	50.1	D	53.1	D	53.1	D	
			Saturday PM	47.2	D	50.2	D	50.2	D	
19	Howe Street/ Pleasant Valley Avenue	SSSC	Weekday PM	4.5 **(59.7)**	A **(F)**	2.3 (32.6)	A (D)	2.3 (32.6)	A (D)	***Significant and Unavoidable***[3]
			Saturday MD	12.4 **(137.8)**	B **(F)**	16.6 **(197.7)**	C **(F)**	16.6 **(197.7)**	C **(F)**	
			Saturday PM	2.8 **(43.1)**	A **(E)**	2.3 **(38.3)**	A **(E)**	2.3 **(38.3)**	A **(E)**	
20	Piedmont Avenue/ Pleasant Valley Avenue	Signal	Weekday PM	**55.7**	**E**	**66.4**	**E**	19.5	B	Less than Significant
			Saturday MD	33.5	C	45.8	D	14.7	B	
			Saturday PM	39.4	D	51.4	D	16.1	B	

Notes: **Bold** indicates intersection operating at unacceptable LOS E or LOS F

1. Signal = signalized intersection, SSSC = side-street stop controlled intersection
2. For side-street stop controlled intersections, delay is reported as: intersection average (worst minor street approach); for signalized intersection, the average intersection delay is reported; for signalized intersections operating with high delay, volume-to-capacity (v/c) ratio is also reported. LOS for both unsignalized and signalized intersections based on 2000 HCM.
3. Although the proposed mitigation measure would mitigate the impact, the impact is identified as significant and unavoidable due to potential secondary impacts.

Source: Fehr & Peers, 2012.

2015 Intersection Impacts

This section addresses the intersection impacts that would occur in 2015 with the completion of the proposed Project. Items discussed in this section include the development of traffic volume forecasts for the 2015 No Project and 2015 Plus Project scenarios, intersection operations results, and Project intersection impacts.

2015 Intersection Traffic Forecasts

Traffic volume forecasts for the 2015 No Project scenario were developed using the ACTC Model and existing traffic counts, which reflect past, present, and future developments expected by year 2015. The main inputs to the 2015 forecasting process are the model outputs from a modified version of the ACTC Model (with updated land use) and the existing traffic counts. The base land use data in the ACTC Model was modified to reflect more accurate land use projections in the City of Oakland, including developments on the City's Active Major Project list. **Appendix 4.11I** describes the modifications to the model land use database that assure that the ACTC Model correctly accounts for traffic growth from pending, planned, proposed, and recently completed residential and non-residential developments in the Project vicinity.

The ACTC Model produces weekday peak hour roadway segment volumes. The difference method, which increases existing turning movement volumes to reflect model-predicted increases in roadway segment volumes, was applied to these forecasted segment volumes to estimate weekday PM peak hour intersection turning movements under 2015 No Project conditions.

Since the ACTC model does not include non-weekday time periods, the ratio between the weekday PM peak hour existing volumes and the forecasted 2015 No Project volumes were applied to the existing Saturday midday and PM peak hour volumes to estimate Saturday midday and PM peak hour volumes under the 2015 No Project conditions. **Figure 4.11-19** shows the traffic volumes for the 2015 No Project scenario.

In addition, this analysis assumes that pedestrian and bicycle volumes at the study intersections would increase proportional to the projected growth in land uses in the study area.

Figure 4.11-20 shows the traffic volumes under the 2015 Plus Project scenario. They include 2015 No Project traffic volumes plus traffic volumes generated by the proposed Project.

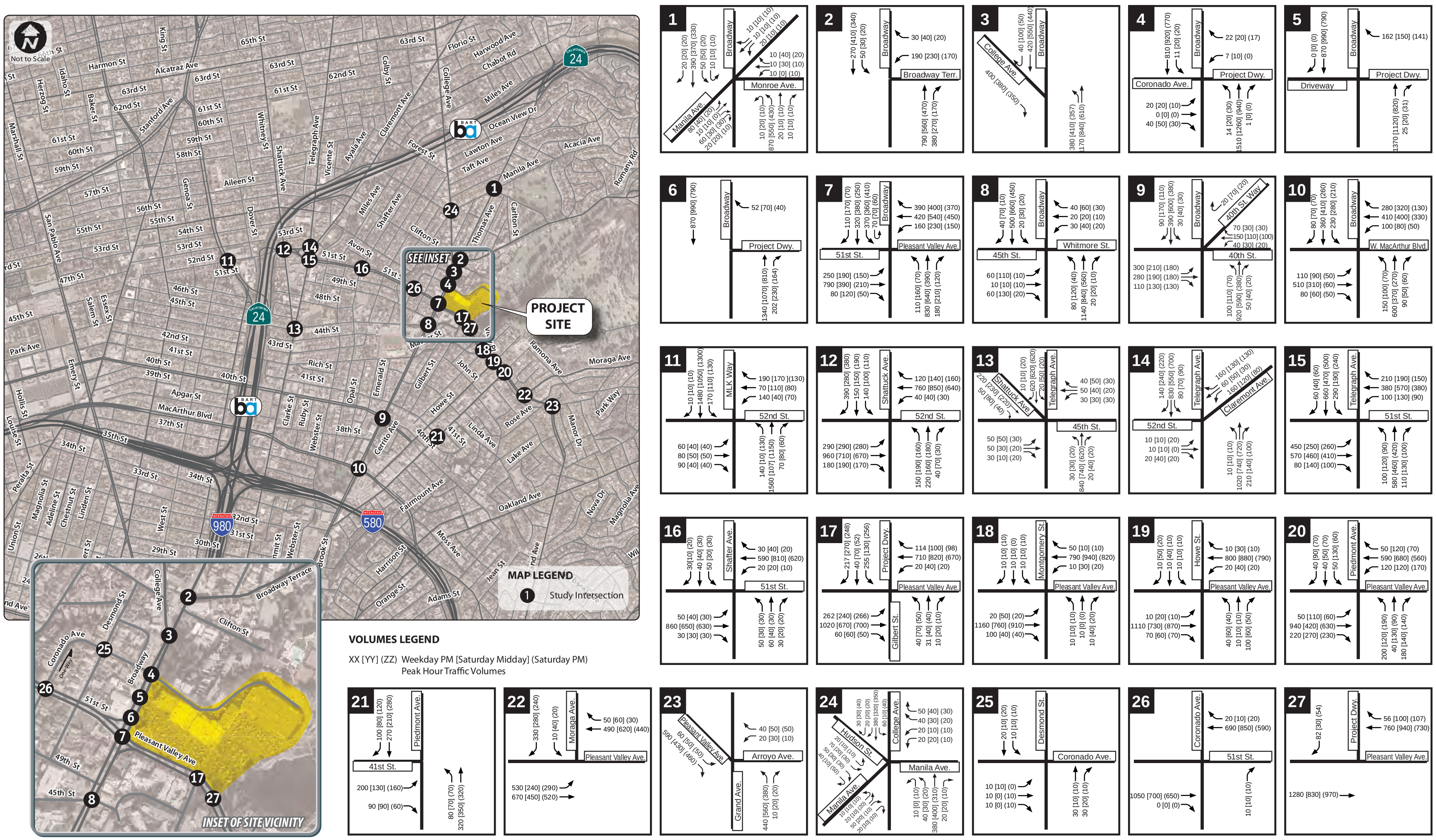

Figure 4.11-19
2015 No Project Conditions, Peak Hour Traffic Volumes

Source: Fehr & Peers

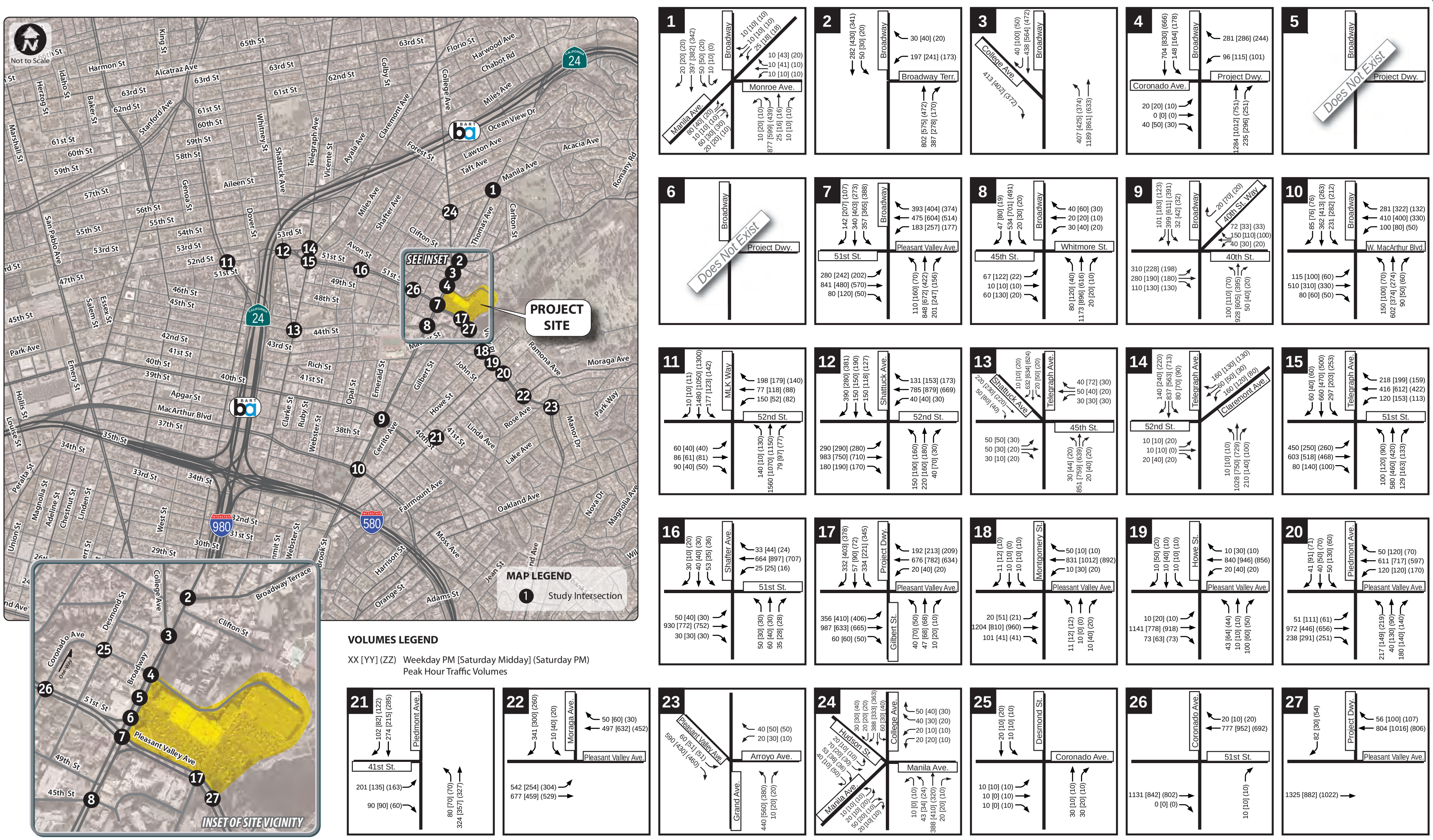

Figure 4.11-20
2015 Plus Project Conditions, Peak Hour Traffic Volumes

Source: Fehr & Peers

Roadway Network

The 2015 No Project and Plus Project analyses assume the following modifications as previously described:

- Broadway/40th Street (#9) intersection:
  - Modify northbound approach from the current configuration which provides one shared through/ right lane, one through lane, and one shared through/left-turn lane to provide one shared right-turn/through lane, one through lane, and one left-turn lane.
  - Modify traffic signal equipment to provide protected/permissive phasing for the northbound left-turn movement.
- Broadway/West MacArthur Boulevard (#10) intersection:
  - Modify eastbound approach from the current configuration to provide one shared through/right lane, two through lanes, and one left-turn lane.
  - Modify northbound approach from the current configuration to provide one right-turn lane, two through lanes, and one left-turn lane.

In addition the 2015 Plus Project analysis assumes that the proposed Project would implement a number of modifications to street configurations and signal operations in the study area as previously described.

No other modifications to the roadway network that would affect the intersection traffic operations, including signal timing optimization, are assumed for the 2015 No Project or Plus Project analyses.

2015 Intersection Operations

The forecasted 2015 intersection turning movement volumes in conjunction with the 2015 intersection lane configurations and traffic signal timings were used to evaluate intersection operations for the 2015 No Project scenario. The 2015 Plus Project scenario was analyzed after adding trips generated by the Project and accounting for the roadway modifications proposed by the Project. **Table 4.11-16** summarizes the results of the traffic operations analysis. **Appendix 4.11J** and **Appendix 4.11K** present the detailed intersection LOS calculation worksheets for the 2015 No Project and 2015 Plus Project conditions, respectively.

Table 4.11-16
Intersection LOS Summary
2015 Conditions

#	Study Intersection	Traffic Control [1]	Peak Hour	2015 No Project		2015 Plus Project		Significant Impact?
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	
1	Broadway/Manila Avenue/ Monroe Avenue	Signal	Weekday PM	10.4	B	10.5	B	No
			Saturday MD	27.3	C	28.5	C	No
			Saturday PM	20.5	C	20.7	C	No
2	Broadway/Broadway Terrace	Signal	Weekday PM	11.7	B	14.1	B	No
			Saturday MD	9.9	A	8.8	A	No
			Saturday PM	7.6	A	6.3	A	No

Table 4.11-16
Intersection LOS Summary
2015 Conditions

#	Study Intersection	Traffic Control [1]	Peak Hour	2015 No Project Delay (Seconds)[2]	2015 No Project LOS	2015 Plus Project Delay (Seconds)[2]	2015 Plus Project LOS	Significant Impact?
3	Broadway/College Avenue	Signal	Weekday PM	10.1	B	10.0	B	No
			Saturday MD	13.4	B	12.4	B	No
			Saturday PM	12.9	B	12.1	B	No
4	Broadway/Coronado Avenue/ North Project Driveway	SSSC/ Signal[3]	Weekday PM	1.9 **(65.1)**	A **(F)**	26.7	C	No
			Saturday MD	2.5 (**74.1**)	A (**F**)	15.3	B	No
			Saturday PM	0.9 (20.2)	A (C)	16.5	B	No
5	Broadway/Center Project Driveway	SSSC	Weekday PM	1.2 (17.7)	A (C)	Does Not Exist		No
			Saturday MD	0.9 (14.0)	A (B)			No
			Saturday PM	0.9 (11.7)	A (B)			No
6	Broadway/South Project Driveway	SSSC	Weekday PM	0.3 (14.8)	A (B)	Does Not Exist		No
			Saturday MD	0.4 (12.9)	A (B)			No
			Saturday PM	0.2 (10.9)	A (B)			No
7	Broadway/51st Street/ Pleasant Valley Avenue	Signal	Weekday PM	50.8	D	**55.1**	**E**	Yes[4]
			Saturday MD	**62.2**	**E**	**55.6**	**E**	Yes[5]
			Saturday PM	45.5	D	39.7	D	No
8	Broadway/45th Street	Signal	Weekday PM	10.2	B	7.7	A	No
			Saturday MD	10.2	B	13.2	B	No
			Saturday PM	7.9	A	5.0	A	No
9	Broadway/40th Street/ 40th Street Way	Signal	Weekday PM	20.4	C	17.8	B	No
			Saturday MD	16.0	B	17.3	B	No
			Saturday PM	20.8	C	15.8	B	No
10	Broadway/West MacArthur Boulevard	Signal	Weekday PM	34.7	C	35.3	D	No
			Saturday MD	38.2	D	39.7	D	No
			Saturday PM	32.0	C	32.8	C	No
11	Martin Luther King Jr. Way/ 52nd Street	Signal	Weekday PM	27.3	C	28.7	C	No
			Saturday MD	13.9	B	14.7	B	No
			Saturday PM	17.3	B	18.3	B	No
12	Shattuck Avenue/ 52nd Street	Signal	Weekday PM	43.3	D	44.0	D	No
			Saturday MD	43.0	D	43.4	D	No
			Saturday PM	**62.8**	**E**	**65.6**	**E**	Yes[5]
13	Telegraph Avenue/Shattuck Avenue	Signal	Weekday PM	7.6	A	7.6	A	No
			Saturday MD	6.7	A	7.3	A	No

Table 4.11-16
Intersection LOS Summary
2015 Conditions

#	Study Intersection	Traffic Control [1]	Peak Hour	2015 No Project		2015 Plus Project		Significant Impact?
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	
			Saturday PM	5.1	A	5.1	A	No
14	Telegraph Avenue/52nd Street/ Claremont Avenue	Signal	Weekday PM	18.6	B	18.5	B	No
			Saturday MD	17.6	B	17.5	B	No
			Saturday PM	13.0	B	12.9	B	No
15	Telegraph Avenue/51st Street	Signal	Weekday PM	**63.9**	**E**	**65.8**	**E**	Yes[5]
			Saturday MD	51.6	D	53.8	D	No
			Saturday PM	47.8	D	51.2	D	No
16	Shafter Avenue/51st Street	Signal	Weekday PM	12.1	B	12.3	B	No
			Saturday MD	11.4	B	11.9	B	No
			Saturday PM	10.9	B	11.3	B	No
17	Gilbert Street/Project Driveway/ Pleasant Valley Avenue	Signal	Weekday PM	14.2	B	24.4	C	No
			Saturday MD	15.7	B	27.4	C	No
			Saturday PM	16.0	B	28.9	C	No
18	Montgomery Street/Pleasant Valley Avenue	SSSC	Weekday PM	3.6 **(136.6)**	A **(F)**	3.7 **(144.5)**	A **(F)**	No[6]
			Saturday MD	2.8 **(82.0)**	A **(F)**	2.3 **(60.9)**	A **(F)**	No[6]
			Saturday PM	1.3 (34.4)	A (D)	1.3 (**35.1**)	A (**E**)	No[6]
19	Howe Street/Pleasant Valley Avenue	SSSC	Weekday PM	17.7 **(235.2)**	C **(F)**	4.9 **(59.6)**	A **(F)**	Yes[7]
			Saturday MD	29.4 **(360.1)**	D(**F**)	34.5 (**445.4**)	D (**F**)	Yes[7]
			Saturday PM	6.0 **(91.6)**	A **(F)**	4.6 **(69.2)**	A **(F)**	No[6]
20	Piedmont Avenue/Pleasant Valley Avenue	Signal	Weekday PM	**72.6**	**E**	**87.1 (v/c=1.10)**	**F**	Yes[8]
			Saturday MD	46.1	D	**61.0**	**E**	Yes[4]
			Saturday PM	49.9	D	**66.3**	**E**	Yes[4]
21	Piedmont Avenue/41st Street	Signal	Weekday PM	10.5	B	10.5	B	No
			Saturday MD	10.5	B	10.6	B	No
			Saturday PM	9.9	A	9.9	A	No
22	Moraga Avenue/Pleasant Valley Avenue	Signal	Weekday PM	26.6	C	28.2	C	No
			Saturday MD	22.4	C	23.0	C	No
			Saturday PM	16.9	B	17.2	B	No
23	Grand Avenue/Arroyo Avenue/Pleasant Valley Avenue	Signal	Weekday PM	6.4	A	6.4	A	No
			Saturday MD	7.7	A	7.8	A	No
			Saturday PM	6.2	A	6.3	A	No

Table 4.11-16
Intersection LOS Summary
2015 Conditions

#	Study Intersection	Traffic Control 1	Peak Hour	2015 No Project		2015 Plus Project		Significant Impact?
				Delay (Seconds)2	LOS	Delay (Seconds)2	LOS	
24	Hudson Street/ Manila Avenue/ College Avenue	Signal	Weekday PM	38.0	D	41.2	D	No
			Saturday MD	21.3	C	22.5	C	No
			Saturday PM	19.6	B	20.3	C	No
25	Desmond Street/Coronado Avenue	SSSC	Weekday PM	7.7 (9.7)	A (A)	7.7 (9.7)	A (A)	No
			Saturday MD	8.7 (9.4)	A (A)	8.7 (9.4)	A (A)	No
			Saturday PM	6.6 (9.3)	A (A)	6.6 (9.3)	A (A)	No
26	Coronado Avenue/51st Street	SSSC	Weekday PM	0.1 (11.3)	A (A)	0.1 (11.1)	A (A)	No
			Saturday MD	0.1 (11.2)	A (B)	0.1 (11.0)	A (B)	No
			Saturday PM	0.1 (11.1)	A (B)	0.1 (11.2)	A (B)	No
27	Project Driveway/Pleasant Valley Avenue	SSSC	Weekday PM	0.5 (12.6)	A (B)	0.5 (12.9)	A (B)	No
			Saturday MD	0.2 (14.1)	A (B)	0.2 (14.7)	A (B)	No
			Saturday PM	0.4 (12.3)	A (B)	0.3 (12.8)	A (B)	No

Notes: **Bold** indicates intersection operating at unacceptable LOS E or LOS F

1. Signal = signalized intersection, SSSC = side-street stop controlled intersection
2. For side-street stop controlled intersections, delay is reported as: intersection average (worst minor street approach); for signalized intersection, the average intersection delay is reported; for signalized intersections operating with high delay, volume-to-capacity (v/c) ratio is also reported. LOS for both unsignalized and signalized intersections based on 2000 HCM.
3. Intersection is side-street stop-controlled under No Project conditions and signalized under Plus Project conditions.
4. The proposed Project would cause an impact at this intersection because it would degrade intersection operations from LOS D to LOS E.
5. The proposed Project would cause an impact at this intersection because it would increase delay for a critical movement by more than six seconds at an intersection already operating at LOS E.
6. The proposed Project would not cause an impact at this unsignalized intersection because the intersection would not meet the peak hour signal warrant, although it would operate at LOS E or LOS F.
7. The proposed Project would cause an impact at this unsignalized intersection because it would add more than ten trips to the intersection and the intersection would meet the peak hour signal warrant.
8. The proposed Project would cause an impact at this intersection because it would degrade intersection operations from LOS E to LOS F.

Source: Fehr & Peers, 2012.

The following intersections are projected to operate at a deficient level in 2015 without or with the proposed Project:

- #4 The side-street stop-controlled westbound approach at the Broadway/Coronado Avenue/North Project Driveway intersection would operate at LOS F during the weekday PM and Saturday midday peak hours under 2015 No Project conditions. This intersection would be signalized as part of the Project and would improve to LOS C during the weekday PM peak hour LOS B during the Saturday midday peak hour.
- #7 The signalized Broadway/51st Street/Pleasant Valley Avenue intersection would degrade from LOS D under 2015 No Project Conditions to LOS E under 2015 Plus Project conditions during the weekday PM peak hour. The intersection would operate at LOS E during the Saturday midday peak hour and at LOS D during the Saturday PM peak hour regardless of the proposed Project.

- #12 The signalized Shattuck Avenue/52nd Street intersection would operate at LOS E during the Saturday PM peak hour regardless of the proposed Project.
- #15 The signalized Telegraph Avenue/51st Street intersection would operate at LOS E during the weekday PM peak hour regardless of the proposed Project.
- #18 The side-street stop-controlled northbound approach at the Montgomery Street/Pleasant Valley Avenue intersection would operate at LOS F during the weekday PM and Saturday midday peak hour regardless of the proposed Project. The approach would degrade from LOS D under 2015 No Project Conditions to LOS E under 2015 Plus Project conditions during the Saturday PM peak hour. This intersection would not meet the peak-hour volume signal warrant.
- #19 The side-street stop-controlled northbound approach at the Howe Street/Pleasant Valley Avenue intersection would operate at LOS F during the weekday and Saturday peak hours regardless of the proposed Project in 2015. This intersection would meet the peak-hour volume signal warrant during the weekday PM and Saturday midday peak hours.
- #20 The signalized Piedmont Avenue/Pleasant Valley Avenue intersection would degrade from LOS E under 2015 No Project Conditions to LOS F under 2015 Plus Project conditions during the weekday PM peak hour. The intersection would also degrade from LOS D under 2015 No Project conditions to LOS E under 2015 Plus Project conditions during both Saturday midday and PM peak hours.

The proposed Project would cause a significant impact at the following intersections:

- #7 Broadway/51st Street/Pleasant Valley Avenue
- #12 Shattuck Avenue/52nd Street
- #15 Telegraph Avenue/51st Street
- #19: The side-street stop-controlled northbound approach at the Howe Street/Pleasant Valley Avenue intersection. The proposed Project would reduce the delay experienced by the northbound approach of the intersection during the weekday PM peak hour due to improved traffic flow along Pleasant Valley Avenue. The northbound approach at this intersection would also continue to operate at LOS F during the Saturday midday peak hour. Since the unsignalized intersection would continue to meet the peak hour signal warrant and the proposed Project would add more than ten peak hour trips to the intersection, this EIR conservatively identifies the impacts as a significant impact.
- #20 Piedmont Avenue/Pleasant Valley Avenue

Although the following unsignalized intersection would operate at LOS E or LOS F, the proposed Project would not cause an impact:

- #18 Montgomery Street/Pleasant Valley Avenue intersection would operate at an unacceptable LOS F during the weekday PM and Saturday midday peak hours and LOS E during the Saturday PM peak hour. However, the proposed Project would not cause a significant impact because the intersection would not meet the peak hour vehicle signal warrant without or with the traffic generated by the proposed Project during the weekday or Saturday peak hours.

Broadway/51st Street/Pleasant Valley Avenue (Intersection #7)

Impact Trans-5: The proposed Project would degrade intersection operations from LOS D to LOS E during the weekday PM peak hour at the Broadway/51st Street/Pleasant Valley Avenue (#7) intersection under 2015 Conditions. The proposed Project would also add traffic that would increase delay for the critical eastbound through movement by more than six seconds during the Saturday midday peak hour, which the intersection would operate at LOS E regardless of the proposed Project (***Significant***)

Mitigation Measures

Mitigation Measure Trans-5: Implementation of the following measures at the Broadway/51st Street/Pleasant Valley Avenue intersection would reduce the impact to a less-than-significant level:

a) Install a left-turn lane on the westbound Pleasant Valley Avenue approach.

b) Install a left-turn lane on the eastbound 51st Street approach.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS D during both weekday PM and Saturday midday peak hours, mitigating the significant impact. However, this mitigation measure would require widening both 51st Street and Pleasant Valley Avenue. This would introduce an additional vehicle lane and increase the pedestrian distance crossing both 51st Street and Pleasant Valley Avenue. The intersection signal cycle length would also need to be increased to accommodate the increased pedestrian crossing distance. These modifications would conflict with City policy concerning pedestrian safety and comfort, including the Public Transit and Alternative Modes Policy (i.e., "Transit-First Policy") which supports alternative transportation modes to automobile travel, and the City's Pedestrian Master Plan Policy 1.1 which promotes using design elements, such as median refuges, to improve pedestrian safety at intersections. Additional automobile lanes would also degrade pedestrian safety by increasing pedestrian crossing distances and increasing pedestrian exposure to automobiles. Therefore, the mitigation would result in secondary unmitigated impacts. Due to the secondary significant impacts on pedestrians, adverse effects on other travel modes and conflicts with City policies, the mitigation is considered infeasible.

No other feasible mitigation measures are available that would mitigate the Project impacts at the Broadway/51st Street/Pleasant Valley Avenue (#7) intersection. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a third through travel along northbound Broadway. However, these modifications cannot be accommodated within the existing automobile right-of-way and would require additional right-of-way, and/or loss of bicycle lanes, on-street parking, or medians and are considered to be infeasible. Thus, the mitigation measure is considered infeasible and the impact would remain ***significant and unavoidable***.

Shattuck Avenue/52nd Street (Intersection #12)

Impact Trans-6: The Shattuck Avenue/52nd Street intersection is projected to operate at LOS E under 2015 Conditions, even without increased traffic from the Project. The proposed Project would add traffic that would increase delay for the critical southbound through movement by more than six seconds during the Saturday PM peak hour. (***Significant***)

Mitigation Measure

Mitigation Measure Trans-6: Implement Mitigation Measure Trans-1.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS D during the Saturday PM peak hour and reduce impacts to less than significant. No secondary significant impacts would result from implementation of this measure.

Telegraph Avenue/ 51st Street (Intersection #15)

Impact Trans-7: The Telegraph Avenue/ 51st Street intersection is projected to operate at LOS E under 2015 Conditions, even without increased traffic from the Project. The proposed Project would add traffic that would increase delay for the critical southbound left-turn movement by more than six seconds during the weekday PM peak hour. (***Significant***)

Mitigation Measure

Mitigation Measure Trans-7: Implement Mitigation Measure Trans-2.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS D during the weekday PM peak hour and reduce impacts to less than significant. No secondary significant impacts would result from implementation of this measure.

Howe Street/Pleasant Valley Avenue (Intersection #19)

Impact Trans-8: The proposed Project would add more than 10 trips to the Howe Street/Pleasant Valley Avenue (#19) intersection during the weekday PM and Saturday midday peak hours under 2015 Plus Project conditions. The intersection would meet the peak hour signal warrant during both time periods. (***Significant***)

Mitigation Measures

Mitigation Measure Trans-8: Implement Mitigation Measure Trans-3.

Resulting Level of Significance

Implementation any of the three measures described in Mitigation Measure Trans-3 would improve traffic operations at this intersection and mitigate the significant impact. However, because each of these three measures would result in significant and unavoidable secondary impacts, the mitigation measures are considered infeasible and the impact would remain ***significant and unavoidable***.

Piedmont Avenue/Pleasant Valley Avenue (Intersection #20)

Impact Trans-9: The proposed Project would degrade intersection operations from LOS E to LOS F during the weekday PM peak hour at the Piedmont Avenue/Pleasant Valley Avenue (#20) intersection under 2015 Conditions; the Project would also degrade the intersection operations during the Saturday midday and PM peak hour from LOS D to LOS E. (***Significant***)

Mitigation Measures

Mitigation Measure Trans-9: Implement Mitigation Measure Trans-4.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS C during the weekday PM, Saturday midday, and Saturday PM peak hours and the impact would be reduced to less than significant. No secondary significant impacts would result from implementation of this measure.

2015 Plus Project Mitigated Conditions

Table 4.3-17 summarizes intersection operations after implementation of the mitigation measures at the affected intersections. Mitigation measures would reduce the impacts at three of the five impacted intersections to a less than significant level. However, the impacts at the Broadway/51st Street /Pleasant Valley Avenue and Howe Street/Pleasant Valley Avenue intersections would remain significant and unavoidable.

Table 4.11-17
Intersection LOS Summary
2015 Plus Project, Mitigated Conditions

#	Study Intersection	Traffic Control [1]	Peak Hour	2015 No Project Delay (Seconds)[2]	2015 No Project LOS	2015 Plus Project Delay (Seconds)[2]	2015 Plus Project LOS	2015 Plus Project Mitigated Delay (Seconds)[2]	2015 Plus Project Mitigated LOS	Significance after Mitigation
7	Broadway/51st Street/ Pleasant Valley Avenue	Signal	Weekday PM	50.8	D	**55.1**	**E**	**55.1**	**E**	***Significant and Unavoidable*** [3]
			Saturday MD	**62.2**	**E**	**55.6**	**E**	**55.6**	**E**	
			Saturday PM	45.4	D	39.7	D	39.7	D	
12	Shattuck Avenue/ 52nd Street	Signal	Weekday PM	43.3	D	44.0	D	44.0	D	Less than Significant
			Saturday MD	43.0	D	43.4	D	43.4	D	
			Saturday PM	**62.8**	**E**	**65.6**	**E**	47.3	D	
15	Telegraph Avenue/51st Street	Signal	Weekday PM	**63.9**	**E**	**65.8**	**E**	48.9	D	Less than Significant
			Saturday MD	51.6	D	53.8	D	53.8	D	
			Saturday PM	47.8	D	51.2	D	50.3	D	
19	Howe Street/Pleasant Valley Avenue	SSSC	Weekday PM	17.7 **(235.2)**	C **(F)**	4.7 **(57.3)**	A **(F)**	4.5**(53.6)**	A **(F)**	***Significant and Unavoidable*** [3]
			Saturday MD	29.4 **(360.1)**	D(**F**)	34.5 (**445.4**)	D (**F**)	34.5 (**445.4**)	D (**F**)	
			Saturday PM	6.0 **(91.6)**	A **(F)**	6.2 **(92.2)**	A **(F)**	4.6**(68.9)**	A **(F)**	
20	Piedmont Avenue/Pleasant Valley Avenue	Signal	Weekday PM	**72.6**	**E**	**86.0 (v/c=1.09)**	**F**	25.2	C	Less than Significant
			Saturday MD	46.1	D	**61.0**	**E**	28.5	C	
			Saturday PM	49.9	D	**62.5**	**E**	21.8	C	

Notes: **Bold** indicates intersection operating at unacceptable LOS E or LOS F
1. Signal = signalized intersection, SSSC = side-street stop controlled intersection
2. For side-street stop controlled intersections, delay is reported as: intersection average (worst minor street approach); for signalized intersection, the average intersection delay is reported; for signalized intersections operating with high delay, volume-to-capacity (v/c) ratio is also reported. LOS for both unsignalized and signalized intersections based on 2000 HCM.
3. Although the proposed mitigation measure would mitigate the impact, the impact is identified as significant and unavoidable due to potential secondary impacts.

Source: Fehr & Peers, 2012.

2035 Intersection Impacts

This section addresses the intersection impacts that would occur in 2035 with the completion of the proposed Project. Items discussed in this section include the development of traffic volume forecasts for the 2035 No Project and 2035 Plus Project scenarios, intersection operations results, and Project intersection impacts.

2035 Intersection Traffic Forecasts

The 2035 No Project intersection turning movement forecasts were developed using the same procedure as the 2015 No Project forecasts. The only difference is that instead of the ACTC model output for 2015, the ACTC model output for 2035, which reflects past, present, and future developments expected by year 2035, was used. **Figure 4.11-21** shows the traffic volumes for the 2035 No Project scenario.

Figure 4.11-22 shows the traffic volumes under the 2035 Plus Project scenario. They consist of 2035 No Project traffic volumes plus traffic volumes generated by the proposed Project.

Roadway Network

The 2035 No Project and Plus Project analyses assume the following modifications as described on page 4.11-30:

- Broadway/40th Street (#9) intersection:
  - o Modify northbound approach from the current configuration which provides one shared through/ right lane, one through lane, and one shared through/left-turn lane to provide one shared right-turn/through lane, one through lane, and one left-turn lane.
  - o Modify traffic signal equipment to provide protected/permissive phasing for the northbound left-turn movement.
- Broadway/West MacArthur Boulevard (#10) intersection:
  - o Modify eastbound approach from the current configuration to provide one shared through/right lane, two through lanes, and one left-turn lane.
  - o Modify northbound approach from the current configuration to provide one right-turn lane, two through lanes, and one left-turn lane.

In addition the 2035 Plus Project analysis assumes that the proposed Project would implement a number of modifications to street configurations and signal operations in the study area as described on page 4.11-39.

No other modifications to the roadway network that would affect the intersection traffic operations, including signal timing optimization, are assumed for the 2035 No Project or Plus Project analyses.

2035 Intersection Operations

The forecasted 2035 intersection turning movement volumes in conjunction with the 2035 intersection lane configurations and traffic signal timings were used to evaluate intersection operations for the 2035 No Project scenario. The 2035 Plus Project scenario was analyzed after adding trips generated by the Project, and accounting for the roadway modifications proposed by the Project. **Table 4.11-18** summarizes the results of the traffic operations analysis. **Appendix 4.11L** and **Appendix 4.11M** present the detailed intersection LOS calculation worksheets for 2035 No Project and 2035 Plus Project conditions, respectively.

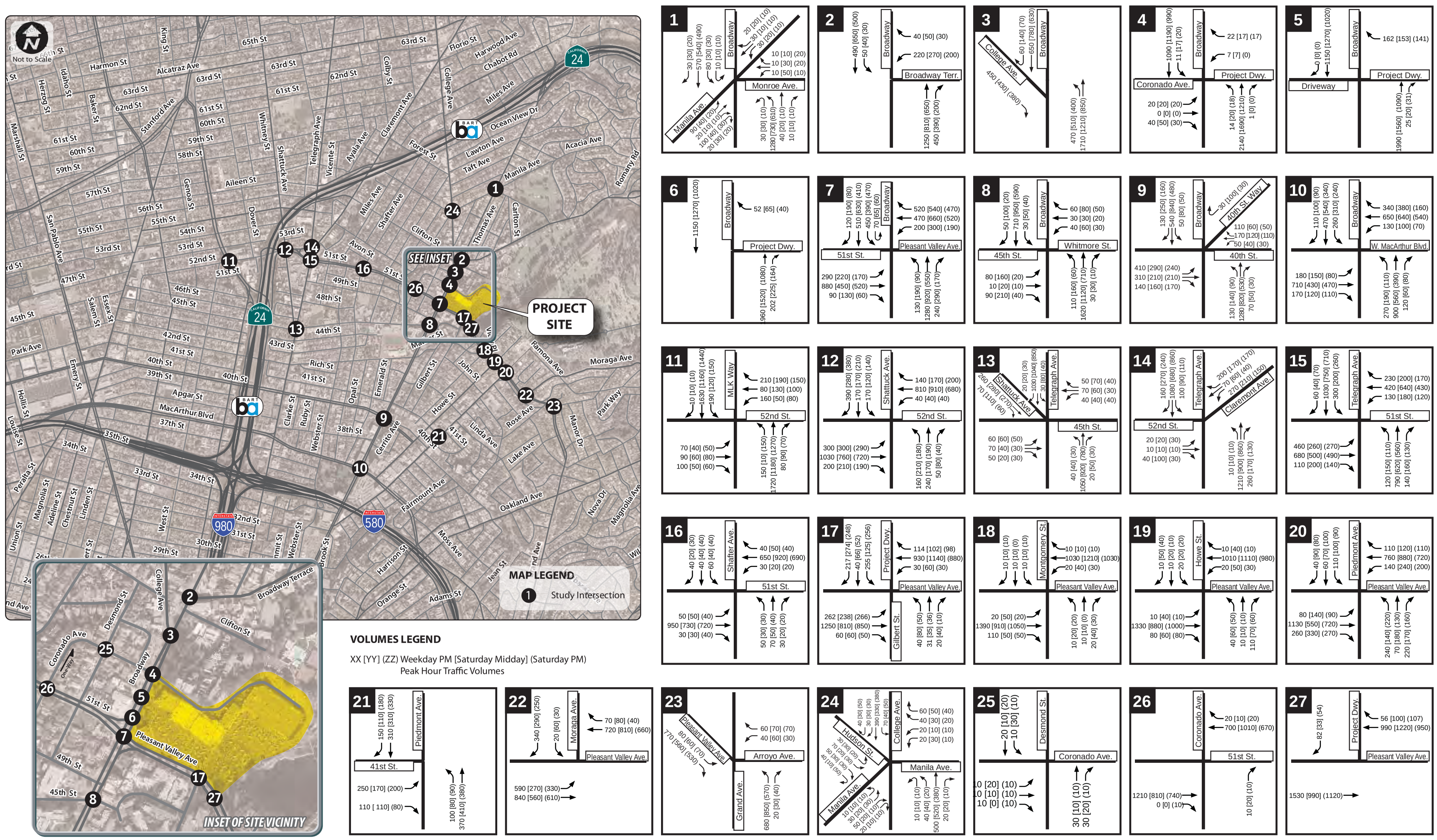

Figure 4.11-21
2035 No Project Conditions, Peak Hour Traffic Volumes

Source: Fehr & Peers

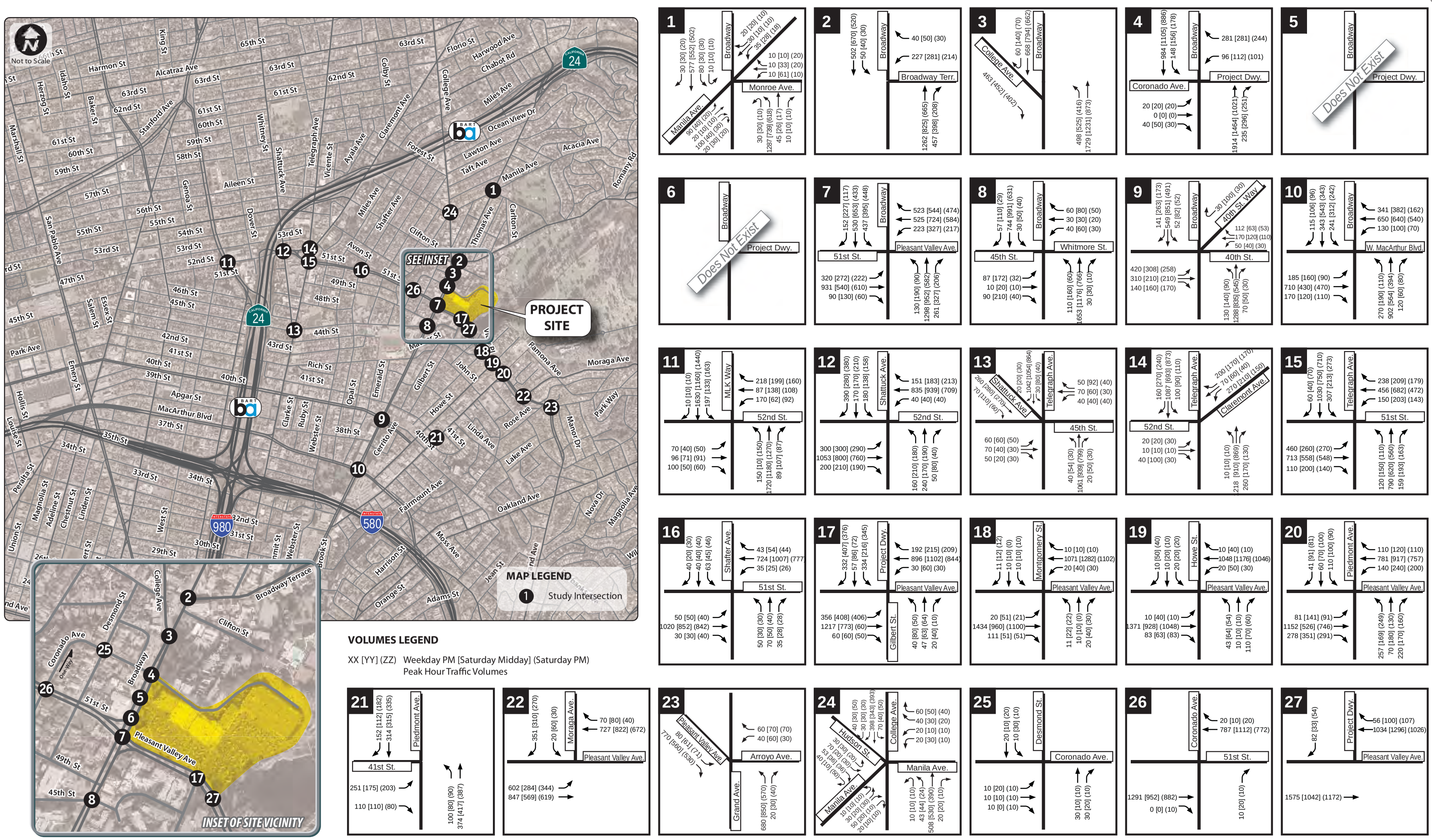

Figure 4.11-22
Cumulative 2035 Plus Project Conditions, Peak Hour Traffic Volumes

Source: Fehr & Peers

Table 4.11-18
Intersection LOS Summary
2035 Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	2035 No Project Delay (Seconds)[2]	2035 No Project LOS	2035 Plus Project Delay (Seconds)[2]	2035 Plus Project LOS	Significant Impact?
1	Broadway/Manila Avenue/ Monroe Avenue	Signal	Weekday PM	15.8	B	16.0	B	No
			Saturday MD	46.5	D	52.8	D	No
			Saturday PM	28.2	C	29.7	C	No
2	Broadway/Broadway Terrace	Signal	Weekday PM	28.6	C	22.2	C	No
			Saturday MD	13.8	B	11.9	B	No
			Saturday PM	9.1	A	7.7	A	No
3	Broadway/College Avenue	Signal	Weekday PM	11.4	B	13.0	B	No
			Saturday MD	16.9	B	14.4	B	No
			Saturday PM	13.6	B	11.8	B	No
4	Broadway/Coronado Avenue/ North Project Driveway	SSSC/ Signal[3]	Weekday PM	2.8 **(206.9)**	A **(F)**	43.9	D	No
			Saturday MD	2.3 (**109.7**)	A (**F**)	24.7	C	No
			Saturday PM	1.6 **(53.7)**	A **(F)**	15.2	B	No
5	Broadway/Center Project Driveway	SSSC	Weekday PM	0.5 (10.8)	A (B)	Does Not Exist		No
			Saturday MD	0.5 (10.3)	A (B)			No
			Saturday PM	0.8 (13.2)	A (B)			No
6	Broadway/South Project Driveway	SSSC	Weekday PM	0.2 (9.9)	A (A)	Does Not Exist		No
			Saturday MD	0.3 (14.9)	A (B)			No
			Saturday PM	0.2 (11.7)	A (B)			No
7	Broadway/51st Street/ Pleasant Valley Avenue	Signal	Weekday PM	**120.0 (v/c=1.13)**	**F**	**136.4 (v/c=1.23)**	**F**	Yes[4, 5]
			Saturday MD	**146.1 (v/c=1.31)**	**F**	**139.7 (v/c=1.24)**	**F**	Yes[5]
			Saturday PM	**57.0**	**E**	47.2	D	No
8	Broadway/45th Street	Signal	Weekday PM	12.0	B	10.0	A	No
			Saturday MD	27.1	C	23.7	C	No
			Saturday PM	8.6	A	6.3	A	No
9	Broadway/40th Street/ 40th Street Way	Signal	Weekday PM	29.0	C	27.2	C	No
			Saturday MD	20.5	C	22.7	C	No
			Saturday PM	21.9	C	17.2	B	No
10	Broadway/West MacArthur Boulevard	Signal	Weekday PM	49.2	D	53.2	D	No
			Saturday MD	45.3	D	47.1	D	No
			Saturday PM	34.7	C	35.6	D	No

Table 4.11-18
Intersection LOS Summary
2035 Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	2035 No Project Delay (Seconds)[2]	2035 No Project LOS	2035 Plus Project Delay (Seconds)[2]	2035 Plus Project LOS	Significant Impact?
11	Martin Luther King Jr. Way/ 52nd Street	Signal	Weekday PM	32.9	C	35.7	D	No
			Saturday MD	15.0	B	16.8	B	No
			Saturday PM	20.1	C	21.2	C	No
12	Shattuck Avenue/ 52nd Street	Signal	Weekday PM	52.5	D	53.0	D	No
			Saturday MD	48.3	D	48.3	D	No
			Saturday PM	**83.6 (v/c=0.93)**	**F**	**84.0 (v/c=0.94)**	**F**	Yes[4]
13	Telegraph Avenue/Shattuck Avenue	Signal	Weekday PM	10.0	A	10.0	A	No
			Saturday MD	9.3	A	10.1	B	No
			Saturday PM	6.7	A	6.7	A	No
14	Telegraph Avenue/52nd Street/ Claremont Avenue	Signal	Weekday PM	26.3	C	26.3	C	No
			Saturday MD	36.9	D	37.8	D	No
			Saturday PM	16.5	B	16.3	B	No
15	Telegraph Avenue/51st Street	Signal	Weekday PM	**66.7**	**E**	**68.9**	**E**	Yes[6]
			Saturday MD	**60.9**	**E**	**66.1**	**E**	Yes[7]
			Saturday PM	53.5	D	**56.7**	**E**	Yes[8]
16	Shafter Avenue/51st Street	Signal	Weekday PM	12.6	B	12.9	B	No
			Saturday MD	12.1	B	12.6	B	No
			Saturday PM	11.4	B	11.9	B	No
17	Gilbert Street/Project Driveway/ Pleasant Valley Avenue	Signal	Weekday PM	16.0	B	26.6	C	No
			Saturday MD	23.9	C	33.8	C	No
			Saturday PM	17.8	B	29.5	C	No
18	Montgomery Street/Pleasant Valley Avenue	SSSC	Weekday PM	5.8 **(209.7)**	A **(F)**	6.2 **(230.6)**	A **(F)**	No[9]
			Saturday MD	9.3 **(216.3)**	A **(F)**	3.4 (**69.8**)	A (**F**)	No[9]
			Saturday PM	2.2 **(55.4)**	A **(F)**	1.8 **(43.2)**	A **(E)**	No[9]
19	Howe Street/Pleasant Valley Avenue	SSSC	Weekday PM	24.5 **(345.9)**	C **(F)**	5.7 **(73.9)**	A **(F)**	Yes[10]
			Saturday MD	*** (*)**	**F (F)**	18.5 (**238.2**)	C (F)	Yes[10]
			Saturday PM	26.7**(420.6)**	C **(F)**	6.4**(92.9)**	A **(F)**	Yes[10]

Table 4.11-18
Intersection LOS Summary
2035 Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	2035 No Project		2035 Plus Project		Significant Impact?
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	
20	Piedmont Avenue/Pleasant Valley Avenue	Signal	Weekday PM	**164.7 (v/c=1.37)**	**F**	**180.3 (v/c=1.42)**	**F**	Yes[4, 5]
			Saturday MD	**140.9 (v/c=1.27)**	**F**	**167.4 (v/c=1.37)**	**F**	Yes[4, 5]
			Saturday PM	**119.7 (v/c=1.26)**	**F**	**139.5 (v/c=1.34)**	**F**	Yes[4, 5]
21	Piedmont Avenue/41st Street	Signal	Weekday PM	11.5	B	11.6	B	No
			Saturday MD	12.2	B	12.3	B	No
			Saturday PM	10.8	B	10.9	B	No
22	Moraga Avenue/Pleasant Valley Avenue	Signal	Weekday PM	41.4	D	44.0	D	No
			Saturday MD	52.2	D	54.3	D	No
			Saturday PM	22.5	C	23.2	C	No
23	Grand Avenue/Arroyo Avenue/ Pleasant Valley Avenue	Signal	Weekday PM	10.6	B	10.6	B	No
			Saturday MD	23.0	C	23.1	C	No
			Saturday PM	8.2	A	8.3	A	No
24	Hudson Street/Manila Avenue/ College Avenue	Signal	Weekday PM	**75.7**	**E**	**83.1 (v/c=0.80)**	**F**	Yes[11]
			Saturday MD	34.9	C	39.0	D	No
			Saturday PM	23.2	C	24.3	C	No
25	Desmond Street/Coronado Avenue	SSSC	Weekday PM	7.7 (9.7)	A (A)	7.7 (9.7)	A (A)	No
			Saturday MD	8.1 (9.8)	A (A)	8.1 (9.8)	A (A)	No
			Saturday PM	6.6 (9.4)	A (A)	6.6 (9.4)	A (A)	No
26	Coronado Avenue/51st Street	SSSC	Weekday PM	0.1 (11.4)	A (B)	0.1 (11.2)	A (B)	No
			Saturday MD	0.1 (11.4)	A (B)	0.1 (11.0)	A (B)	No
			Saturday PM	0.1 (11.3)	A (B)	0.1 (11.0)	A (B)	No
27	Project Driveway/Pleasant Valley Avenue	SSSC	Weekday PM	0.4 (14.6)	A (B)	0.4 (15.0)	A (B)	No
			Saturday MD	0.2 (17.1)	A (C)	0.2 (17.9)	A (C)	No
			Saturday PM	0.3 (13.9)	A (B)	0.3 (14.6)	A (B)	No

Notes: **Bold** indicates intersection operating at unacceptable LOS E or LOS F. * indicates that intersection parameters exceed the limits of the methodology and delay cannot be calculated.

1. Signal = signalized intersection, SSSC = side-street stop controlled intersection
2. For side-street stop controlled intersections, delay is reported as: intersection average (worst minor street approach); for signalized intersection, the average intersection delay is reported; for signalized intersections operating with high delay, volume-to-capacity (v/c) ratio is also reported. LOS for both unsignalized and signalized intersections based on 2000 HCM.
3. Intersection is side-street stop-controlled under No Project conditions and signalized under Plus Project conditions.
4. The proposed Project would cause an impact at this intersection because it would increase the intersection v/c ratio by 0.01 or more at an intersection already operating at LOS F.

Table 4.11-18
Intersection LOS Summary
2035 Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	2035 No Project		2035 Plus Project		Significant Impact?
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	

5. The proposed Project would cause an impact at this intersection because it would increase the v/c ratio for a critical movement by 0.02 or more at an intersection already operating at LOS F.
6. The proposed Project would cause an impact at this intersection because it would increase delay for a critical movement by more than six seconds at an intersection already operating at LOS E.
7. The proposed Project would cause an impact at this intersection because it would increase intersection average delay by more than four seconds at an intersection already operating at LOS E.
8. The proposed Project would cause an impact at this intersection because it would degrade intersection operations from LOS D to LOS E.
9. The proposed Project would not cause an impact at this unsignalized intersection because the intersection would not meet the peak hour signal warrant, although it would operate at LOS E or LOS F.
10. The proposed Project would cause an impact at this unsignalized intersection because it would add more than ten trips to the intersection and the intersection would meet the peak hour signal warrant.
11. The proposed Project would cause an impact at this intersection because it would degrade intersection operations from LOS E to LOS F.

Source: Fehr & Peers, 2012.

The following intersections are projected to operate at a deficient level in 2035 without or with the proposed Project:

- #4 The side-street stop-controlled westbound approach at the Broadway/Coronado Avenue/North Project Driveway intersection would operate at LOS F during the weekday PM, Saturday midday, and Saturday PM peak hours under 2035 No Project conditions. This intersection would be signalized as part of the Project and would improve to LOS D or better under 2035 Plus Project conditions.
- #7 The signalized Broadway/51st Street/Pleasant Valley Avenue intersection would operate at LOS F during the weekday PM and Saturday midday peak hours, regardless of the proposed Project. The intersection would operate at LOS E during the Saturday PM peak hour under 2035 No Project conditions and improve to LOS D under 2035 Plus Project conditions.
- #12 The signalized Shattuck Avenue/52nd Street intersection would operate at LOS E and LOS F during the weekday PM and Saturday PM peak hours, respectively, regardless of the proposed Project.
- #15 The signalized Telegraph Avenue/51st Street intersection (# 15) would operate at LOS E during the weekday PM and Saturday midday peak hours regardless of the proposed Project. During the Saturday PM peak hour, the intersection would degrade from LOS D under 2035 No Project conditions to LOS E under 2035 Plus Project conditions.
- #18 The side-street stop-controlled northbound approach at the Montgomery Street/Pleasant Valley Avenue intersection would operate at LOS E or LOS F during the weekday PM, Saturday midday, and Saturday PM peak hours regardless of the proposed Project. The intersection would not meet the peak-hour volume signal warrant.
- #19 The side-street stop-controlled northbound approach at the Howe Street/Pleasant Valley Avenue intersection would operate at LOS F during the weekday PM, Saturday midday, and Saturday PM peak hours regardless of the proposed Project. The intersection would meet the peak-hour volume signal warrant during all three peak hours.

- #20 The signalized Piedmont Avenue/Pleasant Valley Avenue intersection would operate at LOS F during the weekday PM, Saturday midday, and Saturday PM peak hours regardless of the proposed Project.
- #24 The signalized Hudson Street/Manila Avenue/College Avenue intersection would degrade from LOS E under 2035 No Project conditions to LOS F under 2035 Plus Project conditions during the weekday PM peak hour.

The proposed Project would cause a significant impact at the following intersections:

- #7 Broadway/51st Street/Pleasant Valley Avenue
- #12 Shattuck Avenue/52nd Street
- #15 Telegraph Avenue/51st Street
- #19: The side-street stop-controlled northbound approach at the Howe Street/Pleasant Valley Avenue intersection. The proposed Project would reduce the delay experienced by the northbound approach of the intersection during the weekday PM, Saturday midday, and Saturday PM peak hours due to improved traffic flow along Pleasant Valley Avenue. Since the unsignalized intersection would continue to meet the peak hour signal warrant and the proposed Project would add more than ten peak hour trips to the intersection, this EIR conservatively identifies the impacts as a significant impact.
- #20 Piedmont Avenue/Pleasant Valley Avenue
- #24 Hudson Street/Manila Avenue/College Avenue

Although the following unsignalized intersection would operate at LOS E or LOS F, the proposed Project would not cause an impact:

- #18 Montgomery Street/Pleasant Valley Avenue intersection would operate at an unacceptable LOS F during the weekday PM peak hour and LOS E during the Saturday PM peak hour, the proposed Project would not cause a significant impact because the intersection would not meet the peak hour vehicle signal warrant without or with the traffic generated by the proposed Project during the weekday or Saturday PM peak hours.

Broadway/51st Street/Pleasant Valley Avenue (Intersection #7)

Impact Trans-10: The proposed Project would increase volume-to-capacity (v/c) ratio for the intersection by 0.01 or more and the critical movement v/c ratio for the eastbound left, eastbound through, westbound left, northbound through, and the southbound left movements by 0.02 or more during the weekday PM peak hour, and it would increase v/c ratio for the intersection by 0.01 or more and the critical movement v/c ratio for the eastbound left, eastbound through, and, northbound through movements by 0.02 or more during the Saturday midday peak hour at the Broadway/51st Street/Pleasant Valley Avenue (#7) intersection under 2035 Conditions, which would operate at LOS F regardless of the Project. (***Significant***)

Mitigation Measures

Mitigation Measure Trans-10 Implement Mitigation Measure Trans-5.

Resulting Level of Significance

After implementation of this measure, the intersection would continue to operate at LOS F during the weekday PM and Saturday midday peak hours. Although the mitigation measure would reduce the v/c ratio for the intersection and the critical movements, it is not adequate to reduce the impact to a less-than-significant level. After the implementation of this mitigation measure, the proposed Project would continue to increase the intersection v/c ratio by 0.01 or more, and the critical movement v/c ratios by 0.02 or more. Therefore, even with the implementation of this mitigation measure, the impact would remain ***significant and unavoidable***.

In addition, this mitigation measure would require widening both 51st Street and Pleasant Valley Avenue. This would introduce an additional vehicle lane, and increase the pedestrian distance crossing both 51st Street and Pleasant Valley Avenue. The intersection signal cycle length would also need to be increased to accommodate the increased pedestrian crossing distances. These modifications would conflict with City policy concerning pedestrian safety and comfort, therefore resulting in secondary significant impacts. Due to the secondary significant impacts on pedestrians, the mitigation is considered infeasible.

No other feasible mitigation measures are available that would mitigate the Project impacts at the Broadway/51st Street/Pleasant Valley Avenue (#7) intersection. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a third through travel along northbound Broadway. However, these modifications cannot be accommodated within the existing automobile right-of-way and would require additional right-of-way, and/or loss of bicycle lanes, on-street parking, or medians and are considered to be infeasible because it would adversely affect other travel modes and conflict with City's policies including the Public Transit and Alternative Modes Policy (i.e., "Transit-First Policy") which supports alternative transportation modes to automobile travel, the City's Bicycle Master Plan which identifies Broadway as a planned Class 2 bicycle lane facility, and the City's Pedestrian Master Plan Policy 1.1 which promotes using design elements, such as median refuges, to improve pedestrian safety at intersections. Thus, the mitigation measure is considered infeasible and the impact would remain ***significant and unavoidable***.

Shattuck Avenue/52nd Street (Intersection #12)

Impact Trans-11: The proposed Project would increase intersection volume-to-capacity (v/c) ratio by 0.01 or more during the Saturday PM peak hour at the Shattuck Avenue/52nd Street (#12) intersection under 2035 Conditions, which would operate at LOS F regardless of the Project. (***Significant***)

Mitigation Measures

Mitigation Measure Trans-11: Implement Mitigation Measure Trans-1.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS D during the Saturday PM peak hour and the impact would be reduced to less than significant. No secondary significant impacts would result from implementation of this measure.

Telegraph Avenue/ 51st Street (Intersection #15)

Impact Trans-12: The proposed Project would increase delay for the critical southbound left-turn movement by more than six seconds during the weekday PM peak hour at the Telegraph Avenue/ 51st Street (#15) intersection under 2035 Conditions, which would operate at LOS E regardless of the Project; the Project would also increase delay for the critical westbound and southbound movements by more than six seconds during the Saturday midday peak hour; the Project would also degrade the intersection during the Saturday PM peak hour from LOS D to LOS E. (***Significant***)

Mitigation Measures

Mitigation Measure Trans-12: Implement Mitigation Measure Trans-2.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS D during the three studied peak hours and the impact would be reduced to less than significant. No secondary significant impacts would result from implementation of this measure.

Howe Street/ Pleasant Valley Avenue (Intersection #19)

Impact Trans-13: The proposed Project would add more than 10 trips to the Howe Street/ Pleasant Valley Avenue (#19) during the weekday PM, Saturday midday, and Saturday PM peak hours under 2035 Plus Project conditions. The intersection would meet the peak hour signal warrant during the three time periods. (***Significant***)

Mitigation Measures

Mitigation Measure Trans-13: Implement Mitigation Measure Trans-3.

Resulting Level of Significance

Implementing any of these three measures would improve traffic operations at this intersection and mitigate the significant impact. However, all three measures are considered infeasible because they would result in significant and unavoidable impacts. In addition to the secondary significant impacts previously described, queues on eastbound Pleasant Valley Avenue at Piedmont Avenue would also spill back and block this intersection under 2035 Plus Project conditions. Therefore, this impact is considered ***significant and infeasible***.

Piedmont Avenue/Pleasant Valley Avenue (Intersection #20)

Impact Trans-14: The proposed Project would increase volume-to-capacity (v/c) ratio for the intersection by 0.01 or more, and the critical movement v/c ratio for the eastbound, westbound, and northbound movements by 0.02 or more during the weekday PM, Saturday midday, and Saturday PM peak hours at the Piedmont Avenue/Pleasant Valley Avenue (#20) intersection under 2035 Conditions, which would operate at LOS F regardless of the Project. (***Significant***)

Mitigation Measures

Mitigation Measure Trans-14: Implement the following measures at the Piedmont Avenue/Pleasant Valley Avenue intersection:

a) Mitigation Measure Trans-4.

b) Modify signal control equipment to provide lagging protected phasing in the northbound direction.

Resulting Level of Significance

After implementation of this measure, the intersection would continue to operate at LOS F during the weekday PM peak hour, and improve to LOS E during the Saturday PM peak hour. Although the mitigation measure would reduce the v/c ratio for the intersection to less than significant level under the 2035 No Project conditions, the critical westbound and northbound movements would continue to experience an increase in v/c ratio of 0.02 or more. Therefore the impact would remain ***significant and unavoidable***.

The impact can be reduced to a less than significant level by installing a left-turn lane on the northbound Piedmont Avenue approach. Implementation of this measure would improve intersection operations to LOS D during the weekday PM peak hour and LOS C during the Saturday PM peak hour. However, this improvement would result in elimination of planned bicycle lanes on Piedmont Avenue and loss of on-street parking. The loss of the planned bicycle lanes is considered a significant secondary impact that would make this improvement infeasible. No other feasible mitigation measures are available within the existing automobile right-of-way.

Hudson Street/Manila Avenue/College Avenue (Intersection #24)

Impact Trans-15: The proposed Project would degrade intersection operations from LOS E to LOS F during the weekday PM peak hour at the Hudson Street/Manila Avenue/College Avenue (#24) intersection under 2035 Conditions. (***Significant***)

Mitigation Measures

Mitigation Measure Trans-15: Implement the following measures at the Hudson Street/Manila Avenue/College Avenue intersection.

a. Optimize signal timing parameters (i.e., adjust the allocation of green time for each intersection approach)

b. Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.

To implement this measure, the Project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval:

Plans, Specifications, and Estimates (PS&E) to modify the intersection. All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals shall include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection shall be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for among other items the elements listed below:

- 2070L Type Controller
- GPS communication (clock)
- Accessible pedestrian crosswalks according to Federal and State Access Board guidelines
- City Standard ADA wheelchair ramps
- Full actuation (video detection, pedestrian push buttons, bicycle detection)
- Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines Signal interconnect and communication to City Traffic Management Center for corridors identified in the City's ITS Master Plan
- Signal timing plans for the signals in the coordination group.

The Project sponsor shall fund, prepare, and install the approved plans and improvements.

Resulting Level of Significance

After implementation of this measure, the intersection would improve to LOS D during the weekday PM peak hour and the impact would be reduced to less than significant. This mitigation measure is consistent with the mitigation measure identified by the *College Avenue Safeway Project Draft EIR* (July 2011) at this intersection. No secondary significant impacts would result from implementation of this measure.

The City of Oakland, as part of the Caldecott Tunnel Improvement Project Settlement Agreement is planning the following improvement at this intersection:

- Extend bulbouts at the west side of the intersection,
- Install new traffic signal control equipment to allow countdown pedestrian signal heads
- Provide a new north-south crosswalk along the west side of College Avenue.

These planned improvements would not mitigate the Project impacts; however, the proposed mitigation measure would not prevent implementation of these planned improvements.

2035 Plus Project Mitigated Conditions

Table 4.11-19 summarizes intersection operations after implementation of the mitigation measures at the affected intersections. Mitigation measures would reduce the impacts at three of the six intersections to a less than significant level. However, the impacts at the Broadway/51st Street/ Pleasant Valley Avenue, Howe Street/Pleasant Valley Avenue, and Piedmont Avenue/Pleasant Valley Avenue intersections would remain significant and unavoidable.

Table 4.11-19
Intersection LOS Summary
2035 Plus Project Mitigated Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	2035 No Project		2035 Plus Project		2035 Plus Project Mitigated		Significance after Mitigation
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	
7	Broadway/51st Street/ Pleasant Valley Avenue	Signal	Weekday PM	**120.0 (v/c=1.13)**	**F**	**136.4 (v/c=1.23)**	**F**	**136.4 (v/c=1.23)**	**F**	***Significant and Unavoidable***[3]
			Saturday MD	**146.1 (v/c=1.31)**	**F**	**139.7 (v/c=1.24)**	**F**	**139.7 (v/c=1.24)**	**F**	
			Saturday PM	**57.0**	**E**	47.2	D	47.2	D	
12	Shattuck Avenue/ 52nd Street	Signal	Weekday PM	52.5	D	53.0	D	53.0	D	Less than Significant
			Saturday MD	48.3	D	48.3	D	48.3	D	
			Saturday PM	**83.6 (v/c=0.93)**	**F**	**84.0 (v/c=0.94)**	**F**	51.2	D	
15	Telegraph Avenue/ 51st Street	Signal	Weekday PM	**66.7**	**E**	**68.9**	**E**	54.6	D	Less than Significant
			Saturday MD	**60.9**	**E**	**66.1**	**E**	48.5	D	
			Saturday PM	53.5	D	**56.6**	**E**	43.6	D	
19	Howe Street/ Pleasant Valley Avenue	SSSC	Weekday PM	24.5 **(345.9)**	C**(F)**	5.2 **(66.2)**	A **(F)**	4.4 **(56.5)**	A **(F)**	***Significant and Unavoidable***[4]
			Saturday MD	*** (*)**	**F (F)**	18.5 (**238.2**)	C (F)	18.5 (**238.2**)	C **(F)**	
			Saturday PM	26.7**(420.6)**	C **(F)**	6.4**(92.8)**	A **(F)**	6.4**(92.8)**	A **(F)**	
20	Piedmont Avenue/ Pleasant Valley Avenue	Signal	Weekday PM	**164.7 (v/c=1.37)**	**F**	**180.3 (v/c=1.42)**	**F**	**88.2 (v/c=1.21)**	**F**	***Significant and Unavoidable***[4]
			Saturday MD	**140.9 (v/c=1.27)**	**F**	**167.4 (v/c=1.37)**	**F**	**113.9 (v/c=1.26)**	**F**	
			Saturday PM	**119.7 (v/c=1.26)**	**F**	**139.5 (v/c=1.34)**	**F**	**75.2**	**E**	

Table 4.11-19
Intersection LOS Summary
2035 Plus Project Mitigated Conditions

#	Study Intersection	Traffic Control[1]	Peak Hour	2035 No Project		2035 Plus Project		2035 Plus Project Mitigated		Significance after Mitigation
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	
24	Hudson Street/Manila Avenue/ College Avenue	Signal	Weekday PM	**75.7**	**E**	**83.1 (v/c=0.80)**	**F**	50.0	D	Less than Significant
			Saturday MD	34.9	C	39.0	D	39.0	D	
			Saturday PM	23.2	C	24.3	C	24.3	C	

Notes: **Bold** indicates intersection operating at unacceptable LOS E or LOS F
1. Signal = signalized intersection, SSSC = side-street stop controlled intersection
2. For side-street stop controlled intersections, delay is reported as: intersection average (worst minor street approach); for signalized intersection, the average intersection delay is reported; for signalized intersections operating with high delay, volume-to-capacity (v/c) ratio is also reported. LOS for both unsignalized and signalized intersections based on 2000 HCM.
3. Although the proposed mitigation measure would reduce the magnitude of the impact, the impact is identified as significant and unavoidable due to potential secondary impacts.
4. Although the proposed mitigation measure would mitigate the impact, the impact is identified as significant and unavoidable due to potential secondary impacts.

Source: Fehr & Peers, 2012.

Required Congestion Management Program (CMP) Evaluation

Impact Trans-16: The proposed Project would not cause congestion of regional significance on a roadway segment on the Congestion Management Program (CMP) and/or the Metropolitan Transportation System (MTS) evaluated per the requirements of the Land Use Analysis Program of the CMP. (***Less than Significant***)

The Alameda County CMP requires the assessment of development-driven impacts to regional roadways. Because the Project would generate more than 100 "net new" PM peak-hour trips, ACTC requires the use of the Countywide Travel Demand Forecasting Model to assess the impacts on regional roadways near the Project site. The CMP and Metropolitan Transportation System (MTS) roadways in the Project vicinity identified in the NOP comments by ACTC (July 17, 2009 letter) include the following:

CMP and MITS roadways:

- I-880
- I-580
- I-80
- I-980
- SR 24
- SR 13
- Broadway (south of College Avenue)
- San Pablo Avenue
- 51st Street
- Martin Luther King Jr. Way
- Telegraph Avenue
- Shattuck Avenue
- College Avenue

MTS only roadways:

- Broadway (North of College Avenue)
- Grand Avenue
- Pleasant Valley Avenue
- MacArthur Boulevard
- Claremont Avenue

The ACTC Model used in this study is a regional travel demand model that uses socio-economic data and roadway and transit network assumptions to forecast traffic volumes and transit ridership using a four-step modeling process that includes trip generation, trip distribution, mode split, and trip assignment. This process takes into account changes in travel patterns due to future growth and balances trip productions and attractions. This version of the Countywide Model is based on Association of Bay Area Governments (ABAG) *Projections 2007* land uses for 2015 and 2035.

For the purposes of this CMP and MTS Analysis, the Project is assumed to not be included in the Countywide Model in order to present a more conservative analysis. The traffic forecasts for the 2015 and 2035 scenarios were extracted for the CMP and MTS roadway segments from that model and used as the "No Project" forecasts. Vehicle trips generated by the Project were added to the "No Project" forecasts to estimate the "Plus Project" forecasts.

The CMP and MTS segments were assessed using a v/c ratio methodology. For freeway segments, a per-lane capacity of 2,000 vehicles per hour (vph) was used, consistent with the latest CMP documents. For surface streets, a per-lane capacity of 800 vph was used. Roadway segments with a v/c ratio greater than 1.00 signify LOS F.

The "Plus Project" results were compared to the baseline results for the 2015 and 2035 horizon years. The 2015 and 2035 peak hour volumes, v/c ratios and the corresponding levels of service for without and with Project conditions are provided in **Appendix 4.11N**.

Due to differences in the land use assumptions and differences in analysis methodologies, the forecasted traffic volumes on the roadway links can be different from the intersection volumes, particularly at the local level. The first area of difference is the land use data sets employed for the intersection forecasts and the MTS forecasts. The intersection forecasts, which are used to assess Project traffic impacts on City of Oakland intersections, are based on land use data adjusted to reflect all past, present, existing, approved, pending and reasonably foreseeable projects in the City of Oakland, which differs from the data in the ACTC Model. The second area of difference is the use of the Furness process. The intersection forecasts use the output of the ACTC Model as an input to develop intersection volumes in conjunction with existing traffic counts. The CMP and MTS roadway analysis is based on the outputs of the ACTC Model directly on a roadway segment level. It is not unusual to have discrepancies given that the two analyses measure impacts at a different scale. For local streets, intersections are typically a more accurate measure of operating conditions because the capacity of an urban street, defined as the number of vehicles that can pass through its intersections, is controlled by the capacity at its intersections.

The Project would contribute to 2015 and 2035 increases in traffic congestion on CMP roadways. However, the Project would not cause a roadway segment on the CMP to degrade from LOS E or better to LOS F. The Project also would not increase the v/c ratio by more than three percent for roadway segments that would operate at LOS F without the Project. Therefore, the Project would not have a significant impact on CMP roadways.

Based on the application of the CMP thresholds to the MTS roadway segments, the Project would not cause congestion of regional significance on the MTS roadway segments. This is a less-than-significant impact, and as a result no mitigation measures are required.

Mitigation Measures

None required.

Transit Travel Time

Impact Trans-17: The proposed Project would not substantially increase travel times for AC Transit buses. (***Less than Significant***)

In general, the City of Oakland has no basis to establish a numerical threshold for “substantially increased travel times” due to several factors:

- First, bus service, in general, is extremely transitory, and can change quite frequently, as is the case with AC Transit’s bus network. Existing routes may be eliminated, or new routes may be put in service by the time the proposed Project is completed. Similar to parking, transit service is not part of the physical environment, and can change over time in response to external factors. In fact, AC Transit has generally reduced its bus service over the past few years in response to budget issues.
- Second, any numerical threshold to determine the significance of increased travel times needs to consider additional characteristics of the bus service, including its headway (the amount of time between scheduled trips) and total travel time. Considering the transitory nature of bus service, establishing such thresholds is not reasonable, as service can be rerouted, eliminated, or created at any time. Consideration would also have to be given to different types of transit service (e.g., trunk service, Transbay service, local service, and community service), as they generally operate with different characteristics.
- Third, unlike the situation for intersections or roadway facilities, there are no well-established methodologies for characterizing the operations of transit service in relation to travel times. For intersections, clear distinctions are made between intersections that operate at acceptable conditions (e.g., LOS D or better) and those that operate at unacceptable conditions (e.g., LOS E or LOS F), and separate impact thresholds are provided. For bus service, however, there is no well-established LOS equivalent for characterizing transit service in relation to travel times.

The three factors described above would make establishing numerical thresholds for AC Transit travel times difficult and impractical, as the City would have little background or experience on which to base such thresholds. However to the extent feasible, this section provides a quantitative and qualitative analysis of how the proposed Project would affect transit travel times for local routes serving the Project.

Currently, the Project site is directly served by two local bus routes:

- Route 12 which operates with headways as low as 20 minutes during weekday peak periods along Pleasant Valley Avenue/51st Street
- Route 51A which operates with headways as low as 10 minutes during weekday peak periods along Broadway and College Avenue

Table 4.11-20 shows peak-hour travel times on the corridors that these buses operate. Existing average travel speeds range from 13 miles per hour along eastbound Pleasant Valley Avenue/51st Street during the weekday PM peak hour to about 19 miles per hour along northbound Broadway and College Avenue during the Saturday PM peak hour.

Table 4.11-20
Travel Times Along AC Transit Corridors

				Existing		Existing Plus Project		Existing Plus Project Mitigated	
Bus Route	Direction	Distance (miles)	Peak Hour	Travel Time (min:sec)	Average Speed (mph)	Travel Time (min:sec)	Average Speed (mph)	Travel Time (min:sec)	Average Speed (mph)
12	Eastbound (from Pleasant Valley Ave. at Piedmont Ave. to 51st St. at Telegraph Ave)	1.0	Weekday PM	4:30	13	4:50	12	3:20	18
			Saturday MD	3:50	15	4:30	13	3:40	16
			Saturday PM	4:00	15	4:40	13	3:20	18
	Westbound (from 51st St. at Telegraph Ave to Pleasant Valley Ave. at Piedmont Ave.)	1.0	Weekday PM	3:40	16	3:40	16	3:50	16
			Saturday MD	4:20	14	4:30	13	4:30	13
			Saturday PM	3:50	15	4:00	15	4:00	15
51A	Northbound (from Broadway at MacArthur Blvd. to College Ave at Manila Ave.)	1.2	Weekday PM	4:20	16	5:00	14	5:00	14
			Saturday MD	4:00	17	4:20	16	4:20	16
			Saturday PM	3:50	19	3:40	19	3:40	19

Table 4.11-20
Travel Times Along AC Transit Corridors

Bus Route	Direction	Distance (miles)	Peak Hour	Existing Travel Time (min:sec)	Existing Average Speed (mph)	Existing Plus Project Travel Time (min:sec)	Existing Plus Project Average Speed (mph)	Existing Plus Project Mitigated Travel Time (min:sec)	Existing Plus Project Mitigated Average Speed (mph)
	Southbound (from College Ave. at Manila Ave. to Broadway at MacArthur Blvd.)	1.2	Weekday PM	4:40	15	4:10	17	4:10	17
			Saturday MD	4:40	15	4:20	16	4:20	16
			Saturday PM	4:40	15	4:00	18	4:00	18

Note: Corridor travel times were calculated using intersection delay and free-flow segment speeds from Synchro 7.0.

Source: Fehr and Peers, 2012.

The traffic generated by the proposed Project would result in increased congestion along these two corridors. In addition, the Project would also include a number of roadway modifications, such as new traffic signal on Broadway at Coronado Avenue/Project Driveway, and coordination of traffic signals along Broadway, that would affect travel time along the corridor. As shown on Table 4.3-20, average speeds on the Pleasant Valley Avenue/51st Street corridor in both directions and on Broadway/College Avenue corridor in the northbound direction would either remain about the same or decrease under Existing Plus Project conditions. Average speeds on the southbound Broadway/College Avenue corridor would decrease primarily because of improved signal coordination along Broadway and separation of through and left-turn movements on southbound Broadway as proposed by the Project.

Mitigation Measures Trans-2 and Trans-4 proposed at Telegraph Avenue/51st Street (intersection #15) and Piedmont Avenue/Pleasant Valley Avenue (intersection #20) intersections, respectively, would improve travel times on the Pleasant Valley Avenue/51st Street corridor. Overall, it is estimated that the congestion caused by the Project-generated traffic in combination with the roadway modifications proposed by the Project and mitigation measures presented in the EIR would reduce travel times for most buses on these two corridors. However, travel times for some buses would increase. At most, it is estimated that travel times on the northbound Broadway/College Avenue corridor during the weekday PM peak hour would increase by about 40 seconds.

Although not reflected in the quantitative travel time analysis presented above, the Project would also move the following bus stops from the near-side (before the intersection) to the far-side (after the intersection) of the intersection:

- Eastbound 51st Street/Pleasant Valley Avenue (Route 12) from just west of Broadway to about 150 feet east of Broadway.
- Eastbound Pleasant Valley Avenue (Route 12) from just west to just east of Gilbert Street.
- Northbound Broadway (Route 51A) from just south of Pleasant Valley Avenue to north of Pleasant Valley Avenue.

In general, moving a bus stop from the near-side to the far-side of the intersection would reduce the delay experienced by buses by about 15 to 20 seconds as buses would experience less delay waiting for signals.

While the proposed Project may increase some bus travel times, the resulting increases would have a minor effect on transit service within the area as some of the travel time increase would be offset by moving some bus stops from the near-side to the far-side of intersections. The estimated increase is within the variability in travel time experienced by each bus on these corridors. This impact is less than significant.

Mitigation Measures

None required.

Vehicle, Pedestrian and Bicycle Safety

The proposed Project would result in increased vehicular traffic and pedestrian and bicycle activity in and around the Project area. The proposed Project would also modify the roadways serving the Project site, affecting various travel modes. Access and circulation for different travel modes are discussed below.

Transportation Hazards

Impact Trans-18: The proposed Project would not directly or indirectly cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard due to a new or existing physical design feature or incompatible uses. (***Less than Significant***)

The Project site plan has not been finalized; the final Project design would be reviewed to ensure consistency with applicable design standards. Considering the improvements included with the Project and the recommendation provided in the following subsections, the design for the final Project and the adjacent roadways would minimize potential conflicts between various modes and provide safe and efficient pedestrian, bicycle, and vehicle circulation within the site and between the Project and the surrounding circulation systems.

Broadway/College Avenue Intersection

The proposed Project would generate additional automobiles, bicycles, and pedestrians at the Broadway/ College Avenue intersection. The Project would also include modifications to the Broadway/College Avenue intersection including reducing the length of the northbound left-turn lane on Broadway to accommodate left-turn access to the Wendy's Restaurant and changes to the signal timing parameters at the intersection. The intersection currently does not provide a crosswalk on the south approach. In addition, vehicles on southbound College Avenue turn right into Broadway at high speeds due to the angle that College Avenue intersects Broadway. These vehicles may potentially conflict with pedestrians crossing College Avenue or vehicles turning left from northbound Broadway into Wendy's Restaurant.

Mitigation Measures / Recommendations

Impacts related to transportation hazards are less than significant, and therefore no mitigation measures are required. However, while not required to address a CEQA impact, the following design modifications are recommended to further reduce transportation hazards at or near the Project site:

Recommendation Trans-18: Modify the Broadway/College Avenue intersection so that College Avenue would intersect Broadway at a right angle. This modification, as shown on **Figure 4.11-23**, would reduce the size of the intersection and make it more inviting for pedestrians and bicyclists.

The proposed recommendation would have the following benefits:

- Reduce the speed for automobiles on southbound College Avenue turning right to Broadway, which would reduce the potential for conflicts with pedestrians and bicyclists crossing the intersection, as well the automobiles making a U-turn from northbound Broadway to access Wendy's Restaurant.
- Provide a crosswalk across Broadway on the south approach of the intersection.
- Reduce the crossing distance for pedestrians crossing College Avenue west of the intersection.
- Provide longer queuing space for the left-turns from northbound Broadway to College Avenue and from southbound Broadway into the Project site.
- Allow left-turns from southbound College Avenue to northbound Broadway.
- The Broadway/College Avenue intersection would operate at LOS C or better if these modifications are implemented.

The proposed modification would have the following disadvantage; however, none of these would be CEQA impacts:

- Large trucks would continue to not be able to turn right from southbound Broadway to northbound College Avenue.
- Motor vehicles, including buses, on southbound College Avenue would turn right to southbound Broadway at reduced speeds which would result in higher delay.
- Vehicles on northbound Broadway would not be able to turn left into Wendy's Restaurant. However, they would be able to make a U-turn.

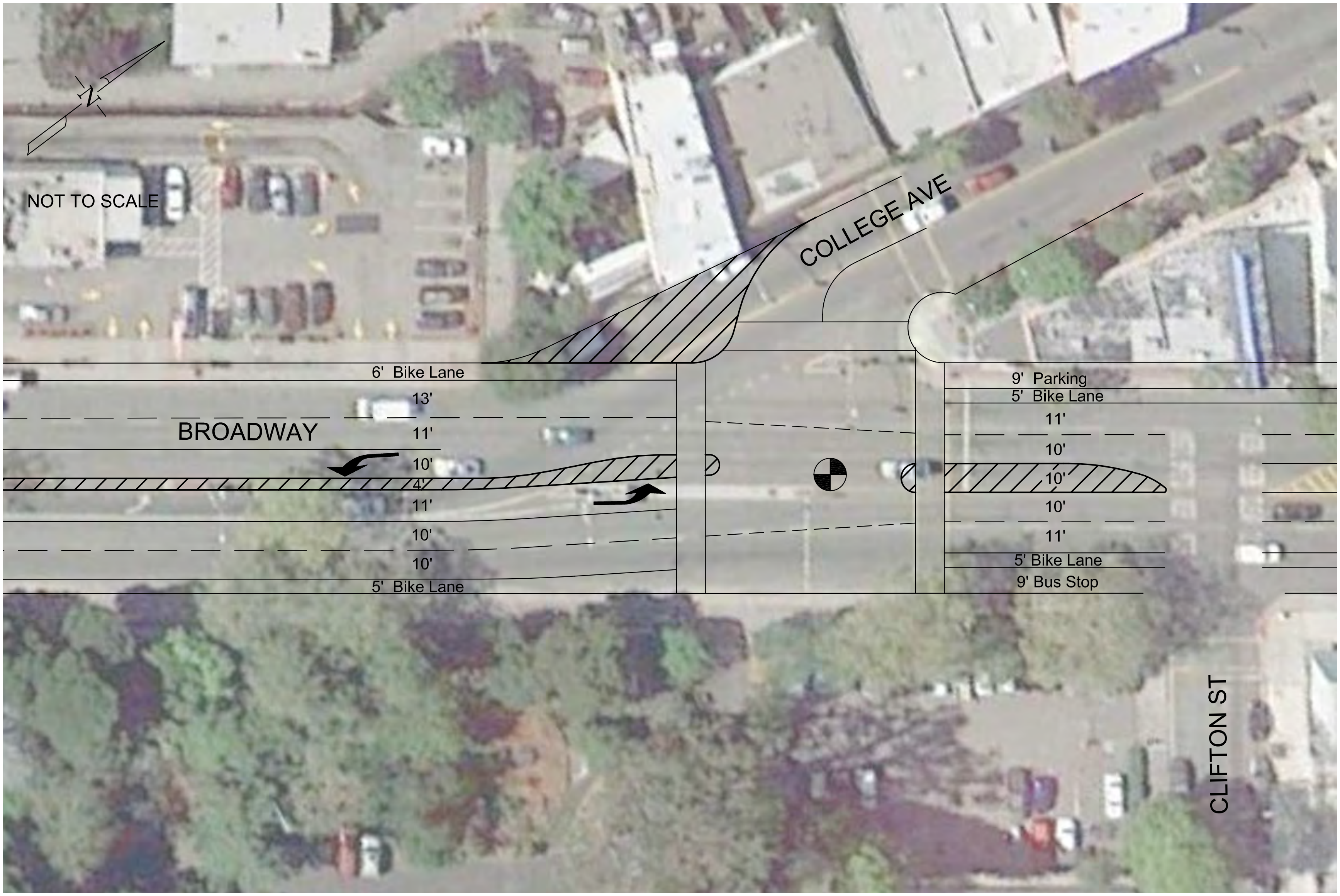

Figure 4.11-23
Conceptual Improvements at Broadway/College Avenue Intersection

Source: Fehr & Peers

At-Grade Railroad Crossings

Impact Trans-19: The proposed Project would not generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users (e.g., motorists, pedestrians, bus riders, bicyclists) to a permanent and substantial transportation hazard (**Less than Significant**)

The Project is not located near any at-grade railroad crossings. Therefore, it will not generate substantial traffic of any travel mode travelling across at-grade railroad crossings. This impact is less than significant.

Mitigation Measures

None required.

Pedestrian Safety

Impact Trans-20: The proposed Project would not directly or indirectly result in a permanent substantial decrease in pedestrian safety (Less than Significant)

The proposed Project would include the following modifications to pedestrian access and circulation in and around the Project area:

- Curb-to-curb pedestrian crossing distances at crosswalks on westbound approach of the Broadway/ 51st Street/Pleasant Valley Avenue intersection, and on the eastbound and southbound approaches of the Gilbert Street/Project Driveway/Pleasant Valley Avenue intersection would increase.
- Provide median pedestrian refuges with minimum width of six feet on the northbound, westbound, and southbound approaches of the Broadway/51st Street/Pleasant Valley Avenue intersection, on the westbound, southbound, and eastbound approaches of the Gilbert Street/Project Driveway/Pleasant Valley Avenue intersection, and on the northbound approach of the Broadway/Coronado Avenue/ Project Driveway intersection.
- Eliminate the existing northbound and southbound right-turn pork chop islands at Broadway/51st Street/Pleasant Valley Avenue intersection, reducing the potential for conflicts between right-turning vehicles and pedestrians crossing to or from the pork chop islands.
- Signalize the Broadway/Coronado Avenue/Project Driveway intersection, which would provide a protected pedestrian crossing across Broadway.
- Provide protected left-turn phasing at Gilbert Street/Project Driveway/Pleasant Valley Avenue intersection minimizing potential conflicts between left-turn traffic and pedestrians.
- Decrease the number of driveways on Broadway from three to one, reducing potential conflict points between automobiles and pedestrians.
- Widen the sidewalks along Project frontage on Broadway and Pleasant Valley Avenue to a minimum of ten feet.
- Provide internal sidewalks and paths that connect the various uses inside the Project to each other and to the existing sidewalk on Pleasant Valley Avenue and Broadway.
- Provide pedestrian passageways between the west portion of the Project and Broadway just north of Pleasant Valley Avenue and Pleasant Valley Avenue at intersection with the Project driveway opposite Gilbert Street.
- The proposed site plan includes the Safeway store in the northeast corner of the site. Although, the site plan includes pedestrian paths that connect the supermarket to the existing sidewalks on

Broadway and Pleasant Valley Avenue, the supermarket is in the furthest location from existing sidewalks and the most difficult to access by pedestrians and bus riders.

All features described above, except the first and last one, would improve pedestrian safety in and around the Project site.

As part of modifying the roadways adjacent to the Project site, the proposed Project would also reconstruct and improve the sidewalks adjacent to the Project. The following specific improvements are expected:

- Upgrade curb ramps to meet ADA design requirements
- Provide tree grates for trees within sidewalks
- Repair cracked and uneven sidewalks
- Adjust signal timing parameters at intersections to ensure adequate crossing times for pedestrians.

The improvements on adjacent roadways proposed as part of the Project or included in the Project mitigation measures include modification to signal timing parameters. In general, longer cycle lengths are considered to adversely affect pedestrians and bicyclists because they would experience additional delay at the intersection, but these are not considered significant CEQA impacts. Additional upgrades to the signal equipment may also be installed as part of the signal modification to comply with the latest local, state, and federal requirements. These may include: providing count-down pedestrian signal heads, providing audible pedestrian signals, and providing bicycle detection at actuated signals.

The proposed Project includes modifications to the existing conditions that would improve pedestrian safety and circulation in the vicinity of the site. In addition, all features of the proposed Project and the mitigation measures will be designed and constructed based on the latest applicable design standards. Therefore, the proposed Project would not result in permanent substantial decrease in pedestrian safety and this impact is less than significant.

Mitigation Measures / Recommendations

Impacts related to pedestrian safety are less than significant, and therefore no mitigation measures are required. However, while not required to address a CEQA impact, the following design modifications are recommended to further improve pedestrian safety at or near the Project site:

Recommendation Trans-20: Implement the following in order to improve pedestrian access, circulation, and safety:

a) Use different materials and/or striping patterns at all crosswalks within the site plan, including mid-block crossings, parking aisle crossings, and parking structure driveways. Also, consider using raised speed tables at crosswalks to reduce automobile speeds.

b) Ensure adequate sight distance is provided at all crosswalks, specially at midblock and parking structure driveways.

c) The internal street in the western portion of the site provides a continuous commercial frontage and is intended as a pedestrian oriented street. The loading berths at Building "M" disrupt the pedestrian flow along the internal street and may result in potential conflicts when truck are backing to/leaving the loading dock. Potential options include:

- Allow trucks to load/unload along the internal street during non-peak periods.
- Provide a pull-out on Pleasant Valley Avenue that would allow trucks to parallel park without interfering with automobile or bicycle flow along Pleasant Valley Avenue. This strategy would also require direct access between the uses on the south side of the internal street and Pleasant Valley Avenue.

- Enlarge the existing loading berth adjacent to Building "J." This strategy would require material to be manually delivered to the uses south of the internal street.
- Implement a loading management program at Building "M" loading berths to minimize disruptions on pedestrian activity.

d) Ensure that all pedestrian paths and sidewalks within the Project site have a minimum width of six feet (10 feet preferred).

e) Ensure that all pedestrian facilities provide pedestrian scale lighting.

Bus Rider Safety

Impact Trans-21: The proposed Project would not directly or indirectly result in a permanent substantial decrease in bus rider safety (***Less than Significant***)

The proposed Project would include modifications to transit access and circulation in and around the Project area, including moving the following bus stops from the near-side to the far-side of the intersection:

- Northbound Broadway from just south of Pleasant Valley Avenue to north of Pleasant Valley Avenue.
- Eastbound 51st Street/Pleasant Valley Avenue from just west of Broadway to about 150 feet east of Broadway.
- Eastbound Pleasant Valley Avenue from just west to just east of Gilbert Street.
- Provide pedestrian passageway between the Project site and Broadway adjacent to the bus stop north of Pleasant Valley Avenue and Pleasant Valley Avenue at the bus stop just west of the Project driveway.

The proposed Project includes modifications to the existing conditions to improve access to bus stops and bus rider safety. In addition, all features of the proposed Project and the mitigation measures will be designed and constructed based on the latest applicable design standards. Therefore, the proposed Project would not result in permanent substantial decrease in bus rider safety and this impact is less than significant.

Mitigation Measures / Recommendations

Impacts related to bus rider safety are less than significant, and therefore no mitigation measures are required. However, while not required to address a CEQA impact, the following design modifications are recommended to further improve bus rider safety at or near the Project site:

Recommendation Trans-21: Implement the following in order to improve access, circulation, and safety for bus riders:

a) Provide bus shelter at the bus stops on northbound and southbound Broadway north of Pleasant Valley Avenue/51st Street and on westbound Pleasant Valley Avenue west of Project driveway.

Bicyclist Safety

Impact Trans-22: The proposed Project would not directly or indirectly result in a permanent substantial decrease in bicyclist safety (***Less than Significant***)

The proposed Project would include the following modifications to bicycle access and circulation in and around the Project area:

- Eliminate the existing northbound and southbound right-turn pork chop islands at Broadway/51st Street/Pleasant Valley Avenue intersection reducing potential conflicts between right-turning automobiles and through bicycles.
- Provide protected left-turn phasing at Gilbert Street/Project Driveway/Pleasant Valley Avenue intersection minimizing potential conflicts between left-turn traffic and bicyclists.
- Decrease the number of driveways on Broadway from three to one, reducing potential conflict points between automobiles and bicycles.
- Provide Class 2 bicycle lanes on Broadway between 49th Street and College Avenue.
- Eliminate the right-turn only lane from westbound Pleasant Valley Avenue to Project Driveway.

As part of modifying the roadways adjacent to the Project site, the proposed Project would also reconstruct and improve the street infrastructure adjacent to the Project. The following specific improvements benefiting bicyclists are expected:

- Adjust signal timing parameters at intersections to ensure adequate crossing times for bicyclists.
- Modify existing gutter-pans and modify or move drainage inlets that conflict with bicycle circulation.

The proposed Project includes modifications to the existing conditions to improve bicycle safety. In addition, all features of the proposed Project and the mitigation measures will be designed and constructed based on the latest applicable design standards. Therefore, the proposed Project would not result in permanent substantial decrease in bicycle safety and this impact is less than significant.

Mitigation Measures / Recommendations

None Required.

Change in Air Traffic Patterns

Impact Trans-23: The proposed Project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. (***Less than Significant***)

The Oakland International Airport is located about nine miles south of the Project site. The proposed Project would increase density and increase building heights at the Project site. However, building heights are not expected to interfere with current flight patterns of Oakland International Airport or other nearby airports. Therefore, the proposed Project would not result in change in air traffic patterns.

Mitigation Measures

None Required.

Consistency with Adopted Policies, Plans or Programs Supporting Alternative Transportation

Impact Trans-24: The proposed Project would not fundamentally conflict with adopted City policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities adopted for the purpose of avoiding or mitigating an environmental effect and actually result in a physical change in the environment. (***Less than Significant***)

A discussion of applicable polices and plans is provided below. In general, the proposed Project and the associated mitigation measures presented in this EIR, are consistent with these policies, plans and programs, and would not cause a significant impact by conflicting with adopted policies, plans, or programs supporting public transit, bicycle, or pedestrian.

The City of Oakland General Plan LUTE states a strong preference for encouraging the use of alternative transportation modes, such as transit, bicycling, and walking. As previously documented, about 15 percent of existing Safeway customers currently use non-auto travel modes. The usage of non-auto modes is mostly due to the site's proximity to residential neighborhoods and AC Transit's Route 51A, one of the busiest AC Transit bus routes. Since the proposed Project is located in the same existing site and considering the demographics of the surrounding community, the proposed Project is expected to have similar travel mode characteristics as the existing Safeway Store.

As part of the City's SCA TRANS-1, the proposed Project would implement a TDM program at the Project site to encourage more employees and customers to shift from driving alone to other modes of travel. Potential TDM measures may include, but are not limited to, awareness programs, direct transit sales to employees, parking management strategies, and physical improvements that encourage walking, bicycling, and transit. The components of the proposed TDM program have not been finalized. A TDM program may not be as effective for retail developments as other types of developments. Typically, TDM programs are most effective for developments, such as office buildings, where most trips are daily peak period commute trips. Most retail employees do not work every day, have irregular work hours, and start and end their work shift outside the peak commute periods; as a result, they may not have access to convenient transit. Most customers would not travel to the site daily and may make large purchases which may not be convenient to transport by walking, bicycling, or transit.

The proposed Project is consistent with the City's *Pedestrian Master Plan* by including features and improvements such as providing signalized access across Broadway at Coronado Avenue, providing median refuges at several intersections, and widening sidewalks along Broadway and Pleasant Valley Avenue adjacent to the Project site. In addition, recommendations included in Mitigation Measures TRANS-20 would improve pedestrian access, circulation, and safety and further encourage pedestrian activity in and around the site.

The proposed Project is consistent with the City's *Bicycle Master Plan* (BMP) in that the proposed Project does not preclude the BMP from being implemented. Consistent with the BMP, the Project would install Class 2 bicycle lanes on Broadway between College Avenue and 49th Street and Class 3A arterial bicycle route on Pleasant Valley Avenue along Project frontage. The Project includes short-term and long-term bicycle parking that encourage bicycle activity (addressed in more detail in a subsequent section).

The proposed Project would also move existing bus stops on northbound Broadway from south to north of Pleasant Valley Avenue, and on eastbound 51st Street/Pleasant Valley Avenue from east to west of Broadway. The new bus stops would encourage additional transit trips because they would be closer to the Project site. In addition, the Project would provide a pedestrian connection adjacent to the bus stop on northbound Broadway. In addition, moving bus stops from the near-side to the far-side of the intersection would improve bus travel times by reducing potential delays experienced by buses at the signal.

Mitigation Measures

None Required.

Construction-Period Impacts

Impact Trans-25: The proposed Project would result in a substantial, though temporary adverse effect on the circulation system during construction of the Project. (***Less than Significant with Standard Conditions of Approval***)

The proposed Project will be constructed in phases and the shopping center would continue to be open during construction. The eastern portion of the site, which will include the proposed Safeway Store, will be constructed in the early phases while the western portion of the site will be constructed during the later phases of construction. Each phase of construction would consist of demolishing existing facilities and construction new ones. Project modification on Pleasant Valley Avenue would occur in the early phases of construction and Project modifications on Broadway would occur in the later phases of construction.

During the construction period, temporary and intermittent transportation impacts may result from truck movements as well as construction worker vehicles to and from the Project site. The construction-related traffic may temporary reduce capacities of Project area roadways because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. Depending on the phase of construction, trucks would enter and/or exit the site from the Project driveway on Broadway opposite Coronado Avenue or the Project driveway on Pleasant Valley Avenue opposite Gilbert Street.

Considering the proximity of SR 24 freeway ramps on Broadway and 51st Street, use of local roadways by construction trucks would be limited to those streets. Truck traffic that occurs during the peak commute hours (7:00 to 9:00 AM and 4:00 to 6:00 PM) may result in worse levels of service and higher delays at study intersections during the construction period. Also, if parking of construction workers' vehicles cannot be accommodated within the Project site, it would temporarily increase parking occupancy levels in the area. Project construction, especially in the public right-of-way, could also impact the operations of AC Transit buses.

Standard Conditions of Approval

The City of Oakland **SCA Trans-2** requires that a Construction Traffic Management Plan be developed as part of a larger Construction Management Plan to address potentially significant impacts during the Project's construction. To further implement SCA Trans-2, the Construction Traffic Management Plan developed for the Project shall include the following:

m) A set of comprehensive traffic control measures for motor vehicles, transit, bicycle, and pedestrian access and circulation during each phase of construction.

n) A construction period parking management plan to ensure that parking demands for construction workers, site employees, and customers are accommodated during each phase of construction.

Mitigation Measures

None Required.

Neighborhood Traffic Intrusion

Impact Trans-26: Neighborhood traffic intrusion would not exceed the capacity of affected residential streets, and would not result in a significant impact. (**LTS**)

The traffic operations analysis presented in previous sections assumed that motorists would access the site using arterials and major streets in the Project vicinity. The proposed mitigation measures, to the extent feasible, would ensure that the major streets would have adequate capacity to serve the Project. However, considering existing and expected traffic congestion in the area, the proposed Project may result in additional traffic on surrounding residential neighborhood streets. Additional traffic generated by the proposed Project may use adjacent residential streets such as Coronado Avenue, and Desmond, Gilbert, and Whitmore Streets, as cut-through routes to divert from potential congestion on Broadway or 51st Street/Pleasant Valley Avenue.

Some traffic calming strategies have already been implemented on the residential streets in the Project vicinity to reduce the potential for cut-through traffic and speeding. These include:

- One-way traffic flow on Coronado Avenue between 51st Street and Broadway
- One-way traffic flow on Whitmore Street between Gilbert Street and Broadway
- Speed humps on Desmond Street between 51st Street and Coronado Avenue
- Traffic circle at Gilbert Street/Mather Street intersection

Travel times along Broadway and 51st Street/Pleasant Valley Avenue were summarized in Table 4.11-20. As shown in that table, travel times along both corridors are expected to generally remain similar or better than Existing conditions under Existing plus Project conditions and Existing plus Project Mitigated conditions. Considering that travel times would remain similar to current conditions, it is expected that most motorists would continue to use the major arterials in the area (i.e., Broadway and 51st Street/Pleasant Valley Avenue) and not divert to the adjacent residential streets.

Potential for Significant Impacts on Residential Streets

The significance criteria used to determine if the Project would result in significant impacts are based on the physical capacity of intersections. Due to the relatively low current traffic volumes on residential streets, even if the majority of the Project generated traffic were assigned to these residential streets, the traffic volumes would not meet the thresholds for adverse impacts set by City of Oakland's Significance Criteria, and no significant impacts would be identified. In addition, as shown in the intersection operations analysis, the intersections of these residential streets with the major arterials, such as Broadway/Coronado Avenue (Intersection #4), Gilbert Street/Pleasant Valley Avenue (#17), and Coronado Avenue/51st Street (#26) operate at acceptable LOS and additional traffic on the residential streets would not cause a significant impact at these intersections.

Since neighborhood traffic intrusion would not exceed the capacity of these residential streets, it would not result in a significant impact based on the identified significant criteria. As a result, no mitigation measure is required.

Planning-Related Non-CEQA Issues Discussion

The items discussed in this section include:

- Parking Considerations
- Truck Access and Circulation

- Transit Considerations
- Intersection Queuing Analysis
- Traffic Control Devices
- Collision History

While these subjects do not relate to environmental impacts that are required to be evaluated under CEQA, they are discussed for informational purposes to aid the public and decision makers in evaluating and considering the merits of the Project.

Parking for Bicycles and Automobiles

Bicycle and automobile parking requirements and parking demand estimates are typically based on specific land use activities. Except for the proposed Safeway Store, the specific commercial land uses in the Project are not known at this time. Thus, the bicycle and automobile parking zoning requirements and the estimated automobile parking demand presented below are based on the commercial land use mix presented in the preliminary Project plans.

Bicycle Parking

City of Oakland Bicycle Parking Ordinance, found in Municipal Code Chapter 17.117, provides bicycle parking requirements for new facilities and additions to existing facilities. Two types of bicycle parking are required: long-term bicycle parking, which includes lockers or locked enclosures, and short-term bicycle parking, which includes bicycle racks. Municipal Code Chapter 17.117.110 indicates the bicycle parking requirements as follows:

Long-Term (minimum two spaces per activity type):

- General Food Sales: One space for each 12,000 square feet of floor area
- Retail Sales Use: One space for each 12,000 square feet of floor area
- Office: One space for each 10,000 square feet of floor area

Short-Term (minimum two spaces per activity type):

- General Food Sales: One space for each 2,000 square feet of floor area
- Retail Sales Use: One space for each 5,000 square feet of floor area
- Office: One space for each 20,000 square feet of floor area

Table 4.11-21 summarizes bicycle parking supply as required by the Bicycle Parking Ordinance. At completion, the proposed Project would require 26 long-term and 85 short-term spaces. The Oakland Bicycle Parking Ordinance addresses not only the quantity of parking, but the design and layout of that parking. Generally, long-term and short-term bicycle parking spaces are required to be located within 500 feet and 50 feet of the building entrance, respectively.

Table 4.11-21
Bicycle Parking Required
Per Bicycle Parking Ordinance

Use	Net Floor Area	Parking Required		
		Long-Term	Short-Term	Total
Supermarket	65.0 KSF		33 spaces	
Retail	200.0 KSF	24 spaces	40 spaces	107 spaces
Restaurant	19.4 KSF		10 spaces	
Office	8.8 KSF	2 spaces	2 spaces	4 spaces
Total Bicycle Parking Required		**26 spaces**	**85 spaces**	**111 spaces**

Source: Fehr & Peers, 2012.

The latest Project site plan (dated July 3, 2012) identifies bicycle parking throughout the Project site near the entrances to buildings. However, the site plan does not identify the type or quantity of bicycle parking locations.

Since the proposed Project would provide more than 150,000 square feet of floor area, Municipal Code Chapter 17.117.130 requires a minimum of two showers per gender (four showers total) and four lockers per shower (16 lockers totals).

Recommended Improvement Measures

Recommendation Trans-27: Although not required to address an adverse environmental impact, the City should consider the following improvements to bicycle parking:

a) Consider locating the long-term bicycle parking in the parking structures.

b) Ensure the short-term bicycle parking on sidewalks do not block pedestrian circulation.

c) Ensure that some short-term bicycle parking spaces can accommodate bicycles with trailers.

d) Monitor the usage of long-term and short-term bicycle parking spaces and if necessary provide additional parking spaces.

e) Consider providing shower and locker facilities in a central location that can be accessed by all site employees.

Automobile Parking

The evaluation includes the following:

- Comparison of the proposed parking supply to the City's parking requirements
- Comparison of the proposed parking supply to the estimated Project demand
- Summary of strategies to reduce parking demand and/or increase supply

Project Parking Supply

The proposed Project would provide 967 off-street parking spaces in the following locations:

- Deck on top of the proposed Safeway and adjacent buildings (Buildings A, B, and C) providing 267 parking spaces
- Three level parking structure in the west portion of the site (Buildings H and J) providing 362 parking spaces
- Surface parking throughout the site providing 338 parking spaces

In addition, the Project would result in the loss of following ten on-street parking spaces:

- Loss of five metered on-street parking spaces on the west side of Broadway between College and Coronado Avenues. These parking meters can be replaced by converting the parking spaces on Broadway between Coronado Avenue and 51st Street/Pleasant Valley Avenue from unrestricted to metered spaces
- Loss of four unmetered on-street parking spaces on the east side of Broadway just south of 51st Street/Pleasant Valley Avenue.
- Loss of one unmetered parking space on 51st Street

City Off-Street Project Parking Requirements

A consideration when evaluating the Project's proposed parking supply is how it compares to the City's Municipal Code requirements for off-street parking (Municipal Code Chapter 17.116). This analysis applies the requirements for the C-30 zone consistent with the applicable zoning for the Project site as described in Chapter 3, Project Description. The City of Oakland Municipal Code Chapter 17.116.80 indicates the parking requirements as follows:

- General Food Sales: one space per 200 square feet of net floor area
- General Retail Sales: one space per 400 square feet of net floor area
- Office: one space per 600 square feet of net floor area

Table 4.11-22 summarizes parking supply as required by the Municipal Code. The proposed Project would require 937 off-street parking spaces. Based on the Project site plan, the Project would provide 967 spaces which would satisfy the City's zoning code requirements.

Table 4.11-22
Required Automobile Parking Supply
Per City of Oakland Zoning Ordinance

Use	Net Floor Area	Parking Required
Supermarket	65.0 KSF	325 spaces
Retail	200.0 KSF	500 spaces
Restaurant	19.4 KSF	97 spaces
Office	8.8 KSF	15 spaces
Total Parking Required		**937 spaces**
Parking Supply		**967 spaces**
Parking Surplus		**30 spaces**

Source: Fehr & Peers, 2012.

Based on the Project site plan, the parking supply would include 86 compact spaces, corresponding to about nine percent of the overall parking supply. The amount of compact spaces satisfies the City of Oakland Municipal Code Chapter 17.116.200, which allows up to one-third of the overall parking spaces to be compact spaces.

The Project would also provide 30 accessible (handicap) parking spaces, corresponding to about three percent of the overall parking supply. The amount of accessible spaces satisfies the Access Board's *ADA Accessibility Guidelines for Buildings and Facilities* (ADAAG) which recommends that two percent of parking spaces be accessible.

Parking Demand Analysis

The parking supply provided for the proposed Project was also measured against the expected parking demand for the proposed Project uses, using parking demand rates based on ITE *Parking Generation, 4th Edition* (ITE, 2010). **Table 4.11-23** summarizes the estimated weekday and Saturday peak parking demand. Since the Project would consist of mostly commercial uses with usage peaked in December, the parking demand analysis was completed for both December and non-December periods. This analysis also assumes that all uses would peak at the same time of the day.

The parking demand for the Safeway component of the Project was estimated using the 85th percentile demand rates for urban supermarkets. The proposed Safeway store is estimated to generate about 184 and 180 parked automobiles during the weekday and Saturday peaks, respectively in non-December months. In December, parking demand is estimated to increase to about 199 and 194 parked automobiles during the weekday and Saturday peaks, respectively.

Table 4.11-23
Automobile Parking Demand Estimate

Land Use	ITE Code	Units[1]	Weekday (Non-Friday)	Friday	Saturday
Non-December					
Supermarket	850[2]	65.0 KSF	184	184	180
Retail	820[3]	228.2 KSF	582	671	655
Total Demand			766	855	835
Parking Supply			967	967	967
Parking Surplus (Deficit)			201	106	132
December					
Supermarket	850[4]	65.0 KSF	199	199	194
Retail	820[5]	228.2 KSF	858	904	1,066
Total Demand			1,057	1,102	1,260
Parking Supply			967	967	967
Parking Surplus (Deficit)			(90)	(141)	(293)

1. KSF = 1,000-square feet
2. ITE parking generation rates:
   85th percentile rate for urban supermarkets on weekdays = 2.83 spaces per KSF.
   ITE does not provide 85th percentile rates for urban supermarkets on Saturdays. The weekday 85th percentile to average ratio was applied to the Saturday average rate = 2.77 spaces per KSF.
3. ITE parking generation rates:
   Average rate for shopping center on non-December weekdays (non-Friday) = 2.55 spaces per KSF.
   Average rate for shopping center on non-December Friday = 2.94 spaces per KSF.
   Average rate for shopping center on non-December Saturdays = 2.87 spaces per KSF.
4. Based on data presented in ITE *Parking Generation,* parking demand in December is expected to be 8% higher than other months for supermarkets.
5. ITE parking generation rates:
   Average rate for shopping center on December weekdays (non-Friday) = 3.76 spaces per KSF.
   Average rate for shopping center on December Friday = 3.96 spaces per KSF.
   Average rate for shopping center on December Saturdays = 4.67 spaces per KSF.

Source: *Parking Generation* (3rd Edition), ITE, 2004 and Fehr & Peers, 2012.

Although specific retail tenants have not yet been identified, the site is expected to be occupied by mostly retailers in various buildings throughout the site. The ITE data for suburban Shopping Center land use was used to estimate the trip generation for both the retail and office components of the Project because it best fits the services proposed for the site. In order to present a more conservative analysis, the data was not adjusted to account for the urban setting of the Project site which would result in fewer customers and employees driving to the site due to the availability of other travel modes. The data was also not adjusted to account for the internalization of the trips between the supermarket and the other uses.

Since demand for shopping centers is higher during the December holiday season, this analysis estimates parking demand for non-Friday weekdays, Fridays, and Saturdays during December and non-December periods using the average rates for suburban shopping center uses. The retail component of the Project is estimated to generate between 582 parked automobiles on non-December non-Friday weekdays and 1,066 parked automobiles on December Saturdays.

Overall as shown in Table 4.11-23, the proposed Project is estimated to have a typical parking demand of between 766 and 855 parking spaces in non-December months. The proposed parking supply of 967 spaces would be adequate to meet the expected demand during most of the year. In December, the overall parking demand would increase to between 1,057 and 1,260 parking spaces. The parking supply provided on-site would not be adequate to meet the parking demand in December. The Project is predicted to have a parking deficit as much as 293 spaces on Saturdays in December. This is typical of urban retail centers where adequate parking supply is provided to meet the parking demand throughout most of the year but not the few busiest days during the holiday shopping period. Providing adequate parking supply to meet the highest parking demand would require considerable resources to construct and maintain parking facilities that would be vacant throughout most of the year and are only used a few days a year. In addition, an excessive parking supply would not be consistent with the urban setting of the Project which aims to encourage pedestrian, bicycle, and transit activity.

Parking Analysis Conclusions

As discussed in previous sections, the parking supply provided for the proposed Project would meet City code requirements. The Project parking supply would also meet the estimated demand throughout most of the year. Thus, Project customers and employees are not expected to park on-street during most the year.

Parking supply would not be adequate to meet the Project parking demand during peak periods in December. When demand exceeds capacity, it is expected that most customers will circulate through the site and wait to find an available parking space. Some Project customers or employees may use on-street parking when on-site demand would exceed the supply. Currently, the on-street parking on 51st Street west of Broadway and on Pleasant Valley Road east of the Project site do not have any restrictions and operate below capacity. It is expected that these spaces would be used by Project customers and employees when needed. Thus, parking by Project customers and employees in the adjacent residential neighborhoods is expected to be minimal.

Recommended Improvement Measures

Recommendation Trans-28: Although not required to address an adverse environmental impact, the City should consider the following strategies to reduce overall parking demand for the Project site and better manage the available parking supply:

a) Implement a Transportation Demand Management (TDM) plan to encourage more Project employees to use other travel modes than driving as required by SCA Trans-1.

b) Encourage employees to use the least convenient parking spaces such as parking spaces on the top deck of the parking structures and behind the buildings.

c) Install an automated parking counting system including variable message signs to inform motorists of the number of parking spaces available in the structured parking facilities and reduce potential traffic circulation.

d) Consider strategies to manage the parking demand and supply during the peak December periods:

- Provide attendant parking for employees and/or customers. Automobiles can park in the drive aisles with attendant parking and increase the overall parking capacity of the site.
- Provide remote parking for site employees.

The environmental consequences of each strategy listed above have been considered. It is not anticipated that the implementation of any of these strategies would result in any significant CEQA impacts.

Truck Access and Circulation

Municipal Code Requirements

The following off-street loading facilities are required for commercial uses per City Municipal Code Section 17.116.140:

- Buildings providing less than 10,000 square feet of net floor area do not require any loading berths
- Buildings between 10,000 and 24,999 square feet of net floor area require one loading berth
- Buildings between 25,000 and 49,999 square feet of net floor area require two loading berths
- Buildings between 50,000 and 99,999 square feet of net floor area require three loading berths
- Each additional 120,000 square feet (or fraction of one-half or more) of net floor area require one additional loading berth

Proposed Truck Loading

The proposed Project would provide the following loading berths:

- The 65,000-square foot Safeway Store (Building "A") would have two loading berths in the back of the store on the northwest corner of the building and space for two additional trucks to load/unload adjacent to the store on the northeast corner of the building. Trucks accessing the Safeway loading berths would enter the site from the signalized driveway on Pleasant Valley Avenue, travel along the access road on the east perimeter of the site, and back into the loading docks; they would leave the site by traveling along the access road on the north perimeter of the site and exit through the signalized Project driveway on Broadway.
- About 129,000 square feet of uses in the southwest portion of the site (Buildings "G," "L," "N," and "O") would share two loading berths (Building "M"). The loading berths would be on the internal Project street. Trucks would access these loading berths by entering the site from the signalized driveway on Pleasant Valley Avenue, turning left into the internal street, and backing into the loading berths; they would leave the site by traveling north along the internal street and exiting through the signalized Project driveway on Broadway.
- About 17,554 square feet of uses in the center of the site (Buildings "C1a" and C1b) would share one loading area. The loading area would be located in back of the stores. Trucks would access the loading area by entering the site from the signalized driveway on Broadway, travel along the access road on the north parameter of the site, and back into the loading area; they would leave the site by traveling along the access road on the north and east parameters of the site and exiting through the driveway on Pleasant Valley Avenue.
- The 14,310 square-foot Building "H" would provide one loading berth. The loading berth would be located in back of the stores. Trucks would access the loading berth by entering the site from the signalized driveway on Broadway, travel along the access road on the north parameter of the site, and back into the loading berth; they would leave the site by traveling along the access road exiting through either driveway on Pleasant Valley Avenue or Broadway.
- About 16,330 square feet of uses in the center of the site (Building "J") would share one loading area. The loading area would be located in back of the stores. Trucks would access the loading area by entering the site from the signalized driveway on Broadway, travel along the access road on the north parameter of the site, and back into the loading area; they would leave the site by traveling along the access road on the north and east parameters of the site and exiting through the driveway on Pleasant Valley Avenue.

Based on City Municipal Code requirements, the 293,200 square-feet of the Project would require five loading berths. Overall, the Project would provide five loading berths and loading area for four additional trucks. Thus, the Project would meet the City's Code requirements.

Recommended Improvement Measures

> **Recommendation Trans-29**: Implement a loading management program to ensure that truck deliveries for all Project buildings can be accommodated with minimal disruptions to pedestrian, bicycle, and automobile access and circulation and parking throughout the site. The loading management program should identify loading areas for all Project buildings and truck waiting areas when truck loading areas are occupied.

Transit Ridership

One of the stated goals in City of Oakland General Plan LUTE is the promotion of transit ridership and encouragement of transit accessibility and improvement of transit service throughout Oakland. Thus, an increase in transit ridership is not identified as an adverse impact under CEQA.

This section analyzes the transit system with trips associated with the proposed Project added to the existing system. This analysis presents the extent of Project impacts relative to existing transit conditions.

Since the proposed Project primarily serves the nearby areas and the nearest BART station (Rockridge Station) is over 0.5 miles away, the Project is expected to generate very few trips that would use BART. Thus, potential impacts of the proposed Project on BART train occupancy and station gate capacity are expected to be minimal and are not further discussed.

AC Transit Ridership

Table 4.11-13 summarized the current customer mode share and estimated Project trips generated by different travel modes. Currently, about zero percent of weekday PM peak hour trips and one percent of Saturday peak hour trips are by transit. Based on the existing mode share, the proposed Project is estimated to generate no new weekday PM peak hour and seven new Saturday PM peak hour transit trips. All new transit trips are expected to be by bus.

Based on criteria presented on page 4.11-58, an impact would occur on an AC Transit line if the Project would add more than three percent to the total ridership on a line when the average passengers per seat rate (i.e., load factor) on that line exceeds 125 percent.

Transit operations are evaluated against the existing conditions using the transit trips generated by the proposed Project. Table 4.11-2 shows AC Transit average and maximum passenger load factors for buses serving the Project site. Two local bus routes currently serve the Project site: Line 12 and Line 51A. Currently, Line 12 has maximum ridership of 50 percent in the eastbound direction and 33 percent in the westbound direction, while Line 51A has a maximum load factor of 103 percent in both directions.

Although the existing mode share data does not show any transit riders during the weekday PM peak hour, this transit ridership analysis assumes that two percent of trips generated by the Project (corresponding to about 10 trips) would by bus. In addition, it is also conservatively assumes that all transit trips generated by the proposed Project would use Line 51A which operates above capacity in the Project vicinity.

Of the 10 weekday PM peak-hour AC Transit trips generated by the proposed Project, about one additional rider is expected to be added to each northbound or southbound Line 51A bus. As shown in **Table 4.11-24**, this would result in a three percent increase in load factors in both northbound and southbound directions. However, since the overall load factors would continue to be less than 125 percent, the Project-generated ridership increases to AC Transit lines would result in a less than significant impact.

Table 4.11-24
AC Transit Maximum Loads
(No Project and Plus Project)

Bus Line	Stop Location	Direction	Average Capacity (Seats)	No Project		Plus Project	
				Maximum Load[1]	Max. Load Factor[2]	Maximum Load[1]	Max. Load Factor
51A	Broadway at Pleasant Valley Avenue/51st Street[3]	NB	32	33	**103%**	34	**106%**
		SB	32	33	**103%**	34	**106%**

Notes: **Bold** indicates maximum load factor above seating capacity.
1. Maximum number of passengers on the bus observed on a typical weekday.
2. Maximum load divided by average seated capacity.
3. The No Project ridership is for Line 51. Line 51B is assumed to have the same ridership as Line 51.

Source: Fehr & Peers, 2011.

Intersection Queuing Analysis

Environmental impacts of the Project on intersection traffic operations were analyzed through the delay/ LOS analysis presented earlier in this document. Although not an environmental impact, in addition, an analysis on the Project's potential to affect queuing at intersections was also completed to provide additional information to aid the public and decision makers in evaluating and considering the merits of the Project.

Queuing analysis for intersections in the Project vicinity was completed for all analysis scenarios using the Synchro software. The software calculates the expected queue using a formula that extrapolates the length of queue based on two cycle lengths. This methodology provides reasonable results for locations operating in the LOS A through D, but can miss-represent conditions as intersection operations approach capacity. In these instances, the software output denotes the condition with a letter/symbol adjacent to the analysis output worksheet.

The potential for queuing was identified where the Project trips would add 25 or more feet to the 95th percentile queue if the 95th percentile queue was over the available storage length without the Project or where Project trips would extend the queue over the available storage length. The findings are summarized below and in **Appendix 4.11O**.

In general, the locations with queuing are consistent with the delay/LOS analysis presented earlier in this document. Potential queuing would be expected at intersections where a significant impact on traffic operations was identified. Typically, improvements recommended to mitigate the significant impacts and reduce delay at intersections would also reduce queue lengths.

At some intersections, queues for one of two movements may increase while queues for other movements decrease. This is due to the reallocation of signal green time to the intersection approach and/or movements with higher traffic volumes which reduces the average delay experienced at the intersection.

As traffic signal timing parameters are implemented, they will be further refined to balance delays and queues for motorists on all approaches as well as safety and convenience of all users at the intersection including pedestrians and bicyclists.

Existing Plus Project Conditions

Intersection #2: Broadway/Broadway Terrace:

Northbound Through – Project would increase queue from 285 to 400 feet during the weekday PM peak hour and from 130 feet to 260 feet during the Saturday midday peak hour. Storage length is 160 feet before upstream signalized intersection is blocked.

Intersection #4: Broadway/Coronado Avenue/Project Driveway:

Southbound Left – The new southbound left-turn lane proposed as part of the Project would have a queue of 270 feet during weekday PM peak hour, 220 feet during the Saturday midday peak hour, and 250 feet during the Saturday PM peak hour, exceeding the 180 feet of available storage before upstream signalized intersection is blocked. Recommendation Trans-18 would increase the storage length by about 60 feet and eliminate the queue spill back during the Saturday midday peak hour.

Intersection #7: Broadway/51st Street/Pleasant Valley Avenue:

Eastbound Left - Project would increase queue from 290 to 390 feet during the weekday PM peak hour, from 255 feet to 365 feet during the Saturday midday peak hour, and from 160 to 265 feet during the Saturday PM peak hour; storage length is 120 feet before queue spills out of the left-turn pocket.

Westbound Left – Project would increase queue from 205 to 235 feet during the weekday PM peak hour. The Project would also reduce the storage length of the westbound left-turn pocket from 300 to 200 feet; thus, exceeding the available storage length.

Northbound Left – The new northbound left-turn lane proposed as part of the Project would have a queue of 245 feet during Saturday midday peak hour, exceeding the 140 feet of available storage in the left-turn pocket.

Northbound Through – Project would increase queue from 280 to 390 feet during the Saturday midday peak hour; storage length is 280 feet before upstream unsignalized intersection is blocked.

Intersection #15: Telegraph Avenue/51st Street:

Westbound Left – Project would increase queue from 150 to 190 feet during the Saturday midday peak hour; storage length is 180 feet before queue spills out of the left-turn pocket.

Intersection #20: Piedmont Avenue/Pleasant Valley Avenue:

Eastbound Through – Project would increase queue from 235 feet to 410 feet during the Saturday midday peak hour and from 275 to 445 feet during the Saturday PM peak hour; storage length is 250 feet before upstream unsignalized intersection is blocked. The proposed Mitigation Measure Trans-4 would reduce the queue to 90 feet during the Saturday midday peak hour and 70 feet during the Saturday PM peak hour.

Northbound Through – Project would increase queue from 165 to 225 feet during the Saturday midday peak hour; storage length is 140 feet before upstream unsignalized intersection is blocked. The proposed Mitigation Measure Trans-4 would not change the queue during the Saturday midday peak hour.

2015 Plus Project Conditions

Intersection #2: Broadway/Broadway Terrace:

Northbound Through – Project would increase queue from 305 to 415 feet during the weekday PM peak hour and from 25 to 175 feet during the Saturday PM peak hour. Storage length is 160 feet before upstream signalized intersection is blocked.

Intersection #3: Broadway/College Avenue:

Northbound Left – Project would increase queue from 240 to 300 feet during the Saturday midday peak hour. The Project would also reduce the available storage from 200 feet to 180 feet. Recommendation Trans-18A would increase the storage length by about 60 feet and reduce the queue spill back.

Intersection #4: Broadway/Coronado Avenue/Project Driveway:

Southbound Left – The new southbound left-turn lane proposed as part of the Project would have a queue of 270 feet during weekday PM peak hour, 235 feet during the Saturday midday peak hour, and 250 feet during the Saturday PM peak hour, exceeding the 180 feet of available storage before upstream signalized intersection is blocked. Recommendation Trans-18A would increase the storage length by about 60 feet which would reduce the queue spillback.

Intersection #7: Broadway/51st Street/Pleasant Valley Avenue:

Eastbound Left – Project would increase queue from 300 to 435 feet during the weekday PM peak hour, from 265 to 375 feet during the Saturday midday peak hour, and from 175 to 285 feet during the Saturday PM peak hour; storage length is 120 feet before queue spills out of the left-turn pocket.

Westbound Left – Project would increase queue from 235 to 275 feet during the weekday PM peak hour. The Project would also reduce the length of the westbound left-turn pocket from 300 to 200 feet; thus, exceeding the available storage length.

Northbound Left – The new northbound left-turn lane proposed as part of the Project would have a queue of 255 feet during Saturday midday peak hour, exceeding the 140 feet of available storage in the left-turn pocket.

Northbound Through – Project would increase queue from 315 to 515 feet during the Saturday midday peak hour; storage length is 280 feet before upstream unsignalized intersection is blocked.

Intersection #15: Telegraph Avenue/51st Street:

Westbound Left – Project would increase queue from 165 to 205 feet during the Saturday midday peak hour; storage length is 180 feet before queue spills out of the left-turn pocket.

Intersection #20: Piedmont Avenue/Pleasant Valley Avenue:

Eastbound Through – Project would increase queue from 490 to 515 feet during the weekday PM peak hour, from 250 feet to 455 feet during the Saturday midday peak hour, and from 295 to 495 feet during the Saturday PM peak hour; storage length is 250 feet before upstream unsignalized intersection is blocked. The proposed Mitigation Measure Trans-4 would reduce the queue to 290 feet during the weekday PM peak hour, 265 feet during the Saturday midday peak hour, and 240 feet during the Saturday PM peak hour.

Northbound Through – Project would increase queue from 365 to 390 feet during the weekday PM peak hour, from 195 to 250 feet during the Saturday midday peak hour, and from 250 to 280 feet during the Saturday PM peak hour; storage length is 140 feet before upstream unsignalized intersection is blocked.

The proposed Mitigation Measure Trans-4 would decrease or increase the queue to 380 feet during the weekday PM peak hour, 275 feet during the Saturday midday peak hour, and 275 feet during the Saturday PM peak hour.

2035 Plus Project Conditions

Intersection #2: Broadway/Broadway Terrace:

Northbound Through – Project would increase queue from 720 to 860 feet during the weekday PM peak hour and from 175 to 255 feet during the weekday PM peak hour. Storage length is 160 feet before upstream signalized intersection is blocked.

Intersection #3: Broadway/College Avenue:

Northbound Through – Project would increase queue from 65 to 500 feet during the weekday PM peak hour and from 195 to 380 feet during the Saturday midday peak hour. Storage length is 350 feet before upstream signalized intersection is blocked.

Intersection #4: Broadway/Coronado Avenue/Project Driveway:

Southbound Left – The new southbound left-turn lane proposed as part of the Project would have a queue of 255 feet during weekday PM peak hour and 235 feet during the Saturday PM peak hour, exceeding the 180 feet of available storage before upstream signalized intersection is blocked. Recommendation Trans-18A would increase the storage length by about 60 feet.

Southbound Through – The newly signalized southbound through movement proposed as part of the Project would have a queue of 220 feet during weekday PM peak hour, exceeding the 180 feet of available storage before upstream signalized intersection is blocked. Recommendation Trans-18A would increase the storage length by about 60 feet which would accommodate the estimated queue spillback.

Intersection #7: Broadway/51st Street/Pleasant Valley Avenue:

Eastbound Left – Project would increase queue from 370 to 505 feet during the weekday PM peak hour, from 325 to 430 feet during the Saturday midday peak hour, and from 215 to 325 feet during the Saturday PM peak hour; storage length is 120 feet before queue spills out of the left-turn pocket.

Westbound Left – Project would reduce the queue from 310 to 300 feet during the weekday PM peak hour, but the Project would also reduce the length of the westbound left-turn pocket from 300 to 200 feet; thus, exceeding the available storage length.

Northbound Left – The new northbound left-turn lane proposed as part of the Project would have a queue of 170 feet during weekday PM peak hour and 240 feet during the Saturday midday peak hour, exceeding the 140 feet of available storage in the left-turn pocket.

Northbound Through – Project would increase queue from 670 to 965 feet during the weekday PM peak hour, from 560 to 840 feet during the Saturday midday peak hour, and from 225 to 370 feet during the Saturday PM peak hour; storage length is 280 feet before upstream unsignalized intersection is blocked.

Intersection #12: Shattuck Avenue/52nd Street:

Southbound Left – Project would increase queue from 130 to 165 feet during the Saturday midday peak hour, and from 170 to 205 feet during the Saturday PM peak hour; storage length is 150 feet before queue spills out of the left-turn pocket. The proposed Mitigation Measure Trans-1 would reduce the queue to 150 feet during the Saturday PM peak hour.

Intersection #15: Telegraph Avenue/51st Street:

Westbound Left – Project would increase queue from 165 to 200 feet during the weekday PM peak hour, from 250 to 290 feet during the Saturday midday peak hour, and from 150 to 190 feet during the Saturday PM peak hour; storage length is 180 feet before queue spills out of the left-turn pocket. The proposed Mitigation Measure Trans-2 would increase the queue to 220 feet during the weekday PM peak hour and reduce the queue to 260 feet during the Saturday midday peak hour and 185 feet during the Saturday PM peak hour.

Northbound Through – Project would increase queue from 380 to 410 feet during the weekday PM peak hour and from 255 to 270 feet during the Saturday PM peak hour; storage length is 220 feet before upstream signalized intersection is blocked. The proposed Mitigation Measure Trans-2 would increase the queue to 420 feet during the weekday PM peak hour and 340 feet during the Saturday PM peak hour.

Intersection #20: Piedmont Avenue/Pleasant Valley Avenue:

Eastbound Through – Project would increase queue from 635 to 660 feet during the weekday PM peak hour, from 345 to 690 feet during the Saturday midday peak hour, and from 380 to 740 feet during the Saturday PM peak hour; storage length is 250 feet before upstream unsignalized intersection is blocked. The proposed Mitigation Measure Trans-4 would reduce the queue to 530 feet during the weekday PM peak hour, 380 feet during the Saturday midday peak hour, and 360 feet during the Saturday PM peak hour.

Westbound Through – Project would increase queue from 165 to 170 feet during the weekday PM peak hour and from 260 to 280 feet during the Saturday PM peak hour; storage length is 280 feet before upstream unsignalized intersection is blocked. The proposed Mitigation Measure Trans-3 would increase the queue to 400 feet during the weekday PM peak hour and 405 feet during the Saturday PM peak hour.

Northbound Through – Project would increase queue from 490 to 510 feet during the weekday PM peak hour, from 305 to 340 feet during the Saturday midday peak hour, and from 340 to 370 feet during the Saturday PM peak hour; storage length is 140 feet before upstream unsignalized intersection is blocked. The proposed Mitigation Measure Trans-4 would increase the queue to 515 feet during the weekday PM peak hour, 465 feet during the Saturday midday peak hour, and 500 feet during the Saturday PM peak hour.

Traffic Control Devices

As previously described, the California MUTCD peak hour traffic signal warrant would be satisfied at the following intersection under Project scenarios:

- #19 Howe Street/Pleasant Valley Avenue

However as shown in Table 4.11-6, this intersection currently satisfies the MUTCD peak hour signal warrant. The intersection will also continue to meet the peak hour signal warrant regardless of the proposed Project. While the Project would add traffic to this intersection, the stop-controlled northbound Howe Street approach would experience less delay with the proposed Project during the weekday and Saturday PM peak hours because the proposed Project and mitigation measures would improve traffic flow along Pleasant Valley Avenue and provide additional gaps for vehicles to turn from northbound Howe Street into Pleasant Valley Avenue.

Since the intersection satisfies the peak hour signal warrant and the Project would add more than ten peak hour vehicles to the intersection, the Project would have a significant impact at this intersection (See Impact Trans-3). However, signalizing the intersection is not desirable because signalization of the Howe Street/Pleasant Valley Avenue intersection would allow easier automobile access between Howe Street and Pleasant Valley Avenue, which may encourage cut-through automobiles to use Howe Street as an alternative to the congested Broadway and Piedmont Avenue corridors. Considering that this segment of Howe Street is primarily residential, potential increase in cut-through is not desirable.

No other study intersection would satisfy the peak hour signal warrant.

In addition, the proposed Project includes a number of roadway modifications adjacent to the project site and a number of mitigation measures in the project vicinity. These roadway modifications would include either new traffic control devices (such as traffic signals) or upgrades to existing traffic control devices. As previously described, all improvements, including crosswalks and pedestrian signals, will be designed and constructed to City standards in effect at the time of construction.

Collision History

The Collision Characteristics subsection summarizes five years of historical collision data in the vicinity of the Project and provides collision rate per million vehicles at the study intersections.

As described in the “Vehicle, Pedestrian, and Bicycle Safety” section earlier in this chapter, the off-site improvements proposed by the Project and the mitigation measures included in this EIR would have a positive impact on vehicle, pedestrian, or bicycle safety. The proposed Project would generally redesign Broadway and Pleasant Valley Avenue adjacent to the Project site to the latest applicable standards. As previously described, most of the modifications on adjacent streets proposed by the Project would improve safety, especially for pedestrians and bicyclists. Therefore, it is expected that the Project would generally reduce collision rates in the Project vicinity.

4.12

Utilities and Public Services

This section evaluates the proposed Project's potential impacts related to utilities and service systems. This section describes the existing utilities and services in the vicinity of the site, and evaluates the changes that development of the Project site as proposed might have with respect to utilities and service systems.

Physical Setting

Stormwater

Regional Storm Drainage

The Alameda County Flood Control and Water Conservation District (District) is responsible for the construction, operation and maintenance of major storm drain trunk lines and flood control facilities in Oakland. The District was created in 1949 by the State legislature to provide flood control services to Alameda County. The District's flood control infrastructure includes hundreds of miles of pipelines, channels, creeks, erosion control measures and pump stations. The City of Oakland is within Zone 12 (which also includes the City of Emeryville) and is the largest of the District's zones. Zone 12 has approximately 50 miles of closed conduit, approximately 10 miles of earthen and concrete channels, as well as the existing natural waterways, which move stormwater to the San Francisco Bay.[1] Four pump stations (Lake Merritt, Ettie, McKillop and Temescal) lift stormwater to the Bay.

The Project site is within the Glen Echo Creek sub-watershed, which is a component of the San Antonio Creek watershed. To the northeast of the Project site is the Rockridge branch of Glen Echo Creek, part of the District's flood control facilities also known as Line B-1. Line B-1 is approximately 2.5 miles in length and originates in the vicinity of Broadway Terrace and Romany Road, beginning as a natural creek meandering through the Claremont Golf Course, and then flowing into a large multi-purpose quarry pond located along the southern tip of the Claremont Country Club immediately adjacent to the Project site. An inverted-bell spillway carries overflow into a closed culvert that exits the property across Pleasant Valley Avenue at the southern boundary. The Rockridge branch joins the Broadway branch near 42nd Street and Broadway, and then joins the main stem at 30th Street and Richmond Boulevard, which flows into Lake Merritt at the northwest inlet, which flows into San Antonio Creek and ultimately into San Francisco Bay.

Local Storm Drain System

The Oakland Public Works Agency (PWA) is responsible for maintenance of the local storm drainage system within Oakland's public areas and roads. The City of Oakland's storm drainage system consists of more than 300 miles of storm drainpipes and 15,000 structures (mostly inlets, manholes and catch basins).

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[1] Alameda County Flood Control and Water Conservation District, *Report to the Community, Fiscal Year 2005,* 2005.

The storm drain system is a network of disjointed private and public drainage ways. City-owned drainage systems are improved drainage facilities located within easements and rights-of-way.

The existing storm drain system on the Project site consists of a series of drop-inlets connected by underground pipes. Runoff on the impervious portions of the site is directed by sheet flow, either toward the on-site system drop-inlet or curbside storm drains in Pleasant Valley Avenue and Broadway. Existing storm drainage facilities in, and in the immediate vicinity of the Project site include:

- 24-inch and 12-inch storm drain conduits located beneath the shopping center parking lot
- 24-inch storm drain lines which underlie Pleasant Valley Avenue and Broadway
- A 54-inch storm drain which carries overflow from the quarry pond into a buried culvert on the south side of Pleasant Valley Avenue. This overflow line is contained within an easement which runs across the Project site just northwest of the new AAA building.

Water

The Project site is served by existing water supplies, treatment facilities and distribution systems operated and managed by the East Bay Municipal Utility District (EBMUD). EBMUD provides potable water to approximately 1.3 million people throughout portions of Alameda and Contra Costa counties including the City of Oakland.

In October 2009, EBMUD adopted a long-term *Water Supply Management Program 2040* that serves as a water supply planning guide through the year 2040 (WSMP 2040). EBMUD now uses the WSMP 2040 to assess water supplies and analyze demands over a thirty-year planning horizon. The main objective of the WSMP 2040 was to identify and recommend solutions to meet or overcome dry-year water demands now and through the year 2040. EBMUD also prepared and certified a Programmatic EIR for the WSMP 2040 which evaluated the impacts associated with implementation of the WSMP 2040. Individual projects identified in the WSMP could be subject to project-specific environmental review. The following information is primarily derived from the EBMUD WSMP 2040 and its associated EIR.

Water Supply

EBMUD obtains approximately 90 percent of its water from the Mokelumne River watershed, and transports it through pipe aqueducts to temporary storage reservoirs in the East Bay hills. The remaining 10 percent of their water supply originates as runoff from protected watershed lands in the East Bay hills.

Current Water Supply and Demand

EBMUD has water rights and facilities to divert up to a daily maximum of 325 million gallons per day (mgd) from the Mokelumne River.[2] However, this allocation may be constrained by the interrelationships between EBMUD's water rights and the rights of other users of Mokelumne River water, its ability to store water, and the amount of Mokelumne River runoff. Additional water supply from local runoff put to beneficial uses is approximately 15 to 25 mgd during normal hydrologic years, but is reduced to near zero during drought conditions. EBMUD's normal year water supply for 2005 was 222 mgd.[3]

According to EBMUD's *Water Supply Master Plan 2040*, the current (2010) average daily water demand within its service area is estimated to be 251 mgd. That number is adjusted to account for conservation and recycled water program savings, resulting in an adjusted 2010 demand of approximately 216 mgd.[4]

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[2] East Bay Municipal Utility District, *Water Supply Master Plan 2040,* October 2009,

[3] EBMUD, *Water Supply Master Plan 2040*, October 2009.

[4] EBMUD, *Water Supply Master Plan 2040*, October 2009. Table 4-2, pg 4-8

Thus, EBMUD's current water supply (normal year supply of 222 mgd) is sufficient to meet current demands (of approximately 216 mgd) during normal and wet years. However, due to the various constraints on EBMUD's supply from the Mokelumne River and local sources, current supply is insufficient to meet customer needs in multiple year droughts despite water conservation measures and recycling programs. For example, during the recent 1987 to 1992 drought, customers were subject to water use restrictions (rationing) each year.

Future Year Water Supply and Demand

The primary purpose of the EBMUD *Water Supply Master Plan 2040* is to identify recommendations and solutions to meet dry-year water demands through year 2040.

WSMP 2040 includes an update of water demand projections for future potable water demands up to the year 2040. These future year water demands were calculated using existing and future demands for various land use categories and future changes in land use as stated in the respective general plans of communities within the EBMUD service area. Based on this land use information for residential and non-residential land use categories, EBMUD forecasts that service area demands would be about 304 mgd by 2030, but that with implementation of conservation techniques and recycled water use, the adjusted water demand would be reduced to approximately 229 mgd. By year 2040, the unadjusted water demand is projected to increase to 312 mgd, matched with decreases due to water conservation and water recycling that can bring the adjusted demand number down to 230 mgd by year 2040.[5] The demand projections were developed prior to the onset of the economic recession in December 2007. EBMUD anticipates the economic development and associated demand could be realized at a slower rate over time, but demand would average out close to the projected 2040 value.[6]

The Master Plan includes a "portfolio" of supplemental water supply sources, conservation, recycling and water rationing to satisfy customer water demand through 2040, even during drought year conditions. The preferred "portfolio" strategy is meant to be open and flexible, with different components of the portfolio to be pursued over time based on which elements of the portfolio are the most feasible for implementation. These portfolio components include:

- increased water conservation (EBMUD's WSMP 2040 set a goal of reducing water demand through conservation by as much as 39 mgd);
- increased production and use of recycled water (the WSMP includes a goal of achieving up to 11 mgd or water recycling use by year 2040);
- managed water rationing during years of prolonged drought (with a rationing level of 15% used to allow the District flexibility to respond to emergencies and unknown factors); and
- targeted supplemental water supply sources (including Northern California water transfers, the Bayside Groundwater Project, Sacramento Basin and San Joaquin groundwater banking and exchanges, regional desalination projects and reservoir expansions). Beginning in year 2010, EBMUD will be adding two additional supplemental water supplies to its portfolio; the Freeport Regional Water Project and the first phase of the Bayside Groundwater Project.

The combination of these portfolio elements, implemented over time, will satisfy increased customer demand through 2040, even during drought year conditions.[7]

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5 Ibid.

6 City of Oakland, *Housing Element of the General Plan Draft EIR*, August 2010, pg 6-3

7 EBMUD, *Water Supply Master Plan 2040*, October 2009. pg 6-53

Water Treatment Facilities

There are six water treatment plants in the EBMUD water supply and distribution system. Combined, the six plants have a treatment capacity of over 375,000,000 gallons per day. The Orinda Treatment Plant (WTP) supplies water to portions of Oakland, including the Project site. This WTP has the largest output of EBMUD's treatment plants with a peak capacity of 200,000,000 gallons per day, and is currently operating at approximately 70 percent of capacity.[8] At the WTP, water is subject to coagulation, filtration and disinfection prior to being distributed to the public.

Water Distribution System

Water distribution systems in Oakland are divided into pressure zones covering approximately 200-foot elevation ranges. As a result, water pressure ranges from 40 to 130 pounds per square inch (psi). Water pressure is generally adequate throughout the City, but pressure may be reduced in some locations with older water mains if they are not sized based on current standards or have lost capacity due to deterioration. Typically, required pipeline relocations and extensions, in addition to other water distribution infrastructure improvements, are made at the expense of the project applicant in consultation with EBMUD's New Business Office.

The Project site is served by a six inch water main located beneath Broadway. The Oakland Fire Department maintains a minimum fire flow standard of 1,500 gallons per minute, and these lines and associated minor water line connections are anticipated to have an available capacity.

Wastewater

Wastewater Treatment Facility

EBMUD provides wastewater service to approximately 642,000 people in Alameda and Contra Costa counties.[9] Wastewater collected by interceptors in the EBMUD service area Special District No. 1, which includes the City of Oakland, flows to the Main Wastewater Treatment Plant (MWWTP), which is located in Oakland near the eastern approach to the San Francisco-Oakland Bay Bridge. Additionally, EBMUD has two wet weather wastewater treatment facilities (WWF) in Oakland: the San Leandro Creek WWF and the Oakport WWF.

The MWWTP provides both primary and secondary treatment of wastewater. Primary treatment involves the removal of floating materials, oils and greases, sand, silt and organic solids sufficiently heavy to settle in water. Secondary treatment involves the removal of suspended organic and chemical impurities. The MWWTP has a primary treatment capacity of 320,000,000 gallons per day, and a secondary treatment capacity of 168,000,000 gallons per day. Storage basins provide plant capacity for short-term hydraulic peak of 415,000,000 gallons per day. The average annual daily flow into the MWWTP is approximately 80,000,000 gallons per day, representing 48 percent of the plant's secondary capacity.[10] Treated effluent is disinfected, dechlorinated and discharged through a deep-water outfall one mile off the East Bay shoreline into San Francisco Bay.

In addition, EBMUD has been recycling water at its MWWTP since the early 1970s. Recycled water is suitable for land uses that do not require potable water sources, such as golf courses, some agricultural areas and industrial uses. EBMUD provided more than 8,000,000 gallons per day of recycled water to

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[8] East Bay Municipal Utility District, *Daily Water Supply Report*, August 5, 2005, www.ebmud.com/water_&_environment/water_supply/daily_reports/default.htm.

[9] East Bay Municipal Utility District, 2005, op. cit.

[10] East Bay Municipal Utility District, Wastewater Treatment, http://www.ebmud.com/wastewater/treatment/.

customers in 2004, and has a goal to recycle 14,000,000 gallons per day by 2020.[11] Incentives used by EBMUD to encourage customers to utilize recycled water include rate discounts on recycled water and low-interest loans used to retrofit buildings so that they can accommodate recycled water.

In January 2002, the City of Oakland adopted a dual plumbing ordinance, which requires new development to use recycled water provided by EBMUD, and to install a dual plumbing system if recycled water is anticipated to be available. The multi-phased East Bayshore Recycled Water Project will supply up to 2,500,000 gallons per day of recycled water to portions of Alameda, Albany, Berkeley, Emeryville and Oakland. Recycled water use is not planned within the Project area.

Wastewater Collection System

The City of Oakland owns and maintains approximately 1,000 miles of sewer collection pipelines and seven pump stations within Oakland. Most of the City's wastewater collection system is 50 years old, and some of the existing infrastructure is as old as 100 years. The sewer system is connected to trunk lines which convey flows to EBMUD's wastewater interceptors, which consist of 29 miles of reinforced concrete pipes ranging from 1 to 9 feet in diameter. Wastewater from the Project site is conveyed through these interceptors to the MWWTP.

The City of Oakland has delineated and numbered sewer sub-basins which encompass a specific physical area, and its sewer flows are assigned by the City of Oakland to a single discharge point from the City's collection system to the EBMUD interceptor system. The City allocates each sub-basin a certain amount of sewer flow that may be discharged to the EBMUD system, and flows within a sub-basin normally may not exceed that allocation. Should a sub-basin require more flow than its allocation, allocation may be redirected between adjacent sub-basins. In total, flows from the sewer basin may not exceed that basin's allocation. In this manner, the City ensures the capacity of the EBMUD wastewater transport and treatment system is adequate to serve development as planned and as proposed. The Project site is situated in sewer Sub-basin 50-05.

The Project site is currently served by existing sewer infrastructure located beneath the surrounding roadways. Existing infrastructure consists of eight-inch pipelines located beneath both Broadway and Pleasant Valley Avenue. An eight inch lateral connection near the northeast corner of the Project site connects its sanitary sewer system to the existing infrastructure in Broadway.

The City of Oakland has a 25-year Sanitary Sewer Infiltration/Inflow Correction Program intended to reduce inflow and infiltration by upgrading the existing sewer system by rehabilitating and enhancing key portions of the sewer system that had the greatest problems within infiltration and inflow in order to eliminate overflows. The areas with the highest infiltration and inflow were identified and targeted cost-effectively for system rehabilitation and/or capacity correction. The 25-year plan was prioritized, in general, to achieve the maximum sanitary sewer overflow reduction at the least initial capital cost in the shortest time possible. Also, locations with the highest impact to public health and safety were given higher priorities. This program will be completed by 2013, and Oakland's Sewer Discharge Permit with the Regional Water Quality Control Board mandates the order of these projects.

Capacity improvements have targeted the trunk network only, on the assumption that the local mains have sufficient capacity to serve their respective sub-basins. The Sanitary Sewer Infiltration/Inflow Correction Program has been designed to accommodate a 20 percent increase in base-flow, with remaining system capacity determined by sub-basin. If the base-flow level of wastewater generated by a proposed development Project would not exceed the projected capacity of the sub-basin in which that project is located, impact analysis may be limited to the study of those local sewer mains which directly serve the Project site.

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[11] East Bay Municipal Utility District, 2005, op. cit.

Solid Waste

Solid waste and yard trimmings within the City of Oakland are collected by Waste Management of Alameda County. These materials are taken to the Davis Street Transfer Station in San Leandro. The Transfer Station, which has a maximum allowable capacity of 5,600 tons of waste per day, received an average of 3,028 tons per day in 2003.[12] The facility can process up to 320 tons per day of concrete, asphalt, dirt, bricks, wood and metal. After undergoing processing, waste from the Transfer Station is delivered to the Altamont Landfill in eastern Alameda County. The landfill comprises approximately 2,170 acres (480 acres permitted landfill area) and has a permitted maximum disposal of 11,150 tons per day and an average input of 7,505 tons per day. The landfill is projected to have sufficient capacity to operate until at least 2031, and potential to operate through 2071, depending on waste flows and waste reduction measures.[13]

The City provides curbside recycling within the City, including the project site. Curbside recycling includes the following materials: glass, aluminum and tin, motor oil, cardboard, magazine and newsprint, and plastic. Recyclable materials are delivered to the Davis Street Transfer Center, where they are processed.

The California Integrated Waste Management Board (CIWMB) estimates an average waste generation rate of 2.5 pounds per 1,000 square feet of commercial retail use.[14]

Energy

The Pacific Gas and Electric Company (PG&E) provides electricity and natural gas service to the City of Oakland, including the project site. Most of Oakland's electrical power is delivered via 12-kilovolt (kV) transmission lines from PG&E Substation L. Substation L receives 155 kV and distributes power to upper downtown Oakland and West Oakland. Local electric and gas distribution lines are located within the Project site. PG&E charges connection and user fees for all new development in addition to sliding rates for electrical and natural gas service based on use. These services are currently available at the Project site.

Regulatory Setting

State Regulations

California Integrated Waste Management Act

In 1989, the California legislature enacted the California Integrated Waste Management Act (AB 939), which requires the diversion of waste materials from landfills in order to preserve the decreasing capacity of landfills. Cities and counties in California were required to divert 25 percent of solid waste by 1995, and 50 percent of solid waste by 2000. The City of Oakland met this requirement by diverting 65 percent or more of its waste from 2000 through 2004.[15] AB 939 further requires every city and county to prepare

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[12] Alameda County Waste Management Authority, *Alameda County Integrated Waste Management Plan*, February 26, 2003.

[13] Ibid.

[14] Integrated Waste Management Board, *Estimated Solid Waste Generation Rates for Commercial Establishments*, 2009, http://www.ciwmb.ca.gov/WasteChar/WasteGenRates/Commercial.htm.

[15] California Integrated Waste Management Board, *Jurisdiction Profile for City of Oakland, Waste Stream Information Profiles*, 2005, http://www.ciwmb.ca.gov/profiles/.

two documents demonstrating how the mandated rates of diversion will be achieved. The Source Reduction and Recycling Element describes the chief source of the jurisdiction's waste, the existing diversion programs, and current rates of waste diversion and new or expanded diversion programs. The Household Hazardous Waste element describes each jurisdiction's responsibility in ensuring that household hazardous wastes are not mixed with non-hazardous solid wastes and subsequently deposited at a landfill. Oakland's Source Reduction and Recycling Element and its Household Hazardous Waste Element were approved in 1995 by the California Integrated Waste Management Board.[16]

Title 24, California's Energy Efficiency Standards

Title 24, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, details requirements to achieve minimum energy efficiency standards of the State of California. The standards apply to new construction of both residential and nonresidential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating and lighting. Compliance with these standards is verified and enforced through the local building permit process.

City of Oakland Regulations

Waste Reduction and Recycling Plan

Oakland Municipal Code Chapter 15.34 requires building permit applications for new construction, demolition, or alterations (with a valuation of $50,000 or greater) to be accompanied by an approved Waste Reduction and Recycling Plan (WRRP). The WRRP is required to document the ways that the applicant will reduce the quantity of construction and demolition debris disposed at landfills by 65 percent or more. The City does not approve building permits for projects until the WRRP is approved.

Oakland General Plan

Land Use and Transportation Element

The Land Use and Transportation Element of the Oakland General Plan includes the following policies related to the provision of utilities and infrastructure:

> *Policy N.12.4:* Electrical, telephone, and related distribution lines should be undergrounded in commercial and residential areas, except where special local conditions, such as limited visibility of the poles and wires makes this unneeded. They should also be underground in appropriate institutional, industrial, and other areas, and generally along freeways, scenic routes, and heavily traveled streets. Programs should lead systematically toward the eventual undergrounding of all existing lines in such places. Where significant utility extensions are taking place in these areas, such as in new subdivisions, utilities should be installed underground at the start.

City of Oakland's Standard Conditions of Approval

The City's Standard Conditions of Approval relevant to this impact topic are listed below for reference. The conditions of approval will be adopted as requirements of the proposed project if the project is approved by the City to help ensure that no significant impacts (for the applicable topic) occur. As a result, they are not listed as mitigation measures.

[16] Ibid.

SCA Util-1: Waste Reduction and Recycling. The project applicant will submit a Construction & Demolition Waste Reduction and Recycling Plan (WRRP) and an Operational Diversion Plan (ODP) for review and approval by the Public Works Agency.

a. Chapter 15.34 of the Oakland Municipal Code outlines requirements for reducing waste and optimizing construction and demolition (C&D) recycling. Affected projects include all new construction, renovations/alterations/modifications with construction values of $50,000 or more (except R-3), and all demolition (including soft demo).The WRRP must specify the methods by which the development will divert C&D debris waste generated by the proposed project from landfill disposal in accordance with current City requirements. Current standards, FAQs, and forms are available at www.oaklandpw.com/Page39.aspx or in the Green Building Resource Center. After approval of the plan, the project applicant shall implement the plan.

a. The ODP will identify how the project complies with the Recycling Space Allocation Ordinance, (Chapter 17.118 of the Oakland Municipal Code), including capacity calculations, and specify the methods by which the development will meet the current diversion of solid waste generated by operation of the proposed project from landfill disposal in accordance with current City requirements. The proposed program shall be implemented and maintained for the duration of the proposed activity or facility. Changes to the plan may be re-submitted to the Environmental Services Division of the Public Works Agency for review and approval. Any incentive programs shall remain fully operational as long as residents and businesses exist at the project site.

SCA Util-2: Stormwater and Sewer. *Prior to completing the final design for the project's sewer service.* Confirmation of the capacity of the City's surrounding stormwater and sanitary sewer system and state of repair shall be completed by a qualified civil engineer with funding from the project applicant. The project applicant shall be responsible for the necessary stormwater and sanitary sewer infrastructure improvements to accommodate the proposed project. In addition, the applicant shall be required to pay additional fees to improve sanitary sewer infrastructure if required by the Sewer and Stormwater Division. Improvements to the existing sanitary sewer collection system shall specifically include, but are not limited to, mechanisms to control or minimize increases in infiltration/inflow to offset sanitary sewer increases associated with the proposed project. To the maximum extent practicable, the applicant will be required to implement Best Management Practices to reduce the peak stormwater runoff from the project site. Additionally, the project applicant shall be responsible for payment of the required installation or hook-up fees to the affected service providers.

Impacts, Standard Conditions of Approval and Mitigation Measures

Criteria of Significance

The Project would result in a significant impact related to public utilities if it would:

Stormwater:

1. Require or result in construction of new storm water drainage facilities or expansion of existing facilities, construction of which could cause significant environmental effects;

Wastewater:

2. Exceed wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board;

3. Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new wastewater treatment facilities or expansion of existing facilities, construction of which could cause significant environmental effects;

Water

4. Exceed water supplies available to serve the project from existing entitlements and resources, and require or result in construction of water facilities or expansion of existing facilities, construction of which could cause significant environmental effects;

Solid Waste:

5. Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs and require or result in construction of landfill facilities or expansion of existing facilities, construction of which could cause significant environmental effects;
6. Violate applicable federal, state, and local statutes and regulations related to solid waste;

Energy:

7. Violate applicable federal, state and local statutes and regulations relating to energy standards; or
8. Result in a determination by the energy provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects.

Stormwater

Impact Util-1: Although the Project will result in the construction of certain new storm water drainage facilities, the construction of these facilities would not cause significant environmental effects. (**LTS with SCA**)

Construction Effects

The Project proposes to construct a number of on-site bio-retention storm water treatment areas to capture and treat storm water runoff from all building rooftops. The total area of bio-retention as proposed is approximately 8,890 square feet. Additionally, the Project would construct new on-site storm drains under the parking lot and driveways to collect storm runoff and convey that runoff to the City's existing storm drain system in Pleasant Valley Avenue. Construction of the storm drain improvements would occur in areas that are currently part of the existing shopping center's parking lots and driveways, i.e., areas with minimal to no environmental sensitivity.

Standard Conditions of Approval

All construction activity on-site, including construction of these storm drain system components, would be required to comply with City of Oakland standard conditions of approval regarding construction noise (SCA Noise-1 and SCA Noise-2), air quality and dust suppression (SCA Air-1 and SCA Air-2), erosion control (SCA Geo-1) and temporary construction traffic controls (SCA Trans-1) which would ensure that standard construction effects remain at less than significant levels.

Effects on Downstream Drainage Facilities

As indicated in the hydrology chapter of this EIR, the reduction in impervious surfaces associated with the proposed new bio-retention storm water treatment areas, coupled with the time for the flows to work their way through the various BMP's, will serve to reduce overall site runoff as compared to existing conditions. The amount of surface runoff leaving the site post-Project construction is anticipated to be less than current runoff volumes. Therefore, no increase in stormwater flows entering the City's storm drainage system will occur, and no downstream storm drainage systems improvements are anticipated.

Standard Conditions of Approval

Pursuant to SCA Util-2, the Project sponsor will be required to confirm the capacity of the City's surrounding stormwater system and state of repair, and the Project will be responsible for any necessary stormwater infrastructure improvements necessary to accommodate the proposed Project, thus ensuring that potential impacts remain at a less than significant level.

Mitigation Measures

None needed

Wastewater Treatment Capacity

Impact Util-2: The Project would not generate wastewater flows that would exceed the capacity of existing wastewater treatment facilities or necessitate the expansion of existing wastewater treatment facilities. (**LTS**)

Wastewater Flows

Baseline Wastewater Flows

The Project site is currently an actively used shopping center generating wastewater flows from its existing commercial tenants. These current activities produce a baseline amount of wastewater flows against which to measure the incremental change associated with the Project. Existing wastewater flows are presented in **Table 4.12-1** below.

Table 4.12-1: Existing Wastewater Flows

Existing Uses	Area (square feet/seats)	gpd/Unit	Average Daily Flow (gpd)	Peak Daily Flow (gpd)[1]
Retail	149,126 SF	0.1 GPD/SF	14,913	
Bank /Office	17,261 SF	0.2 GPD/SF	5,969	
Restaurant	19,421 SF/777 seats	50 GPD/seat	12,984	
Total:			33,865	133,809

Source: BKF 2011; Lamphier-Gregory 2012.

[1] Peak flow based on 3.5 peaking factor + 1000 gpd/acre infiltration rate over 15.28-acre site.

Project Wastewater Flows

The proposed new Safeway store is estimated to generate approximately the same wastewater flows as the current store, even though the new Safeway would be larger than the existing Safeway store. This is because the proposed new Safeway would use more efficient plumbing fixtures and water conservation features that would result in an overall reduction in sanitary sewer flows from the Safeway store on a per square footage basis. The existing Safeway uses 3.5 gallon per flush (gpf) toilets, whereas the new store would utilize 1.6 gpf toilets. The existing Safeway has a refrigeration cooling tower, whereas the new Safeway will have more efficient air-cooled condensing units in lieu of the cooling tower. However, the EIR conservatively assumes that per-unit wastewater generation rates for both Safeway and the Project as a whole would be the same as existing per-unit wastewater generation rates.

Projected wastewater flows from the Project are shown in the **Table 4.12-2**. As indicated in Table 4.14-2, the Project's total estimated average daily sewer load is approximately 67,949 gpd, an increase of 34,084 gpd over existing average daily flows. Estimated daily peak flow would be 253,103 gpd, an increase of 119,294 gpd over existing peak daily flows.

Table 4.14-2: Project Wastewater Flows

Existing Uses	Area (square feet/seats)	gpd/Unit	Average Daily Flow (gpd)	Peak Daily Flow (gpd)[1]
Retail	256,551 SF	0.1 gpd/SF	25,655	
Bank /Office	17,261 SF	0.2 gpd/SF	3,452	
Restaurant	19,421 SF/777 seats	50 gpd/seat	38,842	
Subtotal:			67,949	253,103
Less Existing Flows			- 33,865	133,809
Net Increase			34,084	119,294

Source: BKF 2011; Lamphier-Gregory 2012.

[1] Peak flow based on 3.5 peaking factor + 1000 gpd/acre infiltration rate over 15.28-acre site.

Wastewater Treatment Capacity

The City of Oakland uses a numbered sub-basin system and assigns the discharges from each sub-basin a single discharge point from the City's collection system to the EBMUD interceptor system. The City allocates each sub-basin a certain amount of sewer flow that may be discharged to the EBMUD system, and flows within a sub-basin normally may not exceed that allocation. Should a sub-basin require more flow than its allocation, allocation may be redirected between adjacent sub-basins. In this manner, the City ensures the capacity of the EBMUD wastewater transport and treatment system is adequate to serve development as planned and as proposed.

The Project site is located in sewer sub-basin 50-05. City of Oakland Public Works staff has indicated that, without off-site sewer rehabilitation (infiltration/inflow reduction) improvements to offset its estimated base flow increase, the estimated Project wastewater base flow exceeds the 20% growth rate of Sub-basin 50-05 and Sub-basin 50-05 does not currently have capacity for this net increase.

Standard Conditions of Approval

Pursuant to SCA Util-2, the Project applicant would be required to confirm the capacity of the City's wastewater system, and the Project would be responsible for any necessary wastewater infrastructure improvements necessary to accommodate the Project. With the City's wastewater sub-basin allocation approach, should a sub-basin require more flow than its allocation, allocation may be redirected between adjacent sub-basins. In this manner, the City ensures the capacity of the EBMUD wastewater transport and treatment system is adequate to serve development as planned and as proposed. Therefore, portions of unused allocation would be re-allocated, through coordination agreements with EBMUD, to the relevant sub-basins to accommodate the Project's projected demand. As there is sufficient system-wide conveyance and treatment capacity dedicated to the City of Oakland, the fact that the Project would cause Sub-basin 50-05 to exceed its wet weather allocation prescribed by the City would not be considered a significant impact.

Inabilities to handle wet weather flows are also a concern of EBMUD. The City of Oakland implements an inflow and infiltration correction program (IICP) to reduce wet weather overflows into the sanitary sewer system. The IICP sets a maximum allowable peak wastewater flow from each sub-basin within the City. The IICP is expected to increase the capacity of the collection system to allow an approximately 20 percent increase in wastewater flows. City of Oakland Public Works staff has indicated that the estimated wastewater base flow exceeds the 20% growth rate of Sub-basin 50-05 and Sub-basin 50-05 does not currently have capacity for this net increase. Implementation of the City's Standard Conditions of Approval and adherence to the provisions of the IICP would help decrease the amount of inflow and infiltration into the existing wastewater transport system. City of Oakland Public Works staff has indicated that, pursuant to SCA Util-2, the Project would be required to implement off-site sewer rehabilitation (infiltration/inflow reduction) improvements to offset its estimated base flow increase; implement improvements of the on-site and local collection system to accommodate the Project; and/or pay the current sewer mitigation fee.

Construction of needed off-site improvements would generally occur along existing pipeline alignments and within existing rights-of-way, and would be required to comply with City of Oakland Standard Conditions of Approval regarding construction noise (SCA Noise-1 and SCA Noise-2), air quality and dust suppression (SCA Air-1 and SCA Air-2), erosion control (SCA Geo-1) and temporary construction traffic controls (SCA Trans-1) which would ensure that standard construction effects remain less than significant.

With implementation of City of Oakland Standard Conditions of Approval regarding construction effects, the construction of any sewer infrastructure improvements that may be necessary pursuant to SCA Util-2, and the payment of sanitary sewer improvement fees, installation fees and hook-up fees, the Project's effects on wastewater infrastructure would remain at a level of less than significant.

Mitigation Measures

None needed

Wastewater Collection Infrastructure

Impact Util-3: Although the Project will result in the construction of new on-site wastewater collection infrastructure, the construction of such infrastructure would not cause significant environmental effects. (**LTS with SCA**)

The Project would need to construct a number of on-site wastewater collection lines (sewer lateral lines) to connect new buildings to the existing wastewater infrastructure. Construction of these new sewer lateral lines would occur in areas that are currently part of the existing shopping center, either in areas currently occupied by buildings, parking lots or driveways (areas with minimal to no environmental sensitivity). The Project's sanitary sewer system would connect to existing eight-inch sanitary sewer lines located beneath both Broadway and Pleasant Valley Avenue, which ultimately empty into EBMUD's interceptors.

Standard Conditions of Approval

All construction activity on-site, including construction of these sewer laterals, would be required to comply with City of Oakland standard conditions of approval regarding construction noise (SCA Noise-1 and SCA Noise-2), air quality and dust suppression (SCA Air-1 and SCA Air-2), erosion control (SCA Geo-1) and temporary construction traffic controls (SCA Trans-1) which would ensure that standard construction effects remain at less than significant levels.

All new and potentially upgraded sanitary sewer infrastructure elements will be required to be designed and constructed in accordance with the City's *Sanitary Sewer Design Guidelines*, including adherence to accepted engineering principles.

Pursuant to SCA Util-2, the Project sponsor would be required to show proposed sewer discharge calculations at the final design stage and to confirm the capacity of the City's surrounding sanitary sewer system and state of repair. The applicant would be responsible to verify the capacity of the main sewer pipe where the proposed sewer flow will be discharged to by using a peak flow factor of 3.75 and assuming the main sewer is flowing at one-third capacity. The Project would be responsible for any sewer infrastructure improvements necessary to accommodate the Project. Improvements to the existing sanitary sewer collection system may include, but are not limited to, mechanisms to control or minimize increases in infiltration/inflow to offset sanitary sewer increases associated with the proposed Project. In addition, the Project applicant shall be required to pay fees to improve sanitary sewer infrastructure if required by the Sewer and Stormwater Division, and for payment of all required installation or hook-up fees to the affected service providers.

City-wide capacity improvements to the sewer collection system are being conducted through the City's on-going Sanitary Sewer Infiltration/Inflow Correction Program. This program includes improvements to certain portions of the main sewer trunk network, which are designed to accommodate an overall 20 percent increase in base-flow. Property owners within the City of Oakland fund the Sanitary Sewer Infiltration/Inflow Correction Program improvements through the payment of property taxes, and a portion of the property taxes from the Project would be directed toward this Program.

With implementation of City of Oakland standard conditions of approval regarding construction effects, design and construction of new sewer system components in compliance with the City's *Sanitary Sewer Design Guideline*, the construction of any sewer infrastructure improvements that may be necessary pursuant to SCA Util-2, and the payment of sanitary sewer improvement fees, installation fees and hook-up fees, the Project's effects on wastewater infrastructure would remain at a level of less than significant.

Mitigation Measures

None needed

Water Supply

Impact Util-4: The Project would not exceed water supplies available from existing entitlements and resources. (**LTS**)

CEQA Guidelines Section 15155 requires a city or county with discretionary land use oversight for a "water demand" project to request a determination from the governing body of the public water system as to whether the projected water demand of that project was accounted for in the most recently adopted urban water management plan, and to request a water supply assessment (WSA). A "water demand" project is specifically defined in the Guidelines as a shopping center employing more than 1,000 persons or occupying more than 500,000 square feet of space. Since the proposed Project is a shopping center that would neither employ more than 1,000 persons (total projected employment under the Project is estimated to be approximately 515 people, or an increase of approximately 193 employees over existing conditions) nor occupy more than 500,000 square feet of space (the Project would occupy a total of approximately 279,000 square feet, or a net increase over current conditions of approximately 97,000 square feet), a WSA was not required nor requested.

The total water demand for the Project has been extrapolated from the wastewater demands presented above as derived from the City of Oakland's *Sanitary Sewer Design Guidelines*. The estimated average daily wastewater flow rates have been divided by a factor of 0.9, based on the assumption that approximately 90% of the overall water use of the Project will end up as wastewater and approximately 10% will be consumed through irrigation. The resulting water demands for the Project are as follows:

- Current, or baseline water demand of the existing shopping center is estimated to be approximately 34,100 gpd
- Total water demand of the Project at buildout is estimated to be 52,600 gpd.
- The net increased water demand as a result of redevelopment as proposed under the Project is estimated at 18,500 gpd.

This increased water demand represents a very marginal increase in overall water demands from throughout the EBMUD service area (less than 1/100th of a percent increase over the current adjusted demand of 216,000,000 gpd). The Project's estimated water demand is fully accounted for in EBMUD's water demand projections as published in the 2009 *WSMP 2040* and would not exceed water supplies available from existing entitlements and resources. The proposed Project would not result in a new significant increase in water usage and would not, by itself, require new or expanded water entitlements. Additionally, as part of standard development practices within the City of Oakland, the Project applicant would be required to comply with the Oakland Water Efficient Landscape Requirements found in Title 10, Chapter 7 of the Municipal Code. Therefore, the Project would not exceed water supplies available from existing entitlements and resources, and the water supply impacts of the Project would be less than significant.

Mitigation Measures

None needed

Water Supply Infrastructure

Impact Util-5: Although the Project would result in the construction of certain new on-site water supply infrastructure, the construction of such infrastructure would not cause significant environmental effects. (**LTS with SCA**)

The Project will need to construct a number of on-site water supply lines to connect new buildings to the existing water infrastructure. Construction of these new water lines would occur in areas that are currently part of the existing shopping center, either in areas currently occupied by buildings, parking lots or driveways (areas with minimal to no environmental sensitivity). All construction activity on-site, including construction of these sewer laterals, would be required to comply with City of Oakland standard conditions of approval regarding construction noise (SCA Noise-1), air quality and dust suppression (SCA Air-1), erosion control (SCA Geo-1) and temporary construction traffic controls (SCA Trans-1) which would ensure that standard construction effects remain at less than significant levels.

The existing main water pipeline system near the Project site is expected to be adequate to deliver water to the proposed Project, although the water pipelines within the site may need to be extended or relocated to provide the requested service. As part of standard development practices, all modifications and improvements to the existing water supply infrastructure required to accommodate the Project would be determined in consultation with EBMUD upon application for water service, with all associated costs to be borne by the Project sponsor.

Additionally, minimum fire flow requirements would be assessed at the time of Project funding. The Oakland Fire Department maintains a minimum fire flow standard of 1,500 gallons per minute.

Mitigation Measures

None needed

Solid Waste

Impact Util-6: The amount of solid waste generated by the proposed Project would not exceed the capacity of the Davis Street Transfer Station or the Altamont Landfill and would not require the construction or expansion of landfill facilities. As such, the proposed Project would have a less than significant impact on solid waste facilities. Demolition activities associated with the removal of the existing buildings, paved asphalt areas, and utilities would be subject to City of Oakland waste reduction and recycling requirements (**LTS with SCA**).

Operational Waste

The proposed project would be served by landfills with the capacity to handle solid wastes generated by the demolition, construction and operational phases of the proposed project. The CIWMB estimates an average waste generation rate of 2.5 pounds per 1,000 square feet per day for commercial retail uses. Although solid waste generation rates can vary substantially by specific use, this generation rate can be used to approximate the additional amount of waste that would be generated by the Project as proposed. The current approximately 185,000 square feet of commercial retail space is estimated to generate approximately 462 pounds of solid waste per day. The addition of approximately 95,000 square feet of net new commercial retail uses at the Project site would be expected to increase this waste generation by approximately 237 pounds of additional solid waste each day, for a total of approximately 700 pounds per day.

This would represent approximately ½ of 1 percent of the total daily permitted throughput for the Davis Street Transfer Station, and one one-thousandth of a percent (0.001 %) of the Altamont Landfill capacity. The amount of solid waste generated by operation of the proposed Project would not exceed the capacity of the Davis Street Transfer Station or the Altamont Landfill, and would not require the construction or expansion of landfill facilities. As such, operation of the proposed Project would have a less than significant impact on solid waste facilities.

Standard Conditions of Approval

Demolition activities associated with the removal of the existing building space, paved asphalt areas and utilities would be subject to City of Oakland waste reduction and recycling requirements. Compliance with SCA Util-1, the City's Waste Reduction and Recycling Standard, and Oakland Municipal Code Chapter 15.34 (which requires implementation of a recycling and waste reduction plan for construction and demolition activities) would reduce the amount of waste generated during the construction phases of the proposed Project. The Project would be required to comply with existing solid waste reduction requirements and would not violate applicable federal, State and local solid waste statutes and regulations.

Mitigation Measures

None needed

Energy Demands

Impact Util-6: The Project would not require more energy than what the local energy provider (PG&E) has the capacity to serve, nor would it require construction of new energy facilities or expansion of existing facilities which could cause significant environmental effects. The Project would be subject to the requirements of currently applicable federal, state and local statutes and regulations relating to energy standards. (**LTS with SCA**)

The Project would be subject to Title 24, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, and would not violate applicable regulations related to energy standards.

The Project is located in an area that currently receives electrical and natural gas services from PG&E. Connecting new buildings to existing lines would involve relatively minor improvements to the existing energy infrastructure. Energy consumption would primarily be associated with the new commercial uses at the site. The Project would not require or result in the construction of new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects. As such, the proposed project would have a less than significant impact on the provision of electricity and natural gas, and on energy consumption.

Mitigation Measures

None needed

Cumulative Utility Impacts

Cumulative Impact Util-7: The Project, in combination with other known past, present, planned or reasonably anticipated future projects would not exceed existing or projected utility capacities. (**LTS with SCA**)

Stormwater Drainage

The geographic area considered for the cumulative analysis of stormwater drainage collection systems is the City of Oakland, since the City is responsible for the local storm drainage system and the Alameda County Flood Control and Water Control District (ACFCWCD) operates the major trunk lines and flood control facilities. Cumulative development would occur in urbanized areas and primarily involve redevelopment of previously developed properties, so there would be limited change in impervious surface area and stormwater runoff. In addition, with required compliance of individual development projects with SCA Util-2, *Stormwater and Sewer*, compliance with City of Oakland Storm Drainage Design Guidelines which require a net reduction of 25 percent in the peak stormwater runoff rate from new projects to the extent possible, and the Alameda Countywide Clean Water Program National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit, cumulative stormwater drainage system impacts would be less than significant.

Water Supply

The geographic area considered for cumulative water supply impacts is the planning area for EBMUD, the water district that serves the City of Oakland and many other East Bay cities. As discussed above, EBMUD accounted for water demands associated with the Project within the current 2009 WSMP 2040. The WSMP includes an analysis of past, present, existing, pending and reasonably foreseeable future development projects based on the Association of Bay Area Governments (ABAG's) *Projections 2005*. Based on the ABAG projections, the WSMP acknowledges that Oakland is continuing to see additional redevelopment, and no significant Project-related cumulative impacts related to water supply are anticipated.

Wastewater Collection and Treatment

The geographic area considered for the cumulative analysis of wastewater collection systems is the City of Oakland, as the City owns, operates and maintains the wastewater collection system within the City. The Project site is located within Sub-basin 50-05. EBMUD allocates a certain amount of sewer flow that may be discharged into the interceptor system. Each sub-basin encompasses a specific physical area, and its sewer flows are assigned to a single discharge point from the City's collection system into the EBMUD South Interceptor. The sub-basin allocation system is the method by which EBMUD and the City of Oakland ensures that the City does not exceed its city-wide allocation of wastewater collection and treatment capacity. The City has determined that development of the Project would exceed the sub-basin allocation. Therefore, portions of unused allocation would be re-allocated, through coordination agreements with EBMUD, to the relevant sub-basins to accommodate the Project's projected demand. As there is sufficient system-wide conveyance and treatment capacity dedicated to the City of Oakland, the fact that the Project would cause Sub-basin 50-05 to exceed its wet weather allocation prescribed by the City is not a physical impact, and would not be considered a significant cumulative impact. The allocation system utilized enables EBMUD to ensure that the capacity of its wastewater transport and treatment system is adequate to serve past, present, existing, pending and reasonably foreseeable future development projects.

Inabilities to handle wet weather flows are also a concern of EBMUD. The City of Oakland implements an inflow and infiltration correction program (IICP) to reduce wet weather overflows into the sanitary sewer system. The IICP sets a maximum allowable peak wastewater flow from each sub-basin within the City. The IICP is expected to increase the capacity of the collection system to allow an approximately 20 percent increase in wastewater flows.

The City's implementation of its Standard Conditions of Approval and adherence to the provisions of the IICP would help decrease the amount of inflow and infiltration into the existing wastewater transport system. As a result, past, present, existing, pending and reasonably foreseeable future development projects are not anticipated to require or result in the construction of new wastewater treatment facilities or the expansion of existing facilities, and there would be no significant cumulative wastewater impacts.

Solid Waste

The proposed Project, together with past, present, existing, pending and reasonably foreseeable future development projects would result in a cumulative increase in solid waste generation. As discussed above, the waste generated by the Project would amount to an estimated 295 additional pounds per day, representing approximately 0.05 percent and 0.001 percent of the total daily permitted throughput for the Davis Street Transfer Station and the Altamont Landfill, respectively. The landfill is projected to have sufficient capacity to operate until at least 2031, and potentially through 2071 depending on waste flows and waste reduction measures. As such, the Project would not result in a significant cumulative impact related to solid waste.

Additionally, demolition activities associated with the removal of the existing structures, paved asphalt areas and utilities would be subject to City of Oakland waste reduction and recycling requirements. Compliance with the City's Waste Reduction and Recycling Standard Condition of Approval (SCA Util-3) and Oakland Municipal Code Chapter 15.34 (which requires implementation of a recycling and Waste reduction Plan for construction and demolition activities) would reduce the amount of waste generated during the construction phase of the all cumulative development projects.

Energy

The Project, together with past, present, existing, pending and reasonably foreseeable future development projects would increase demand for electricity and natural gas, but not to the extent that energy providers have identified a significant adverse cumulative impact. The Project and all other cumulative development projects in Oakland would be required to meet current State and local codes concerning energy consumption, including Title 24 of the California Code of Regulations. The Project would not violate applicable statutes and regulations related to energy standards and no significant adverse cumulative energy impacts are expected.

4.13

Other Less-than-Significant Effects

The June 2009 Notice of Preparation for this EIR did not include an Initial Study Checklist and therefore did not identify any environmental topics as being specifically screened out for potential adverse environmental effects. However, the NOP did indicate that it was ". . . *anticipated that the Project will not have significant environmental impacts on agricultural resources; cultural resources; mineral resources; population and housing; public services; and recreation. Nevertheless, these environmental factors will be analyzed in the EIR.*" This chapter of the EIR provides a discussion and analysis of these environmental topics which were not anticipated to rise to a level of significance and are not evaluated elsewhere in the EIR.

Agricultural Resources

Farmland Conversion

Impact Ag-1: The project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use. (**No Impact**)

The Project site is located in a highly urbanized portion of the City of Oakland, is currently an existing shopping center and is entirely covered by buildings or paved areas. The Project site is not shown on the Farmland Mapping and Monitoring Program of the California Resources Agency as containing any prime, unique or important farmland.

Mitigation Measures

None needed

Williamson Act Conflicts

Impact Ag -2: The Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract. (**No Impact**)

The Project site is zoned for commercial and medium density residential use. There are no lands in the vicinity that are zoned for agriculture, and neither the Project site nor any lands in the surroundings are under Williamson Act contracts.

Mitigation Measures

None needed

Other Changes Affecting Farmlands

Impact Ag-3: The Project would not involve any changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use. (**No Impact**)

The Project site is located in a highly urbanized portion of the City of Oakland. There are no farmlands in the vicinity that could be converted to non-agricultural use as a result of any Project changes.

Mitigation Measures

None needed

Mineral Resources

Loss of Mineral Resources

Impact Min-1: The Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. (**LTS**)

The Project site is the location of a former quarry known originally as the Oakland Paving Company Quarry or the Bilger Quarry, which was opened as far back as the late 1860's. At that time it was one of the largest quarries in Alameda County.[1] Rocks from the quarry, known as "blue-rock" (metamorphosed sandstone with lime carbonate in seams)[2] and "trap-rock" (Franciscan quartz diorite, a near-basalt)[3] were crushed, shipped out via rail spur and used for macadam, concrete, and gutter rock. The last quarry operator, DeSilva Construction, permanently closed the quarry in the 1950s.

According to the California Department of Conservation Division of Mines and Geology's Aggregate Resource Map,[4] the Project site is not currently considered an Aggregate Resource sector.

The Leona Quarry was the last mine in Oakland to be identified as a regionally significant source of aggregate resources. Areas with this designation are judged to be of prime importance in meeting future mineral needs in the region, and land use decisions must consider the importance of these resources to the region as a whole, and not just their importance to Oakland. The Leona Quarry has been closed for many years, and there is no other land in Oakland with such a designation.

Mitigation Measures

None needed

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[1] From *Stone Quarries and Beyond*, complied by Peggy Perazzo, http://quarriesandbeyond.org/states/ca/quarry_photo/ca-alameda_photos.html

[2] From *The Structural and Industrial Materials of California*, Bulletin No. 38, California, State Mining Bureau, San Francisco, California, 1906

[3] http://oaklandgeology.wordpress.com/2008/03/10/rockridge-shopping-center-quarry

[4] http://www.conservation.ca.gov/smgb/reports/Designation/DR%207/Documents/ DR7_SR146_Plate2.60.pdf

Loss of a Mineral Resource Recovery Site

Impact Min-2: The project would not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. (**No Impact**)

The Project site is not designated as a locally important mineral resource recovery site under the City of Oakland General Plan Land Use and Transportation Element (LUTE) or Conservation Element. There are no specific plans or other local land use plans applicable to the site.

Conservation Element Policy CO-3.2: Quarry Operations prohibits new quarrying activity in Oakland except upon clear and compelling evidence that the benefits will outweigh the resulting environmental, health, safety, aesthetic and quality of life costs.

Mitigation Measures

None needed

Population and Housing

Population Growth

Impact Pop-1: The Project will not induce substantial population growth in a manner not contemplated in the General Plan, either directly or indirectly. (**LTS**)

The Project does not propose to construct any new homes that would induce population growth. The estimated increase in employment at the Project site (approximately 193 employees over existing conditions) is not so large as to induce population growth, and employees for new businesses can be found from within the existing available labor force. The Project does not require the extension of any roads or other infrastructure that would lead to growth inducing impacts that were not previously considered or analyzed in the General Plan and its associated EIR.

Mitigation Measures

None needed

Housing and/or Population Displacement

Impact Pop-2: The Project would not displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element. (**No Impact**)

The Project involves the redevelopment of an existing shopping center with a new commercial center. No housing exists within the Project site and no housing would be removed as part of the Project.

At buildout, the Project will result in demolition of all 185,500 square feet of currently existing commercial space and be redeveloped with approximately 322,500 square feet of new space, for a net increase of about 137,000 square feet of building space. While some existing business tenants within the existing shopping center may be displaced either temporarily during construction or permanently as a result of a new tenant mix, such displacement would not necessitate the construction of replacement housing or replacement commercial space in excess of that contained in the City's General Plan Land Use and Transportation Element or Housing Element.

Mitigation Measures

None needed

Public Services

Fire Protection

Impact Pub Serv-1: The Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities in order to maintain acceptable service ratios, response times or other fire protection service performance objectives. (**LTS**)

The Oakland Fire Department (OFD), Fire Prevention Bureau provides protection of all citizens within the City of Oakland from natural or man-made hazards which may cause both injury and loss of property. The Fire Prevention Bureau is primarily responsible for fire safety education, fire cause determination, inspection of high hazard occupancies, fire code enforcement, hazardous materials regulation, and vegetation management. The Bureau provides plan checking services that assure the incorporation of proper life safety standards, as well as code compliance, in all new construction in the city.

The Operations Division of the Fire Prevention Bureau includes 500 uniformed personnel to fill three complete shifts of response personnel, 25 fire stations, and extensive equipment and resources to handle emergencies. The Fire Department receives an average of 60,000 response calls annually, 80% of which are medical emergencies. The Fire Department's response time goal is seven minutes or less, 90 percent of the time.

The OFD fire stations nearest to the Project site include Station 8 (located at 463 51st Street, near 51st and Telegraph) which is approximately ½ mile from the Project site, and Station 19 (located at 5766 Miles Avenue, near Highway 24 and College Avenue), which is approximately ¾ of a mile from the Project site. Both of these stations are capable of providing prompt fire protection service to the Project site (less than 7 minutes) in an emergency. Station 8, which nearest to the site, is a truck company with a ladder-equipped fire truck capable of fighting structural fires in multi-level buildings.

The Project site is not located within the Oakland Wildfire Prevention Assessment District, indicating that it is not located in the high wildland fire zone.

The increase in retail space at the Project site may result in an increase in calls for fire and emergency service. However, the Fire Department would be able to provide adequate fire suppression and emergency medical response services to the Project Site with existing staff. The Project would not require development of new or physically altered facilities.

City of Oakland's Standard Conditions of Approval

The City's Standard Conditions of Approval relevant to this impact topic are listed below for reference. The conditions of approval will be adopted as requirements of the proposed Project if the Project is approved by the City to help ensure that no significant impacts (for the applicable topic) occur. As a result, they are not listed as mitigation measures.

> **SCA Pub Serv-1: Fire Safety Phasing Plan**. *Prior to issuance of a demolition, grading, and/or construction and concurrent with any P-job submittal permit.* The project applicant shall submit a separate fire safety phasing plan to the Planning and Zoning Division and Fire Services Division for their review and approval. The fire safety plan shall include all of the fire safety features incorporated into the project and the schedule for implementation of the features. Fire Services Division may

require changes to the plan or may reject the plan if it does not adequately address fire hazards associated with the project as a whole or the individual phase.

In accordance with the California State Fire Code, the Fire Department would require that fire prevention measures such as automatic sprinklers, smoke detectors, fire alarm systems, and fire resistant construction, be incorporated into final Project plans for each building. The building and fire code requirements adopted by the City of Oakland would be incorporated into Project construction. The Fire Department would review the Project, including provisions for onsite access, exits, and any necessary special equipment to assist firefighters on-site. The Project applicant would be required to incorporate the Fire Department's recommendations into the final Project.

Mitigation Measures

None needed

Police Protection

Impact Pub Serv-2: The Project could result in an increase in calls for police protection services, but would not result in substantial adverse physical impacts associated with the provision of new or physically altered police facilities or the need for new or physically altered police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other Oakland Police Department performance objectives (**LTS**)

The Oakland Police Department (OPD) Patrol Division uses a geographic, area command system to serve the City. The project site is located in Area 1, which includes West and North Oakland and is bordered by the Berkeley Hills on the north, Lake Merritt on the east, the Oakland Estuary on the south, and the Bay on the west. Officers assigned to this patrol respond to calls for service and critical incidents, conduct preliminary investigations and engage in community-oriented problem-solving projects. In addition to patrol officers, area personnel include community policing officers (the Project site is located with the OPD Community Policing Beat 1), crime response team officers, neighborhood enhancement team officers, foot patrol officers, police canine officers, police service technicians, and police evidence technicians.[5]

According to the OPD's Crimewatch web site,[6] during the 3-month period from November 2010 through February 2011, there were a total of 2 aggravated assaults, 5 robberies, 7 vehicle thefts, 10 burglaries and 31 thefts reported within ¼ mile of the Project site. The data indicates that the general area surrounding the Project site has a relatively high incidence of crime.

The Project would increase development intensity on the Project site as well as increase the on-site population (employees and visitors). This increase could result in an increase in reported crimes. Whereas the City continues to deal with issues surrounding crime and crime prevention, and whereas the OPD continues to manage its resources as effectively as possible given budgetary constraints, it is not anticipated that the Project will result in the need for any new physical facilities to maintain acceptable service ratios, response times or other Oakland Police Department performance objectives which could result in direct physical environmental effects.

5 http://www2.oaklandnet.com/oakca/groups/police/documents/image/oak025561.pdf

6 http://gismaps.oaklandnet.com/crimewatch/wizard.asp

Mitigation Measures

None needed

Public Schools

Impact Pub Serv-3: The Project could result in new students for local schools, but would not require new or physically altered school facilities to maintain acceptable performance objectives. (**LTS**)

The Project does not include any proposed new residential uses and would not directly generate new student enrollment in the Oakland Unified School District. Whereas it is possible that families could relocate to Oakland or other adjacent communities as a result of the minor increase in employment opportunities generated by the Project, such increases in new families would be so minor (the estimated increase in employment at the Project site is approximately 120 employees over existing conditions) that it is unlikely to induce population growth, Employees for new businesses can likely be found from within the existing available labor force.

Pursuant to Senate Bill 50 (SB 50), the Project sponsor would be required to pay school impact fees established to offset potential impacts from new development on school facilities. Therefore, although the Project could indirectly result in a minor increase in resident population and potential student enrollment, payment of fees mandated under SB 50 is the mitigation measure prescribed by the statute. Payment of such fees is deemed full and complete mitigation.

Mitigation Measures

None required

Recreation

Park Usage

Impact Rec-1: The Project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. (**LTS**)

Public parks in the vicinity of the Project site include Frog Park (approximately ¾ mile from the site), Rockridge Park (approximately 1 mile from the site), Ostrander Park (approximately 1.5 mile from the site), and the Lake Temescal Regional Recreation Area (approximately 2 miles from the site).

The Project's effect on parks and recreation facilities would be indirect, resulting from the increase in employment opportunities at the site, which could result in a minor increase in the resident population in Oakland and surrounding communities. Increases in the number of employees and shoppers at the Project site could result in an increased use of nearby parks. However, the expected increase in park usage would be very minor and existing parks offer substantial capacity for increased use.

Mitigation Measures

None needed

Construction or Expansion of Recreational Facilities

Impact Rec-2: The Project does not include recreational facilities nor does it require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. (**No Impact**)

The Project does not provide for new public recreation areas or parks, but does expand on the existing pedestrian and bicycle network for the site and includes a number of public gathering places and plazas. The main plazas are located along Broadway at the Pleasant Valley Avenue intersection, connecting through the corner buildings at this location. The internal project street also has a number of smaller plazas and gathering places, including wide sidewalks for outdoor cafes and public seating. The landscaped edge near the quarry pond will have two smaller plazas which serve as scenic outlooks over the Pond and small shelter away from the large parking lot.

Construction of these pedestrian and bicycle networks, public plazas and gathering spaces would have no adverse physical effects on the environment, other than as described and identified on other chapters of this EIR.

Mitigation Measures

None needed

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Alternatives

Introduction and Overview

CEQA Guidelines require an analysis of a reasonable range of alternatives for any project subject to an EIR. The purpose of the alternatives section is to provide decision-makers and the public with a discussion of alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. Evaluation of alternatives should present the proposed action and all the alternatives in comparative form to define the issues and provide a clear basis for choice among the options.

CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that would otherwise occur. Where a lead agency has determined that even after adoption of all feasible mitigation measures, a project as proposed would still result in significant environmental effects that cannot be substantially lessened or avoided, the agency must first determine whether there are any alternatives that are both environmentally superior and feasible. CEQA provides the following guidelines for discussing project alternatives:

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation (§15126.6(a)).
- An EIR is not required to consider alternatives which are infeasible (§15126.6(a)).
- The discussion of alternatives shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project (§15126.6(b)).
- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (§15126.6(c)).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis and comparison with the proposed project (§15126.6(d)).

Accomplishing Basic Project Objectives

CEQA requires an analysis of alternatives that would feasibly attain most of the basic objectives of the project. The overall Project objective is to redevelop the Project site to support development of a new Safeway store and to add new commercial space at the site. The specific Project objectives are as follows:

- Revitalize the 15.4-acre site at the intersection of Pleasant Valley Avenue and Broadway through phased redevelopment of the existing 1960s suburban style commercial development with a vibrant urban shopping environment composed of an approximately 65,000 square foot Safeway store and approximately 228,000 square feet of net leasable space for retail, restaurant, office, and associated uses.

- Improve Safeway store to offer a more comprehensive range of retail services and products to Safeway's customers, including: an on-site "from scratch" bakery; a pharmacy; expanded wine, cheese and floral offerings; an expanded deli (including warm food table, and prepared catering food items); a "service" meat and seafood service (as compared to the pre-packaged items currently available); organic produce; and one or more specialty drink kiosks.
- Provide a more functional and efficient shopping area configuration by improving access and walkability to create a sense of place where customers can enjoy amenities from all the retailers within the center, thereby enhancing the overall shopping experience.
- Construct an urban infill development that accommodates a larger grocery store anchor than currently exists and that attracts and retains other high-quality retail tenants, including those that will provide shopping options to local customers that are not currently available in the City.
- Construct a retail development that will provide significant benefits to the City and community in terms of increased employment opportunities, tax revenues and shopping opportunities.
- Enable the shopping center, especially the grocery store, to remain operational throughout the construction period.
- Coordinate development in phases in order to meet both current and expected future retail market demands.
- Construct energy efficient buildings using environmentally-friendly design practices incorporating "green" features where possible.
- Improve aesthetics of the site through native and drought-tolerant landscaping, while maintaining and protecting adjacent surface waters.
- Comply with all applicable agreements pertaining to the property, including the terms of a land lease that precludes development of housing on the site.
- Improve site circulation by consolidating access points, developing an outer ring road and providing internal roadways with clear direction options for various destinations within the center.
- Enhance pedestrian and bicycle access to the project site by providing a meandering sidewalk that substantially encircles the site and new plaza areas as well as a pedestrian/bike path along the eastern edge of the site.
- Provide sufficient parking to serve the needs of Safeway and other retail tenants that has direct and convenient access from major thoroughfares and will be inviting, well-lit, safe and screened to a greater degree than current conditions from pedestrians and motorists.
- Provide several hundred construction jobs as well as approximately 70 new union jobs with Safeway and approximately 170 new positions with the expansion of the retail center.
- Complete the project on schedule and within budget.
- Capitalize on the current opportunity to move the Safeway grocery store into the CVS Pharmacy site soon after the current CVS lease expires.

Reducing Significant and Unavoidable Project Impacts

CEQA also requires the identification and analysis of alternatives that would avoid or substantially lessen any of the significant effects of the project. As explained in Chapter 4.11: Transportation, Circulation and Parking and summarized below, the Project would result in significant unavoidable impacts related to traffic operations at the Howe Street/Pleasant Valley Avenue, Piedmont Avenue/Pleasant Valley Avenue and Broadway/51st Street/Pleasant Valley Avenue intersections. Pursuant to the CEQA Guidelines, the alternatives evaluated in this EIR were developed with the purpose of substantially reducing these unavoidable significant impacts, as well as avoiding or reducing other significant impacts of the Project for which feasible mitigation measures have been identified.

However, none of the alternatives would avoid all of the significant and unavoidable traffic impacts identified for the Project. These impacts are as follows:

- Howe Street/Pleasant Valley Avenue (Existing, 2015 and 2035): Under Existing plus Project, 2015 plus Project, and 2035 plus Project conditions, the proposed Project would add more than 10 trips to the Howe Street/Pleasant Valley Avenue intersection during the weekday PM and Saturday midday peak hours. This intersection would meet the peak hour signal warrant, and this impact would exceed the City's threshold and be considered significant. Although several improvements are identified as capable of improving traffic operations at this intersection and mitigating the traffic impact, each of these improvements would result in significant and unavoidable secondary impacts. Because of these secondary significant impacts, these measures are considered infeasible and traffic impacts at the Howe Street/Pleasant Valley Avenue intersection are considered ***significant and unavoidable***.
- Piedmont Avenue/Pleasant Valley Avenue – Intersection #20 (2035): Under 2035 plus Project conditions, the Project would increase the volume-to-capacity (v/c) ratio for the intersection at Piedmont Avenue/Pleasant Valley Avenue during both the weekday PM and Saturday peak hours by more than the City's acceptable thresholds, and the traffic impact would be considered significant. Although intersection improvements are identified which are capable of improving traffic operations at this intersection, one of the recommended improvements would not reduce the impact to a less-than-significant level and the other identified improvement would result in significant and unavoidable secondary impacts (i.e., elimination of planned bicycle lanes on Piedmont Avenue and loss of on-street parking). Because of these secondary significant impacts, these improvements are considered infeasible and traffic impacts at the Piedmont Avenue/Pleasant Valley Avenue intersection are considered ***significant and unavoidable***.
- Broadway/51st Street/Pleasant Valley Avenue – Intersection #7 (2015 and 2035): Under 2015 plus Project and 2035 plus Project conditions, the Project would increase volume-to-capacity (v/c) ratio for the intersection at Broadway/51st Street/Pleasant Valley Avenue during the weekday PM peak hour by more than the City's acceptable thresholds, and the traffic impact would be considered significant. Although a mitigation measure is identified that is capable of reducing the impact, it is not adequate to reduce the impact to a less-than-significant level. In addition, this mitigation measure would result in significant and unavoidable secondary impacts (i.e., conflicts with City policy concerning pedestrian safety). Traffic operations at the intersection could be improved by providing additional automobile travel lanes, but such lanes could not be accommodated within the existing right-of-way and thus are considered to be infeasible. Because of the secondary significant impacts and infeasibility of identified improvements, traffic impacts at the Broadway/51st Street/Pleasant Valley Avenue intersection are considered ***significant and unavoidable***.

Alternatives Analyzed

The five alternatives analyzed in this EIR are listed below. These alternatives are intended to meet the CEQA requirement that an EIR describe the no project alternative as well as a range of reasonable alternatives to the project that would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen the significant effects of the project.

Alternative 1: No Project

CEQA Guidelines Section 15126.6(e)(3)(B) states that "If the project is…a development project on identifiable property, the "no project" alternative is the circumstance under which the project does not proceed. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this "no project" consequence should be discussed." Under Alternative 1: No Project, the Safeway store would remain in its existing location at its present size and there would be no redevelopment of the shopping center buildings or grounds apart from a possible remodeling of the Safeway store.

Alternative 2: Safeway Relocation

Alternative 2: Safeway Relocation includes relocation of the Safeway store to the current CVS Pharmacy space, but retains the remainder of the shopping center as it currently exists. Safeway would simply re-occupy the CVS Pharmacy building with minor alterations as necessary. New commercial tenants would be sought to fill the vacated Safeway site, but no new or additional space would be added. The Safeway Relocation alternative would retain the approximately 185,500 square feet of commercial uses that currently exist on the site, with no net increase in building space. This alternative may require additional discretionary action on the part of the City; administrative building permits would be necessary for internal improvements to suit future retail tenants.

Alternative 3: Reduced Project

Alternative 3: Reduced Project is envisioned to include all site improvements as proposed under the Project with the exception of upper-floor space. Similar to the Project, this alternative would demolish all of the existing buildings on the site, and redevelop the site with a new commercial center. However, the amount of new space constructed under this alternative would be approximately 254,700 square feet, or about 80 percent of the amount of new space proposed under the Project. The Project proposes to construct approximately 67,700 square feet of new space on upper levels, including above the new Safeway and on a second floor along Pleasant Valley Avenue. Under the Reduced Project alternative, the site would be re-built without the upper-floor commercial space included in the Project, for a total development of approximately 254,700 square feet of space.

Alternative 4: Concept with Commercial Emphasis (RCPC Plan)

During the scoping process for this EIR, in written responses to the June 25, 2009 Notice of Preparation (NOP) (see **Appendix 1B**) and at a July 15, 2009 City of Oakland Planning Commission public hearing on the scope of the EIR, individuals and neighborhood groups expressed their desire for a different design and mix of land uses that they believed was more pedestrian-, bicycle- and transit-friendly, and more urban in character. Alternative 4: Concept with Commercial Emphasis is based on a concept plan put forth by the Rockridge Community Planning Council (RCPC), which can be viewed on the RCPC website.[1]

Alternative 4 includes a mix of land uses and site layout that are very similar to the Project evaluated in this EIR. Similar to the Project, Alternative 4 would involve the demolition of all of the existing buildings and the construction of a new 65,000 square foot Safeway store along with other retail, office and restaurant space, for a total of 320,000 square feet of commercial space. A total of 1,000 off-street parking spaces would be located in surface parking lots, along a new internal "shopping street," on a rooftop parking lot over the new Safeway store, and in a three level parking garage located over retail space. Unlike the Project, Alternative 4 would retain the Chase bank in its present location, and place

[1] http://www.rockridge.org/ludocs/Safeway/RockridgeCenterSafeway/rcpc_plans.pdf

more retail space where the Project proposes a new freestanding bank with a drive-thru. Alternative 4 would connect the new entry on Broadway to the center of the site through the internal "shopping street," whereas the Project would extend Coronado Avenue along the northerly boundary of the site through to the quarry pond.

Alternative 5: Concept with Residential Emphasis (ULTRA Plan)

Alternative 5: Concept with Residential Emphasis (ULTRA Plan) is a concept plan put forth by Urbanists for a Livable Temescal-Rockridge Area (ULTRA) in its July 27, 2009 letter responding to the NOP (**Appendix 1B**). Alternative 5 would involve the demolition of all of the existing buildings and the construction of a new Safeway store along with a lesser amount of retail and office space than the Project, plus a substantial number of housing units. Alternative 5 would include 121,000 square feet of commercial space and up to 349 residential units in both residential and mixed-use buildings. Approximately 800 off-street parking spaces would be located in two parking structures. The new Safeway store would be located along Broadway, next to a new transit plaza. Safeway's "boutique" shops (i.e., deli, bakery, butcher shop, pharmacy, floral, specialty drinks, banking) would front onto Broadway and the transit plaza, with access from both the main store and the street. Live/work homes/offices would front on Pleasant Valley Avenue. Townhouses and flats would line the parking garage, fill the upper stories above the Safeway store and other retail, and occupy the area by the quarry pond. Three-story townhouses with garages on alleys would occupy the more remote portion of the site, where the CVS Pharmacy building now stands, organized around a central park.

Table 5-1 compares the amount of development and mix of uses proposed by the Project to the five alternatives.

Table 5-1: Project and Alternatives Development Summary

	Demo of Existing Structures?	Commercial (sq. ft.)	Residential (units)	Parking Spaces
Project	Yes	322,536	0	967
Alternative 1: No Project	No	185,500	0	667
Alternative 2: Safeway Relocation	No	185,500	0	667
Alternative 3: Reduced Project	Yes	254,700	0	820
Alternative 4: Concept with Commercial Emphasis (RCPC Plan)	Yes	320,000	0	1,000
Alternative 5: Concept with Residential Emphasis (ULTRA Plan)	Yes	121,000	349	804

Alternatives Considered but Rejected

"Fully Mitigated" Alternative

CEQA Guidelines, Section 15126.6(c) indicates that the range of potential alternatives to the proposed project shall include those that could feasibly accomplish *most of the basic objectives of the project* (emphasis added) and could avoid or substantially lessen one or more of the significant effects. The fundamental objectives of the proposed Project are: 1) to revitalize the existing shopping center with a new, larger Safeway store that provides a more comprehensive range of retail services and products to

Safeway's customers; and 2) to attract and retain other high-quality retail tenants, including stores that will provide shopping options to local customers that are not currently available in the City.

As more fully described under Alternative #2, the increased number of vehicle trips associated with a larger grocery store as the only change at the site would, by itself, result in significant and unavoidable traffic impacts. The only means of off-setting the increased vehicle trips attributed to the larger Safeway store would be to reduce the total number of other vehicle trips generated at the site by reducing the amount of other retail space that currently exists.

It is possible to describe any number of alternatives that include a new 65,000 square foot "Lifestyle" Safeway store, and that would reduce the amount of other currently existing retail space, such that the total number of vehicle trips generated from the site would be less than or equal to the current baseline condition. Such an alternative would be capable of lessening the significant traffic effects that would otherwise result from the proposed Project. However, any such alternative would also result in further under-utilization of the site, would not allow for the attraction and retention of other high-quality retail tenants that could provide shopping options to local customers not currently available, and would likely worsen the City's current retail sales leakage.

Although such an alternative is physically feasible, there is no alternative that would be capable of reducing or avoiding the significant traffic impacts identified for the Project, while still accomplishing the basic Project objectives. For this reason, a "fully mitigated" alternative was eliminated from further consideration in this EIR.

Alternative Site Location

In considering the range of alternatives to be analyzed in an EIR, the CEQA Guidelines state that an alternative site location should be considered when feasible alternative locations are available and the "significant effects of the project would be avoided or substantially lessened by putting the project in another location."

The Project applicant does control other locations in Oakland and has other sites that are either currently proposed for redevelopment or are suitable for redevelopment potential. However, considering an alternative site for this Project would not accomplish the main objective of the Project, which is to redevelop this older obsolete shopping center with a new, more modern and more functional shopping center, thereby improving the Project site and enhancing its sales potential.

Relocation of this Project to another location would reduce identified traffic impacts at intersections in the vicinity of the Project site. However, similar traffic impacts may likely result at different intersections in proximity to any alternative site. For these reasons, an alternative site location was eliminated from further consideration in this EIR.

Overview of Alternatives Analysis

Each of the alternatives is more fully described below, and their potential environmental effects are also disclosed. The environmental effects of each alternative are compared to those of the Project and to existing conditions. As permitted by CEQA (CEQA Guidelines Section 15126.6[d]) the effects of the alternatives are discussed in less detail than the impact discussions of the Project. However, the alternatives analysis is conducted at a sufficient level of detail to provide the public, other public agencies, and City decision-makers adequate information to fully evaluate the alternatives and possibly to enable the City to consider approval of the alternatives without further environmental review. Two of the alternatives, Alternative 4 and Alternative 5, may require further analysis before the City could consider approval of those alternatives based on this EIR. For each of the alternatives, the significance of each impact is compared to City of Oakland thresholds of significance, as indicated in the topic heading (e.g., Aesthetics [LTS]). These significance conclusions assume implementation of Standard Conditions of

Approval and/or mitigation measures. The impacts of each alternative are also compared to the impacts of the Project to indicate whether the alternative would: 1) avoid potentially significant impacts of the Project; 2) generally have the same impact as the Project; or 3) result in impacts either greater than or less than the impacts of the Project.

Table 5-2 provides a summary comparison of the impacts of the alternatives relative to those of the Project. For each impact discussion found within the Draft EIR chapters, this table identifies the extent to which this impact would be significant under each alternative, for example:

- no impact (No Impact)
- less than significant (LTS)
- less than significant with implementation of City of Oakland Standard Conditions of Approval (LTS with SCA)
- less than significant with implementation of mitigation measures recommended for the Project (LTS with Mitigation)
- significant and unavoidable (SU)

Table 5-2 also compares the magnitude of the impact relative to the proposed Project. For example:

- the symbol "🡻" indicates that the alternative would have a less substantial impact relative to the Project, even if the CEQA conclusion were similar for both the Project and the alternative (e.g., an alternative could have a less substantial adverse effect than does the Project, even though both levels of impacts can be addressed through City of Oakland Standard Conditions of Approval);
- the symbol "🡹" indicates that the alternative's impact would be more substantial than the proposed Project; and
- the symbol "🡸🡺" indicates that the magnitude of the alternative's impact would be relatively the same or similar to the proposed Project.

Table 5-3 provides a comparison of how each of the alternatives would address or compare to the significant impacts identified in this EIR as resulting from the proposed Project.

Table 5-2: Summary of Impacts for Each Alternative, and Relative Comparison to the Project

Environmental Topic	Project	Alternative 1: No Project	Alternative 2: Safeway Relocation	Alternative 3: Reduced Project	Alternative 4: Concept with Commercial Emphasis (RCPC Plan)	Alternative 5: Concept with Residential Emphasis (ULTRA Plan)
Aesthetic						
Vistas	No Impact	No impacts	No Impact, ↓	No Impact, ↓	No Impact, ←→	No Impact, ←→
Character	No Impact		No Impact, ↑	No Impact, ↑↓	No Impact, ←→	No Impact, ←→
Light/Glare/Shadows	LTS with SCA		No Impact, ↓	LTS with SCA, ↓	LTS with SCA, ←→	LTS with SCA, ↑
Urban Decay	LTS		LTS, ←→	LTS, ←→	LTS, ←→	LTS, ←→
Air Quality						
Construction	LTS with SCA	No impacts	LTS with SCA, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Operations	LTS		LTS, ↓	LTS, ←→	LTS, ←→	LTS, ↓
Biological Resources						
Special Status Species	LTS w/ Mitig.	No impacts	No Impact, ↓	LTS with Mitig. ←→	LTS with Mitig. ←→	LTS with Mitig. ←→
Wetlands	LTS with SCA		No Impact, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Wildlife Movement	No Impact		No Impact, ↓	No Impact, ←→	No Impact, ←→	No Impact, ←→
Tree Protection	LTS with SCA		LTS, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Creek Protection	LTS with SCA		No Impact, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Cultural Resources						
Historic	No Impact	No impacts	No Impact, ←→	No Impact, ←→	No Impact, ←→	No Impact, ←→
Archaeology	LTS with SCA		No Impact, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Geology and Soils						
Seismic Hazards	LTS with SCA	No impacts	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Slope Instability, Unstable Fill and Expansive Soils	LTS with SCA		No Impact, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Greenhouse Gas						
GHG Emissions	LTS	No impacts	LTS, ↓	LTS, ↓	LTS, ←→	LTS, ↓
CAP Consistency:	LTS		LTS, ↓	LTS, ↓	LTS, ←→	LTS, ←→
Hazards/Haz Materials:						
Site Contamination:	No Impact	No impacts	No Impact, ←→	No Impact, ←→	No Impact, ←→	LTS with SCA, ↑
Disposal, Transport, Use	LTS with SCA		LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→

Table 5-2: Summary of Impacts for Each Alternative, and Relative Comparison to the Project

Environmental Topic	Project	Alternative 1: No Project	Alternative 2: Safeway Relocation	Alternative 3: Reduced Project	Alternative 4: Concept with Commercial Emphasis (RCPC Plan)	Alternative 5: Concept with Residential Emphasis (ULTRA Plan)
Schools, Airports, Emergency Response, Wildfire	No Impact		No Impact, ←→	No Impact, ←→	No Impact, ←→	No Impact, ←→
Hydrology/Water Quality						
Groundwater, Flooding	No Impact	No impacts	No Impact, ↓	No Impact, ←→	No Impact, ←→	No Impact, ←→
Increased Runoff	No Impact		No Impact, ←→	No Impact, ←→	No Impact, ←→	No Impact, ←→
Construction	LTS with SCA		LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Operations	LTS with SCA		LTS, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Creek Protection	LTS with SCA		LTS, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Land Use						
Divide Community	No Impact	No impacts	No Impact, ←→	No Impact, ←→	No Impact, ←→	No Impact, ↓
Plans and Policy Conflict	No Impact		No Impact, ←→	No Impact, ←→	No Impact, ←→	No Impact, ←→
Noise and Vibration						
Construction Noise	LTS with SCA	No impacts	LTS with SCA, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→
Traffic Noise	LTS with SCA		LTS, ↓	LTS, ←→	LTS with SCA, ←→	LTS with SCA, ↓
Land Use Compatibility	No Impact		No Impact, ←→	No Impact, ←→	No Impact, ←→	LTS, with SCA, ↑
Operations Noise	LTS with SCA		LTS, ↓	LTS, ←→	LTS, ←→	LTS with SCA , ↑
Transportation:						
Trip Generation (compared to Project)		No change	41% of weekday, 50% of weekend, ↓	64% of weekday, 65% of weekend, ↓	Same, ←→	19% of weekday, 0.1% of weekend, ↓
Broadway/51st at 2015	SU		LTS, ↓	LTS, ↓	SU, ←→	LTS, ↓
Broadway/51st at 2035	SU		SU, ↓	SU, ↓	SU, ←→	SU, ↓
Howe//Plsnt. Valley, Existing	SU		SU, ↓	SU, ↓	SU, ↓	SU, ↓
Howe//Plsnt. Valley, 2015	SU		SU, ↓	SU, ↓	SU, ↓	SU, ↓
Howe//Plsnt. Valley, 2035	SU		SU, ↓	SU, ↓	SU, ↓	SU, ↓
Piedmont/Plsnt. Valley, 2035	SU		SU, ↓	SU, ↓	SU, ←→	LTS, ↓
Transit Travel	LTS		LTS, ↓	LTS, ←→	LTS, ←→	LTS, ↓
Construction Period	LTS with SCA		LTS with SCA, ↓	LTS with SCA, ←→	LTS with SCA, ←→	LTS with SCA, ←→

Table 5-2: Summary of Impacts for Each Alternative, and Relative Comparison to the Project

Environmental Topic	Project	Alternative 1: No Project	Alternative 2: Safeway Relocation	Alternative 3: Reduced Project	Alternative 4: Concept with Commercial Emphasis (RCPC Plan)	Alternative 5: Concept with Residential Emphasis (ULTRA Plan)
Support of Alt. Transp.	LTS		LTS, ↑	LTS, ←→	LTS, ←→	LTS, ↓
Utilities and Public Services						
Utilities	LTS with SCA	No impacts	LTS, ↓	LTS with SCA, ↓	LTS with SCA, ←→	LTS with SCA, ↑
Parks and Schools	No Impact		No Impact, ←→	No Impact, ←→	No Impact, ←→	LTS with SCA, ↑

Alternative 1: No Project

CEQA Guidelines Section 15126.6(e) requires that a "no project" alternative be evaluated, along with its impacts. The "no project" alternative must be the *practical result* of non-approval of the project.

Description of Alternative 1

For this Draft EIR, the Alternative 1: No Project is defined as an alternative under which the site remains in its existing state (**Figure 5-1**). The Safeway store remains in its existing location at its present size, but the store could be remodeled with interior improvements and façade upgrades to remain more competitive. Existing shopping center tenants either remain or vacate based on their individual desires and leases. There would be no redevelopment of the shopping center buildings or grounds apart from a possible remodeling of the Safeway store, no reconfiguration of the existing parking area, and no improvements to on-site or off-site circulation.

At the current CVS Pharmacy building, one of three scenarios could occur: (1) CVS Pharmacy and Property Development Centers, Inc. (PD Centers), an affiliate of Safeway, Inc., the lease holder, and the Project applicant, would agree to new lease terms such that CVS Pharmacy stays in its current location; (2) the CVS Pharmacy lease could expire and PD Centers would find a new retail tenant or tenants to occupy the space; or (3) the CVS Pharmacy lease could expire and the building would be left vacant and not utilized.

The first two scenarios would be consistent with the description of existing physical settings from each of the sub-chapters in Chapter 4 of this Draft EIR. There would be no change in the existing physical characteristics of the Project site. Existing uses would continue to operate as they do now. Under the second scenario, replacement of one retail tenant with another would have no material consequences for the existing physical setting. Under the third scenario, the only change would be that the CVS Pharmacy building would be left vacant and not utilized. The potential remodeling of the Safeway store could occur regardless of what happens at the CVS building.

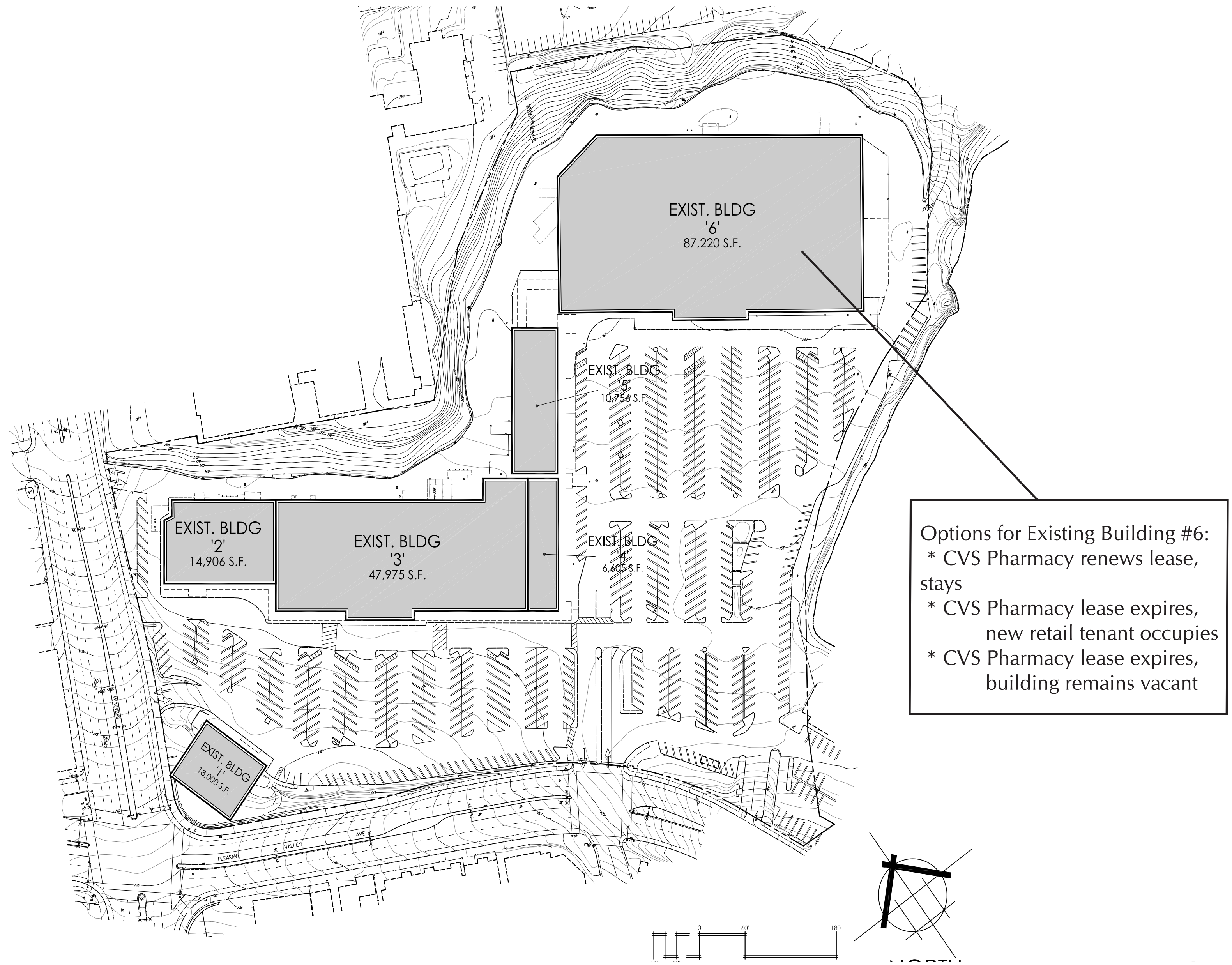

Figure 5-1
No Project / No Development Alternative

Comparative Environmental Analysis

Aesthetics *(LTS)*

No impacts. The existing visual character and light, glare and shadow conditions on the Project site would remain unchanged. Although the existing Safeway store could be remodeled in its existing location at its present size, there would be no substantial improvement in the visual quality of the site, and no change from the current suburban character of the shopping center to a more urban character that is more compatible with surrounding development. The potential loss of a major retail anchor like CVS Pharmacy could cause the shopping center to become further underutilized for a time, particularly in the absence of substantial upgrades to the overall site. However, the retail market is strong in the Project's market area and vacant properties are well-maintained and quickly absorbed, so the No Project alternative would not be expected to result in significant urban decay impacts.

Air Quality *(No Impact)*

No impacts. There would be no new development and thus no increase in air pollutant emissions.

Biological Resources *(No Impact)*

No impacts. None of the trees that exist on the site would be removed and there would be no potential disturbance of roosting bats or western pond turtles during construction, or potential disturbance of wetlands.

Cultural Resources *(No Impact)*

No impacts. There would be no impacts on the historic resources in the vicinity and no unlikely disturbance of previously undiscovered archaeological resources during construction.

Geology and Soils *(No Impact)*

No impacts. There would be no new buildings, other improvements, or additional occupants on the site exposed to potential on-site slope instability, or seismic or soils-related hazards.

Greenhouse Gas Emissions *(No Impact)*

There would be no new development and thus no increase in greenhouse gas emissions and no impact on global climate change. There would also be no opportunity to improve the energy efficiency and performance of buildings on the site, or to enhance pedestrian and bicycle access to the shopping center and thereby reduce vehicle miles traveled and greenhouse gas emissions.

Hazards and Hazardous Materials *(No Impact)*

No impacts. There would be no change in potential exposure of people or property to hazards or hazardous materials.

Hydrology and Water Quality *(No Impact)*

No impacts. Potential degradation of water quality from construction period erosion and sedimentation would be avoided. There would be no change in the existing impervious surface area, the amount or rate of surface water runoff, or potential impacts to surface water quality from new development. There would also be no new infrastructure installed and thus no opportunity to reduce the peak flow or improve the water quality of stormwater runoff from the site.

Land Use *(No Impact)*

No impacts. The existing land use characteristics on the Project site would remain unchanged. There would be no opportunity to better integrate the site with the surrounding neighborhoods. There would also be no opportunity to further land use planning and economic development objectives related to the property. If the CVS Pharmacy lease were to expire and the building left vacant, this would also impede attainment of land use planning and economic development objectives related to the property and the surrounding area.

Noise and Vibration *(No Impact)*

No impacts. There would be no new development and thus no change in the existing noise environment for adjacent sensitive receptors, no Project-related change in traffic noise on surrounding roadways, and no construction-related noise and vibration impacts.

Transportation, Circulation and Parking *(No Impact)*

There would be no increase in the number of vehicle trips generated from the Project site and no impact on intersections in the vicinity. The potential remodeling of the Safeway store in its existing location with no increase in size could enable the store to remain competitive, but would not be expected to substantially divert sales and thus generate additional trips. There would be less opportunity to enhance pedestrian and bicycle access to the shopping center and thereby reduce vehicle trips, traffic congestion and vehicle miles traveled. There would also be no Project-related off-site improvements to Broadway and Pleasant Valley Avenues. Existing circulation and parking conditions on the site would remain unchanged.

This alternative would avoid the significant and unavoidable impacts on operations at the Howe Street/Pleasant Valley Avenue, Piedmont Avenue/Pleasant Valley Avenue, and Broadway/51st Street/Pleasant Valley Avenue intersections identified for the Project. However, the Piedmont Avenue/Pleasant Valley Avenue and Broadway/51st Street/Pleasant Valley Avenue intersections would continue to operate at unacceptable levels of service during both the Saturday and weekday PM peak hours in the future.

Utilities and Public Services *(No Impact)*

No impacts. There would be no development and thus no additional water demand, sewage generation, solid waste generation or energy demand associated with the Project site. There would also be no opportunity to improve the energy efficiency of buildings on the site.

Alternative 2: Safeway Relocation

The second alternative identified and evaluated in this EIR considers the practical results of not approving the Project as proposed, but recognizing that PD Centers, the Project applicant, will still have an important economic interest in the property and a desire to improve the existing shopping center and enhance revenue. As the primary lease holder of the shopping center, PD Centers sub-leases the majority of the retail space within the shopping center to other commercial tenants. One of those sub-lease tenants, CVS Pharmacy, has a sub-lease that is due to expire. The Project applicant has indicated that even if the Project is not approved, one likely option would be to not renew the sub-lease with CVS Pharmacy and to instead move Safeway into the CVS Pharmacy space. The CVS space is over 87,000 square feet and has room to accommodate the larger Safeway store that Safeway wishes to put in. Alternative 2: Safeway Relocation is perhaps the most likely practical result of non-approval of the Project.

Description of Alternative 2

Alternative 2: Safeway Relocation would involve the relocation of the existing Safeway store, which occupies approximately 48,000 square feet of space in the shopping center, to the current site of the CVS Pharmacy once the CVS lease expires. The CVS Pharmacy space is approximately 87,000 square feet in size, large enough to accommodate the proposed "Lifestyle" Safeway store. The Project applicant has indicated that relocating the Safeway store to this larger, more functional space is critical to long-term business plans for the site and would occur whether the remainder of the Project is approved or not. Relocation of the Safeway store may require discretionary action on the part of the City. Building permits would be necessary for re-modeling of the former CVS Pharmacy building.

The remainder of the existing shopping center would remain as it is. New tenants would be sought to fill the vacated 48,000 square feet of the former Safeway site, but no new building space would be added to the shopping center. This alternative would retain the current approximately 185,500 square feet of commercial space at the site, along with the existing parking configuration. Functionally, there would be no change in the physical characteristics of the site and all existing uses at the site would continue to operate substantially the same as they do now, but with a shifting of internal uses within the existing shopping center structures (see **Figure 5-2**).

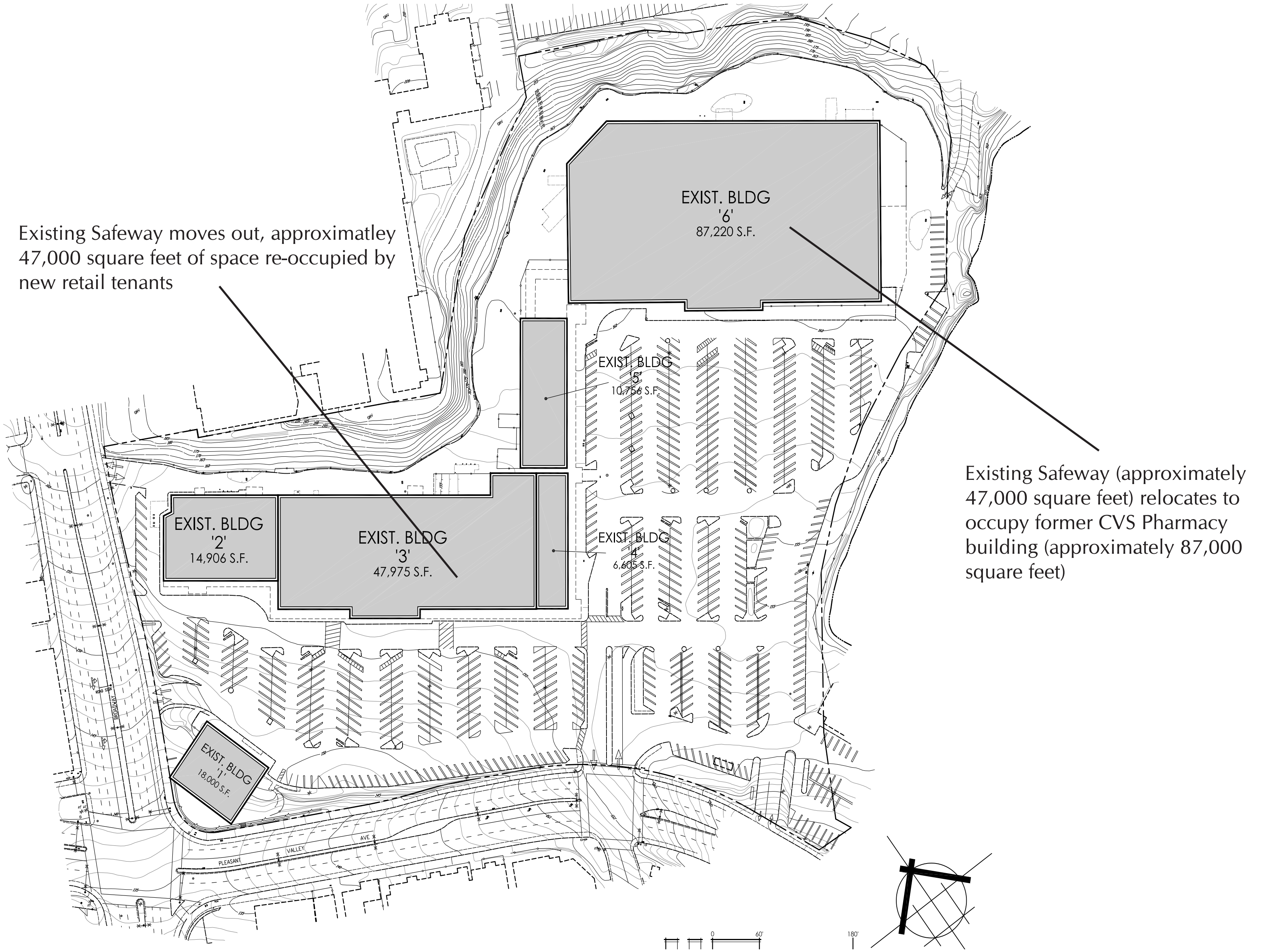

Figure 5-2
Alternative 2: Safeway Relocation Alternative

Comparative Environmental Analysis

Aesthetics

Scenic Vistas and Visual Resources (No Impact)

In the absence of new development, no views from the site, no scenic vistas and no important visual resources in the Oakland General Plan would be affected. The prominent rock outcroppings and significant geologic features which remain from prior quarrying activities at the site would not be disturbed by this alternative. This alternative would not require the removal of any existing trees which have minor scenic value, but would also be less likely to result in the substantial planting of new trees and vegetation as proposed under the Project.

Visual Character (No Impact)

The visual character of the site would undergo little or no change, and thus the existing visual character and quality of the site and its surroundings would not be substantially degraded, but the visual improvements and enhancements as proposed under the Project would also not occur. The general character of the site would remain as a commercial shopping center, and the majority of the shopping center would remain in appearance much as it does today, although the relocated Safeway store would likely have an improved façade.

Light/Glare/Shadows (No Impact)

Lighting at the site would be only slightly modified with new illumination standards at the new Safeway store, but light and glare effects would remain substantially similar to what is currently observed at the site. Under this alternative, no new structures or landscaping improvements would create substantial shadows beyond the site, and thus would not interfere with any off-site solar collectors or generate shadows that would fall on any public space or historic resources.

Urban Decay (LTS)

With a new, larger “Lifestyle” Safeway store but no other change in the overall amount of commercial space on the site, there would be less diverted sales to the site than with the Project. The potential urban decay impacts of Alternative 2 would be less than significant.

Air Quality

Construction Period Fugitive Dust Emissions (LTS with SCA)

Most construction activities associated with this alternative would occur indoors as a result of interior modifications to the former CVS Pharmacy building to accommodate the new Safeway, and as future tenant improvements at the former Safeway. The site preparation and new building construction activities associated with the Project that could generate short-term emissions of fugitive dust would not occur.

For any exterior work that may result in dust emission, this alternative would be required to implement BAAQMD recommended construction-period dust control measures, implement the City’s Standard Conditions of Approval (SCA Air-1) and comply with the requirements found under the City Municipal Code (Section 15.36.100; Dust Control Measures). Implementation of these standard conditions of approval would ensure that the impact of construction-period fugitive dust remains at a less than significant level.

Construction Period Criteria Air Pollutants and Precursor Emissions (LTS)

Construction and re-modeling activities under this alternative could generate short-term emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. However, because the emphasis of the construction work would be interior remodeling, it is reasonable to conclude that this alternative would not result in emissions of construction-related criteria air pollutants and/or precursor emissions that exceed City of Oakland thresholds of significance.

Construction Period Health Risks to Adjacent Sensitive Receptors (LTS)

Construction and re-modeling activities under this alternative would be considerably shorter and simpler, and involve less use of diesel-powered heavy equipment such as bulldozers, generators, pavers or lifters, than would the Project. Given that the Project would not result in a significant inhalation cancer risk, a significant inhalation chronic hazard, or a significant exposure to $PM_{2.5}$, Alternative 2 would have reduced less-than-significant health risks compared to the Project.

Operational Related Criteria Air Pollutants (LTS)

This alternative would result in an increase in traffic as compared to current conditions due to an increase in the size and shopping activity at the new, larger Safeway store. The Safeway would increase in size from its current approximately 48,000 square foot location to its new location within the 87,000 square-foot former CVS Pharmacy building, for a net increase of approximately 39,000 square feet. Since the Project would result in less-than-significant criteria air pollutant and precursor emissions, and Alternative 2 would result in 41% of the weekday PM peak hour trips and 50% of the Saturday PM peak period trips generated by the Project, the criteria air pollutant and/or precursor emissions of Alternative 2 would be less than those of the Project and, like the Project, would be less than significant.

Carbon Monoxide Concentrations (LTS)

Alternative 2 would be consistent with the applicable Congestion Management Program established by the County Congestion Management Agency for designated roads or highways, regional transportation plan, and local Congestion Management Agency plans. Alternative 2 would also not contribute a substantial number of vehicle trips to any intersection experiencing more than 44,000 vehicles per hour, or to any intersection experiencing more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited. Peak hour traffic volumes at all surrounding intersections are well below the 44,000 vehicle-per-hour criteria and are projected to remain below that level in 2015 and 2030. Since Alternative 2 would not exceed these conditions, like the Project, this alternative would be expected to result in a less-than-significant impact to air quality from CO concentrations.

Biological Resources

Special Status Species (No Impact)

Alternative 2 would not result in removal of large trees or the demolition of buildings within the site and its immediate vicinity that could provide potential nesting habitat for birds or roosting habitat for bats. This alternative would not result in any construction at or near the quarry pond, such that there would be no adverse effects to pond turtles under this alternative.

Wetlands, Riparian Habitat and Sensitive Natural Communities (No Impact)

With no new landscaping and access improvements along the quarry pond, Alternative 2 would avoid potential impacts on regulated wetlands and waters of the US associated with the quarry pond.

Wildlife Movement/Nursery Sites (No Impact)

Alternative 2 would not adversely affect wildlife movement or nursery sites. The site is located in an urbanized area that has supported commercial uses for more than 40 years. There are no wildlife movement corridors passing through the site, and the site is not used as a wildlife nursery.

Habitat Conservation Plans (No Impact)

No habitat conservation plans or natural community conservation plans are applicable to the site or the vicinity of the site. This alternative would not conflict with any applicable habitat conservation plan or natural community conservation plan.

Compliance with Oakland Tree Protection Ordinance (LTS)

Alternative 2 would not require removal of protected trees (as defined by the City's ordinance) or Monterey pines, as would be required for the Project. To the extent that any protected trees in the nearby medians might need to be removed to improve access, compliance with the provisions of the Oakland Tree Protection Ordinance pursuant to City of Oakland Standard Conditions of Approval would be required, ensuring that such potential impacts remain less than significant.

Compliance with Oakland Creek Protection Ordinance (No Impact)

Alternative 2 would likely require a Creek Protection Permit as a Category I project (for any indoor development or work) or a Category II project (for any exterior work that does not include earthwork), as the new Safeway site would be within 100 feet of the quarry pond. Unlike the Project, Alternative 2 would not include pedestrian access and landscaping adjacent to the quarry pond. As with the Project, this alternative would not discharge new pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it adversely impact a riparian corridor by significantly altering vegetation or wildlife habitat.

Cultural Resources

Materially Impair an On-site Historic Resource (No Impact)

Alternative 2 would not directly result in a substantial adverse change in the significance of an on-site historical resource as defined in CEQA Guidelines §15064.5. The site is not included on nor has it been found eligible for inclusion on the National Register of Historical Resources, the California Register of Historical Resources or the Local Register, nor has it been documented on a DPR Form 523 historical resources survey form with a rating of 1 through 5. Therefore, the Project site is not considered a significant historical resource for purposes of CEQA. Relocation of the Safeway store would not alter or change the significance of an historic resource.

Materially Impair an Adjacent Historic Resource (No Impact)

Like the Project, Alternative 2 would not directly or indirectly result in a substantial adverse change in the significance of a nearby historical resource.

Archaeological or Paleontological Resources, and Human Remains (No Impact)

Alternative 2 would not cause a substantial adverse change in the significance of a known archaeological resource, nor would it directly or indirectly destroy a known unique paleontological resource or site, or unique geologic feature. Unlike the Project, this alternative would also not include any earthwork activity that could damage currently unknown archaeological or paleontological resources.

Geology and Soils

Seismic Ground Shaking and Ground Failure (LTS with SCA)

The site is located in an area that would be subject to very strong ground shaking and potential liquefaction in a major seismic event. Substantial remodeling activities under the this alternative would be required to implement City of Oakland Standard Conditions of Approval, including SCA Geo-2, which require a detailed soils report and compliance with Uniform Building Code standards to ensure that building designs minimize the effects of ground shaking and seismic-induced ground failure. Similar to the Project, implementation of the requirements found in City of Oakland Standard Conditions of Approval would ensure risks of injury and structural damage from seismic ground shaking and seismic ground failure would remain less than significant.

Landslides (No Impact)

A cut slope at the site's northerly boundary shows evidence of erosion and fallen debris, and could potentially be susceptible to slides. There are areas of erosion on this slope and there is evidence of fallen debris at the toe of the slope behind the cyclone fence and low wooden walls that have been constructed to protect the existing asphalt loading area/driveway and buildings. Alternative 2 would not conduct any grading, tree removal or alteration to this cut slope and thus would not change these existing conditions. In addition, Alternative 2 would not increase the amount of development on the site and thus would not expose additional occupants or construction workers to potential hazards. Alternative 2 would have no impact related to landslides.

Geologic Fill (No Impact)

Portions of the easterly side of the site near the quarry pond contain clayey soil with variable gravel content, potentially unsuitable as a sub-grade soil for building foundations. This alternative would not result in any new development in this area and therefore would not expose people or property to hazards related to potentially unsuitable clayey soils.

Expansive Soil (No Impact)

Since this alternative would not result in any new building construction, no further analysis of soil expansion potential would be required and no compaction, removal or replacement of soils for foundation support would be necessary.

Underground Hazards (No Impact)

There are no known wells, pits, swamps, mounds, tank vaults or unmarked sewer lines located below the surface of the site that would be disturbed, and there is no evidence to suggest that the site has been previously used as a landfill. The site is currently served by municipal sewage systems, and this alternative would continue to be served by these systems.

Greenhouse Gas Emissions

Greenhouse Gas Emissions (LTS)

The site is currently an actively used shopping center generating GHG emissions from stationary and indirect sources such as electricity, gas and water use. It also generates GHG emissions from mobile sources including those associated with employee trips, shopping trips and deliveries. Although the amount of commercial space at the shopping center would not change, Alternative 2 would involve an increase in the size of the Safeway store and a corresponding overall increase in vehicle trips and in turn GHG emissions. Like the Project, the new Safeway store under Alternative 2 would achieve the same substantial reductions in GHG emissions with respect to refrigerants, which have a particularly high global warming potential. In combination, the increase in vehicle trips and decreased operational GHG emissions under Alternative 2 would generate less GHG emission than would the Project. Construction emissions would also be considerably less than with the Project. The GHG emissions impacts of Alternative 2 would be less than the Project and, like the Project, would be less than significant.

Conflict with an Applicable Plan, Policy or Regulation Adopted for the Purpose of Reducing GHG Emissions (LTS)

Because the estimated GHG emissions of the Alternative 2 would not exceed the City's numeric significance threshold, like the Project, Alternative 2 would also comply with applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions.

Hazards and Hazardous Materials

Cortese List / Presence of Hazardous Materials Contamination (No Impact)

No portion of the site is included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Environmental Site Assessments prepared for the site do not indicate the presence of on-site soil or groundwater contamination at significant levels, nor do they indicate that off-site contamination of soil or groundwater presents a concern to construction or operation of a shopping center.

Disposal, Transport, Upset or Use of Hazardous Materials (LTS with SCA)

Construction workers, future commercial tenants and shoppers at the site could be exposed to hazardous materials during construction and remodeling of the new Safeway and/or remodeling of future tenant improvements at the former Safeway store. Under this alternative, portions of the existing shopping center with asbestos-containing materials and lead-based paint could be removed, and the handling and disposal of such material could potentially result in release of asbestos fibers into the air, potentially exposing those nearby to increased risk.

Like the Project, the Alternative 2 would be subject to implementation of City of Oakland Standard Condition of Approval SCA Air-3, Haz-4, Haz-10 and Haz-11, specifically requiring adherence to all applicable laws and regulations particular to asbestos removal and lead-based paint remediation. Furthermore, implementation of this alternative would be required to comply with the additional site-specific conditions of approval (as recommended for the Project) regarding removal and disposal of materials which may contain asbestos at the site. Compliance with these state and federal laws and site-specific conditions of approval regarding hazardous materials will ensure potential exposure to these materials remains less than significant.

Hazardous Materials near School, Hazards near Airports, Interference with Emergency Response, and Wildfire Hazards (No Impact)

Although the site is located within one-quarter mile of Oakland Technical High School and Emerson Elementary School, there are no known components of this alternative that would emit hazardous emissions or result in the need to handle hazardous or acutely hazardous materials, substances or waste. The site is not located near any public airport, within an airport plan area or near a private airstrip. This alternative would not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. The Project site is located in an urbanized area of Oakland more than ½ mile outside of the Fire Prevention and Assessment District boundary, which indicates that it is not subject to significant wildfire hazard.

Hydrology and Water Quality

Depletion of or Interference with Groundwater Supplies (No Impact)

The site is already fully developed and/or paved, and is served with water from the East Bay Municipal Utility District. Alternative 2 would not result in any change in existing groundwater recharge and would not deplete groundwater resources.

Flooding (No Impact)

The site is not subject to potential flooding, and Alternative 2 would not subject off-site areas to increased flood potential. No portion of the site is within the 100-year or 500-year flood hazard area as mapped on Federal Flood Hazard Boundary or Flood Insurance Rate Maps or other flood hazard delineation maps. This alternative would not place any structures within a 100-year flood hazard area that might impede or redirect flood flows, or expose people or structures to a substantial risk of loss, injury or death involving flooding, seiche, tsunami, or mudflow.

Increased Runoff Exceeding Stormwater Drainage System Capacity (No Impact)

The site currently has very little impervious surface and is almost entirely covered by buildings and paved areas. Virtually all storm water falling on the site runs off the site as surface runoff. No retention or detention of runoff currently occurs prior to entering into the City's storm drain system. Implementation of this alternative would not increase impervious surface area and thus would not increase stormwater runoff.

City of Oakland standard conditions of approval generally require new construction projects to apply for and obtain a Stormwater Management Plan pursuant to NPDES water quality treatment requirements, However, it is unlikely that this alternative would require implementation of NPDES water quality treatment requirements as it would not create and/or "replace" 10,000 square feet or more of impervious surface, nor would it result in an increase or replacement of more than 50 percent of the impervious surface of the previously existing development. Thus, this alternative would likely not result in the construction of bio-retention storm water treatment areas to capture and treat storm water runoff, and is unlikely to be required to strive to achieve a net reduction of 25 percent from the current peak stormwater runoff rate.

Erosion and Sedimentation (No Impact)

Alternative 2 would not result in the need for site preparation or construction activity that could result in soil erosion or have an adverse effect on water quality. No site grading or construction activity would expose underlying soils which could be carried via stormwater runoff into the storm drain system and/or into adjacent surface water, resulting in increased sedimentation.

Degradation of Water Quality during Construction (LTS with SCA)

Alternative 2 would be unlikely to result in significant degradation of stormwater quality from minor quantities of paint, solvents, oil and grease, or petroleum hydrocarbons being allowed to enter into the storm water runoff from the site and contributing to potential degradation of downstream receiving waters. Implementation of this alternative would have little or no outdoor construction activity (beyond potential façade improvements) that would involve these substances.

City of Oakland Standard Conditions of Approval generally require new construction projects to apply for and obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) issued by the State Water Resources Control Board, including preparation of a Stormwater Pollution Prevention Plan (SWPPP) that contains best management practices to eliminate or reduce discharge of materials to stormwater. However, this alternative would not likely be required to prepare and implement a SWPPP as it would not disturb 1acre or more of soil ("disturbance" generally refers to exposed soil resulting from activities such as clearing, grading, and excavating).

Degradation of Water Quality during Operations (LTS)

Continued operational activities such as vehicular use, landscaping maintenance and other operational activities would continue to potentially introduce pollutants into stormwater runoff, but would not increase or exacerbate existing conditions.

Although City's Standard Conditions of Approval generally require demonstration of compliance with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES), this alternative would be unlikely to require implementation of NPDES water quality treatment requirements as it would not create and/or "replace" 10,000 square feet or more of impervious surface and would not result in an increase of, or replacement of, more than 50 percent of the impervious surface of a previously existing development.

Conflict with Oakland Creek Protection Ordinance (LTS)

Alternative 2 would likely require a Creek Protection Permit as a Category I project (for any indoor development or work) or a Category II project (for any exterior work that does not include earthwork), as the new Safeway site would be within 100 feet of the quarry pond. Unlike the Project, Alternative 2 would not include pedestrian access and landscaping adjacent to the quarry pond. However, as with the Project, there is nothing about this alternative that would fundamentally conflict with elements of the ordinance intended to protect hydrologic resources. This alternative would not discharge a substantial amount of pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it substantially endanger public or private property or threaten public health or safety.

Land Use

Physical Division of an Existing Community (No Impact)

Alternative 2 would not result in redevelopment of the existing shopping center, and would not physically divide an existing community. However, this alternative would not facilitate improved pedestrian, bicycle or vehicular connections from the site to the surrounding community as would the Project.

Conflict with Land Use Policies (No Impact)

Alternative 2 would not conflict with any land use policies adopted for the purpose of avoiding or mitigating an environmental effect. However, this alternative would not necessarily support planning policies intended to foster greater social interaction and to attract more people (i.e., shoppers) to the area. Although this alternative would retain existing businesses and jobs from the current shopping center tenants, it would not expand retail shopping choices with a greater mix of new major anchor and minor retail shops within a distinctive "node" of commercial development and would not provide an opportunity to capture a greater share of retail expenditures within the City.

Conflict with Applicable Habitat Conservation Plan (No Impact)

This alternative would not result in a fundamental conflict with any applicable habitat conservation plan or natural community conservation plan.

Noise and Vibration

Construction Noise (LTS with SCA)

Noise generated by construction and remodeling activities at the site would not be expected to violate the City of Oakland Noise Ordinance or result in a nuisance of persistent construction-related noise. Construction-related noise levels are normally highest during demolition (which would not occur under this alternative) and during construction of project infrastructure. Noise generated by interior work would be much lower outdoors and would not affect community noise levels. Construction noises associated with this alternative, including the delivery of construction materials, would be subject to SCAs Noise-1 and Noise-2, which regulate hours of construction, requires implementation of a noise mitigation plan, and place restrictions on the delivery of construction materials. With the incorporation of the City of Oakland's Standard Conditions of Approval, noise impacts resulting from this alternative would be less-than-significant.

Permanent Increase in Ambient Noise (LTS)

Alternative 2 would not result in a substantial increase in the permanent outdoor ambient noise levels in the vicinity above existing levels. This alternative would result in little to no increase in traffic and associated traffic noise above existing conditions. Vehicular traffic noise levels and other ambient noise conditions would not increase measurably above existing levels or future baseline levels.

Conflict with Land Use Compatibility Guidelines (No Impact)

Alternative 2 would not result in a conflict with land use compatibility guidelines used to determine the acceptability of noise for a commercial land use.

Operational Noise in Excess of Oakland Noise Ordinance Standards (LTS)

Analysis of the Project (see Chapter 4.7) included an assessment of new noise sources throughout the Project area, including noise specifically associated with an improved Safeway store at the site currently occupied by the CVS Pharmacy. Under Alternative 2, the only new (or relocated) noise sources would occur at the new Safeway, representing the only change as compared to existing conditions. Noise levels specifically generated at the new Safeway store would be the same as that analyzed for the Project, but other sources of operational noise as analyzed for the Project would not occur. Specifically:

- New roof-top mechanical equipment (heating, ventilating, air conditioning, and refrigeration equipment) would likely be located on the top of the new Safeway store. Based on equipment specifications, the worst-case noise level produced by this equipment is 82 dBA at 5 feet from the top of the units. Noise levels at the nearest noise-sensitive land uses (approximately 570 feet from the Safeway store) would be approximately 41 dBA, well below the daytime and night-time noise standards set forth in the City of Oakland Noise Ordinance.
- Noise generated by the operation of trash compactors at the rear of the new Safeway store would be expected to be well below ambient noise levels at the nearest residential land uses to the east and south.
- The Safeway loading docks are presumed to be located at the northeast corner of the new Safeway building, approximately 620 feet from the nearest residential land uses south of the site. The highest noise levels would be generated when heavy trucks pull into or out of the loading area. Maximum noise levels generated by truck circulation would be expected to reach 53 dBA at a distance of 620 feet, and the day-night average noise level resulting from the arrival and departure of heavy trucks and vendor trucks at any time during the day or night would result in a 0 dBA L_{dn} increase outside the nearest receiving residences.

Alternative 2 would not result in new or exacerbated operational noise levels that would exceed the City of Oakland Noise Ordinance regarding operational noise pursuant to Oakland Planning Code, Section 17.120.050.

Transportation, Circulation and Parking

Trip Generation

As indicated in **Table 5-3**, Alternative 2 would result in an increase in both weekday peak and Saturday peak hour traffic as compared to existing conditions. The total number of trips generated under this alternative would increase relative to the baseline (or existing conditions) by approximately 180 trips during the weekday pm peak, and by approximately 317 trips during the Saturday peak hours. Trips generated by the Safeway store are a function of a trip generation rate applied to the space of the store. With relocation of Safeway to the new, larger site at the CVS Pharmacy building, the number of Safeway-related trips would increase as a function of the increased size of the store. With a lower trip generation rate for other types of retail uses, the reduced number of other retail trips would off-set to some degree the increase in Safeway trips.

Table 5-3: Trip Generation Estimates
Alternative 2: Safeway Relocation

Land Use	ITE Code	Units[1]	Weekday PM Peak Hour In	Weekday PM Peak Hour Out	Weekday PM Peak Hour Total	Saturday Peak Hour In	Saturday Peak Hour Out	Saturday Peak Hour Total
Relocated Safeway[2]	850	87.2 KSF	404	389	793	482	464	946
- Existing Safeway[2]	850	48.0 KSF	-281	-270	-551	-266	-255	-521
Net New Safeway Trips			123	119	242	216	209	425
New Retail Infill[3]	820	48.0 KSF	191	198	389	277	255	532
- Existing CVS[4]	n/a	-87.2 KSF	-156	-178	-334	-211	-263	-474
New Project Trips			158	139	297	282	201	483
- Pass-By Vehicles[5]			-51	-51	-102	-63	-63	-126
- Internalized Trips[6]			-8	-8	-16	-20	-20	-40
Alternative 2 Trip Generation			***99***	***80***	***179***	***199***	***118***	***317***
Project Trip Generation			211	225	436	369	264	633
Net Difference, compared to Project (%)					***41%***			***50%***

KSF = 1,000-square feet
Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) regression equation and average for Supermarket (Land Use Code 850) :
Weekday PM: Ln(T) = 0.61 Ln(X) + 3.95; Enter = 51%, Exit = 49%
Saturday: T = 10.85 (X); Enter = 51%, Exit = 49%
Where: T = trips generated, X = 1,000 square feet, Ln = natural log
Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) regression equations for Shopping Center (Land Use Code 820) :
Weekday PM: Ln(T) = 0.67 Ln(X) + 3.37; Enter = 49%, Exit = 51%
Saturday: Ln(T) = 0.65 Ln(X) + 3.76; Enter = 52%, Exit = 48%
Where: T = trips generated, X = 1,000 square feet, Ln = natural log
Data based on peak hour counts collected on June 6 and June 7, 2008.
Trip pass-by rate based on Institute of Transportation Engineers (ITE), *Trip Generation Handbook* average pass-by for Shopping Center (Land Use Code 820). Average Weekday pass-by rate: 34%; average Saturday pass-by rate: 26%.
Based on intercept survey results, average internalization rates were 5% for weekday and 8% for Saturday
Source: Trip Generation (8th Edition), ITE, 2008; and Fehr & Peers, 2012.

Compared to the Project, Alternative 2 would result in a decrease of approximately 257 trips during the weekday pm peak (approximately 41% of the trips generated by the Project), and a decrease of 316 trips during the Saturday peak hours (approximately 50% of the trips generated by the Project).

Roadway Network

Similar to the Project, this alternative is also assumed to implement a number of modifications to street configurations and signal operations on Broadway and Pleasant Valley Avenue adjacent to the site.

Intersection Impacts (SU)

This alternative would generate only about 41% of the net new vehicle trips during the weekday PM peak as compared to the Project, and about 50% of the net new vehicle trips during the Saturday peak as compared to the Project.

- This reduction in trips would be sufficient to reduce the impact at Broadway/51st Street/Pleasant Valley Avenue (intersection #7) under 2015 Plus Project conditions from significant and unavoidable to a less-than-significant level.
- However, the reduction in trips would not be sufficient to avoid the significant and unavoidable traffic impacts at Howe Street/Pleasant Valley Avenue (intersection #19) under Existing plus Project, 2015 plus Project, and 2035 plus Project conditions, and at Broadway/51st Street/Pleasant Valley Avenue (intersection #7) and Piedmont Avenue/Pleasant Valley Avenue (intersection #20) under 2035 plus Project conditions.

Congestion Management Program Evaluation (LTS)

With less traffic than the Project, this alternative would not cause congestion of regional significance on a roadway segment on the Metropolitan Transportation System (MTS).

Transportation Hazards (LTS)

The design of the Project and the adjacent roadways seeks to minimize potential conflicts between various modes of transportation and to provide safe and efficient pedestrian, bicycle, and vehicle circulation within the site and between the site and the surrounding circulation systems. It is unlikely that this alternative would include modifications to the Broadway/College Avenue intersection which reduce conflicts between pedestrians crossing College Avenue and vehicles turning left from northbound Broadway into Wendy's Restaurant. It is also unlikely that this alternative would implement any of those modifications to pedestrian access, transit access, bicycle access and circulation in and around the site area as are proposed under the Project. However, even without these improvements as proposed and recommended for the Project, Alternative 2 would not directly or indirectly result in a permanent substantial decrease in vehicular, pedestrian, bus rider or bicyclist safety.

Transit Travel Time (LTS)

With even less traffic than the Project, traffic generated by this alternative would not substantially increase travel times for AC Transit buses travelling east and west along Pleasant Valley Avenue and 51st Street, nor for buses travelling north and south along Broadway and College Avenue.

At-Grade Railroad Crossings (No Impact)

This alternative is not located near any at-grade railroad crossings and, like the Project, this alternative would not generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users to a permanent and substantial transportation hazard.

Change in Air Traffic Patterns (No Impact)

Similar to the Project, this alternative would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

Consistency with Adopted Policies Supporting Alternative Transportation (LTS)

About 15 percent of existing Safeway customers currently use non-auto travel modes, due to the site's proximity to residential neighborhoods and AC Transit's Route 51A, one of the busiest AC Transit bus routes. Since the Safeway store would remain within the same center, this alternative would be expected to have similar travel mode characteristics as the existing Safeway store. Without a discretionary approval process, this alternative may not be required to implement a TDM program to encourage more employees and customers to shift from driving alone to other modes of travel. Additionally, some of the improvements proposed as part of the Project (e.g., providing signalized access across Broadway at

Coronado Avenue, providing median refuges at several intersections, widening sidewalks along Broadway and Pleasant Valley Avenue adjacent to the site, installing Class 2 bicycle lanes on Broadway and a Class 3A arterial bicycle route on Pleasant Valley Avenue along the site's frontage, and moving bus stop locations) may not be part of this alternative. Even without these improvements, this alternative would not fundamentally conflict with adopted City policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities adopted for the purpose of avoiding or mitigating an environmental effect.

Construction-Period Impacts (LTS with SCA)

Most construction activities associated with this alternative would occur indoors as a result of interior modifications to the former CVS Pharmacy building to accommodate the new Safeway, and as future tenant improvements at the former Safeway. During the remodeling period, temporary and intermittent transportation impacts may result from truck movements as well as construction worker vehicles to and from the site. The construction-related traffic may result in a temporary adverse effect on the circulation system. The City of Oakland SCA Trans-1 requires that a Construction Traffic Management Plan be developed as part of a larger Construction Management Plan to address potentially significant impacts during construction, and implementation of such a plan would ensure that construction-period impacts remain less than significant.

Utilities and Public Services

Stormwater (No Impact)

Alternative 2 would likely not result in the construction of new storm drainage facilities. This alternative would be unlikely to require implementation of NPDES water quality treatment requirements such as on-site bio-retention storm water treatment areas to capture and treat storm water runoff from building rooftops. No environmental effects related to the construction of storm drain improvements would occur.

Wastewater (No Impact)

The site is currently an actively used shopping center generating wastewater flows from its existing commercial tenants. Alternative 2 could generate an increase in wastewater flows over these baseline conditions as a result of the larger grocery store. This increased flow would be off-set to some degree by a reduction in wastewater flows from the current Safeway site when it becomes occupied with less water-intensive retail uses and by elimination of the CVS Pharmacy use. The marginal increase in wastewater flows would not exceed the capacity of existing wastewater treatment facilities or necessitate the expansion of existing wastewater treatment or collection facilities. This alternative would also be unlikely to require construction of new or additional on-site wastewater collection lines, since no new buildings would be constructed and the existing buildings already are connected to the City's wastewater infrastructure.

Water Supply (No Impact)

The site is currently an actively used shopping center creating demand for water from its existing commercial tenants. Alternative 2 could generate an increased demand for water over these baseline conditions as a result of the larger, expanded grocery store. This increased water demand would be off-set to some degree by a reduction in water demands from the current Safeway site as it becomes backfilled with less water-intensive retail uses and by elimination of the CVS Pharmacy use. The increased water demands of this alternative would not exceed the water supplies available from existing entitlements and resources. This alternative would also be unlikely to require construction of new or additional on-site water collection lines, as no new buildings would be constructed and existing buildings already are connected to the City's main water infrastructure system.

Solid Waste (No Impact)

Alternative 2 would generate a small additional demand for solid waste collection and disposal from the larger grocery store. The amount of solid waste generated by this alternative can be accommodated within the capacity of the Davis Street Transfer Station and the Altamont Landfill. Construction and remodeling activities associated with commercial tenant spaces would be subject to the City of Oakland's waste reduction and recycling requirements.

Energy Demands (No Impact)

Alternative 2 would not require more energy than the current baseline energy demands of the existing shopping center. The local energy provider (PG&E) has the capacity to serve this current demand and no construction of new energy facilities or expansion of existing facilities would be required. New construction and remodeling activity would be subject to the requirements of currently applicable federal, state and local statutes and regulations relating to energy standards including Title 24, the California Energy Efficiency Standards for Residential and Nonresidential Buildings.

Alternative 3: Reduced Project

CEQA Guidelines Section 15126.6(c) requires that the range of potential alternatives to the proposed project include alternatives that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. This alternative has been developed to consider an alternative capable of achieving most of the Project applicant's major objectives, and which is also able to lessen its significant adverse effects on traffic congestion.

Description of Alternative 3

Alternative 3: Reduced Project would include all improvements as proposed under the Project, with the exception of upper level space. Under the Reduced Project alternative, all 185,500 square feet of existing shopping center space would be demolished, and the site would be re-built with a new shopping center. The Project proposes to rebuild the site with a total of approximately 322,500 square feet of space, a net increase of approximately 137,000 square feet of commercial space on the site. Approximately 67,700 square feet is proposed as upper floor space, primarily along Pleasant Valley Avenue and Broadway, and above the new Safeway store.

Development under the Reduced Project alternative would be similar to the proposed Project, but this alternative would not include the 67,700 square feet of upper level space. This alternative would result in a total of approximately 254,700 square feet of commercial space at the site, for a net increase of approximately 69,200 square feet (see **Figure 5-3**).

1-Story Elevation (above) versus Proposed 2-Sory Elevation (Below)

Figure 5-3
Alternative 2: Reduced Alternative

Original elevations modified for illustrative purposes only

Comparative Environmental Analysis

Aesthetics

Scenic Vistas (No Impact)

Given the urban nature of the area, views from and through the site of the surrounding area are generally limited to the immediate developed area adjacent to the site. Views from the site have not been identified as scenic vistas or important visual resources in the Oakland General Plan or by a regulatory agency with jurisdiction over the site. As a result, development of the Reduced Project alternative would not significantly alter scenic vistas. Given its reduced height, private views (though not a CEQA topic) would be less affected by this alternative.

Scenic Resources (No Impact)

No scenic resources have been formally identified at the site, and development of this alternative would have no adverse effects on any formally-identified scenic resources. Certain trees located on the site would likely be removed, but these trees are ornamental landscape species with minor scenic value, and their loss would be compensated by replacement plantings. The prominent rock outcroppings and significant geologic features which remain from prior quarrying activities at the site would not be disturbed by this alternative. The site contains no historic resources or other potentially significant scenic resources.

Visual Character (No Impact)

The visual character of the site would change with development of the Reduced Project alternative, but the general character of the site would remain as a commercial shopping center. This alternative would not substantially degrade the existing visual character or quality of the site and its surroundings, but instead would improve the visual character of the site. Much of the existing surface parking lot along the street frontage of Broadway and Pleasant Valley Avenue would be replaced with new buildings and associated landscaping, resulting in a more urban character, denser development, newer architecture and an internal street pattern. The Reduced Project alternative would have lower building heights than the Project, making it somewhat less urban in character than the Project.

Light/Glare/Shadows (LTS with SCA)

Lighting at the site would be modified under this alternative, but stores and parking areas at the site would still be illuminated in a manner similar to what is currently observed at the site. This alternative would be subject to implementation of SCA Aesth-1: Lighting Plan, which would require that proposed lighting fixtures be adequately shielded to a point below the light bulb and reflector to prevent unnecessary glare onto adjacent properties, ensuring that light and glare impacts would be less than significant. No structures or landscape improvements developed under this alternative would create substantial shadows beyond the Project site, and thus would not adversely affect off-site locations. Since the Reduced Project alternative would generally be shorter in height than the Project, the shadows of this alternative would be comparatively shorter and would similarly have no off-site effects.

Urban Decay (LTS)

With a reduction in the amount of commercial space on the site compared to the Project there would be less diverted sales to the site than would occur under the Project. The potential urban decay impacts of the Reduced Project Alternative would be less than significant.

Air Quality

Violate an Air Quality Standard (No Impact)

Like the Project, this alternative would not include any type of use that would emit substantial amounts of pollutants other than precursors of ozone and particulate matter, such that it might individually violate an air quality standard.

Construction Period Fugitive Dust Emissions (LTS with SCA)

Like the Project, this alternative would generate fugitive dust from demolition, grading, hauling and construction activities. The fugitive dust emissions associated with these construction activities would be effectively reduced to a level of less than significant with implementation of required City of Oakland Standard Condition of Approval Air-1. Additionally, this alternative would be required to implement SCA Air-3 which would require certified asbestos removal, encapsulation, or enclosure of any identified asbestos containing materials in accordance with all applicable laws and regulations.

Construction Period Criteria Air Pollutants and Precursor Emissions (LTS)

During construction, this alternative would generate regional ozone precursor emissions and regional particulate matter emissions from construction equipment exhaust. For comparison, the analysis of the Project concludes that it would not be expected to generate emissions of criteria air pollutants during construction that would exceed the City's thresholds of significance. This alternative would have slightly lower construction-period air pollutant emissions since it would have approximately 67,800 square feet less new building space than the Project. Thus, its construction-period exhaust emission would similarly not exceed the City's thresholds of significance. This alternative would be subject to implementation of the City's Standard Conditions of Approval SCA Air-1 and SCA Air-2, further reducing construction-period emission levels.

Construction Period Health Risks to Adjacent Sensitive Receptors (LTS With SCA)

Construction of this alternative would use traditional diesel-powered equipment such as bulldozers, generators, pavers and lifters, all of which would contribute to both cancer and non-cancer health risks. However, with implementation of SCA Air-1 and SCA Air -2 the construction-period health risks associated with the Project were found to not expose nearby sensitive receptors to levels of diesel emissions that would exceed thresholds of significance for inhalation cancer risk, chronic exposure or $PM_{2.5}$ exposure. With 67,800 square feet less new building space than the Project, Alternative 3 would have a slightly reduced inhalation cancer risk, chronic exposure and $PM_{2.5}$ exposure. This alternative would similarly be subject to implementation of the City's Standard Conditions of Approval SCA Air-1 and SCA Air-2, including its diesel reduction measures, which would ensure that the construction–period health risks to adjacent residents remain less than significant.

Operational Related Criteria Air Pollutants (LTS)

Once complete and occupied, this alternative would generate emissions of criteria pollutants, primarily as a result of increased motor vehicle traffic as well as new area source emissions. Since the Project would result in less-than-significant criteria air pollutant and precursor emissions, and Alternative 3 would result in approximately 64% of the weekday PM peak hour trips and 65% of the Saturday PM peak period trips generated by the Project, the criteria air pollutant and/or precursor emissions of Alternative 3 would be less than those of the Project and, like the Project, would be less than significant.

Carbon Monoxide Concentrations (LTS)

Alternative 3 would be consistent with the applicable Congestion Management Program established by the County Congestion Management Agency for designated roads or highways, regional transportation plan, and local Congestion Management Agency plans. Alternative 3 would also not contribute a substantial number of vehicle trips to any intersection experiencing more than 44,000 vehicles per hour, or to any intersection experiencing more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited. Peak hour traffic volumes at all surrounding intersections are well below the 44,000 vehicle-per-hour criteria and are projected to remain below that level in 2015 and 2035. Since Alternative 3 would not exceed these conditions, like the Project, this alternative would be expected to result in a less-than-significant impact to air quality from CO concentrations.

Biological Resources

Special Status Species (LTS with Mitigation)

The large trees and existing buildings within the site and its immediate vicinity provide potential migratory bird nesting habitat bat roosting habitat, and the adjacent quarry pond and surrounding vegetation provides some habitat value to water birds, nesting birds, roosting bats and potentially western pond turtle. These habitats could be disturbed during construction of the Reduced Alternative. Implementation of City of Oakland Standard Conditions of Approval would reduce potential adverse effects to nesting migratory birds. Additional mitigation measures as recommended for the Project (bat surveys and western pond turtle surveys), together with compliance with requirements of applicable regulatory programs would mitigate potential impacts to special status species to levels of less than significant.

Wetlands, Riparian Habitat and Sensitive Natural Communities (LTS with SCA)

The Reduced Project Alternative is assumed to have new landscaping and access improvements along the quarry pond, similar to the Project. Implementation of Standard Conditions of Approval Bio-2 through Bio-5 would be required for those portions of this alternative that fall within 20 feet of the top of bank. A City of Oakland Creek Protection permit would be required, including an Erosion and Sedimentation Control Plan, a Creek Protection Plan and a detailed Landscape Plan. Compliance with the requirements of the City's Creek Protection permit would ensure that the Project would not adversely affect off-site wetlands, riparian habitat and sensitive natural communities.

Wildlife Movement/Nursery Sites (No Impact)

The site is located in an urbanized area that has supported commercial uses for more than 40 years. There are no wildlife movement corridors passing through the site, and the site is not used as a wildlife nursery. Redevelopment of the site under this alternative would not adversely affect wildlife movement or nursery sites.

Habitat Conservation Plans (No Impact)

No habitat conservation plans or natural community conservation plans are currently applicable to the site or the vicinity of the site. Redevelopment of the site under this alternative would not fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan.

Compliance with Oakland Tree Protection Ordinance (LTS with SCA)

Similar to the Project, construction of the Reduced Project alternative would likely result in the removal of three "protected trees" and three Monterey pines in order to accommodate new buildings, improved parking areas, and improved pedestrian access adjacent to the quarry pond. Compliance with City of

Oakland Standard Conditions of Approval to obtain a tree removal permit prior to removal of any "protected trees"(SCA Aesth-2), the requirements for the provision of replacement trees (SCA Aesth-3) and provisions for the protection of trees to remain during construction activities (SCA Aesth-4) would ensure that any potential tree removal necessary for Project construction would be conducted in compliance with City ordinances and regulations, thereby ensuring that this impact remains less than significant.

Compliance with Oakland Creek Protection Ordinance (LTS with SCA)

Similar to the Project, no development or work would occur within the daylighted section of the Rockridge branch of Glen Echo Creek or on the downside slope of the quarry pond. However, new landscaping and a pedestrian path within 20 feet of the top of bank of the adjacent pond would likely qualify for a Category IV Creek Protection permit pursuant to SCAs Bio-2, Bio-3, Bio-4 and Bio-5. Although this alternative would likely be subject to the provisions of the City of Oakland Creek Protection Ordinance, there is nothing about this alternative that would fundamentally conflict with elements of the ordinance intended to protect biological resources. The Reduced Project alternative would not discharge a substantial amount of pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it adversely impact a riparian corridor by significantly altering vegetation or wildlife habitat.

Cultural Resources

Materially Impair an On-site Historic Resource (No Impact)

The site is not considered a significant historic property, and therefore development of the Reduced Project alternative would not directly result in a substantial adverse change in the significance of an on-site historical resource.

Materially Impair an Adjacent Historic Resource (LTS)

This alternative would not directly or indirectly result in a substantial adverse change in the significance of a nearby historical resource. It is highly unlikely that demolition or construction activity associated with this alternative would produce vibrations that could damage adjacent historic structures.

Archaeological or Paleontological Resources, and Human Remains (LTS)

Construction of this alternative would not cause a substantial adverse change in the significance of a known archaeological resource, nor would it directly or indirectly destroy a known unique paleontological resource or site, or unique geologic feature. It is possible that currently unknown archaeological or paleontological resources could be damaged during site grading and construction. Implementation of City of Oakland Standard Conditions of Approval Cultural-1 through-3, including the site-specific conditions as recommended for the Project, would ensure that potential impacts remain at a level of less than significant.

Geology and Soils

Seismic Ground Shaking and Ground Failure (LTS with SCA)

The site is not located within an Alquist-Priolo Special Studies zone, but the City of Oakland Safety Element indicates that the easterly portions of the site are located in a Potential Liquefaction Area and subject to seismic-induced ground failure. The Reduced Project alternative would be subject to the City's Standard Conditions of Approval, including SCA Geo-2, which requires submittal of a detailed soils report along with detailed engineering drawings to ensure that buildings are designed and constructed in conformance with the requirements of all applicable building code regulations. Implementation of City of Oakland standard conditions of approval and compliance with Uniform Building Code standards would ensure that foundation designs for all new buildings minimize the effects of ground shaking and seismic-induced ground failure to a level of less than significant.

Landslides (LTS with SCA)

According to the City of Oakland Safety Element, the existing off-site cut slope extending along the site's northern boundary (averaging approximately 50 feet in height) is identified as a Potential Landslide Area. There are areas of erosion on this slope and there is evidence of fallen debris at the toe of the slope. This alternative would not conduct any grading, tree removal or alteration to this cut slope and would not exacerbate or further increase slope instability. However, this alternative would be subject to implementation of City Standard Condition of Approval Geo-2, which would require that site stability issues be addressed and corrective actions be prescribed at locations where land stability problems exist. With implementation of this Standard Condition of Approval, including the 2007 geotechnical investigation's recommendation for reconstruction of on-site catchment structures at the toe of the cut slope, the risks of injury and structural damage from slope failure under the Reduced Project alternative would be less than significant.

Geologic Fill (LTS with SCA)

Soils at the site where new buildings would be constructed under this alternative are anticipated to be able to support building loads on shallow footings, with floor slabs supported on-grade over a prepared sub-grade. The Reduced Project alternative would be subject to the City's Standard Conditions of Approval, including SCA Geo-2 as well as the associated recommendations of the 2007 geotechnical investigation prepared for the site, which include that if unsuitable soil is encountered during the construction phase, such soils should be excavated to a firm bottom and the resulting hole should be backfilled with engineered fill or lean mix concrete. With implementation of SCA Geo-2 and the associated recommendations of the 2007 geotechnical investigation, the potential risk of structural damage from unstable soils would be less than significant.

Greenhouse Gas Emissions

GHG Emissions (LTS)

The Reduced Project alternative would increase vehicle trips as compared to the proposed Project. Assuming that vehicle-related GHG emissions would be approximately proportional to the total number of net new trips, this alternative would result in a corresponding reduction in vehicular GHG emissions as compared to the Project, and would also generate approximately half the net increase in area source emissions as the Project. The new Safeway store under the Reduced Project alternative would result in the same substantial reductions in GHG emissions as estimated for the Project with respect to refrigerants, which have a particularly high global warming potential. Overall, the GHG emissions impacts of the Reduced Project alternative would be less than significant, and slightly less than the Project.

Conflict with an Applicable Plan, Policy or Regulation Adopted for the Purpose of Reducing GHG Emissions (LTS)

Because the estimated GHG emissions of the Reduced Project alternative would not exceed the City's numeric significance threshold, like the Project, the Reduced Project alternative would also comply with applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions.

Hazards and Hazardous Materials

Cortese List / Presence of Hazardous Materials Contamination (No Impact)

No portion of the site is included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Environmental Site Assessments prepared for the site do not indicate the presence of on-site soil or groundwater contamination at significant levels, nor do they indicate that off-site contamination of soil or groundwater presents a concern to construction or operation of a shopping center.

Disposal, Transport, Upset or Use of Hazardous Materials (LTS with SCA)

Construction workers, future commercial tenants and shoppers at the site could be exposed to hazardous materials during construction activities. Under this alternative, portions of the existing shopping center with asbestos-containing materials and lead-based paint would be removed, and the handling and disposal of such material could potentially result in release of asbestos fibers into the air, potentially exposing those nearby to increased risk.

Like the Project, the Reduced Project alternative would be subject to implementation of City of Oakland Standard Condition of Approval SCA Air-3, Haz-4, Haz-10 and Haz-11 pertaining to asbestos removal and lead-based paint remediation, including the recommendations from the Phase II Environmental Site Assessment and subsequent Addendum prepared for the Project site. With implementation of these Standard Conditions of Approval and the associated recommendations of the Phase II Environmental Site Assessment and subsequent Addendum, the potential risk from asbestos and lead-based paint with the Reduce Project alternative would be less than significant.

Hazardous Materials near School, Hazards near Airports, Interference with Emergency Response, and Wildfire Hazards (No Impact)

Although the site is located within one-quarter mile of Oakland Technical High School and Emerson Elementary School, there are no known components of this alternative that would emit hazardous emissions or result in the need to handle hazardous or acutely hazardous materials, substances or waste. The site is not located near any public airport, within an airport plan area or near a private airstrip. This alternative would not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. The Project site is located in an urbanized area of Oakland more than ½ mile outside of the Fire Prevention and Assessment District boundary, which indicates that it is not subject to significant wildfire hazard.

Hydrology and Water Quality

Depletion of or Interference with Groundwater Supplies (No Impact)

The site is already fully developed and/or paved, and is served with water from the East Bay Municipal Utility District. The Reduced Project alternative would not result in any change in existing groundwater recharge and would not deplete groundwater resources.

Flooding (No Impact)

No portion of the site is within the 100-year or 500-year flood hazard area as mapped on Federal Flood Hazard Boundary or Flood Insurance Rate Maps or other flood hazard delineation maps. This alternative would not place any structures within a 100-year flood hazard area that might impede or redirect flood flows, or expose people or structures to a substantial risk of loss, injury or death involving flooding, seiche, tsunami, or mudflow.

Increased Runoff Exceeding Stormwater Drainage System Capacity (LTS)

The site currently has very little impervious surface and is almost entirely covered by buildings and paved areas. Virtually all storm water falling onto the site results in surface runoff. No retention or detention of runoff currently occurs prior to entering into the City's storm drain system. Implementation of the Reduced Project alternative would not increase impervious surface area and thus would not increase stormwater runoff.

This alternative would be subject to City of Oakland Standard Conditions of Approval which require new construction projects to apply for and obtain approval of a Stormwater Management Plan pursuant to NPDES water quality treatment requirements. As such, this alternative would be required to implement on-site storm water treatment areas and other best management practices to capture and treat storm water runoff from all building rooftops and parking area, similar to that proposed under the Project. Additionally, the pervious surfaces associated with such storm water treatment areas and other BMPs would serve to reduce overall site runoff such that the amount of surface runoff leaving the site post-construction would be less than current runoff volumes, and no increase in stormwater flows entering the City's storm drainage system would occur. However, since the City's storm drain system is aged and often unable to accommodate storm water flows, this alternative would also be subject to the general recommendation of the City's *Storm Drainage Design Guidelines* to achieve a net reduction of 25 percent in the site's peak stormwater runoff rate, to the extent possible, in an effort to better address City-wide storm drainage capacity. This alternative would provide similar opportunities as the Project for low-impact development passive approaches to on-site stormwater management.

Erosion and Sedimentation (LTS with SCA)

Similar to the Project, site preparation and construction activity associated with this alternative could result in soil erosion, which could have adverse effects on water quality. During site preparation and construction activity, potentially significant soil erosion impacts could occur by exposing underlying soils. If left unprotected during construction, such exposed soils could be carried via stormwater runoff into the storm drain system and/or into adjacent surface water, resulting in increased sedimentation. Like the Project, this alternative would be subject to SCA Hydro-1, and required to obtain a grading permit, including an approved Erosion and Sedimentation Control Plan, from the Building Services Division. The Erosion and Sediment Control Plan would include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. Such measures will include but will not be limited to short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Effective implementation of SCA Hydro-1 and SCA Geo-1 during site preparation and construction activity at the site would ensure that potentially significant soil erosion and sedimentation impacts remain at a level of less than significant.

Degradation of Water Quality during Construction (LTS with SCA)

Site preparation and construction activity associated with this alternative could result in degradation of stormwater quality. Potential pollutants associated with construction activities are likely to include minor quantities of paint, solvents, oil and grease, and petroleum hydrocarbons. If such pollutants were allowed to enter into the storm water runoff from the site, they would contribute to the potential degradation of downstream receiving waters. Like the Project, this alternative would be subject to the provisions of Standard Conditions of Approval Hydro-2, requiring coverage under a General Construction Activity Storm Water Permit issued by the State Water Resources Control Board. Coverage under this permit requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) for review and approval by the Planning and Zoning Division and the Building Services Division of the City of Oakland, and evidence of approval of the SWPPP by the SWRCB. At a minimum, the SWPPP would need to include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; a list of provisions to eliminate or reduce discharge of materials to stormwater; Best Management Practices (BMPs), and an inspection and monitoring program. Effective implementation of SCA Hydro-1 during site preparation and construction activity would ensure that potentially significant water quality impacts during construction of this alternative remain at a level of less than significant.

Degradation of Water Quality during Operations (LTS with SCA)

Operational activities such as vehicular use, landscaping maintenance and other operational activities pursuant to this alternative could potentially introduce pollutants into stormwater runoff, resulting in degradation of downstream water quality. Like the Project, this alternative would be subject to the provisions of Standard Conditions of Approval Hydro-3, requiring demonstrated compliance with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES). These provisions require preparation and approval of a Stormwater Pollution Management Plan (SMP) to limit the discharge of pollutants in stormwater after construction of the Project to the maximum extent practicable. Additionally, this alternative would be subject to SCA Hydro-3, requiring a maintenance agreement for accepting responsibility for the adequate installation/construction, operation, maintenance, inspection and reporting of all stormwater treatment measures. Effective implementation of SCA Hydro-3 would ensure that potentially significant water quality impacts during operations of this alternative remain less than significant.

Conflict with Oakland Creek Protection Ordinance (LTS)

Under the Reduced Project alternative no development or work would be conducted within the day-lighted section of the Rockridge branch of Glen Echo Creek or on the downside slope of the quarry pond. However, the area adjacent to the pond would be improved with new landscaping and a public access trail, similar to that proposed by the Project. Portions of this landscaping and trail would qualify for a Category IV Creek Protection Permit. However, as with the Project, there is nothing about this alternative that would fundamentally conflict with elements of the ordinance intended to protect hydrologic resources. This alternative would not discharge a substantial amount of pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it substantially endanger public or private property or threaten public health or safety.

Land Use

Physically Divide an Established Community (No Impact)

Like the Project, the design of this alternative would not further divide or limit connections to the surrounding community either to or through the site, but would instead create improved connections from the site to the surrounding community.

Land Use Compatibility (No Impact)

This alternative would not be incompatible with surrounding land uses and would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. The land uses provided under this alternative would be consistent with the General Plan designations and applicable zoning on the site, and would not exceed the maximum development intensity allowed under the General Plan or zoning. All building setbacks, parking design requirements, etc. would be consistent with the applicable zoning. As a result of lowering the height of new buildings under this alternative, it would not be taller than the zoning regulations currently prescribe, and the new buildings would not result in significant adverse physical impacts such as shadowing off-site locations or substantially blocking important view sheds or vistas. No significant land use impacts related to this alternative's consistency with land use policies would occur.

Habitat and Natural Community Conservation Plans (No Impact)

This alternative would not result in a fundamental conflict with any applicable habitat conservation plan or natural community conservation plan. The site is not located within or near an area guided by a Habitat Conservation Plan or Natural Community Conservation Plan.

Noise and Vibration

Construction Noise (LTS with SCA)

Similar to the Project, construction activities associated with this alternative would occur in several phases over an approximate two year period, including demolition of the existing CVS store and adjacent retail buildings, construction of a new Safeway store and adjacent retail space, redesign and construction of the surface parking lot, landscaping improvements, demolition of all other retail and commercial buildings, internal access improvements, construction of new retail space, and the construction of additional parking throughout the site.

As evaluated in Chapter 4.7 of this EIR, noise generated by these construction activities would not be expected to violate the City of Oakland Noise Ordinance regarding nuisance of persistent construction-related noise, provided that standard construction noise controls are implemented at the site. This alternative would be subject to implementation of SCA Noise-1 which provides reasonable regulations of the hours of construction, and SCA Noise-2 which requires preparation of a Noise Reduction Plan including restrictions on the arrival and operation of heavy equipment and the delivery of construction materials. With the incorporation of the City of Oakland's Standard Conditions of Approval the noise impact resulting from construction of this alternative would be less than significant.

Permanent Increase in Ambient Traffic Noise (LTS)

The Reduced Project alternative would not result in a substantial increase in the permanent outdoor ambient noise levels in the vicinity above existing noise levels. As indicated in Chapter 4.7 of this EIR, vehicular traffic generated by the Project would not increase noise levels substantially because Project-generated traffic makes up a small percentage of the total traffic along area roadways. As indicated above, traffic generated under this alternative would be less that generated by the Project, and thus traffic noise generated by this alternative would be similarly less than the Project. Vehicular traffic noise levels with this alternative would not increase measurably above existing levels or future baseline levels, and the increased vehicular noise along nearby roadways attributable to this alternative would be an imperceptible increase of 0 to 2 dBA L_{dn}.

Conflict with Land Use Compatibility Guidelines (No Impact)

This alternative would not result in a conflict with land use compatibility guidelines used to determine the acceptability of noise for a commercial land use.

Operational Noise in Excess of Oakland Noise Ordinance Standards (LTS)

Commercial and retail operations under this alternative will not result in new or exacerbated operational noise levels that would exceed the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise. Even though there would be less developed new commercial space, the Reduced Project alternative would have similar operational noise associated with roof-top mechanical equipment, trash compactors and loading docks as the operational noise associated with the Project. As analyzed for the Project in Chapter 4.7 of this EIR, roof-top mechanical noise levels at the nearest noise-sensitive receptors would not exceed the daytime and night-time noise standards set forth in the City of Oakland Noise Ordinance, the operation of trash compactors would not normally be audible or measurably increase day-night average noise levels at nearby sensitive land uses (particularly assuming that trash compactors would be contained within commercial structures), and the arrival and departure of heavy trucks and vendor trucks during the day or night day-night would not result in an increase in noise at the nearest receiving residences that would exceed the thresholds set forth in the City's Noise Ordinance.

Transportation, Circulation and Parking

Trip Generation

As indicated in **Table 5-4**, the Reduced Project alternative would result in an increase in both weekday peak and Saturday peak hour traffic as compared to existing conditions. The total number of trips generated under this alternative would increase relative to the baseline (or existing conditions) by approximately 279 trips during the weekday pm peak, and by approximately 411 trips during the Saturday peak hour. This increase in vehicle trips is attributable to the larger Safeway store as well as the addition of other retail space.

Compared to the Project, the Reduced Project alternative would result in a decrease of approximately 157 trips during the weekday pm peak (approximately 64% of the trips generated by the Project), and a decrease of 222 trips during the Saturday peak hour (approximately 65% of the trips generated by the Project).

Roadway Network

Similar to the Project, this alternative is also assumed to implement a number of modifications to street configurations and signal operations on Broadway and Pleasant Valley Avenue adjacent to the site.

Table 5-4: Trip Generation Estimates
Alternative 3 – Reduced Project

Land Use	ITE Code	Units[1]	Weekday PM Peak Hour			Saturday Peak Hour		
			In	Out	Total	In	Out	Total
Proposed Safeway[2]	850	65.0 KSF	338	325	663	360	345	705
- Existing Safeway[2]	850	48.0 KSF	-281	-270	-551	-266	-255	-521
Net New Safeway Trips			*57*	*55*	*112*	*94*	*90*	*184*
Proposed Net New Retail[3]	820	110.2 KSF	333	346	679	475	438	913
- Existing CVS[4]	n/a	-87.2 KSF	-156	-178	-334	-211	-263	-474
New Project Trips			234	223	457	358	265	623
- Pass-By Vehicles[5]			-77	-77	-154	-81	-81	-162
- Internalized Trips[6]			-12	-12	-24	-25	-25	-50
Alternative 3 Trip Generation			***145***	***133***	***279***	***252***	***159***	***411***
Project Trip Generation			211	225	436	369	264	633
Net Difference Compared to Project (%)					***64%***			***65%***

KSF = 1,000-square feet
Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) regression equation and average for Supermarket (Land Use Code 850) :
Weekday PM: Ln(T) = 0.61 Ln(X) + 3.95; Enter = 51%, Exit = 49%
Saturday: T = 10.85 (X); Enter = 51%, Exit = 49%
Where: T = trips generated, X = 1,000 square feet, Ln = natural log
Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) regression equations for Shopping Center (Land Use Code 820) :
Weekday PM: Ln(T) = 0.67 Ln(X) + 3.37; Enter = 49%, Exit = 51%
Saturday: Ln(T) = 0.65 Ln(X) + 3.76; Enter = 52%, Exit = 48%
Where: T = trips generated, X = 1,000 square feet, Ln = natural log
Data based on peak hour counts collected on June 6 and June 7, 2008.
Trip pass-by rate based on Institute of Transportation Engineers (ITE), *Trip Generation Handbook* average pass-by for Shopping Center (Land Use Code 820). Average Weekday pass-by rate: 34%; average Saturday pass-by rate: 26%.
Based on intercept survey results, average internalization rates were 5% for weekday and 8% for Saturday
Source: Trip Generation (8th Edition), ITE, 2008; and Fehr & Peers, 2012.

Intersection Impacts (SU)

This alternative would generate about 65% of the increase in net new vehicle trips as compared to the Project.

- This reduction in trips would be sufficient to reduce the impact at Broadway/51st Street/Pleasant Valley Avenue (intersection #7) under 2015 plus Project conditions from significant and unavoidable to a less-than-significant level.
- However, it will not be sufficient to avoid the significant and unavoidable traffic impacts at Howe Street/Pleasant Valley Avenue (intersection #19) under Existing plus Project, 2015 plus Project, and 2035 plus Project conditions, and at Broadway/51st Street/Pleasant Valley Avenue (intersection #7) and Piedmont Avenue/Pleasant Valley Avenue (intersection #20) under 2035 plus Project conditions.

Congestion Management Program Evaluation (LTS)

With less traffic than the Project, the Reduced Project alternative would also not cause congestion of regional significance on a roadway segment on the Metropolitan Transportation System (MTS).

Transportation Hazards (LTS)

The design of the Project and the adjacent roadways seeks to minimize potential conflicts between various modes of transportation and to provide safe and efficient pedestrian, bicycle, and vehicle circulation within the site and between the site and the surrounding circulation systems. It is likely (though not proposed) that similar improvements would be included as part of the Reduced Project alternative. These improvements would include modifications to the Broadway/College Avenue intersection (which reduce conflicts between pedestrians crossing College Avenue and vehicles turning left from northbound Broadway into Wendy's Restaurant); two inbound and two outbound travel lanes on the driveway at Pleasant Valley Avenue, and those other modifications to pedestrian access, transit access, bicycle access and circulation in and around the site as proposed under the Project (i.e., providing signalized access across Broadway at Coronado Avenue, providing median refuges at several intersections, widening sidewalks along Broadway and Pleasant Valley Avenue adjacent to the site, installing Class 2 bicycle lanes on Broadway and a Class 3A arterial bicycle route on Pleasant Valley Avenue along the site's frontage, and moving bus stop locations). However, even without these improvements as proposed and recommended for the Project, the Reduced Project alternative would not directly or indirectly result in a permanent substantial decrease in vehicular, pedestrian, bus rider or bicyclist safety.

Transit Travel Time (LTS)

With less traffic than the Project, traffic generated by the alternative would not substantially increase travel times for AC Transit buses travelling east and west along Pleasant Valley Avenue and 51st Street, nor for buses travelling north and south along Broadway and College Avenue.

At-Grade Railroad Crossings (LTS)

This alternative is not located near any at-grade railroad crossings and, like the Project, this alternative would not generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users to a permanent and substantial transportation hazard.

Change in Air Traffic Patterns (LTS)

Similar to the Project, this alternative would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

Consistency with Adopted Policies Supporting Alternative Transportation (LTS)

About 15 percent of existing Safeway customers currently use non-auto travel modes, due to the site's proximity to residential neighborhoods and AC Transit's Route 51A, one of the busiest AC Transit bus routes. Since the Safeway store would remain within the same center, the Reduced Project alternative is expected to have similar travel mode characteristics as the existing Safeway store. Pursuant to SCA Trans-2, this alternative would also be required to implement a TDM program to encourage more employees and customers to shift from driving alone to other modes of travel. This alternative would not fundamentally conflict with adopted City policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities adopted for the purpose of avoiding or mitigating an environmental effect.

Construction-Period Impacts (LTS with SCA)

During the construction activities associated with this alternative, temporary and intermittent transportation impacts may result from truck movements as well as construction worker vehicles to and from the site. The construction-related traffic may result in a temporary adverse effect on the circulation system. The City of Oakland SCA Trans-1 requires that a Construction Traffic Management Plan be developed as part of a larger Construction Management Plan to address potentially significant impacts during construction, and implementation of such a plan would ensure that construction-period impacts remain less than significant.

Utilities and Public Services

Stormwater (LTS with SCA)

Like the Project, the Reduced Project alternative would likely need to construct new on-site storm drains under the parking lot and driveways to collect storm runoff and convey that runoff to the City's existing storm drain system. Construction of the storm drain improvements would occur in areas that are currently part of the existing shopping center's parking lots and driveways, areas with minimal to no environmental sensitivity, and compliance with all City of Oakland standard conditions of approval for infrastructure construction would ensure standard construction effects remain less than significant. Like the Project, this alternative would also be subject to the general recommendation of the City's *Storm Drainage Design Guidelines* to achieve a net reduction of 25 percent in the site's peak stormwater runoff rate, to the extent possible, in an effort to better address City-wide storm drainage capacity. Additionally, this alternative would be subject to SCA Util-2, requiring confirmation of the capacity of the City's surrounding stormwater system and state of repair, and acceptance of the responsibility for any necessary stormwater infrastructure improvements to accommodate the runoff form the site. Implementation of these Standard Conditions of Approval would ensure that potential impacts remain less than significant.

Wastewater (LTS with SCA)

The Reduced Project alternative would generate an increase in wastewater flows over baseline conditions, but similar to the Project, this increase would not be so substantial as to exceed the capacity of existing wastewater treatment facilities or necessitate the expansion of existing wastewater treatment or collection facilities. Given that the Reduced Project alternative represents approximately half the net increase in development as compared to the Project, this alternative would generate approximately half the increase in projected wastewater flows, an estimated increase of 8,300 gallons per day (gpd) over baseline flows. This projected increase in wastewater flows would not be substantial in the context of the entire volume of wastewater processed by EBMUD's wastewater treatment plant and would be less than significant, the same as for the Project.

Similar to the Project, this alternative would require construction of new on-site wastewater collection infrastructure, including a number of on-site wastewater collection lines to connect new buildings to the existing wastewater infrastructure. Construction of these new sewer lateral lines would occur in areas that are currently part of the existing shopping center, either in areas currently occupied by buildings, parking lots or driveways, areas with minimal to no environmental sensitivity. Compliance with all City of Oakland Standard Conditions of Approval for infrastructure construction would ensure that standard construction effects remain less than significant. Furthermore, this alternative would be subject to SCA Util-2 which would require confirmation that the capacity of the City's surrounding sanitary sewer system is adequate to accommodate the sewer discharge from this alternative as well as the responsibility for undertaking any necessary sewer infrastructure improvements. Development of this alternative would also require payment of fees to improve sanitary sewer infrastructure if required by the Sewer and Stormwater Division, and payment of all required installation or hook-up fees to the affected service provider.

Similar to the Project, with implementation of City of Oakland Standard Conditions of Approval, this alternative's effects on wastewater infrastructure would be less than significant.

Water Supply (LTS with SCA)

The Reduced Project alternative would generate an increase in water demand over baseline conditions, but this increase would not exceed water supplies available from existing entitlements and resources. Given that the Reduced Project alternative represents approximately one-half of the net increase in development as compared to the Project, this alternative would generate approximately one-half of the increase in water demands projected for the Project, or approximately an increase of 9,300 gpd over the current baseline demand. This increased water demand would represent a marginal increase in overall water demands from throughout the EBMUD service area and would not result in a new significant increase in water use and would not, by itself, require new or expanded water entitlements. However, EBMUD's current water supply is insufficient to meet customer needs in multiple year drought conditions and this alternative would contribute to this drought-period water supply deficiency. As part of standard development practices within the City of Oakland, the Project applicant would be required to comply with the Oakland Water Efficient Landscape Requirements found in Title 10, Chapter 7 of the Municipal Code. With implementation of these standard municipal code requirements, the impact of this alternative on water supply would be less than significant.

Similar to the Project, this alternative would require construction of new on-site water distribution infrastructure. Construction of this new infrastructure would occur in areas that are currently part of the existing shopping center in areas with minimal to no environmental sensitivity. Compliance with all City of Oakland Standard Conditions of Approval for infrastructure construction would ensure that standard construction effects remain at levels of less than significant.

Solid Waste (LTS with SCA)

Given that the Reduced Project alternative would result in approximately half the net increase in development as the Project, this alternative would generate approximately half the increase in solid waste projected for the Project, an increase of approximately 140 pounds of waste per day over existing conditions. This amount of increased solid waste would not exceed the capacity of the Davis Street Transfer Station or the Altamont Landfill, and would not require the construction or expansion of landfill facilities. As such, operation of this alternative would have a less than significant impact on solid waste facilities.

Demolition activities associated with the removal of the existing building space, paved asphalt areas and utilities would be subject to City of Oakland waste reduction and recycling requirements. Compliance with SCA Util-3, the City's Waste Reduction and Recycling Standard, and Oakland Municipal Code Chapter 15.34 would ensure that the amount of waste generated during the construction phases of this alternative remain less than significant.

Energy Demands (LTS)

Like the Project, this alternative would be subject to Title 24, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, and would not violate applicable regulations related to energy standards. The site is located in an area that currently receives electrical and natural gas services from PG&E. Connecting new buildings to existing lines would involve relatively minor improvements to the existing energy infrastructure. Energy consumption would primarily be associated with the new commercial uses at the site. This alternative would not require or result in the construction of new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects. Therefore, this alternative would have a less than significant impact on the provision of electricity and natural gas, and on energy consumption.

Alternative 4: Concept with Commercial Emphasis (RCPC Plan)

Description of Alternative 4

Individuals and community groups have expressed their desire for a different design and mix of land uses which they believe to be more pedestrian, bicycle and transit-friendly, and more urban in character. Alternative 4: presents a concept plan put forth by the Rockridge Community Planning Council (RCPC), which can be viewed on the RCPC website[2].

In its July 26, 2009 letter responding to the NOP (**Appendix 1B)**, the RCPC identified a number of alternatives that it believed would result in reduced impacts and better use of the site. These alternatives included a community amenities alternative, mixed use with residential alternative, continued street grid alternative, and transit-oriented development alternative. In communications with the City, the RCPC Land Use Committee recommended the following principles intended to create a pedestrian and transit-friendly urban shopping area that it wished to be addressed in the project's final design. Alternative 4 reflects most of these principles.

1. Safe, convenient, and pleasant pedestrian access to the Safeway store and other shopping from both Broadway and Pleasant Valley Avenue shopping center entrances;
2. Extend the city street grid into the center so that extensions of Coronado Avenue and Gilbert Streets connect within the center and extend to the quarry pond and all parking structures;
3. Replace most of the surface parking areas with structured parking so that the land is used efficiently and appropriately for an urban area;
4. Activate the quarry pond frontage with restaurants or another activity center;
5. Better AC Transit access to the shopping center, including a possible onsite station;
6. Direct pedestrian access to shopping from Pleasant Valley Avenue;
7. Better landscaping and sidewalk amenities on the Pleasant Valley Avenue frontage, in surface parking areas, and on the "shopping street;"
8. Prominent pedestrian crossings (e.g., speed tables) across access roads on the site; and
9. Provide space for a future phase to include housing.

Alternative 4 would involve redevelopment of the existing Rockridge Shopping Center, including the demolition of all of the existing buildings on the site and the construction of a new Safeway store along with other retail, office and restaurant space. Alternative 4 is illustrated in **Figure 5-4,** and development assumptions are presented in **Table 5-5**. Alternative 4 would include a total of 320,000 square feet of commercial space, including a 65,000 square foot Safeway store, 35,000 square feet of major retail, 160,000 square feet of other retail, 10,000 square feet of restaurant uses, 10,000 square feet of office uses, and a 10,000 square foot bank.[3] The existing CVS Pharmacy building would be demolished and replaced by a new Safeway store. Subsequently, the existing Safeway and all of the other existing buildings on the site would be demolished and replaced with new 2- to 4-story buildings containing retail uses on the ground floor and office uses on the second floor. A total of 1,000 off-street parking spaces would be

[2] http://www.rockridge.org/ludocs/Safeway/RockridgeCenterSafeway/rcpc_plans.pdf

[3] Since Alternative 4 represents a site layout put forth by RCPC that is substantially similar to the Project but the RCPC concept plan did not specify the amount of space occupied by various uses, this analysis assumes a mix of uses that is substantially similar to the Project.

located in surface parking lots, along a new internal "shopping street," on a rooftop parking lot over the new Safeway store, and in a three level parking garage located over retail space.

Table 5-5 Alternative 4 Development Assumptions (square feet)

Safeway	65,000
Major Retail	35,000
Other Retail	160,000
Restaurant	10,000
Office	10,000
Bank/Finance	10,000
Auxiliary Space	30,000
TOTAL	320,000

Alternative 4 includes a mix of land uses and a site layout that is very similar to the Project evaluated in this EIR. Unlike the Project, Alternative 4 would retain the Chase Bank in its present location, and place more retail space where the Project proposes a new freestanding bank with a drive-thru. Alternative 4 would include more office space, and more restaurant space and outdoor dining adjacent to the quarry pond, as compared to the Project. Alternative 4 would connect the new entry on Broadway to the center of the site through the internal "shopping street," whereas the Project would continue the city street grid as an extension of Coronado Avenue along the northerly boundary of the site through to the quarry pond.

Comparative Environmental Analysis

Alternative 4 includes a mix of land uses and site layout that are essentially the same as the Project evaluated in this EIR. As a result, the environmental impacts of Alternative 4 would be essentially the same as those of the Project.

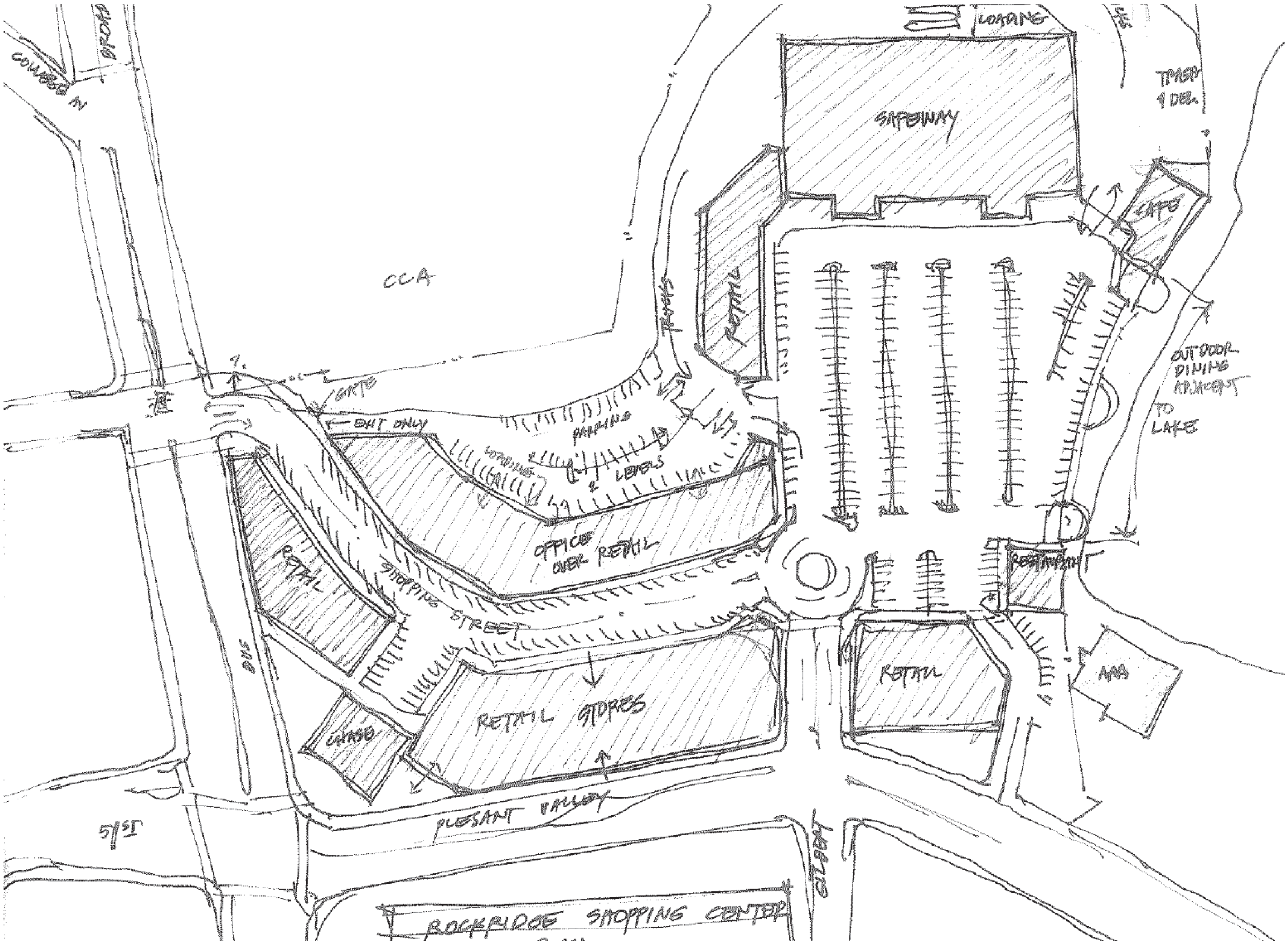

Figure 5-4
Rockridge Community Planning Council (RCPC)
Alternative Concept Plan

http://www.rockridge.org/ludocs/Safeway/Rockridge-CenterSafeway/rcpc_plans.pdf

Alternative 5: Concept with Residential Emphasis (ULTRA Plan)

Description of Alternative 5

During the scoping process for this EIR, individuals and community groups expressed their desire for a different design and mix of land uses which they believed to be more pedestrian, bicycle and transit-friendly, more urban in character, and that also includes mixed-use development with housing. Alternative 5: Concept with Residential Emphasis, presents a concept plan put forth by Urbanists for a Livable Temescal-Rockridge Area (ULTRA) in their July 27, 2009 letter responding to the NOP (see **Appendix 1B**).

Alternative 5 would involve redevelopment of the existing Rockridge Shopping Center, including the demolition of all of existing buildings on the site. New construction would include a new, 62,000 square foot Safeway store, 38,500 square feet of other retail space, and 21,500 square feet of office space. This total of 121,000 square feet of commercial space would represent a reduction of approximately 64,500 square feet as compared to the existing 185,500 square feet currently existing within the shopping center. New construction would also include a total of up to 349 residential units in a mix of townhomes, flats, apartments and dorms, in both residential-only and mixed-use buildings. A total of 804 off-street parking spaces would be located in two parking structures. Alternative 5 would include a mix of housing types, and would integrate and provide for pedestrian, transit, and bicycling access. Its design is intended to "knit together" the neighborhoods that adjoin the Project site with walkable streetscapes and varied, neighborhood-serving retail uses. Alternative 5 is illustrated in **Figure 5-5** and development assumptions are presented in **Table 5-6**.

Alternative 5 would result in a reduction in the total amount of retail space on the site as compared to the existing center, but would include a new Safeway store to be located along Broadway next to the proposed transit plaza. Safeway's "boutique" shops (deli, bakery, butcher shop, pharmacy, floral, specialty drinks, banking, etc.) would front onto Broadway and the transit plaza, with access from both the main store as well as the street. Prominent retail architecture would visually connect the project to College Avenue. Grand staircases would lead from street levels up to a shopping level. A shopping level pedestrian passage would provide a pedestrian link from the transit plaza through the site.

Alternative 5 would provide a diversity of unit types, from one-bedroom apartments and 1-2 bedroom flats, to 2-3 bedroom townhouses, as well as a dormitory for California College of the Arts (CCA) should CCA be interested in developing a residential project with direct linkage to the campus. Alternatively, the dormitory could be another apartment building or a senior independent living project. Townhouses and flats would line the parking garage, fill the upper stories above the Safeway and other retail, and occupy the area by the quarry pond. Three-story townhouses with garages on alleys would occupy the rear portion of the site where the CVS Pharmacy building now stands, organized around a central park. Combined homes/offices would front on Pleasant Valley Avenue. Units above would front onto a shopping level pedestrian passage containing specialty retail storefronts. The residential portion of the buildings would step up from Pleasant Valley Avenue.

A transit plaza at sidewalk level would serve busses along Broadway and 51st Street/Pleasant Valley Avenue, as well as a future Broadway streetcar (not proposed as part of this Project or Alternative). Gilbert Street would be extended into the site, with housing and offices over neighborhood retail. Pedestrian and vehicular entry would be provided at the second parking level from the upslope portion of Pleasant Valley Avenue. This second vehicular entrance would take some pressure off of the Gilbert Street entrance. A second level bridge would connect the two upper level parking garages across the Gilbert Street extension. A new left-turn lane would be provided on Broadway into the site.

Development under Alternative 5 would top out at around the height of the adjacent bluffs. The quarry pond is integrated into the site, creating an urban park-like setting at the junction of three neighborhoods. A restaurant/café and a lake view plaza would overlook the quarry pond.

Table 5-6 Alternative 5 Development Assumptions

	Units	Square Feet
Residential (units)		
Flex (homes/offices)	19	
Apartments	46	
BR Flats	54	
Liner Flats	32	
Townhouses (2 story and over flats)	70	
Townhouses (3 story with garage)	70	
Dorm Rooms	58	
Residential, Total	**349**	
Commercial (square feet)		
Safeway		65,000
Other Retail		38,500
Office		21500
Commercial, Total		**121,000**
TOTAL	**349**	**121,000**

Figure 5-5
Urbanists for a Livable Temescal-Rockridge Area (ULTRA) Alternative Concept Plan

http://www.rockridge.org/ludocs/Safeway/Rockridge-CenterSafeway/ultra_plans.pdf

Comparative Environmental Analysis

Aesthetics

Scenic Vistas (No Impact)

Views from and through the site of the surrounding area are generally limited to the immediate developed area adjacent to the site. Views from the site have not been identified as scenic vistas or important visual resources in the Oakland General Plan or by a regulatory agency with jurisdiction over the site. Development under Alternative 5 would top out at around the height of the adjacent bluffs. As a result, development of Alternative 5 would not significantly alter scenic vistas.

Scenic Resources (No Impact)

No scenic resources have been formally identified at the site, and development of this alternative would have no adverse effects on any formally-identified scenic resources. Certain trees located on the site would likely be removed, but these trees are ornamental landscape species with minor scenic value, and their loss would be compensated by replacement plantings. The prominent rock outcroppings and geologic features which remain from prior quarrying activities at the site would not be disturbed by this alternative. The site contains no historic resources or other potentially significant scenic resources.

Visual Character (No Impact)

The visual character of the site would undergo a major change with development of Alternative 5, but this alternative would not substantially degrade the visual quality of the site and its surroundings. Instead, like the Project, Alternative 5 would improve the visual quality of the site. The existing surface parking that currently occupies much of the site and the street frontage of Broadway and Pleasant Valley Avenue would be replaced with new buildings built to the public right-of-way, "activated" with shops and homes/offices that open to the street. Alternative 5 would have taller building heights than the Project, making it somewhat more urban in character than the Project. Alternative 5 would visually integrate development on the site with the surrounding neighborhoods by mixing commercial and residential uses to create a neighborhood, enclosing all of the on-site parking within parking garages lined with active uses, extending the street grid (Gilbert Street and Coronado Avenue) onto the site and defining it through building placement and form, and enlivening the Broadway and Pleasant Valley Avenue frontages with a transit plaza and active uses that open to the street.

Light and Glare (LTS with SCA)

Lighting at the site would be modified under this alternative but stores, homes and parking areas at the site would still be illuminated in a manner similar to what is currently observed at the site. This alternative would be subject to implementation of SCA Aesth-1: Lighting Plan, which would require that proposed lighting fixtures be adequately shielded to a point below the light bulb and reflector to prevent unnecessary glare onto adjacent properties, ensuring that light and glare impacts would be less than significant.

Landscape Shadows, Shadows on Solar Collectors, Historic Resources and Public Space (No Impact)

Since Alternative 5 would be taller than the Project in certain portions of the site, shadows with this alternative would be greater. However, shadows of the Project were shown as not extending substantially beyond the boundaries of the site, and this alternative's additional building height would not significantly change the length of these shadows such that they would adversely affect off-site locations.

Urban Decay (LTS)

With a new, larger "Lifestyle" Safeway store there could be diverted sales in the food and beverage category to the site, but not so much sales diversion as to result in urban decay. Additionally, the new residences provided under this alternative would result in associated increases in market demand for these products. Alternative 5 would not result in business closures, long term vacancies or associated physical deterioration of properties. The potential urban decay impacts of Alternative 5 would be less than significant.

Air Quality

Construction Period Fugitive Dust Emissions (LTS with SCA)

Like the Project, Alternative 5 would generate fugitive dust from demolition, grading, hauling and construction activities. The fugitive dust emissions associated with these construction activities would be effectively reduced to a level of less than significant with implementation of SCA Air-1. Additionally, this alternative would be required to implement SCA Air-3 which would require certified asbestos removal, encapsulation, or enclosure of any identified asbestos containing materials in accordance with all applicable laws and regulations, the same as the Project.

Construction Period Criteria Air Pollutants and Precursor Emissions (LTS)

During construction, Alternative 5 would generate regional ozone precursor emissions and regional particulate matter emissions from construction equipment exhaust. This alternative would have similar construction-period criteria air pollutant emissions as the Project, and it would also be subject to implementation of the City's Standard Conditions of Approval SCA Air-1 and SCA Air-2, ensuring that construction period criteria air pollutants and precursor emissions would be less than significant, same as the Project.

Construction Period Health Risks to Adjacent Sensitive Receptors (LTS with SCA)

Construction of this alternative would use traditional diesel-powered equipment such as bulldozers, generators, pavers and lifters, all of which would contribute to both cancer and non-cancer health risks. With implementation of SCA Air-2 the construction-period health risks associated with the Project were found to not expose nearby sensitive receptors to levels of diesel emissions that would exceed thresholds of significance for inhalation cancer risk, chronic exposure or $PM_{2.5}$ exposure. This alternative would be subject to implementation of the City's Standard Conditions of Approval SCA Air-2, including its diesel reduction measures, ensuring that construction period health risks to adjacent sensitive receptors would be less than significant, same as the Project.

Operational Related Criteria Air Pollutants (LTS)

Once complete and occupied, this alternative would generate emissions of criteria pollutants, primarily as a result of increased motor vehicle traffic as well as new area source emissions. With only 19% of the weekday peak hour trips as compared to the Project, and no increase in the number of Saturday peak hour trips as compared to the current baseline, the operational related criteria air pollutant emissions impacts of Alternative 5 would be less than significant.

Carbon Monoxide Concentrations (LTS)

Alternative 5 would be consistent with the applicable Congestion Management Program established by the County Congestion Management Agency for designated roads or highways, regional transportation plan, and local Congestion Management Agency plans. Alternative 5 would also not contribute a substantial number of vehicle trips to any intersection experiencing more than 44,000 vehicles per hour, or to any intersection experiencing more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited. Peak hour traffic volumes at all surrounding intersections are well below the 44,000 vehicle-per-hour criteria and are projected to remain below that level in 2015 and 2030. Since Alternative 5 would not exceed these conditions, like the Project, this alternative would be expected to result in a less-than-significant impact to air quality from CO concentrations.

Biological Resources

Special Status Species (LTS with Mitigation)

The large trees and existing buildings within the site and its immediate vicinity provide potential nesting habitat, and the adjacent detention pond and surrounding vegetation provides some habitat value to water birds, nesting birds, roosting bats and potentially western pond turtle. These habitats could be disturbed during construction of this alternative. Implementation of City of Oakland Standard Conditions of Approval and mitigation measures as recommended for the Project, would ensure that any adverse effects to these habitats would be reduced to a level of less than significant.

Wetlands, Riparian Habitat and Sensitive Natural Communities (LTS with SCA)

With landscaping and access improvements along the quarry pond similar to the Project, Alternative 5 would have similar permitting needs related to regulated wetlands associated with the quarry pond as required under Standard City of Oakland Conditions of Approval.. With implementation of construction period and long-term operational Standard Conditions of Approval related to water quality, including any conditions imposed through the required Creek Protection Permit for proposed improvements within 20 feet of the top of bank of the adjacent quarry pond, Alternative 5 would not result in indirect sedimentation or water quality degradation affecting the quarry pond.

Wildlife Movement/Nursery Sites (No Impact)

The site is located in an urbanized area that has supported commercial uses for more than 40 years. There are no wildlife movement corridors passing through the site, and the site is not used as a wildlife nursery. Like the Project, Alternative 5 would not adversely affect wildlife movement or nursery sites.

Habitat Conservation Plans (No Impact)

No habitat conservation plans or natural community conservation plans are currently in force at the site or in the vicinity of the site. Alternative 5 would not fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan.

Compliance with Oakland Tree Protection Ordinance (LTS with SCA)

Similar to the Project, construction of Alternative 5 would likely result in the removal of “protected trees” and Monterey pines in order to accommodate new buildings, improved parking areas, and improved pedestrian access adjacent to the quarry pond. Compliance with City of Oakland Standard Conditions of Approval to obtain a tree removal permit prior to removal of any “protected trees” (SCA Aesth-2), requirements for the provision of replacement trees (SCA Aesth-3) and provisions for the protection of trees to remain during construction activities (SCA Aesth-4) would ensure that any potential tree removal necessary for construction of this alternative would be conducted in compliance with City ordinances and regulations, thereby ensuring this impact remains at a level of less than significant, same as with the Project.

Compliance with Oakland Creek Protection Ordinance (LTS with SCA)

Similar to the Project, no development or work would occur within the daylighted section of the Rockridge branch of Glen Echo Creek or on the downside slope of the quarry pond. However, new landscaping and pedestrian paths would be provided in the area adjacent to the pond that may require a Category IV Creek Protection permit pursuant to City of Oakland Standard Conditions of Approval Hydro-6 through -9. Although this alternative would likely be subject to the provisions of the City of Oakland Creek Protection Ordinance, there is nothing about this alternative that would fundamentally conflict with elements of the ordinance intended to protect biological resources. Alternative 5 would not discharge a substantial amount of pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it adversely impact a riparian corridor by significantly altering vegetation or wildlife habitat.

Cultural Resources

Materially Impair an On-site Historic Resource (No Impact)

The site is not considered a significant historic property, and therefore development of Alternative 5 would not result in a substantial adverse change in the significance of an on-site historical resource.

Materially Impair an Adjacent Historic Resource (LTS)

This alternative would not directly or indirectly result in a substantial adverse change in the significance of a nearby historical resource. It is unlikely that demolition or construction activity associated with this alternative would produce vibrations that could damage adjacent historic structures, similar to the Project.

Archaeological or Paleontological Resources, and Human Remains (LTS with SCA)

Construction of this alternative would not cause a substantial adverse change in the significance of a known archaeological resource, nor would it directly or indirectly destroy a known unique paleontological resource or site, or unique geologic feature. It is possible that currently unknown archaeological or paleontological resources could be damaged during site grading and construction. Implementation of City of Oakland Standard Conditions of Approval Cultural-1 through-3, including the same site-specific conditions as recommended for the Project, would ensure that such potential impacts remain at a level of less than significant.

Geology and Soils

Seismic Ground Shaking and Ground Failure (LTS with SCA)

The potential geology, soils and seismic impacts of Alternative 5 would be similar to the Project, and Alternative 5 would be subject to similar Standard Conditions of Approval. The site is not located within an Alquist-Priolo Special Studies zone, but the City of Oakland Safety Element indicates that the easterly portions of the site are located in a Potential Liquefaction Area and subject to seismic-induced ground failure. Alternative 5 would be subject to the City's Standard Conditions of Approval, including SCA Geo-2, which requires submittal of a detailed soils report along with detailed engineering drawings to ensure that buildings are designed and constructed in conformance with the requirements of applicable building code regulations. With implementation of City of Oakland Standard Conditions of Approval and compliance with Uniform Building Code standards in the design and construction of new buildings, the effects of ground shaking and seismic-induced ground failure would be less than significant.

Landslides (LTS with SCA)

According to the City of Oakland Safety Element, the existing off-site cut slope extending along the site's northern boundary (averaging approximately 50 feet in height) is identified as a Potential Landslide Area. There are areas of erosion on this slope and there is evidence of fallen debris at the toe of the slope. Alternative 5, like the Project, would not involve any grading, tree removal or alteration to this cut slope and would not exacerbate or further increase slope instability. In addition, this alternative would be subject to implementation of City Standard Condition of Approval Geo-2, which would require that site stability issues be addressed and corrective actions be prescribed at locations where land stability problems exist. With implementation of this Standard Condition of Approval, including the 2007 geotechnical investigation's recommendation for reconstruction of on-site catchment structures at the toe of the cut slope, the risks of injury and structural damage from slope failure under Alternative 5 would be less than significant.

Geologic Fill (LTS with SCA)

A detailed engineering study and soils report would be required for Alternative 5 to determine what type of foundation and building supports would be necessary for the taller buildings with residences on the upper floors. Alternative 5 would be subject to the City's Standard Conditions of Approval, including SCA Geo-2 as well as the associated recommendations of the 2007 geotechnical investigation prepared for the site, which include that if unsuitable soil is encountered during the construction phase, such soils should be excavated to a firm bottom and the resulting hole should be backfilled with engineered fill or lean mix concrete. With implementation of SCA Geo-2 and the associated recommendations of the 2007 geotechnical investigation, the potential risk of structural damage from unstable soils would be less than significant, the same as for the Project.

Greenhouse Gas Emissions

GHG Emissions (LTS)

Similar to the Project, the GHG emissions of construction and operation of Alternative 5 would not exceed City thresholds of significance. With fewer weekday peak hour trips, this Alternative would result in a reduction in vehicular GHG emissions as compared to the Project. Construction emissions would be similar to the Project. The new Safeway store under Alternative 5 would result in the same substantial reductions in GHG emissions as the Project with respect to refrigerants, which have a particularly high global warming potential. Overall, the GHG emissions impacts of Alternative 5 would be less than significant.

Conflict with an Applicable Plan, Policy or Regulation Adopted for the Purpose of Reducing GHG Emissions (LTS)

Because the estimated GHG emissions of the Alternative 5 would not exceed the City's numeric significance threshold, like the Project, Alternative 5 would also comply with applicable plans, policies and regulations adopted for the purpose of reducing GHG emissions.

Hazards and Hazardous Materials

Cortese List/Presence of Hazardous Materials Contamination (LTS with SCA)

No portion of the site is included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Environmental Site Assessments prepared for the site do not indicate the presence of on-site soil or groundwater contamination at significant levels, nor do they indicate that off-site contamination of soil or groundwater presents a concern to construction or operation of a shopping center. The primary contamination issue at the site is the presence of soil and groundwater contaminants from a former dry cleaning business. However, the Environmental Site Assessments prepared for the site do not address the suitability of the site for residential use, which is subject to higher standards for contamination. Pursuant to SCA Haz-1 and SCA Haz-2, subsequent Phase I and/or Phase II reports would be required and additional remediation may be necessary for Alternative 5 to enable the site to be used for residential use.

Disposal, Transport, Upset or Use of Hazardous Materials (LTS with SCA)

Construction workers, future commercial tenants, shoppers and residents at the site could be exposed to hazardous materials during construction activities. Under this alternative the existing shopping center, portions of which have asbestos-containing materials and lead-based paint, would be removed. The handling and disposal of such material could potentially result in release of asbestos fibers into the air, potentially exposing those nearby to increased risk.

Like the Project, Alternative 5 would be subject to implementation of City of Oakland Standard Condition of Approval SCA Air-3, Haz-4, Haz-10 and Haz-11 pertaining to asbestos removal and lead-based paint remediation, including the recommendations from the Phase II Environmental Site Assessment and subsequent Addendum prepared for the Project site. With implementation of these Standard Conditions of Approval and the associated recommendations of the Phase II Environmental Site Assessment and subsequent Addendum, the potential risk from asbestos and lead-based paint under Alternative 5 would be less than significant.

Hazardous Materials near Schools, Hazards near Airports, Interference with Emergency Response, and Wildfire Hazards (No Impact)

Although the site is located within one-quarter mile of Oakland Technical High School and Emerson Elementary School, there are no known components of this alternative that would emit hazardous emissions or result in the need to handle hazardous or acutely hazardous materials, substances or waste. The site is not located near any public airport, within an airport plan area or near a private airstrip. This alternative would not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. The Project site is located in an urbanized area of Oakland more than ½ mile outside of the Fire Prevention and Assessment District boundary, which indicates that it is not subject to significant wildfire hazard.

Hydrology and Water Quality

Depletion of or Interference with Groundwater Supplies (No Impact)

The site is already fully developed and/or paved, and is served with water from the East Bay Municipal Utility District. Alternative 5 would not result in any change in existing groundwater recharge and would not deplete groundwater resources.

Flooding (No Impact)

No portion of the site is within the 100-year or 500-year flood hazard area as mapped on Federal Flood Hazard Boundary or Flood Insurance Rate Maps or other flood hazard delineation maps. This alternative would not place any structures within a 100-year flood hazard area that might impede or redirect flood flows, or expose people or structures to a substantial risk of loss, injury or death involving flooding, seiche, tsunami, or mudflow.

Increased Runoff Exceeding Stormwater Drainage System Capacity (LTS)

The site currently has very little impervious surface and is almost entirely covered by buildings and paved areas. Virtually all stormwater falling onto the site results in surface runoff. No retention or detention of runoff currently occurs prior to entering into the City's storm drain system. Alternative 5 would not increase impervious surface area and thus would not increase stormwater runoff. This alternative would be subject to City of Oakland Standard Conditions of Approval which require new construction projects to apply for and obtain approval of a Stormwater Management Plan pursuant to NPDES water quality treatment requirements. As such, this alternative would be required to implement on-site storm water treatment areas and other best management practices to capture and treat storm water runoff from all building rooftops and parking area, similar to that proposed under the Project. Additionally, the pervious surfaces associated with such storm water treatment areas and other BMPs would serve to reduce overall site runoff such that the amount of surface runoff leaving the site post-construction would be less than current runoff volumes, and no increase in stormwater flows entering the City's storm drainage system would occur. However, since the City's storm drain system is aged and often unable to accommodate storm water flows, this alternative would also be subject to the general recommendation of the City's *Storm Drainage Design Guidelines* to achieve a net reduction of 25 percent in the site's peak stormwater runoff rate, to the extent possible, in an effort to better address City-wide storm drainage capacity. The proposed site layout of Alternative 5 would provide similar opportunities as the Project for low-impact, passive approaches to on-site stormwater management.

Erosion and Sedimentation (LTS with SCA)

Similar to the Project, site preparation and construction activity associated with this alternative could result in soil erosion, which could have adverse effects on water quality. During site preparation and construction activity, potentially significant soil erosion impacts could occur by exposing underlying soils. If left unprotected during construction, such exposed soils could be carried via stormwater runoff into the storm drain system and/or into adjacent surface water, resulting in increased sedimentation. Like the Project, this alternative would be subject to SCA Hydro-1, and be required to obtain a grading permit, including an approved Erosion and Sedimentation Control Plan, from the Building Services Division. The Erosion and Sediment Control Plan would include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. Such measures will include but will not be limited to short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Effective implementation of SCA Hydro-1, SCA Hydro-4 and SCA Geo-1 during site preparation and construction activity at the site would ensure soil erosion and sedimentation impacts remain at a level of less than significant.

Degradation of Water Quality during Construction (LTS with SCA)

Site preparation and construction activity associated with this alternative could result in degradation of stormwater quality. Potential pollutants associated with construction activities are likely to include minor quantities of paint, solvents, oil and grease, and petroleum hydrocarbons. If such pollutants were allowed to enter into the storm water runoff from the site, they would contribute to the potential degradation of downstream receiving waters. Like the Project, this alternative would be subject to the provisions of Standard Conditions of Approval Hydro-2, requiring coverage under a General Construction Activity Storm Water Permit issued by the State Water Resources Control Board. Coverage under this permit requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) for review and approval by the Planning and Zoning Division and the Building Services Division of the City of Oakland, and evidence of approval of the SWPPP by the SWRCB. At a minimum, the SWPPP would need to include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; a list of provisions to eliminate or reduce discharge of materials to stormwater; Best Management Practices (BMPs), and an inspection and monitoring program. Effective implementation of SCA Hydro-1, SCA Hydro-4 and SCA-Geo1 during site preparation and construction activity would ensure that water quality impacts during construction of this alternative remain at a level of less than significant.

Degradation of Water Quality during Operations (No Impact with SCA)

Operational activities such as vehicular use, landscaping maintenance, normal residential uses and other operational activities pursuant to this alternative could potentially introduce pollutants into stormwater runoff, resulting in degradation of downstream water quality. Like the Project, this alternative would be subject to the provisions of SCA Hydro-2, requiring demonstrated compliance with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES). These provisions require preparation and approval of a Stormwater Pollution Management Plan (SMP) to limit the discharge of pollutants in stormwater after construction of the Project to the maximum extent practicable. Additionally, this alternative would be subject to SCA Hydro-4, requiring a maintenance agreement for accepting responsibility for the adequate installation/ construction, operation, maintenance, inspection and reporting of all stormwater treatment measures. Effective implementation of SCA Hydro-2 and Hydro-3 would ensure water quality impacts during operations of this alternative remain less than significant.

Conflict with Oakland Creek Protection Ordinance (LTS with SCA)

Under Alternative 5, no development or work would be conducted within the day-lighted section of the Rockridge branch of Glen Echo Creek or on the downside slope of the quarry pond. However, the area adjacent to the pond would be improved with new landscaping similar to the Project. Portions of these improvements within 20 feet of the top of bank of the adjacent quarry pond would require a Category IV Creek Protection Permit pursuant to City of Oakland Standard Conditions of Approval. However, as with the Project, there is nothing about this alternative that would fundamentally conflict with elements of the ordinance intended to protect hydrologic resources. This alternative would not discharge a substantial amount of pollutants into the creek or watercourse, it would not significantly modify the natural flow of water, it would not deposit substantial amounts of new material into a creek or cause substantial bank erosion or instability, nor would it substantially endanger public or private property or threaten public health or safety.

Land Use

Physically Divide an Established Community (No Impact)

Like the Project, Alternative 5 would not divide an established community or limit connections to the surrounding community, but would instead enhance connectivity. As a mixed-use development, with a pedestrian- and transit-friendly design, and with a form and character resembling that of surrounding mixed-use neighborhoods, Alternative 5 would enhance connectivity and integrate the site with its surroundings.

Land Use Compatibility (No Impact)

Like the Project, this alternative would not be incompatible with surrounding land uses and would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. The land uses provided under this alternative would be consistent with the site’s current General Plan land use designation.

The mixed-use character of this alternative could result in internal land use incompatibilities between on-site commercial and residential uses. However, with implementation of existing City Municipal Code, zoning, building code, development review and design review provisions, significant on-site land use incompatibilities could be avoided.

Habitat and Natural Community Conservation Plans (No Impact)

This alternative would not result in a fundamental conflict with any applicable habitat conservation plan or natural community conservation plan. The site is not located within or near an area guided by a Habitat Conservation Plan or Natural Community Conservation Plan.

Noise and Vibration

Construction Noise (LTS with SCA)

Similar to the Project, noise generated by construction activities would not be expected to violate the City of Oakland Noise Ordinance regarding nuisance of persistent construction-related noise, provided that standard construction noise controls are implemented. This alternative would be subject to implementation of SCA Noise-1 which provides reasonable regulations of the hours of construction, and SCA Noise-2 which requires preparation of a Noise Reduction Plan, including restrictions on operation of heavy equipment and the delivery of construction materials. These Standard Conditions of Approval would ensure that noise impact resulting from construction of this alternative would remain less than significant.

Permanent Increase in Ambient Traffic Noise (LTS)

Alternative 5 would not result in a substantial increase in the permanent outdoor ambient noise levels in the vicinity above existing noise levels. Vehicular traffic generated by Alternative 5 would represent such a small percentage of the total traffic along area roadways that it would not result in a perceptible permanent increase in ambient traffic noise.

Conflict with Land Use Compatibility Guidelines (LTS)

Although residential uses would make Alternative 5 less compatible with ambient noise levels than the Project, potential impacts related to conflicts with land use compatibility guidelines would still be less than significant with implementation of Standard Conditions of Approval. Existing ambient noise levels are approximately 69 dB L_{dn} along Pleasant Valley Avenue and 72 dB L_{dn} along Broadway. These existing ambient noise levels are within the conditionally acceptable range for commercial uses but exceed the acceptable range for residential uses (normally acceptable at 60 dB L_{dn} and conditionally acceptable at 70 dB L_{dn}). To achieve an acceptable interior noise level for residential uses, noise reduction in the form of sound-rated assemblies (i.e., windows, exterior doors, and walls) would need to be incorporated into the residential buildings proposed under Alternative 5, consistent with City of Oakland Standard Condition of Approval SCA Noise-4.

Operational Noise in Excess of Oakland Noise Ordinance Standards (LTS)

The proposed mixed-use buildings under Alternative 5 would be subject to greater operational noise impacts, but this would still be less than significant with implementation of Standard Conditions of Approval. The mix of commercial and residential uses under this alternative could expose new residents to operational noise levels exceeding the City of Oakland Noise Ordinance limits (Oakland Planning Code Section 17.120.050). Operational noises such as roof-top coolers, external mechanical systems, trash compactors, loading dock operations and delivery trucks would occur within the immediate context of the new residential homes above the ground floor retail space. There would be no noise attenuation due to distance from the noise source (such as that provided to the nearest off-site neighbors) for mixed-use buildings. In order to comply with the interior noise requirements of the City of Oakland's General Plan Noise Element and achieve an acceptable interior noise level within new residences, noise reduction in the form of sound-rated assemblies and other detailed site planning and building design considerations would be necessary. The specific building designs and layout of buildings on the site would require more detailed investigation during the design phase, as required pursuant to City of Oakland SCA Noise-4.

Transportation, Circulation and Parking

Trip Generation

As indicated in **Table 5-7**, Alternative 5 would result in an increase in weekday peak hour traffic and no overall change in Saturday peak hour trip generation as compared to existing conditions. The total number of trips generated under this alternative would increase relative to the baseline (or existing conditions) by approximately 85 trips during the weekday PM peak and would be the same during the Saturday peak hour. (Although the total trip generation would remain the same during the Saturday peak hour, the inbound traffic would increase by 28 trips and the outbound traffic would decrease by 28 trips). This net change in vehicle trips is attributable to the net reduction of approximately 64,500 square feet of total retail space on the site and the addition of up to 349 residential units.

Roadway Network

Similar to the Project, this alternative is also assumed to implement a number of modifications to street configurations and signal operations on Broadway and Pleasant Valley Avenue adjacent to the site.

Table 5-7: Trip Generation Estimates
Alternative 5 – Concept with Residential Emphasis (ULTRA Plan)

Land Use	ITE Code	Units[1]	Weekday PM Peak Hour In	Weekday PM Peak Hour Out	Weekday PM Peak Hour Total	Saturday Peak Hour In	Saturday Peak Hour Out	Saturday Peak Hour Total
Proposed Safeway[2]	850	62.0 KSF	328	316	644	343	330	673
- Existing Safeway[2]	850	48.0 KSF	-281	-270	-551	-266	-255	-521
Net New Safeway Trips[2]			*47*	*46*	*93*	*77*	*75*	*152*
Proposed New Retail[3]	820	9.7 KSF	18	18	36	24	23	47
- Existing CVS[4]	n/a	-87.2 KSF	-156	-178	-334	-211	-263	-474
Net New Non-Residential Trips			-91	-114	-205	-110	-165	-275
- Pass-By Vehicles[5]			35	35	70	36	36	72
- Internalized Trips[6]			5	5	10	11	11	22
Residential[7]	220	349 DU	137	73	210	91	91	181
Alternative 5 Trip Generation			**86**	**-1**	**85**	**28**	**-28**	**0**
Project Trip Generation			211	225	436	369	264	633
Net Difference Compared to Project (%)					***19%***			***0%***

KSF = 1,000-square feet, DU = Dwelling unit

Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) regression equation and average for Supermarket (Land Use Code 850) :

Weekday PM: Ln(T) = 0.61 Ln(X) + 3.95; Enter = 51%, Exit = 49%

Saturday: T = 10.85 (X); Enter = 51%, Exit = 49%

Where: T = trips generated, X = 1,000 square feet, Ln = natural log

Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) regression equations for Shopping Center (Land Use Code 820) :

Weekday PM: T = 3.73 (X); Enter = 49%, Exit = 51%

Saturday: T = 4.89 (X); Enter = 52%, Exit = 48%
Where: T = trips generated, X = 1,000 square feet
Data based on peak hour counts collected on June 6 and June 7, 2008.
Trip pass-by rate based on Institute of Transportation Engineers (ITE), *Trip Generation Handbook* average pass-by for Shopping Center (Land Use Code 820). Average Weekday pass-by rate: 34%; average Saturday pass-by rate: 26%.
Based on intercept survey results, average internalization rates were 5% for weekday and 8% for Saturday between the commercial components of the Project. The analysis conservatively does not assume any internalization between the commercial and residential components of the Project.
Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) regression equation and average rate for Apartments (Land Use Code 220) :
Weekday PM: T = 0.55 (X) + 17.65; Enter = 65%, Exit = 35%
Saturday PM: T = 0.52 (X); Enter = 50%, Exit = 50%
Where: T = trips generated, X = 1,000 square feet, Ln = natural log

Source: Trip Generation (8th Edition), ITE, 2008; and Fehr & Peers, 2012.

Intersection Impacts (SU)

Given that Alternative 5 would generate so few weekday trips and the same number of weekend peak hour trips as compared to existing conditions:

- this alternative would reduce the impacts at Broadway/51st Street/Pleasant Valley Avenue (intersection #7) under 2015 plus Project conditions from significant and unavoidable (under the Project) to less-than-significant levels
- this alternative would reduce the impacts at Piedmont Avenue/Pleasant Valley Avenue (intersection #20) under 2035 plus Project conditions from significant and unavoidable (under the Project) to less-than-significant levels.
- However, even this much of a reduction in trips would not be sufficient to avoid the significant and unavoidable traffic impacts at Howe Street/Pleasant Valley Avenue (intersection #19) under Existing plus Project, 2015 plus Project, and 2035 plus Project conditions, and at Broadway/51st Street/Pleasant Valley Avenue (intersection #7) under 2035 plus Project conditions.

Congestion Management Program Evaluation (LTS)

Like the Project, Alternative 5 would not cause congestion of regional significance on a roadway segment on the Metropolitan Transportation System (MTS).

Transportation Hazards (LTS)

The design of Alternative 5 minimizes potential conflicts between various modes of travel and provides safe and efficient pedestrian, bicycle, and vehicle circulation within the site, and between the site and the surrounding circulation systems. Alternative 5 would not directly or indirectly result in a permanent substantial decrease in vehicular, pedestrian, bus rider or bicyclist safety.

Transit Travel Time (LTS)

Traffic generated by this alternative would not substantially increase travel times for AC Transit buses travelling east and west along Pleasant Valley Avenue and 51st Street, nor for buses travelling north and south along Broadway and College Avenue.

At-Grade Railroad Crossings (LTS)

This alternative is not located near any at-grade railroad crossings and, like the Project, this alternative would not generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users to a permanent and substantial transportation hazard.

Change in Air Traffic Patterns (LTS)

Similar to the Project, this alternative would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

Consistency with Adopted Policies Supporting Alternative Transportation (LTS)

This alternative would not fundamentally conflict with adopted City policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities adopted for the purpose of avoiding or mitigating an environmental effect. Rather, this alternative would foster implementation of plans and policies which require new development, rebuilding, or retrofit projects to incorporate design features that encourage use of alternative modes of transportation such as transit, bicycling, and walking. As a mixed-use project this alternative would increase opportunities to remain on-site (i.e., not have to use a vehicle at all) for many types of typical home-to-shopping trips including those to grocery and convenience retail stores. The greater diversity of on-site activities could capture a larger share of trips internally, the placement of a large number of residential units within a walkable distance from relatively good transit access could increase rates of walking and transit use, and the centralized location of this site along Broadway could further reduce average trip lengths as compared to other locations.

Construction-Period Impacts (LTS with SCA)

During construction activities associated with this alternative, temporary and intermittent transportation impacts would result from truck movements as well as construction worker vehicles to and from the site. The construction-related traffic may result in a temporary adverse effect on the circulation system. The City of Oakland SCA Trans-1 requires that a Construction Traffic Management Plan be developed as part of a larger Construction Management Plan to address potentially significant impacts during construction, and implementation of such a plan would ensure that construction-period impacts remain less than significant, similar to the Project.

Public Services and Utilities

Stormwater (LTS with SCA)

Like the Project, Alternative 5 would need to construct new on-site storm drains under parking lots and driveways to collect storm runoff and convey that runoff to the City's existing storm drain system. Construction of the storm drain improvements would occur in areas that are currently part of the existing shopping center's parking lots and driveways, areas with minimal to no environmental sensitivity. Compliance with all City of Oakland standard conditions of approval for infrastructure construction would ensure that standard construction effects remain less than significant. Like the Project, this alternative would also be subject to the City's *Storm Drainage Design Guidelines*, which require a net reduction of 25 percent in the peak stormwater runoff rate from new projects, to the extent possible, in an effort to better address City-wide storm drainage capacity. Additionally, similar to the Project, this alternative would be subject to SCA Util-2, requiring confirmation of the capacity of the City's surrounding stormwater system and state of repair, and acceptance of the responsible for any necessary stormwater infrastructure improvements to accommodate the runoff form the site. Implementation of these Standard Conditions of Approval would ensure potential impacts remain less than significant, the same as with the Project.

Wastewater (LTS with SCA)

Alternative 5 would result in estimated wastewater flows of approximately 94,300 gpd, or a net increase in wastewater flows from the site over existing conditions of approximately 63,600 gpd.[4] This represents more than double the wastewater flow as compared to the Project. However, this projected increase in wastewater flows would still not be substantial in the context of the entire volume of wastewater processed by EBMUD's wastewater treatment plant and would not exceed the capacity of existing wastewater treatment facilities or necessitate the expansion of existing wastewater treatment or collection facilities.

This alternative would require construction of new on-site wastewater collection infrastructure, including a number of on-site wastewater collection lines to connect new buildings to the existing wastewater infrastructure. Construction of these new sewer lateral lines would occur in areas that are currently part of the existing shopping center, either in areas currently occupied by buildings, parking lots or driveways, areas with minimal to no environmental sensitivity. Compliance with City of Oakland standard conditions of approval for infrastructure construction would ensure that standard construction impacts remain less than significant. Furthermore, this alternative would be subject to SCA Util-2 which would require confirmation that the capacity of the City's surrounding sanitary sewer system is adequate to accommodate the sewer discharge from this alternative as well as the responsibility for any sewer infrastructure improvements necessary. Development of this alternative would also require payment of fees to improve sanitary sewer infrastructure if required by the Sewer and Stormwater Division, and payment of all required installation or hook-up fees to the affected service provider. Similar to the Project, with implementation of City of Oakland standard conditions of approval, this alternative's effects on wastewater infrastructure would remain less than significant.

Water Supply (LTS with SCA)

Despite a substantial reduction in commercial space from existing conditions and as compared to the Project, Alternative 5 would nonetheless generate a greater increase in water demand over that projected for the Project due to the addition of up to approximately 349 residential units. This alternative would result in an estimated water demand of approximately 84,900 gpd, or a net increase in water demand over existing conditions of approximately 50,800 gpd.[5] This increased water demand would represent a marginal increase in overall water demands from throughout the EBMUD service area and would not result in a new significant increase in water use that would, by itself, require new or expanded water entitlements. However, EBMUD's current water supply is insufficient to meet customer needs in multiple year drought conditions and this alternative would contribute to this drought-period water supply deficiency. As part of standard development practices within the City of Oakland, the Project applicant would be required to comply with the Oakland Water Efficient Landscape Requirements found in Title 10, Chapter 7 of the Municipal Code. Although Alternative 5 would generate more than double the water demand of the Project, with implementation of these standard municipal code requirements, the impact of this alternative on water supply would remain less than significant.

Similar to the Project, this alternative would require construction of new on-site water distribution infrastructure. Construction of this new infrastructure would occur in areas that are currently part of the existing shopping center in areas with minimal to no environmental sensitivity. Similar to the Project,

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[4] Based on a wastewater generation rate of 200 gpd per residential unit (per City of Oakland Public Works Agency *Standards for Sanitary Sewer Design Guidleines*), 250 gpd for Safeway based on Project applicant data from existing Safeway adjusted for water conservation measures proposed for the Project, and 150 gpd for other retail uses.

[5] Assumes wastewater flows equal 90 percent of water use.

Compliance with all City of Oakland standard conditions of approval for infrastructure construction would ensure that standard construction effects remain less than significant.

Solid Waste (LTS with SCA)

Operation and occupancy of development under Alternative 5 would generate approximately 1,600 pounds per day of solid waste (1,300 pounds per day for the residential uses and 300 pounds per day for the commercial uses[6]), more than double the solid waste generated by the Project. Demolition and construction activities under this alternative would also generate solid waste requiring disposal. Demolition activities associated with the removal of the existing building space, paved asphalt areas and utilities would be subject to SCA Util-1, the City's Waste Reduction and Recycling Standard, and Oakland Municipal Code Chapter 15.34. The amount of increased solid waste would not exceed the capacity of the Altamont Landfill, and would not require the construction or expansion of landfill facilities. Therefore, similar to the Project, this alternative would have a less than significant impact on solid waste facilities.

Energy Demands (LTS with SCA)

Like the Project, this alternative would be subject to Title 24, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, and would not violate applicable regulations related to energy standards. The site is located in an area that currently receives electrical and natural gas services from PG&E. Connecting new buildings to existing lines would involve relatively minor improvements to the existing energy infrastructure. Energy consumption would primarily be associated with the new commercial uses at the site. This alternative would not require or result in the construction of new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects. As such, the proposed project would have a less than significant impact on the provision of electricity and natural gas, and on energy consumption.

Schools and Parks (LTS with SCA)

Alternative 5 would include up to 349 residential units, generating an increase in student enrollment within the Oakland Unified School District. Pursuant to Senate Bill 50 (SB 50), the project sponsor would be required to pay school impact fees established to offset potential impacts from new development on school facilities. Therefore, although Alternative 5 would result in an increase in resident population and student enrollment, payment of fees mandated under SB 50 would be deemed full and complete mitigation.

Alternative 5 would also increase demands on existing parks and recreation facilities to serve the 349 residential units. Public parks in the vicinity of the site include Frog Park (approximately ¾ mile from the site), Rockridge Park (approximately 1 mile from the site), Ostrander Park (approximately 1.5 mile from the site) and the Lake Temescal Regional Recreation Area (approximately 2 miles from the site). These existing parks have sufficient capacity for the increased use that could potentially result from residential development under this alternative, and no significant impacts would be anticipated. Construction of Alternative 5 would also need to adequately address the City's requirements for adequate on-site open space, which could likely be met through some combination of dedicated land area, and public and private open space as part of this alternative's design plan. Alternative 5 includes a central park in the portion of the site currently occupied by the CVS Pharmacy building, a greenway along the quarry pond, and a large rooftop terrace open space above the Safeway and the adjacent parking garage.

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[6] Based on average Waste Management of Alameda County annual average disposal rates for residential uses in 2000 of 548 pounds per person and 2.5 persons per unit, and California Integrated Waste Management Board estimated disposal rates of 2.5 pounds per day per 1,000 square feet of retail uses.

Environmentally Superior Alternative

CEQA requires the identification of the environmentally superior alternative in an EIR. Where a no project alternative has been identified as the environmentally superior alternative, CEQA requires the EIR to identify another alternative that would be considered environmentally superior in the absence of the no project alternative.

Summary Comparisons of No Project Alternatives

Alternative 1: No Project would be the environmentally superior alternative. Under Alternative 1 there would be no change in existing conditions at the Project site, and none of the potential environmental impacts associated with the Project would occur. Maintaining the site in its current condition would avoid each of the potential environmental impacts of the Project. However, Alternative 1 would meet none of the basic Project objectives.

Alternative 2: Safeway Relocation would represent a comparatively minor change from existing conditions, and could potentially be implemented without additional discretionary decisions by the City of Oakland (and thus could be considered another “no project” alternative”). It would avoid or reduce many of the environmental impacts of the Project. While Alternative 2 would result in reduced traffic impacts relative to the Project, the significant unavoidable impacts related to operations at Howe Street/Pleasant Valley Avenue (intersection #19) under Existing plus Project, 2015 plus Project, and 2035 plus Project conditions, and at the Piedmont Avenue/Pleasant Valley Avenue and Broadway/51st Street/Pleasant Valley Avenue intersections under 2035 plus Project conditions identified for the Project would still occur.

Summary Comparisons of Other Alternatives

Alternative 3: Reduced Project would generate about 65% of the total peak hour vehicle trips as compared to the Project, and would thus result in less substantial traffic impacts than would the Project. This reduction in trips would be sufficient to reduce the impact at Broadway/51st Street/Pleasant Valley Avenue (intersection #7) under 2015 plus Project conditions from significant and unavoidable to a less-than-significant level. However, this reduction in trips would not be sufficient to avoid the significant and unavoidable traffic impacts at Howe Street/Pleasant Valley Avenue (intersection #19) under Existing plus Project, 2015 plus Project, and 2035 plus Project conditions, and at Broadway/51st Street/Pleasant Valley Avenue intersection (intersection #7) and Piedmont Avenue/Pleasant Valley Avenue (intersection #20) under 2035 plus Project conditions.

Alternative 4: Commercial Emphasis Alternative would be so similar to the Project that its environmental effects would be nearly identical to those of the proposed Project.

Alternative 5 would generate about 20% of the total weekday peak hour vehicle trips as compared to the Project, and virtually no increase in weekend peak hour trips over the existing, baseline condition. Alternative 5 would reduce traffic impacts at Broadway/51st Street/Pleasant Valley Avenue (intersection #7) under 2015 conditions, and at Piedmont Avenue/Pleasant Valley Avenue (intersection #20) under 2035 conditions. Impacts at these intersections would change from significant and unavoidable under the Project, to less than significant under Alternative 5. However, even this much of a reduction in trips would not be sufficient to avoid the significant and unavoidable traffic impacts at Howe Street/Pleasant Valley Avenue (intersection #19) under Existing plus Project, 2015 plus Project, and 2035 plus Project conditions, and at Broadway/51st Street/Pleasant Valley Avenue (intersection #7) under 2035 conditions.

Environmentally Superior Alternative

Alternative 5: Concept with Residential Emphasis (ULTRA Plan) would be considered environmentally superior in the absence of the No Project alternative. This alternative would generate fewer vehicle trips as compared to all other alternatives (other than "no project" alternatives) as evaluated in this EIR. However, Alternative 5 would not achieve many of the basic Project objectives. Of the remaining alternatives, Alternative 3 would be the next environmentally superior alternative and, unlike Alternative 5, would achieve many of the Project objectives.

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CEQA Required Assessment Conclusions

As required by the California Environmental Quality Act (CEQA), this chapter discusses the following types of impacts that could result from implementation of the Project: growth-inducing impacts; significant irreversible changes; significant unavoidable impacts; and effects found not to be significant.

Growth-Inducing Impacts

A project is considered growth-inducing if it would directly or indirectly foster economic or population growth or the construction of additional housing.[1] Examples of projects likely to have significant growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or industrial parks in areas that are currently only sparsely developed or undeveloped. Typically, redevelopment projects on infill sites that are surrounded by existing urban uses are not considered growth-inducing because redevelopment by itself usually does not facilitate development intensification on adjacent sites.

The Project would not have any growth inducement effects. The Project site is in a developed area fully served by public utilities. There are no significant areas that are undeveloped adjacent to the Project site. Additionally, the Project would not remove any obstacles that would help facilitate growth that could significantly affect the physical environment.

Indirect population growth associated with the Project could also occur in association with job creation. The economic stimulus generated by construction of the proposed project could result in the creation of new construction-related jobs. In addition, commercial square footage that would be built as part of the Project could generate a number of employees. However, the jobs created during both the construction and operation phases of the Project would not be substantial in the context of job growth in Oakland and the region in the next 10 years. Although some of the employees generated by the Project may decide to live in Oakland, the migration of these employees into the City would not result in a substantial population increase.

In addition, the Project would occur on an infill site in an existing urbanized neighborhood in Oakland. It would not result in the extension of utilities or roads into exurban areas, and would not directly or indirectly lead to the development of greenfield sites in the East Bay. Therefore, any population growth that would occur as a result of Project implementation would be largely beneficial, and not considered substantial and adverse.

Significant Irreversible Changes

An EIR must identify any significant irreversible environmental changes that could result from implementation of a proposed project. These may include current or future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future generations to similar uses.

[1] *CEQA Guidelines*, 2005, Section 15162.2(d).

CEQA dictates that irreversible commitments of resources should be evaluated to assure that such current consumption is justified.[2] The *CEQA Guidelines* describe three distinct categories of significant irreversible changes: (1) changes in land use that would commit future generations; (2) irreversible changes from environmental accidents; and (3) consumption of non-renewable resources.

Changes in Land Use That Would Commit Future Generations

Because the Project would occur on an infill site on land designated for commercial uses, it would not commit future generations to a significant change in land use.

Irreversible Changes from Environmental Accidents

No significant environmental damage, such as what could occur as a result of an accidental spill or explosion of hazardous materials, is anticipated due to implementation of the proposed project. Furthermore, compliance with federal, State and local regulations, the City of Oakland's Standard Conditions of Approval, would reduce to a less-than-significant level the possibility that hazardous substances within the Project site would cause significant environmental damage.

Consumption of Non-Renewable Resources

Consumption of non-renewable resources includes conversion of agricultural lands, loss of access to mining reserves, and use of non-renewable energy resources. The Project site is located within an urban area of Oakland; no agricultural land would be converted to non-agricultural uses. The Project site does not contain known mineral resources, and does not serve as a mining reserve.

Construction of the Project would require the use of energy, including energy produced from non-renewable sources. Energy consumption would also occur during the operational period of the Project due to the use of automobiles and appliances. However, the Project would incorporate energy-conserving features, as required by the Uniform Building Code and the California Energy Code Title 24. Additionally, the location of the Project site near transit facilities would facilitate the increased use of public transit, further reducing non-renewable energy consumption associated with single-occupant vehicles.

Significant Unavoidable Impacts

CEOA Guidelines section 15126.2(b) requires that the EIR discuss "significant environmental effects which cannot be avoided if the proposed project is implemented." Unavoidable significant impacts are those that could not be reduced to less-than-significant levels by mitigation measures, as part of the Project, or other mitigation measures that could be implemented. The Project would result in the following unavoidable significant impacts.

Traffic

Broadway/51st Street/Pleasant Valley Avenue - Intersection #7

The proposed Project would degrade intersection operations from LOS D to LOS E during the weekday PM peak hour at the Broadway/51st Street/Pleasant Valley Avenue intersection under 2015 Conditions. The proposed Project would also add traffic that would increase delay for the critical eastbound through

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[2] *CEQA Guidelines*, 2003, 15126.2(c).

movement by more than six seconds during the Saturday midday peak hour, during which the intersection would operate at LOS E regardless of the proposed Project. (**Impact Trans-5**)

The Project would also increase the volume-to-capacity (v/c) ratio for the intersection by 0.01 or more, and the critical movement v/c ratio for the eastbound left, eastbound through, westbound left, northbound through, and the southbound left movements by 0.02 or more during the weekday PM peak hour, and it would increase v/c ratio for the intersection by 0.01 or more and the critical movement v/c ratio for the eastbound left, eastbound through, and, northbound through movements by 0.02 or more during the Saturday midday peak hour at the Broadway/51st Street/Pleasant Valley Avenue (#7) intersection under 2035 Conditions, which would operate at LOS F regardless of the Project. (**Impact Trans-10**)

A mitigation measure is identified that would require widening both 51st Street and Pleasant Valley Avenue, which would introduce an additional vehicle lane and increase the pedestrian distance crossing both 51st Street and Pleasant Valley Avenue. The intersection signal cycle length would also need to be increased to accommodate the increased pedestrian crossing distance. These modifications would conflict with City policy concerning pedestrian safety and comfort, therefore resulting in secondary unmitigated impacts. Due to the secondary significant impacts on pedestrians, the mitigation is considered infeasible. No other feasible mitigation measures are available that would mitigate the Project impacts at the Broadway/51st Street/Pleasant Valley Avenue intersection. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a third through travel along northbound Broadway. However, these modifications cannot be accommodated within the existing automobile right-of-way and would require additional right-of-way, and/or loss of bicycle lanes, on-street parking, or medians and are considered to be infeasible. Thus, the mitigation measure is considered infeasible and the impact would remain significant and unavoidable.

Howe Street/Pleasant Valley Avenue - Intersection #19

The proposed Project would add more than 10 trips to the Howe Street/Pleasant Valley Avenue intersection during the weekday PM and Saturday midday peak hours under Existing plus Project conditions, 2015 Plus Project conditions, and 2035 Plus Project conditions. The intersection would meet the peak hour signal warrant during both time periods, and the traffic impact would be considered significant. (**Impact Trans-3, -8 and -13**)

Although mitigation measures are identified that would improve traffic operations at this intersection and mitigate the significant impact, the mitigation measures would result in significant and unavoidable secondary impacts (i.e., loss of on-street parking and diverting traffic from Howe Street to other streets such as Piedmont Avenue or Montgomery Street). Because of the secondary significant impacts associated with the identified mitigation measures, these measures are considered infeasible and impacts at the Howe Street/Pleasant Valley Avenue intersection are considered **significant and unavoidable.**

Piedmont Avenue/Pleasant Valley Avenue – Intersection #20

The Project would increase the volume-to-capacity (v/c) ratio for the intersection by more than 0.01 or more, and the critical movement v/c ratio for the eastbound, westbound, and northbound movements by more than 0.02 or more during both the weekday PM, Saturday midday, and Saturday PM peak hours at the Piedmont Avenue/Pleasant Valley Avenue intersection under 2035 Conditions, which would operate at LOS F regardless of the Project and the traffic impact would be considered significant. (**Impact Trans-14**)

Although intersection improvements are identified which are capable of improving traffic operations to acceptable levels at this intersection during the interim period prior to 2035, the mitigation measure would not be capable of reducing v/c ration for critical westbound and northbound movements under 2035 plus Project conditions. The impact can be reduced to a less than significant level by installing a left-turn lane on the northbound Piedmont Avenue approach, but this improvement would result in elimination of planned bicycle lanes on Piedmont Avenue and loss of on-street parking. Because of these secondary significant impacts, these improvements are considered infeasible and traffic impacts at the Piedmont Avenue/Pleasant Valley Avenue intersection are considered **significant and unavoidable**.

Effects Found Not to be Significant

Meetings with representatives of the City of Oakland departments involved in the planning and review of development projects, and consultants from the City were held to determine the preliminary scope of the EIR. In addition to these meetings, a Notice of Preparation (NOP) was circulated on Thursday, June 25, 2009, and a public scoping session was held in July 15, 2009, to solicit comments from the public about the scope of the EIR. Written comments received on the NOP were considered in the preparation of the final scope for this EIR and in the evaluation of the Project.

Section 15128 of the CEQA Guidelines requires that the EIR "contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR." Environmental topics that were found not to be significant in the EIR scoping process and were not addressed further in this EIR are discussed in Section 4.13, Other Less-than-Significant Effects.

7

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East Bay Municipal Utility District (EBMUD), *Daily Water Supply Report*, August 2005.

EBMUD, *Water Supply Master Plan 2040*, October 2009

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Oakland, City of, *Housing Element of the General Plan Draft EIR*, August 2010.

Other Less Than Significant Effects

California State Mining Bureau, *The Structural and Industrial Materials of California*, San Francisco, California, 1906

Perrazo, Peggy, *Stone Quarries and Beyond.*

Safeway Redevelopment Project
Broadway at Pleasant Valley Avenue

TECHNICAL APPENDICES to the Draft Environmental Impact Report

SCH No. 2009062097

Prepared for:

City of Oakland
250 Frank H. Ogawa Plaza
Oakland, Ca 94612

January, 2013

LAMPHIER - GREGORY
Urban Planning, Environmental Analysis & Project Management

Appendix 1A:

Notice of Preparation

Print Form

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # ____________

Project Title: Safeway Redevelopment Project (Broadway @ Pleasant Valley Ave.)

Lead Agency: City of Oakland — Contact Person: Darin Ranelletti
Mailing Address: 250 Frank H. Ogawa Plaza, Suite 3315 — Phone: (510) 238-3663
City: Oakand — Zip: 94612 — County: Alameda

Project Location: County: Alameda — City/Nearest Community: Oakland
Cross Streets: Broadway and Pleasant Valley Avenue — Zip Code: 94611
Lat. / Long.: ____ ° ____ ' ____ " N/ ____ ° ____ ' ____ " W — Total Acres: 15.4
Assessor's Parcel No.: 014-1242-002-03 & 005-07 — Section: ____ Twp.: ____ Range: ____ Base: ____
Within 2 Miles: State Hwy #: 24 & I-580 — Waterways: ____
Airports: ____ — Railways: ____ — Schools: Oakland Tec; Far West

---

Document Type:

CEQA: [x] NOP [ ] Early Cons [ ] Neg Dec [ ] Mit Neg Dec [ ] Draft EIR [ ] Supplement/Subsequent EIR (Prior SCH No.) ____ Other ____

NEPA: [ ] NOI [ ] EA [ ] Draft EIS [ ] FONSI

Other: [ ] Joint Document [ ] Final Document [ ] Other ____

Local Action Type:

[ ] General Plan Update
[ ] General Plan Amendment
[ ] General Plan Element
[ ] Community Plan
[ ] Specific Plan
[ ] Master Plan
[ ] Planned Unit Development
[ ] Site Plan
[ ] Rezone
[ ] Prezone
[x] Use Permit
[ ] Land Division (Subdivision, etc.)
[ ] Annexation
[ ] Redevelopment
[ ] Coastal Permit
[x] Other Dsgn Rvw

Development Type:

[ ] Residential: Units ____ Acres ____
[ ] Office: Sq.ft. ____ Acres ____ Employees ____
[x] Commercial: Sq.ft. 304K Acres ____ Employees ____
[ ] Industrial: Sq.ft. ____ Acres ____ Employees ____
[ ] Educational ____
[ ] Recreational ____
[ ] Water Facilities: Type ____ MGD ____
[ ] Transportation: Type ____
[ ] Mining: Mineral ____
[ ] Power: Type ____ MW ____
[ ] Waste Treatment: Type ____ MGD ____
[ ] Hazardous Waste: Type ____
[ ] Other: ____

Project Issues Discussed in Document:

[x] Aesthetic/Visual
[x] Agricultural Land
[x] Air Quality
[x] Archeological/Historical
[x] Biological Resources
[ ] Coastal Zone
[x] Drainage/Absorption
[ ] Economic/Jobs
[ ] Fiscal
[x] Flood Plain/Flooding
[ ] Forest Land/Fire Hazard
[x] Geologic/Seismic
[x] Minerals
[x] Noise
[x] Population/Housing Balance
[x] Public Services/Facilities
[x] Recreation/Parks
[x] Schools/Universities
[ ] Septic Systems
[x] Sewer Capacity
[x] Soil Erosion/Compaction/Grading
[x] Solid Waste
[x] Toxic/Hazardous
[x] Traffic/Circulation
[x] Vegetation
[x] Water Quality
[x] Water Supply/Groundwater
[x] Wetland/Riparian
[x] Wildlife
[x] Growth Inducing
[x] Land Use
[x] Cumulative Effects
[ ] Other ____

Present Land Use/Zoning/General Plan Designation:
Zoning = C-30/C-40/R-50; General Plan = Community Commercial

Project Description: *(please use a separate page if necessary)*
The 15.4-acre project site is the location of the existing Rockridge Shopping Center, which contains several retail stores including Safeway, Long's Drugs (now CVS), and others totaling approximately 185,000 square feet of commercial space. The Project includes the demolition of the Safeway and Long's Drugs stores, along with other adjacent stores, and the redevelopment and remodeling of the site with the construction of a new Safeway store, a new CVS store, and other commercial buildings. The project would contain a total of approximately 304,000 square feet of commercial space and 1,006 parking spaces. Also proposed are modifications to adjacent streets including additional vehicle travel lanes and/or turn lanes.

Note: The state Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X". If you have already sent your document to the agency please denote that with an "S".

	Air Resources Board		Office of Historic Preservation
	Boating & Waterways, Department of		Office of Public School Construction
	California Highway Patrol		Parks & Recreation
X	Caltrans District # 4		Pesticide Regulation, Department of
	Caltrans Division of Aeronautics		Public Utilities Commission
	Caltrans Planning (Headquarters)		Reclamation Board
	Coachella Valley Mountains Conservancy	X	Regional WQCB # SF
	Coastal Commission		Resources Agency
	Colorado River Board		S.F. Bay Conservation & Development Commission
	Conservation, Department of		San Gabriel & Lower L.A. Rivers and Mtns Conservancy
	Corrections, Department of		San Joaquin River Conservancy
	Delta Protection Commission		Santa Monica Mountains Conservancy
	Education, Department of		State Lands Commission
	Energy Commission		SWRCB: Clean Water Grants
	Fish & Game Region # ____	X	SWRCB: Water Quality
	Food & Agriculture, Department of		SWRCB: Water Rights
	Forestry & Fire Protection		Tahoe Regional Planning Agency
	General Services, Department of		Toxic Substances Control, Department of
	Health Services, Department of		Water Resources, Department of
	Housing & Community Development		
	Integrated Waste Management Board		Other ____
	Native American Heritage Commission		Other ____
	Office of Emergency Services		

Local Public Review Period (to be filled in by lead agency)

Starting Date June 26, 2009 Ending Date July 27, 2009

Lead Agency (Complete if applicable):

Consulting Firm: Lamphier-Gregory
Address: 1944 Embarcadero
City/State/Zip: Oakland, CA 94606
Contact: Scott Gregory
Phone: (510) 535-6690

Applicant: Safeway, Inc.
Address: 4410 Rosewood Drive
City/State/Zip: Pleasanton, CA 94588
Phone: (925) 226-5896

Signature of Lead Agency Representative: [signature] **Date:** 6/24/09

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

CITY OF OAKLAND

Community and Economic Development Agency, Planning & Zoning Division
250 Frank H. Ogawa Plaza, Suite 3315, Oakland, California, 94612-2032

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE SAFEWAY REDEVELOPMENT PROJECT (BROADWAY @ PLEASANT VALLEY AVE.)

The Oakland Community and Economic Development Agency, Planning and Zoning Division, is preparing a Draft Environmental Impact Report ("EIR") for the Safeway Redevelopment Project (Broadway @ Pleasant Valley Avenue) (the "Project") as identified below, and is requesting comments on the scope and content of the EIR. The EIR will address the potential physical, environmental effects for each of the environmental topics outlined in the California Environmental Quality Act ("CEQA"). The City has not prepared an Initial Study.

The City of Oakland is the Lead Agency for the Project and is the public agency with the greatest responsibility for approving the Project or carrying it out. This notice is being sent to Responsible Agencies and other interested parties. Responsible Agencies are those public agencies, besides the City of Oakland, that also have a role in approving or carrying out the Project. When the Draft EIR is published, it will be sent to all Responsible Agencies and to others who respond to this Notice of Preparation ("NOP") or who otherwise indicate that they would like to receive a copy. Responses to this NOP and any questions or comments should be directed in writing to: Darin Ranelletti, Planner III, City of Oakland, Community and Economic Development Agency, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, CA 94612; (510) 238-3663 (phone); (510) 238-6538 (fax); or dranelletti@oaklandnet.com (e-mail). Comments on the NOP must be received at the above mailing, fax, or e-mail address **by 5:00 p.m. on July 27, 2009**. Please reference case number ER09-007 in all correspondence. In addition, comments may be provided at the EIR Scoping Meeting to be held before the City Planning Commission. Comments should focus on discussing possible impacts on the physical environment, ways in which potential adverse effects might be minimized, and alternatives to the project in light of the EIR's purpose to provide useful and accurate information about such factors.

PUBLIC HEARING: The City Planning Commission will conduct a public hearing on the scope of the EIR for the Project on **July 15, 2009**, at **6:00 p.m.** in Hearing Room 1, City Hall, 1 Frank H. Ogawa Plaza, Oakland, CA.

PROJECT TITLE: Safeway Redevelopment Project (Broadway @ Pleasant Valley Avenue)

PROJECT LOCATION: 5050-5100 Broadway, Oakland, CA (APN 014-1242-002-03 & 014-1242-005-07) (located at the northeast corner of Broadway and Pleasant Valley Avenue) (see map on reverse)

PROJECT SPONSOR: Safeway, Inc., Northern California Division

EXISTING CONDITIONS: The 15.4-acre project site is the location of the existing Rockridge Shopping Center, which contains several retail stores including Safeway, Long's Drugs (now CVS), and others totaling approximately 185,000 square feet of commercial space. The site is not listed on the Cortese List of hazardous waste sites.

PROJECT DESCRIPTION: The Project includes the demolition of the Safeway and Long's Drugs stores, along with other adjacent stores, and the redevelopment and remodeling of the site with the construction of a new Safeway store, a new CVS store, and other commercial buildings. The project would contain a total of approximately 304,000 square feet of commercial space and 1,006 parking spaces. Also proposed are modifications to adjacent streets including additional vehicle travel lanes and/or turn lanes.

PROBABLE ENVIRONMENTAL EFFECTS: It is anticipated that the Project may have environmental impacts on aesthetics, traffic/circulation, air quality, noise, geology/soils, hazards/hazardous materials, hydrology/water quality, utilities/service systems and biological resources. It is anticipated that the Project will not have significant environmental impacts on agricultural resources, cultural resources; land use plans and policies; mineral resources; population and housing; public services, recreation and cumulative growth. Nevertheless, these environmental factors will be analyzed in the EIR.

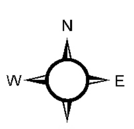
The Draft EIR will also examine a reasonable range of alternatives to the Project, including the CEQA-mandated No Project Alternative, and other potential alternatives that may be capable of reducing or avoiding potential environmental effects.

June 26, 2009
File Number: ER09-007

Eric Angstadt
Deputy Director, Community and Economic Development Agency
Environmental Review Officer

Safeway Redevelopment Project Site

(Broadway @ Pleasant Valley)



It is imperative that you obtain BOTH the Zoning and General Plan designations for the property(s) you are searching for.

Questions? Contact a planner at (510)238-3911.

Printed: 6/17/2009 4:03:33 PM

City of Oakland

Appendix 1B:

Responses to Notice of Preparation

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 622-5491
FAX (510) 286-5559
TTY 711

RECEIVED
JUN 1 3 2009
City of Oakland
Planning & Zoning Division

Flex your power!
Be energy efficient!

July 9, 2009

ALA024033
ALA-24-R2.76
SCH#2009062097

Mr. Darin Ranelletti
City of Oakland
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612

Dear Mr. Ranelletti:

Safeway Redevelopment Project (Broadway at Pleasant Valley Avenue) – Notice of Preparation

Thank you for including the California Department of Transportation (Department) in the environmental review process for the Safeway Redevelopment Project. The following comments are based on the Notice of Preparation. As lead agency, the City of Oakland is responsible for all project mitigation, including any needed improvements to State highways. The project's fair share contribution, financing, scheduling, and implementation responsibilities as well as lead agency monitoring should be fully discussed for all proposed mitigation measures and the project's traffic mitigation fees should be specifically identified in the environmental document. Any required roadway improvements should be completed prior to issuance of project occupancy permits. An encroachment permit is required when the project involves work in the State's right of way (ROW). The Department will not issue an encroachment permit until our concerns are adequately addressed. Therefore, we strongly recommend that the lead agency ensure resolution of the Department's California Environmental Quality Act (CEQA) concerns prior to submittal of the encroachment permit application; see the end of this letter for more information regarding the encroachment permit process.

Traffic Impact Study
The environmental document should include an analysis of the impacts of the proposed project on State highway facilities in the vicinity of the project site. Please ensure that a Traffic Impact Study (TIS) is prepared providing the information detailed below:

1. Information on the plan's traffic impacts in terms of trip generation, distribution, and assignment. The assumptions and methodologies used in compiling this information should be addressed. The study should clearly show the percentage of project trips assigned to State facilities.

2. Current Average Daily Traffic (ADT) and AM and PM peak hour volumes on all significantly affected streets, highway segments and intersections.

3. Schematic illustration and level of service (LOS) analysis for the following scenarios: 1) existing, 2) existing plus project, 3) cumulative and 4) cumulative plus project for the roadways and intersections in the project area.

4. Calculation of cumulative traffic volumes should consider all traffic-generating developments, both existing and future, that would affect the State highway facilities being evaluated.

5. The procedures contained in the 2000 update of the Highway Capacity Manual should be used as a guide for the analysis. We also recommend using the Department's *"Guide for the Preparation of Traffic Impact Studies";* it is available on the following web site: http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf .

6. Mitigation measures should be identified where plan implementation is expected to have a significant impact. Mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring.

We encourage the City of Oakland to coordinate preparation of the study with our office, and we would appreciate the opportunity to review the scope of work.

We look forward to reviewing the TIS, including Technical Appendices, and environmental document for this project. Please send two hard copies to the address at the top of this letterhead, marked ATTN: Yatman Kwan, Mail Stop #10D.

Encroachment Permit
Any work or traffic control within the State ROW requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information: http://www.dot.ca.gov/hq/traffops/developserv/permits/

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked ATTN: Michael Condie, Mail Stop #5E.

Should you have any questions regarding this letter, please call Yatman Kwan of my staff at (510) 622-1670.

Sincerely,

Lisa Carboni

LISA CARBONI
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse

ALAMEDA COUNTY
CONGESTION MANAGEMENT AGENCY

1333 BROADWAY, SUITE 220 • OAKLAND, CA 94612 • PHONE: (510) 836-2560 • FAX: (510) 836-2185
E-MAIL: mail@accma.ca.gov • WEB SITE: accma.ca.gov

July 17, 2009

Darin Ranelletti
Planner III
City of Oakland
Community and Economic Development Agency
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612-2032
dranelletti@oaklandnet.com

SUBJECT: Comments on the Notice of Preparation of a Draft Environmental Impact Report (DEIR) for the Safeway Redevelopment Project (Broadway @ Pleasant Valley Avenue), Oakland

Dear Mr. Ranelletti:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) for a Draft Environmental Impact Report (DEIR) for the Safeway Redevelopment Project (Broadway @ Pleasant Valley Avenue), Oakland. The 15.4 acre project site is located on 5050-5100 Broadway, Oakland California. It is at the northeast corner of Broadway and Pleasant Valley Avenue. The project includes the demolition of the Safeway and Long's Drugs stores, along with other adjacent stores, and the redevelopment and remodeling of the site with the construction of a new Safeway store, a new CVS store, and other commercial buildings. The project would contain a total of approximately 304,000 square feet of commercial space and 1,006 parking spaces. The project would also include modifications to adjacent streets including additional vehicle travel lanes and/or turn lanes.

From the information submitted in the NOP for the DEIR, it is not clear if the project will generate more than 100 p.m. peak hour trips above that which is allowable under the existing general plan. Please include information in the DEIR that shows the number of trips that would be generated with the project compared to the existing general plan. If the project would generate more than 100 p.m. peak hour trips, the Alameda County Congestion Management Agency (ACCMA) respectfully submits the following comments:

- The City of Oakland adopted Resolution No. 69475 on November 19, 1992 establishing guidelines for reviewing the impacts of local land use decisions consistent with the Alameda County Congestion Management Program (CMP). If the proposed project is expected to generate at least 100 p.m. peak hour trips over existing conditions, the CMP Land Use Analysis Program requires the City to conduct a traffic analysis of the project using the Countywide Transportation Demand Model for projection years 2015 and 2035 conditions. Please note the following paragraph as it discusses the responsibility for modeling.

- The CMA Board amended the CMP on March 26th, 1998 so that local jurisdictions are responsible for conducting the model runs themselves or through a consultant. The ACCMA has a Countywide model that is available for this purpose. The City of Oakland and the ACCMA signed a Countywide Model Agreement on November 16, 2007. Before the model can be used for this project, a letter must be submitted to the ACCMA requesting use of the model and describing the project. A copy of a sample letter agreement is available upon request.

- Potential impacts of the project on the Metropolitan Transportation System (MTS) need to be addressed. (See 2007 CMP Figures E-2 and E-3 and Figure 2). The DEIR should address all potential impacts of the project on the MTS roadway and transit systems. These include I-880, I-580, I-80, I-980, SR 24, Harrison Street, Webster Street, Grand Avenue, Broadway, San Pablo Avenue, Telegraph Avenue, 14th Street, as well as BART and AC Transit. Potential impacts of the project must be addressed for 2015 and 2035 conditions.
  - Please note that the ACCMA does *not* have a policy for determining a threshold of significance for Level of Service for the Land Use Analysis Program of the CMP. Professional judgment should be applied to determine the significance of project impacts (Please see chapter 6 of 2007 CMP for more information).

- The adequacy of any project mitigation measures should be discussed. On February 25, 1993, the CMA Board adopted three criteria for evaluating the adequacy of DEIR project mitigation measures:
  - Project mitigation measures must be adequate to sustain CMP service standards for roadways and transit;
  - Project mitigation measures must be fully funded to be considered adequate;
  - Project mitigation measures that rely on state or federal funds directed by or influenced by the CMA must be consistent with the project funding priorities established in the Capital Improvement Program (CIP) section of the CMP or the Regional Transportation Plan (RTP).

  The DEIR should include a discussion on the adequacy of proposed mitigation measures relative to these criteria. In particular, the DEIR should detail when proposed roadway or transit route improvements are expected to be completed, how they will be funded, and what would be the effect on LOS if only the funded portions of these projects were assumed to be built prior to project completion.

- Potential impacts of the project on CMP transit levels of service must be analyzed. (See 2007 CMP, Chapter 4). Transit service standards are 15-30 minute headways for bus service and 3.75-15 minute headways for BART during peak hours. The DEIR should address the issue of transit funding as a mitigation measure in the context of the CMA's policies as discussed above.

- The DEIR should also consider demand-related strategies that are designed to reduce the need for new roadway facilities over the long term and to make the most efficient use of existing facilities (see 2007 CMP, Chapter 5). The DEIR should consider the use of TDM measures, in conjunction with roadway and transit improvements, as a means of attaining acceptable levels of service. Whenever possible, mechanisms that encourage ridesharing, flextime, transit, bicycling, telecommuting and other means of reducing peak hour traffic trips should be considered. The Site Design Guidelines Checklist may be useful during the review of the development proposal. A copy of the checklist is enclosed.

- The EIR should consider opportunities to promote countywide bicycle routes identified in the Alameda Countywide Bicycle Plan, which was approved by the ACCMA Board on October 26, 2006. The approved Countywide Bike Plan is available at http://www.accma.ca.gov/pages/HomeBicyclePlan.aspx

- The Alameda County Pedestrian Plan, developed by ACTIA, was adopted by both the ACTIA and ACCMA Boards in September 2006 and October 2006, respectively. The EIR should consider opportunities to promote pedestrian improvements identified in the Plan through the project development review process. The approved Countywide Pedestrian Plan is available at http://www.acta2002.com/

- For projects adjacent to state roadway facilities, the analysis should address noise impacts of the project. If the analysis finds an impact, then mitigation measures (i.e., soundwalls) should be incorporated as part of the conditions of approval of the proposed project. It should not be assumed that federal or state funding is available.

Thank you for the opportunity to comment on this Notice of Preparation. Please do not hesitate to contact me at 510.836.2560 if you require additional information.

Sincerely,

Diane Stark

Diane Stark
Senior Transportation Planner

Cc: Beth Walukas, Manager of Planning
file: CMP - Environmental Review Opinions - Responses - 2009

EAST BAY
MUNICIPAL UTILITY DISTRICT

RECEIVED
JUL 20 2009
City of Oakland
Planning & Zoning Division

July 16, 2009

Darin Ranelletti, Planner III
City of Oakland
Community and Economic Development Agency
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612

Re: Notice of Preparation of a Draft Environmental Impact Report - Safeway Redevelopment Project, Oakland

Dear Mr. Ranelletti:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation of a Draft Environmental Impact Report (EIR) for the Safeway Redevelopment Project in the City of Oakland (City). EBMUD has the following comments.

WATER SERVICE

EBMUD's Aqueduct Pressure Zone, with a service elevation between 100 and 200 feet, serves the existing parcel. If additional water service is needed, the project sponsor should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions for providing additional water service to the existing parcel. Engineering and installation of water services requires substantial lead-time, which should be provided for in the project sponsor's development schedule.

EBMUD owns and operates 8-inch water mains and public fire hydrants located in an EBMUD right-of-way (R/W 2082) that traverses the proposed development. These water mains and hydrants provide continuous service to EBMUD customers in the area and the integrity of these pipelines and hydrants needs to be maintained at all times. Any proposed construction activity in EBMUD right-of-way would be subject to the terms and conditions determined by EBMUD including relocation of the water mains and/or right-of-ways, at the project sponsor's expense.

WATER RECYCLING

The project site is located approximately 2.2 miles east of EBMUD's East Bayshore recycled water main on 45th Street in Emeryville. The proposed project is not a likely potential candidate for recycled water due to minimal demand. The cost to provide recycled water to the site would be high due to the extensive length of distribution system required to provide minimal demand. However, EBMUD requests that the City coordinate with EBMUD during project development to confirm the feasibility of recycled water service.

WASTEWATER SERVICE

EBMUD's Main Wastewater Treatment Plant (MWWTP) and interceptor system are anticipated to have adequate dry weather capacity to treat the proposed wastewater flows from this project, provided that the wastewater meets the requirements of the current EBMUD Wastewater Control Ordinance. However, wet weather flows are a concern. EBMUD has historically operated three Wet Weather Facilities (WWFs) to provide treatment for high wet weather flows that exceed the treatment capacity of the MWWTP. On January 14, 2009, due to Environmental Protection Agency's (EPA) and the State Water Resources Control Board's (RWQCB) re-interpretation of applicable law, the RWQCB issued an order prohibiting further discharges from EBMUD's WWFs.

Currently, there is insufficient information to forecast how these changes will impact allowable wet weather flows in the individual collection system subbasins contributing to the EBMUD wastewater system, including the subbasin in which the proposed project is located. As ordered by EPA, EBMUD is conducting extensive flow monitoring and hydraulic modeling to determine the level of flow reductions that will be needed in order to comply with the new zero-discharge requirement at the WWFs. It is reasonable to assume that a new regional wet weather flow allocation process may occur in the East Bay, but the schedule for implementation of any new flow allocations has not yet been determined.

In the mean time, it would be prudent for the City to require the project applicant to incorporate the following measures into the proposed project: (1) replace or rehabilitate any existing sanitary sewer collection systems to reduce inflow and infiltration (I/I), and (2) ensure any new wastewater collection systems for the project are constructed to prevent I/I to the maximum extent feasible. Please include such provisions in the environmental documentation for this project.

If you have any questions concerning this response, please contact David J. Rehnstrom, Senior Civil Engineer, Water Service Planning at (510) 287-1365.

Sincerely,

William R. Kirkpatrick
Manager of Water Distribution Planning

WRK:ELE:djr
sb09_160.doc

cc: Safeway, Inc., Northern California Division

1600 Franklin Street, Oakland, CA 94612 - Ph. 510/891-4716 - Fax. 510/891-7157

Nancy Skowbo
Deputy General Manager - Service Development

August 3, 2009

Darin Raniletti
Planner III
Deputy Director of Planning and Zoning
City of Oakland
Community and Economic Development Agency
250 Frank Ogawa Plaza, Suite 3315
Oakland, CA 94612

Subject: Notice of Preparation of a Draft Environmental Report for the Safeway Redevelopment Project (Broadway at Pleasant Valley Avenue)

Dear Mr. Raniletti:

Thank you for the opportunity to comment on the Notice of Preparation of a Draft Environmental Impact Report (EIR) for the Safeway Redevelopment Project at Broadway and Pleasant Valley Avenue. AC Transit believes that this project provides a welcome opportunity to improve an important Oakland site. It is hoped that the environmental review and development review processes comprehensively consider the potential of this prominent location. This letter discusses the (lack of) pedestrian-friendliness in the project, the need for a mixed-use alternative in the EIR, the need for bus-specific traffic analysis, and a bus stop in the area that should be relocated.

Project Description: The Rockridge Shopping Center is at the corner of Broadway and Pleasant Valley (which continues 51st St.) in North Oakland. The single story center has approximately 185,000 square feet on a site of 15.4 acres (or 670,000 square feet). The major retailers at the center are the Safeway supermarket and Long's (now CVS) Drugs.

The project would expand the center to 304,000 square feet, an increase of approximately 119,000 square feet. New buildings would be built along the Pleasant Valley Avenue frontage of the site, and a number of the existing buildings would be replaced by two-story buildings. The center currently has 667 surface parking spaces that would be expanded to 1,006 surface and garage parking spaces. The center would have a parking ratio of 3.3 spaces per 1,000 square feet, or more than one square foot of parking area for each square foot of retail space. Demolition of existing buildings and construction of new buildings would occur in phases.

AC Transit Service: On Broadway, the site is served by AC Transit trunk line 51, local line 59, All-Nighter (after midnight) line 851, and Transbay line CB to San Francisco. The site is also served by local line 12 on Pleasant Valley Avenue. Because of a severe downturn in revenue, the AC Transit Board is considering service adjustments to numerous lines, including the lines listed above. Line 51 has service every 8-10 minutes on weekdays, which is proposed to continue even after the service adjustments are implemented.

Shortcomings of the Current Proposal: Safeway's current proposal would expand what is now a large, auto-dominated strip mall into a larger, auto-dominated strip mall. As has been noted at the scoping hearing, pedestrians and transit riders shopping at Safeway would still have to cross large surface parking lots. Safeway proposes no uses other than retail, existing banking, and a small amount of office space. The proposal retains and reinforces the auto-dominated character of the site with its large expansion of parking space, despite the apparently low utilization of existing parking. The Safeway store itself—presumably the main customer attractor on the site—would move deeper onto the lot, farther from the street, making pedestrian access more difficult than it is today.

The proposal would place street-fronting, presumably more pedestrian-accessible retail uses along portions of Pleasant Valley Avenue. However, there is little in the proposal that would support expanded transit access to the site. The Safeway proposal would represent a missed opportunity to redevelop one of the most important sites in North Oakland.

Mixed-Use, Pedestrian-Friendly Alternative: Under the California Environmental Quality Act, EIRs must consider alternatives to the project that meet project objectives. At this site, the EIR should include and evaluate a mixed use project that incorporates both retail and residential uses. Mixed use development would allow more people to live close to a major transit line and generate more transit riders. It would also support the redesign of the project in a more pedestrian-friendly manner, with a clear, accessible and safe network of sidewalks and walkways. A more pedestrian-friendly environment would in turn encourage greater use of transit and walking to access the city, potentially creating a virtuous circle. Such a development would extend the pedestrian-friendly character of the Rockridge neighborhood to the northwest and the Piedmont Avenue neighborhood to the southeast.

Safeway has developed and is developing numerous mixed use properties, including sites in San Francisco, Portland, and Seattle. Clearly, Safeway is willing and able to develop mixed use stores under appropriate circumstances, and should apply that expertise to this site.

The mixed use alternative can be based upon the retail and pedestrian-oriented C-31 zoning used on College Avenue. AC Transit's handbook, **Designing With Transit: Making Transit Integral to East Bay Communities,** provides a toolkit of approaches for pedestrian-friendly design. These ideas are found in Chapter 4: Safe Routes to Transit—Creating Good Ways to Walk to Transit. With respect to the Safeway Redevelopment Project, the design should also include direct pedestrian access from the California College of Art immediately to the north of the site.

Traffic: The current Safeway proposal appears designed to maximize auto traffic to the site by increasing available parking. This approach is contrary to the City of Oakland's stated General Plan goals and Transit First Policy goals.

The expansion of parking and consequent traffic could cause additional congestion on Broadway, College Avenue, Pleasant Valley Avenue, and 51st Street. The EIR should analyze not only the project's general impact on traffic congestion, but its specific effect on bus movements. Buses cannot be assumed to move in the same manner as general traffic flow. In particular, buses must move in and out of traffic more frequently. Moreover, lane changes are more difficult for buses, as are "weaves," such as the weave across Broadway to reach College Avenue, just north of Pleasant Valley Avenue.

AC Transit is particularly concerned about potential additional delays to line 51—the most heavily used line in its system. Broadway and College Avenue are two key transit streets covered by the "Transit Streets Cooperative Agreement" between AC Transit and the City of Oakland. Additional delays on College Avenue are a particular concern. Congestion-related delays already cause line 51 to become unreliable, resulting in "bunched" operation along College Avenue. AC Transit has proposed a number of potential improvements for this line in the "Route 51 Service and Reliability Report," that was developed in conjunction with the City of Oakland. The EIR should review the improvements proposed in that report and evaluate the extent to which they should be implemented as mitigations to this project or in conjunction with it.

Parking and TDM: The extent to which additional parking is actually needed on the site—regardless of zoning code formulae—should be evaluated. If existing parking is not fully utilized, this should be incorporated into a reduced final parking requirement. The current high level of parking also represents inefficient use of the site.

The proposed amount of parking does not reflect the site's frequent transit service on line 51, the walkable pedestrian neighborhoods around the site, or the opportunity for shared parking. If the currently proposed levels of parking are mandated by the Planning Code, then either the code should be modified or a Variance granted for this site.

The EIR should also analyze a Transportation Demand Management (TDM) Program to shift access to the site away from driving to alternatives such as transit, biking, and walking. Such a shift would allow a reduction in the number of parking spaces. The TDM Program should consider strategies for both employees—such as provision of AC Transit EZ Passes (bus passes), and for customers, through methods such as transit validation.

Transit Stop Relocation: AC Transit has bus stops on both Broadway at Pleasant Valley Avenue, and on Pleasant Valley at Gilbert. Three of these stops are "nearside" of the traffic signal; only the westbound stop is farside. If feasible, AC Transit would like to relocate these stops to the far side of the intersections, reducing the likelihood that buses will be forced to wait at the signals. Relocating the northbound 51 stop across Pleasant Valley would also bring it closer to the project site, making it more convenient for shoppers to use the bus.

In addition to relocating the stops, upgrades to the stop facilities are needed. None of the stops have shelters or transit information. The plan for the site should incorporate improved bus stops.

Thank you for your interest in AC Transit's comments on this important project. We look forward to continuing to work with the City on it. If you have questions about this letter, please contact Nathan Landau, Senior Transportation Planner at 891-4792.

Yours Truly,

Nancy Skowbo
Deputy General Manager for Service Development

Cc: Tina Spencer
Cory Lavigne
Nathan Landau
Ajay Martin
Puja Sarna

Alameda-Contra Costa Transit District

Mary V. King, Interim General Manager

February 16, 2011

The Honorable Councilmember Jane Brunner
City of Oakland
1 Frank H. Ogawa Plaza
Oakland, CA 94612

Re: Pleasant Valley Safeway Transit Center Proposal

Dear ~~Councilmember Brunner~~ Jane:

Thanks again for meeting with us to discuss our continuing efforts to provide safe, effective and reliable transit service, while respecting the integrity of neighborhoods. During our conversation, you raised the possibility of using the upcoming re-development of the Pleasant Valley Safeway project as a potential location for a bus turnaround. District staff has reviewed this concept and we are pleased to present it to you for consideration. We are more than willing to work with the city and developer to assess its viability for the project.

Should you wish further information, please contact Cory LaVigne, our Director of Service Development and Planning, who is responsible for coordination of activities in association with this effort. He can be reached at 510.891.4846 and is eager to assist.

Again, thanks for the opportunity to bring collaboration between our two agencies.

> I really hope this can work out as a successful partnership project for the City and AC Transit.

Sincerely,

Mary

Mary V. King
Interim General Manager

MVK/cl/ct

cc: Elsa Ortiz, AC Transit Board President
Greg Harper, AC Transit Director Ward 2
Eric Angstadt, City of Oakland Planning
Iris Starr, City of Oakland Transportation Planning
Darin Ranelletti, City of Oakland Planning
Cory LaVigne, AC Transit

1600 Franklin Street - Oakland, CA 94612 - **TEL** (510) 891-4875 - **FAX** (510) 891-7157 - www.actransit.org

Proposal for a Transit Center in the Pleasant Valley Safeway Development

Provided by AC Transit at the Request of Councilmember Brunner

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Description: In 2006, the AC Transit District (District) began a study of Line 51- the most used public bus route in the east bay- in order to evaluate service levels and reliability. The portion of Line 51 along College Avenue north of Rockridge BART into Berkeley was identified as a segment where a significant amount of delay/variability in the schedule could be attributed. In March 2010, the District split the route into two smaller routes (51B-northern half; 51A-southern half) with the goal of increasing reliability on segments in Alameda, and Downtown/North Oakland. Rockridge BART was selected as the terminal for the split because it provided a logical method to turn buses around via either Keith Avenue or Miles Avenue.

Due to continuing concerns expressed by residents in and around the Rockridge BART station, the District's Board of Directors has directed staff to explore finding an alternative to the current turn-around for buses. Additionally, Councilmember Brunner has requested that AC Transit perform an evaluation of the feasibility of using the re-development of the Rockridge Center as an opportunity to remove line 51A buses off of Keith Avenue and to provide the necessary turn-around for both lines 51A & 51B within the shopping center. Based on these requests, AC Transit staff performed a conceptual review of location possibilities and completed ridership/service assessments and is pleased to present that information below.

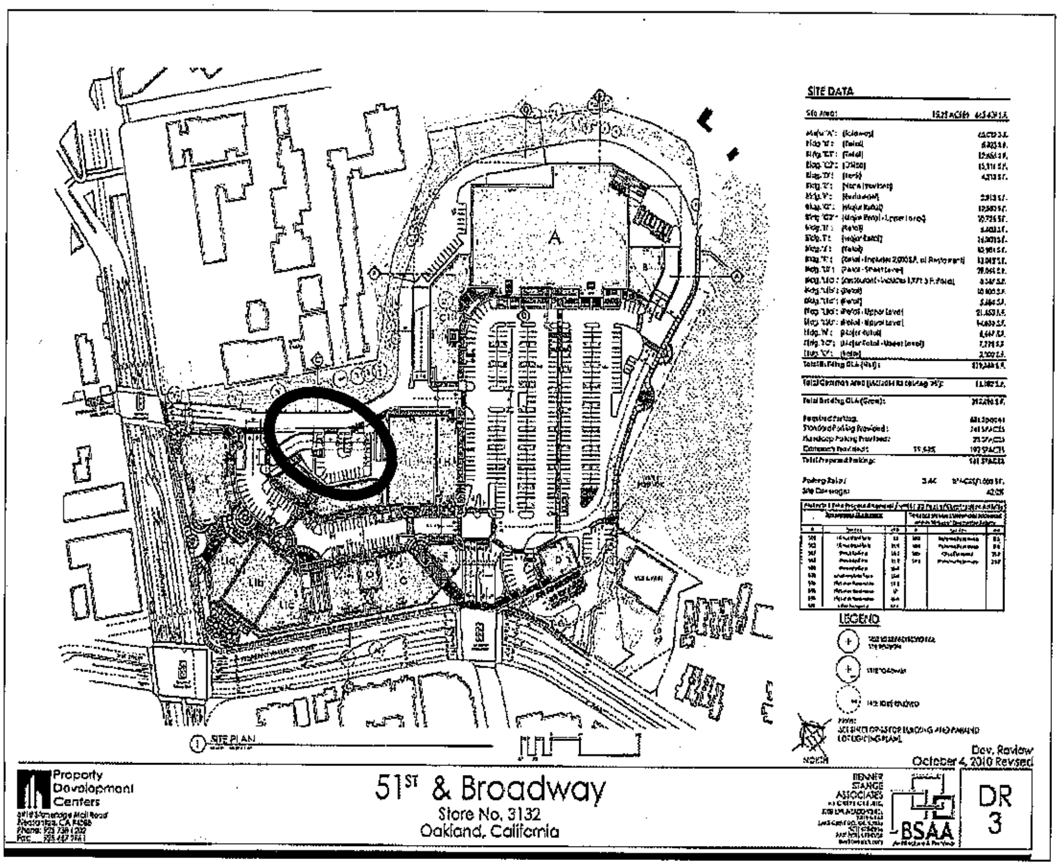
Location: Using the latest drawings provided and based on a number of factors (construction costs, added running time, traffic issues, and development impacts) the District believes that the site highlighted below is best location that could be considered for a transit center. AC Transits main criteria for selection of this site was to minimize time requirements for access/egress of the site. This recommendation does not come without consequences, for in order to meet space and turning requirements listed above, the District feels that the existing site proposal shown would require significantly adjustment. The footprint of building "J" would probably need to be reduced by half. In addition, the loading zone shown just west of building "I" would need to be removed. It's important to note that the District's analysis was not completed using Auto-turn. With that said, the District believes it does provide us with an idea of the magnitude of our request and a framework for the developer to evaluate.

While AC Transit has provided a recommendation for the site location of a transit center, the decision lies ultimately between the city and developer. Should there be interest in exploring alternative locations, the Districts main request is that access/egress to the site be completed exclusively via Broadway, and not Pleasant Valley. This decision will greatly minimize the time required to circulate buses on the site, ensuring its continued sustainability.

Transit Center Requirements: Upon review of the site, AC Transit has the following space requirements for any transit center under consideration for the Rockridge Center site:

- Two adjacent bus bays that can accommodate 40-ft buses- Line 51B
- Two adjacent bus bays that can accommodate 60-ft buses- Lines 51A (future growth)
- Minimum 40' between buses

- Minimum 12' lane widths
- Turning templates to accommodate both MCI 45-ft buses and 60' vehicles (into, through, out of site)
- Minimum 8' wide sidewalk landing areas to deploy ramps at each stop (no bus shelter)



Routing: Line 51B-southbound would route via Broadway, make left at Broadway entrance, then right into transit center; 51A-northbound would make right into Broadway entrance and then right into transit center. Heading out of the transit center, both buses would make left onto entrance roadway. Line 51B-northbound would continue via R/Broadway; Line 51A-southbound via L/Broadway.

Capital Cost: Staff estimates a preliminary estimate ~$350,000 to build a transit center at the location identified above.

Development Impacts: loss of 28 parking spaces within project; removal of loading area west of Building "I"; reduction of footprint of building "J."

Schedule Delay: Routing would add about 5 minutes to each route due to anticipated delays along the entrance roadway. This added time does not include additional costs or savings involved with routing away from the Rockridge BART station.

Passenger impacts: Staff has reviewed current ridership boarding information and finds that service would improve for the 584 passengers who currently travel between areas north of Rockridge BART and the segment between Rockridge BART and 51st and Broadway. The change from Rockridge BART to the Rockridge Center would eliminate these passengers need to transfer. Additionally, relocation of this transfer site would be a great benefit for those currently forced to cross streets to complete a transfer at the Rockridge BART station.

On the other hand, service would degrade for approximately 290 passengers who currently travel between areas south of College Avenue and Broadway and the segment between College Avenue and Broadway and the Rockridge BART Station. The change from Rockridge BART to the Rockridge Center would force these passengers to transfer.

AC Transit is pleased to present this alternative turnaround location for consideration. Please contact Cory LaVigne (891.4846) for further questions or additional information.

Alameda-Contra Costa Transit District
Mary V. King, Interim General Manager

July 29, 2011

Ms. Deanna Santana
City Administrator
City of Oakland
1 Frank H. Ogawa Plaza, 3rd Floor
Oakland, CA 94612

Dear Ms. Santana:

Enclosed you will find a copy of my correspondence, dated February 16, 2011, to Councilmember Jane Brunner regarding the study of a transit alternative in connection with the Pleasant Valley Safeway project. At the Councilmember's request, AC Transit conducted an initial feasibility review of the bus transit service and patron impacts related to the development of an on-site transit center.

Subsequent to our transmittal of this correspondence, on July 13, 2011 it was presented to the AC Transit Board of Directors in conjunction with the presentation of an item regarding the Line 51A/B split. After some discussion, the Board directed staff to forward the analysis and correspondence to the City Planning Department in addition to the Councilmember's office.

As indicated in the enclosed letter, should you desire further information, please do not hesitate to contact Cory LaVigne, our Director of Service Development and Planning, who is responsible for coordination of activities associated with this effort. He can be reached at 510.891.4846 and is eager to assist.

Thank you for your attention to this matter. I look forward to further collaboration between our two agencies.

Sincerely,

Mary V. King
Interim General Manager

MVK/cl/ct

Enclosure: February 16, 2011 Correspondence to Councilmember Brunner

Cc: AC Transit Board of Directors
Eric Angstadt, City of Oakland Deputy Director of Planning and Zoning
Darrin Ranelletti, City of Oakland Planning
Vitaly B. Troyan, Director of Public Works Agency
Mike Neary, Assistant Director of Public Works
Iris Starr, City of Oakland Transportation Planning
Cory LaVigne, AC Transit

AC TRANSIT

Alameda-Contra Costa Transit District

Mary V. King, Interim General Manager

February 16, 2011

The Honorable Councilmember Jane Brunner
City of Oakland
1 Frank H. Ogawa Plaza
Oakland, CA 94612

Re: Pleasant Valley Safeway Transit Center Proposal

Jane

Dear Councilmember Brunner:

Thanks again for meeting with us to discuss our continuing efforts to provide safe, effective and reliable transit service, while respecting the integrity of neighborhoods. During our conversation, you raised the possibility of using the upcoming re-development of the Pleasant Valley Safeway project as a potential location for a bus turnaround. District staff has reviewed this concept and we are pleased to present it to you for consideration. We are more than willing to work with the city and developer to assess its viability for the project.

Should you wish further information, please contact Cory LaVigne, our Director of Service Development and Planning, who is responsible for coordination of activities in association with this effort. He can be reached at 510.891.4846 and is eager to assist.

Again, thanks for the opportunity to bring collaboration between our two agencies.

Sincerely,

Mary

Mary V. King
Interim General Manager

I really hope this can work out as a successful partnership project for the City and AC Transit.

MVK/cl/ct

cc: Elsa Ortiz, AC Transit Board President
Greg Harper, AC Transit Director Ward 2
Eric Angstadt, City of Oakland Planning
Iris Starr, City of Oakland Transportation Planning
Darin Ranelletti, City of Oakland Planning
Cory LaVigne, AC Transit

- Minimum 12' lane widths
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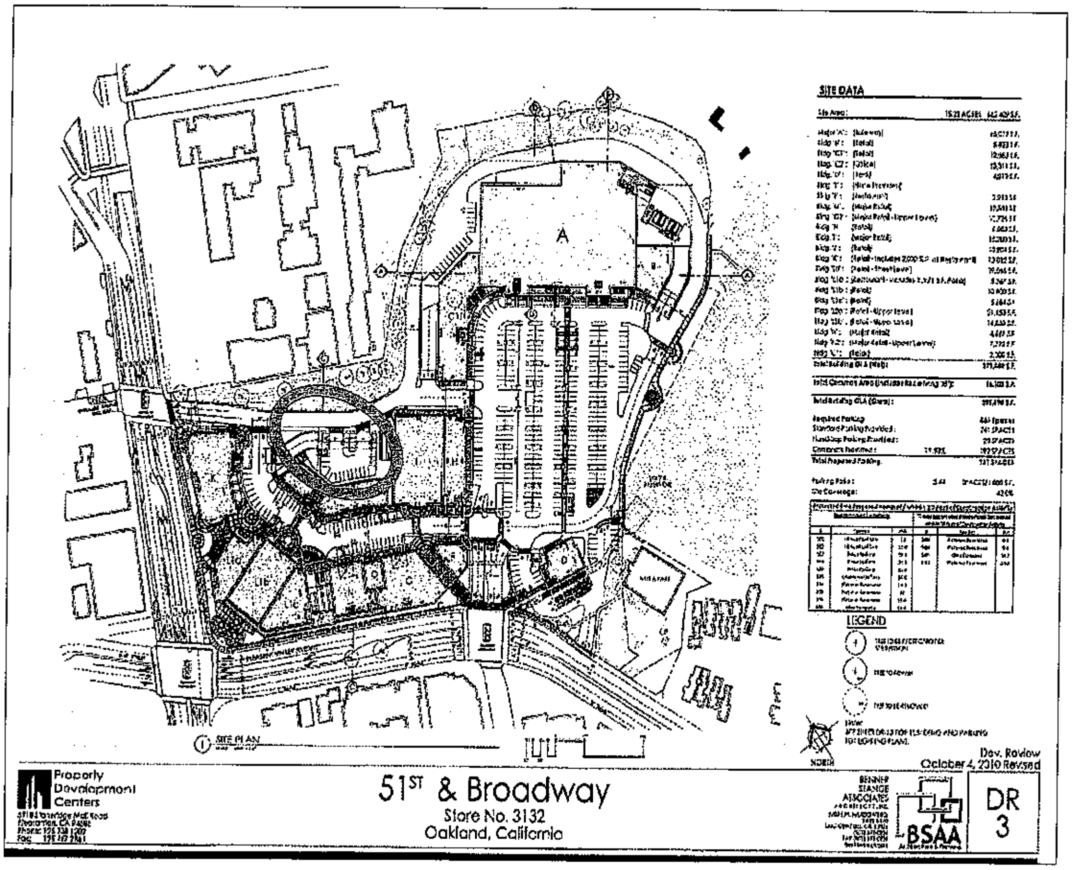

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AC Transit is pleased to present this alternative turnaround location for consideration. Please contact Cory LaVigne (891.4846) for further questions or additional information.

ER09-007

RCPC ROCKRIDGE COMMUNITY PLANNING COUNCIL

◊ 5245 COLLEGE AVENUE PMB 311 ◊OAKLAND, CALIFORNIA 94618◊510•869-4200 ◊www.rockridge.org◊

July 26, 2009

Darin Ranelletti, Planner III
City of Oakland, Planning and Zoning Division
250 Frank Ogawa Plaza, 3rd Floor
Oakland, CA 94612

RE: Safeway Redevelopment Project [Rockridge Shopping Center]
5050-5100 Broadway
Case File Number: ER09-007 (also CMD09-135, CP09-090)

Dear Darin:

The Rockridge Community Planning Council (RCPC) board would like to thank you for giving us this opportunity to provide scoping comments for the Environmental Impact Report ("EIR") on the above-referenced project. RCPC has reviewed the applicant's preapplication materials as submitted to the City and has the following comments.

I) RCPC Agrees that the project could have significant impacts on the environment, and an EIR is appropriate. Both the size and location of this project point to the likelihood of significant impacts on the surrounding environment. RCPC applauds the City's decision to forego the usual initial study and go directly to preparation of an EIR.

II) Project Impacts: As noted, this project has the potential to cause numerous significant impacts, both direct and indirect, and to contribute to cumulatively significant impacts. The following discussion focuses on such impacts and their mitigation.

A) **Transportation impacts:** The project is located directly adjoining an already-congested intersection at Broadway/51st Street/Pleasant Valley Ave. Indeed, not only does that intersection already operate at level of service "F" during peak commute hours, but it is also hazardous for pedestrians and bicyclists. In addition, it is along the route of the AC Transit 51 line, and that bus has to quickly cross three lanes of traffic moving from the northbound bus stop at Broadway and Pleasant Valley to its turnoff onto College Avenue.

As the above comments make clear, project automobile traffic could easily make a bad situation much worse. For that reason, a full traffic analysis is essential. RCPC believes it would be worthwhile to stray from the standard approach for CEQA review and "front-load" the traffic study – that is, a preliminary traffic study should be completed prior to starting work on the remainder of the EIR. That study should consider what mitigation measures are available to improve traffic operations and vehicle, bicycle and pedestrian safety at intersections within the project scope (see below) that currently operate at a LOS of D or lower. Having done so, the EIR should then consider how much traffic to/from the project site could be added before project impacts at those intersections become significant. The EIR should keep that ceiling in mind in considering the project, project alternatives, and unconventional approaches to reducing traffic impacts. (See mitigation measures below.)

The EIR's "traffic" analysis should include not only conventional auto traffic impacts, but also impacts on transit service and on safe, efficient, and convenient pedestrian and bicycle access. The analysis should also consider cumulative transportation impacts, taking into account various other large projects in the area (e.g., Kaiser Medical Center, Civiq, Creekside, 5175 Broadway, and the College Avenue Safeway) as well as City plans for modifying Broadway north of the project site by adding bicycle lanes and reducing automotive travel lanes, AC Transit's plans for instituting bus rapid transit along Telegraph Avenue, and the additional traffic that will result from the Caltrans Caldecott Improvement Project.

Because of the size of this project and its function as the only major shopping center in North Oakland and the surrounding area, the transportation analysis should have a broad scope. It should consider the entire area westward along 51st Street to at least Martin Luther King Jr. Way, northwestward along College Avenue to at least Alcatraz Ave., northward along Broadway to at least the Highway 24 Broadway exit, Eastward along Pleasant Valley and Grand Avenue to at least Oakland Ave., and southward along Broadway to at least Highway I-580.

In addition to considering the traffic along arterials and collector streets, the EIR should also consider whether traffic congestion along major routes might cause "cut-through" traffic on connecting residential streets. That analysis should consider, in addition to traffic impacts per se, noise and pedestrian/bicycle safety impacts from such cut-through traffic. If those impacts are found significant, the EIR should propose appropriate mitigation (e.g., addition of stop signs, traffic circles, speed bumps and other traffic control measures) to reduce the attractiveness and consequent use of cut-through routes.

The EIR should consider not only traffic related to project customers and employees, but also deliveries to and shipments from the project. Currently, the Safeway store at the project site, and presumably the Long's Drug Store as well, receive most of their shipments from one of three exits off of Highway 24 – the 51st Street, Claremont Avenue, or Broadway exits. While the route to and from the project site from the 51st Street exit is along 51st Street and from the Broadway exit along Broadway, both major thoroughfares, the shortest route to the site from the Claremont exit is along Clifton Street, and the return route along Hudson Street, both small residential streets. With the increase in the amount of commercial space within the project, it must be presumed that truck traffic from deliveries will increase accordingly. The EIR needs to evaluate the routes used by trucks going to and from the project site, both presently and under the proposed project. That analysis should include not only traffic impacts, but also noise, vibration, and pedestrian and bicycle safety impacts. Where impacts are caused by the use of residential streets, the EIR should consider as mitigation designating specified arterial truck routes and posting the alternative residential street routes to prohibit their use by large trucks.

The EIR should consider public transit improvements that could reduce project traffic impacts, including:

- Addition or modification of bus stops, including placement of one or more stops internal to the project
- Provision of shuttle bus service to/from the Rockridge and MacArthur and perhaps even 19th Street BART stations.
- Provision of free merchandise delivery (within the North Oakland area) to patrons accessing the project via public transit; and
- Provision of discounted bus and BART passes to employees.

The EIR should also look at other ways of reducing the project's traffic impacts. These should include:

- Providing preferential parking for employee carpools;
- Providing a secure bicycle parking area;
- Providing attractive, well-marked pedestrian access within the site and between the site and surrounding sidewalks;
- Providing safe and pleasant bikeways within the project site, with connections to local bicycle paths and lanes outside the site;
- Considering paid parking for customers and employees, as has been done at Emeryville's Bay Street shopping mall. Any parking pricing proposal should include consideration of congestion pricing and using parking pricing for parking supply management– i.e., factoring into the price of parking the availability of on-site

parking and the degree of congestion on surrounding streets. Revenue from parking fees could be used to help promote public transit use.

B) **Land Use Impacts:** The EIR should discuss the proposed project's consistency not only with the site's current zoning and general plan land use designation, but also with policies contained within the general plan. In particular, the EIR should discuss whether the project accords with the general plan's designation of the site as a "development node" and the designation of Broadway as a major transit corridor.

As currently constituted, the Rockridge Shopping Center tends to divide, rather than unite, the surrounding community. While the project site lies at the junction of three neighborhoods: Piedmont Avenue, Rockridge, and Temescal, and could serve as a unifying bridge and center for those neighborhoods, the project plan being put forward by Safeway appears to not only continue but actually exacerbate the site's current divisive impact. Not only does the plan continue the current uses' auto orientation and inward focus, but by increasing traffic on the streets surrounding the project, it will further isolate the site and divide the surrounding community. The project's almost exclusive auto orientation and its inward focus, with no stores facing out onto either Broadway or Pleasant Valley and no attempt to connect or even relate to areas across the adjacent streets, would impede any attempt to develop this section of Broadway for pedestrian-oriented shopping or connect to the College Avenue pedestrian shopping area. The EIR should identify the project's effect in increasing the division of the surrounding communities as significant and identify mitigation measures to address that impact. Among measures that should be discussed would be:

- Including community amenities (e.g., public space, playground, community center, performing arts space) within the site that would draw people in from the surrounding community and make the site more of a destination;
- Reorienting at least part of the project so that it faces outward onto the surrounding streets (especially Broadway) and improving the pedestrian and bicycle access through and across the project site, while shifting some of the parking to the rear and interior of the site;
- Adding a residential component and redesigning the project so that it is more integrated into the surrounding community (e.g., by including public streets that link to the surround street grid).

C) **Air Quality Impacts:** The proposed project's almost exclusive auto-orientation, along with its size, would indicate the potential for significant air quality impacts, including construction-related impacts and the release of increased amounts of CO_2, with the potential for cumulatively-significant air quality and climate change impacts. As with transportation impacts, a cumulative impact analysis is essential. The analysis should include not only the direct emissions caused by customers, employees, and suppliers, but also, to the extent feasible, indirect emissions relating to the production and supply of merchandise sold at the project.

Mitigation measures that should be considered include: measures to decrease auto use and encourage pedestrian, bicycle, and transit access; encouraging an emphasis on locally-produced goods that would decrease the air quality (and energy) impacts of transporting goods to the site; and using non-CO_2-producing energy sources for heating and cooling within the project.

D) **Energy Impacts:** As with transportation and air quality, the proposed increased development carries with it the potential for a significant increase in energy demand. This would include both the energy involved in demolition of existing buildings and the construction of new buildings, as well as in project operations. Again, this could result in a cumulatively significant energy impact, both in terms of the need for energy production and transmission facilities and climate change impacts associated with increased energy use. The EIR should consider the potential to mitigate for the increased energy use, both in terms of green (energy-efficient) design and providing for the reuse of materials from the existing buildings, and in terms of incorporating renewable energy generating components (e.g., solar PV units, solar hot water for heating) into the project design. The EIR should discuss whether LEED certification would be appropriate and if so, what level of LEED certification would be appropriate to require.

E) **Visual/Aesthetic Impacts:** The current zoning for the site would allow a significant height and density increase over the existing structures. Further, the somewhat isolated nature of the site would appear to make the impacts of taller structures and differing architectural design less significant that they would be at other sites in North Oakland. RCPC does not specifically object to height increases, but does feel that the greater the density, the greater the care needed in the project design to avoid creating a long-term negative impact. While the site is somewhat isolated, the project should be designed to relate harmoniously with adjoining Rockridge and Piedmont Avenue areas. In particular, RCPC believes the project design should seek to upgrade the current nondescript appearance of this section of Broadway. The EIR should also consider the project's visual relationship to the adjacent cliff areas and reservoir.

F) **Biological Impacts:** The site is located directly west of a reservoir that is currently used by waterfowl, possibly including migrating waterfowl. The EIR should investigate the use of the reservoir by both local and migrating birds. The proposed increased use of the site, and specifically the construction activities and increase in auto traffic and nighttime light and glare, could negatively impact the use of the reservoir by wildlife. The EIR should evaluate the significance of those impacts and, if significant, propose appropriate mitigation. That mitigation could include shielding area lighting, both permanent and from auto and truck traffic, from the reservoir area, providing noise protection for the reservoir, especially during demolition and construction, and wildlife improvements that would mitigate or counterbalance any unavoidable impacts.

The reservoir site also provides a potential opportunity for public education about its wildlife habitat values and use. Recognizing the need to protect wildlife from public intrusion, the EIR should consider whether it would be feasible to integrate a public education component into the project that would allow the public to view and better appreciate the reservoir's wildlife value. Doing so would help mitigate the risk that the increased public access to the site would result in increased public access to the reservoir in ways that would harm wildlife.

G) **Blight and Litter Impacts:** The increase in the project size means that it has the potential to draw customers and consumer spending from the surrounding commercial areas. Especially with the current economic downturn, which many analysts see taking at least five years to recover from, this could suck the life-blood from those retail areas, notably Piedmont Avenue, College Avenue, and Telegraph Avenue (Temescal). Each of these areas has, in the past, struggled with blight conditions, which have included not only closed businesses and vacant storefronts, but also accompanying physical degradation and impacts on public health and safety.

The EIR needs to consider the potential for the project to drain the surround area's economic vitality and contribute to causing blight, with accompanying physical impacts. If the effect is found significant, appropriate mitigation (e.g., managing site tenants to minimize detrimental competition with nearby small retail uses or establishment of a blight-relief impact fee on the project) should be considered.

With the project's increased size also comes an increased potential for litter production, especially from "fast food" restaurants. The EIR should discuss appropriate mitigation measures to reduce this impact, such as requiring the funding of a litter control program including providing convenient trash and recycling receptacles and a litter patrol as necessary to keep the site litter-free.

III) Project Alternatives: RCPC feels that the current project proposal is far from the optimal use of the site. Other alternative scenarios might not only be more in keeping with the site's general plan designation but also result in significantly reduced impacts. For that reason, we feel that the alternatives section of the EIR is of particular importance. Listed below are a number of alternatives to the proposed project which we feel merit consideration in the EIR.

A) **Community Amenities Alternative:** As noted above, the proposed project would further increase the project site's divisive land use impact on the surrounding community. As also noted, one way of mitigating this would be to include community amenities that would offset that impact by helping to bring the community together on the project site. Neither the project site's current uses nor the proposed project include any amenities for the community, other than shopping, that would draw the community to the site. The EIR should therefore consider in at least one alternative devoting a portion of the project site to a community-oriented use. Possible uses could include a public space or park, a playground (e.g., skateboard park), or a theater, or performance space.

B) **Mixed Use with Residential Alternative:** An alternative approach to reducing the project's divisive land use impact would be to include a residential component in the project. There are existing residential communities to the northwest (Rockridge) west (Temescal) and southeast (Piedmont Avenue area) of the project site, as well as students resident at the California College of Art to the north. Including a residential component in this project would help bridge the project-created gap between these communities. It would also provide built-in patronage for the project's commercial tenants, as well as a convenient place for project employees to live that could significantly reduce traffic and air quality impacts. One obvious option would be to devote the first floor of project buildings to retail uses, but to also include one or more stories of residential use above that. While we have been told that the current site master lease apparently prohibits residential uses, RCPC nevertheless believes the EIR should include consideration of an alternative containing a residential component.

C) **Continued Street Grid Alternative:** Another way to reduce the project's divisive land use impact would be to continue the street grid of the adjoining residential areas into the project site. While there is currently a theoretical continuation of Gilbert Street past Pleasant Valley Avenue into the project site, it is little more than a lane through the parking lot. On the Broadway side, Coronado Avenue again theoretically continues across Broadway onto the project site, but it is currently only used as a truck route for suppliers. Both these streets could be converted into full public streets within the project area, extending the urban block structure found in the adjoining areas, and the project buildings could be designed to provide street-front retail uses, with structured parking located interior to the blocks. Attached hereto as Exhibit E is a prototypic design example prepared last year by Conley Consulting Group under contract with the City. While RCPC is not endorsing this design, we do feel that an alternative with a more urban neighborhood feel should be investigated in the EIR.

D) **Transit Oriented Development Alternative:** Another alternative that should be examined is a transit-oriented development (TOD) alternative. Such an alternative could significantly reduce the project's likely significant transportation and air quality impacts. A TOD alternative would focus and expand upon some of the transit measures already discussed individually as mitigation measures for transportation impacts. It would include an on-site transit center that would contain both AC Transit bus stops and a terminal for shuttle bus service to the Rockridge and MacArthur BART stations.[1] The TOD alternative could have additional incentives to encourage transit use and discourage automobile use/ownership. For example, there could be reduced parking available, and all parking could be paid parking. If there was a residential component, it could also have reduced parking available for residents with all parking spaces paid for separately from apartment rents. However, there would be car shares available on site, and the rental price for units could include in an AC Transit/BART pass, with additional passes available at a reduced rate.

We appreciate your consideration of these RCPC scoping comments.

With best regards,

Stuart Flashman
RCPC Board Chair

Andrew Charman
RCPC Board Vice-Chair

[1] There has even been some discussion of running a light rail line up Broadway from Jack London Square. The project site might be an appropriate terminus for such a line.

OAKLAND
METROPOLITAN CHAMBER OF COMMERCE
Serving the Business Community Since 1905

December 16, 2010
Mr. Walter Cohen
Director, Community & Economic Development Agency
City of Oakland
250 Frank Ogawa Plaza, Suite 3315
Oakland, CA 94612

Re: 51st/Broadway Safeway Redevelopment

Dear Mr. Cohen:

Thank you for your continued support of retail leasing and development in Oakland. Several proposed projects meet the objectives of the City from policy, neighborhood development and revenue enhancement objectives. The Oakland Retail Advisory Committee (ORAC) recently reviewed one project, the 51st/Broadway Safeway Development that is "on point" to meet these objectives.

As you are aware, the ORAC includes experienced retail professionals: developers, brokers, retailers, architects, and members of the Oakland Metropolitan Chamber of Commerce and CEDA staff who share ideas to support the City's Retail Enhancement Strategy. The review by the ORAC does not evaluate the finer details of the project (elevations, material, color, etc.) but rather looks at the viability of the project as designed.

Significance of the project

The Chamber and the ORAC are in agreement that the 51st Street/Broadway Project should receive support for the value that it adds to the neighborhood, the City's grocery store sector deficit and revenues that support city services.

We support the 51st Street/Broadway Project and believe it will be beneficial to both the City at large and the surrounding area for the following reasons:

- capturing a portion of Oakland's retail leakage and providing the City with sales tax revenue;
- providing both new construction and new retail jobs;
- adding a retail draw and community/neighborhood gathering place as well as enhanced architectural features to this main intersection and
- acting as a catalyst for the redevelopment of the immediately adjacent properties.

The project will invigorate the Rockridge neighborhood and will attract other small retail uses.

Recommendations

1. Expedite implementation

475 14th Street, Oakland, CA 94612-1903 • Telephone 510/874-4800 • Fax: 510/839-8817 • www.oaklandchamber.com

To make this project a reality, we believe that the City should work with Safeway representatives to assist in **facilitating entitlements** to the project. By working pro-actively with the developer, the project will able to remain on track and on time.

2. Support market-responsive phasing
The second phase of the project is particularly innovative and welcome in this currently challenged economic environment. To assist with further development, we suggest that approvals by the city **provide flexibility for future modifications** at the site, allowing the developer to be responsive to the changing marketplace during Phase II of the project. This will maximize the success of the project and provide needed neighborhood services in the Rockridge area.

3. Signal investors
The developer is a strong community advocate and has made substantial efforts to incorporate all input from neighborhood and other interest groups, including parking, street frontage design, pedestrian safety and traffic circulation, and much more. We are persuaded that the **overall benefit to the City far exceeds the particular needs of special interests.** In this spirit, the Chamber and ORAC strongly suggest that community benefits in services, a sense of place and increasing tax revenue be considered throughout the development of the project so that individual interests are balanced with City priorities and broader community benefits. Moving this project closer to approval indicates Oakland's readiness for investment in key retail nodes.

Conclusion

The members of Oakland Retail Advisory Committee look forward to the success of efforts such as the 51st Street/Broadway Project. On behalf of the ORAC and at the appropriate time, the Chamber will submit its position to the Planning Commission and City Council for the consideration of those official bodies. It is this type of project that catalyzes development in Oakland neighborhoods and provides a gateway into the City that is welcoming and vibrant.

Sincerely,

Joseph Haraburda

Joseph Haraburda
President & CEO

Copy: Council President Jane Brunner
Mayor elect: Jean Quan

ULTRA (Urbanists for a Livable Temescal Rockridge Area)

July 27, 2009

Darin Ranelletti
City of Oakland Planning Division
250 Frank H. Ogawa Plaza, Suite 3330
Oakland, CA 94612

Re: Scope of EIR for Safeway Redevelopment Project (Broadway @ Pleasant Valley Avenue.)

Case File Numbers: CMD09-135; CP09-090; ER09-007

Dear Mr. Ranelletti:

ULTRA's mission is to create a livable, authentic community in the North Oakland area by forging civic bonds, fostering environmentally sustainable urban growth and ensuring equitable development. We seek to ensure economic and cultural diversity by providing guidelines for development that support neighborhood-oriented businesses, community services, the arts, affordable housing and affordable commercial properties. A comprehensive urban plan for this site will increase access to alternative transportation, ensure pedestrian and bike safety, and identify more open green spaces and cultural venues for community interaction.

ULTRA is seeking a great urban design by a great urban design TEAM for the Safeway Redevelopment Project. An open, professionally run design charrette is a must to get this project back on track, where community members are members of the team. Together we can build a project that is focused on 'place making', knitting the neighborhoods of Temescal, Rockridge and Piedmont Avenue together. If we consider the space between the buildings as much as the buildings themselves, a street becomes a room whose walls are made by the buildings that face it and its ceiling happens when the street trees achieve crown closure.

According to the General Plan the Broadway corridor is designated as "growth and change" from the 580 freeway underpass to College Avenue. Furthermore, the intersection of Broadway, Pleasant Valley and 51st Street has the added distinction of being the center of a stretch of upper Broadway designated as a "Target Area for Community and Economic Development." It also states that for this Target Area the city should, "conduct land-use study to determine the feasibility of higher density housing." The city did one such study, the Conley Report released in June 2008. This report singled out this intersection as one of only five "finalist nodes" in the entire city as; "an opportunity to redevelop the pattern of land use to one that is less auto-oriented, and supports creation of a pedestrian environment that serves the adjacent neighborhoods." In the report, there are multiple alternatives presented as to how higher density mixed-use could be built on this site. Our proposed alternative also has higher density mixed-use but gives prominence to Safeway by locating it on Broadway. This intersection is a gateway to Oakland and will segue nicely with the Broadway Corridor development project.

EIR Scope Issues:

- **Catchment Area**: At over 300,000 sf, the proposed Shopping Center certainly achieves sub-regional status (a typical Wal-Mart can be over 200,000 feet, although some newer stores are around 155k.) We understand that Safeway is marketing to proposed retail leaseholders that the catchment area is up to five miles. It seems completely reasonable to request that a traffic analysis, along with environmental impacts thereof (particularly GHG generation in support of the requirements of AB 32) be expanded to cover at least the same area. An enlarged catchment area would also seem to be justified by their proposed parking count: Our count shows that they are providing about 100 more spaces than would be called for per City requirements.

- **Blight Generation**: The proposed project contains almost 120,000 sf more retail/office space than the present shopping center. The Broadway corridor, downtown, and other retail neighborhood commercial areas are experiencing growing vacancies. What is the potential for continued and increasing blight and diminishment of the streetscape in these areas if all this potential retail moves to the new Center?

- **Phasing**: Along the same vein, look at the Phasing plan on page 22 of the Staff Report: What if the project is approved, but the leasing doesn't go as planned? The community could be stuck with a sea of parking with the store way over in the back corner. On the other hand, this might simply leave a more developable lot up front for new mixed-use development. Retail occupancy should also be need based and focused on neighborhood services as opposed to chain stores that offer retail for the sake of retail. Interim vacancies or phasing would allow for better long-term use planning.

- **Integration of Transit**: Also along these lines, the distance to the proposed Safeway store entrance is **more than ¼ mile** from either of the bus stops for the 51 at Pleasant Valley. Numerous studies show that this is more than the maximum distance people will typically walk to transit—let alone while schlepping bags.

Alternate Proposals

Any alternate proposals in the study **must include mixed income and affordable housing, integrate and provide for pedestrian, transit, and bicycling access, while knitting together the various neighborhoods that adjoin the site through walkable streetscapes and varied, neighborhood-serving retail.**

As an example, ULTRA has developed a proposed alternative that addresses these criteria, as shown in the attached drawings. We request that this alternative be studied as a viable alternative. In addition, the plan specifically addresses the Planning Commission's comments about getting "innovative retail" on the site, and providing for multi-modal access to the grocery store. We propose that the Safeway be located along Broadway, with its "boutique" operations, such as the deli, bakery, and butcher shop, etc., fronting onto Broadway, with access from both the main store as well as the street. We realize that there are issues involving store security and manpower in this approach, but the potential for increased sales through walk-up traffic is there—just consider the success of Market Hall. Another successful example is the mixed-use Gish Apartments in San Jose. There, the 7/11 chain took a chance on its first non-strip mall store in the South Bay, without surface parking, but located at a light rail stop, and below an apartment building. In the South Bay, the typical 7/11 gets more than 90% of its traffic by automobile. At Gish, it is less than 50%, **but the store is now the highest grossing 7/11 in San Jose**.

From a cursory perspective, we think a project of this size would fit within the current zoning envelope. In addition to the features described in the attached drawings, please note the following features:

- Density, unit types, and livability: While it is possible to increase residential density as shown in several of the Conley options, the only way to do that would be to increase height and/or go to predominantly double-loaded corridor buildings with single-aspect (that is, windows on one side) apartments. Such units are not appropriate for households with children. Besides having the opportunity to be larger and with more bedrooms, double-aspect units provide flow-through ventilation and increased natural lighting, reducing energy consumption. Our proposed scheme offers a diversity of unit types, from one-bedroom apartments and 1-2 bedroom flats, to 2-3 bedroom townhouses. We also show a dormitory for California College of the Arts (CCA) should they be interested in developing a podium project with direct linkage to the campus, this could also be another apartment building instead. Flexible space and community access by resident and community groups, youth activities, etc. should be part of the development project.
- Height: As a result, the proposed project should top out at around the height of the adjacent bluffs, which should diffuse opposition from uphill neighbors.
- The reservoir is a potential natural resource that needs to be integrated into the site because it provides an opportunity to create an urban oasis at the junction of three neighborhoods that are underserved by parks.

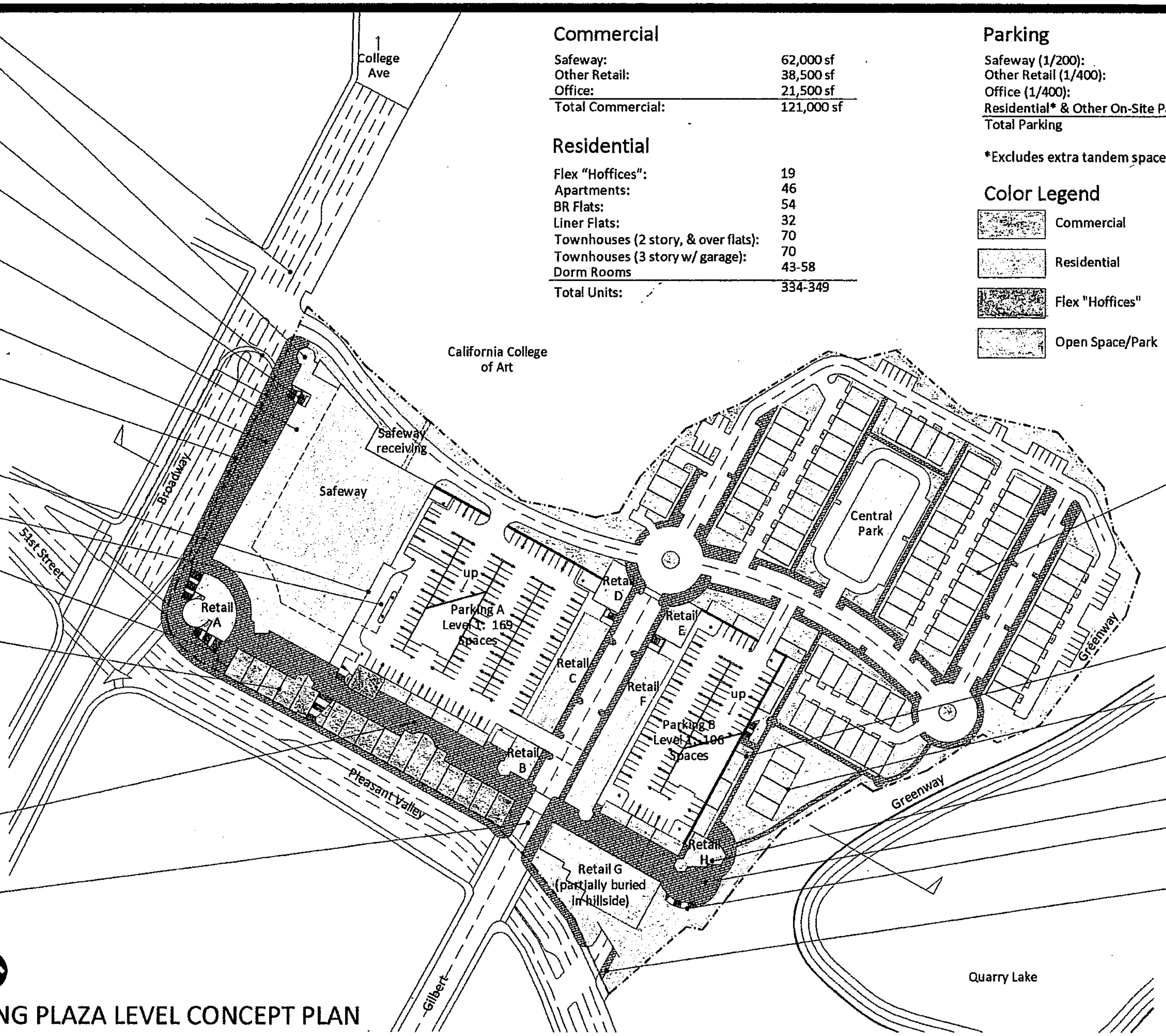
There should be no question about the feasibility of housing at this site. Housing developers would find this location very desirable because of the super market, other retail, and proximity to transit options.

An affordable housing component as part of any housing on the site should also be studied. In our proposal, at a typical 80/20 ratio, that would compute to about 68 units. The apartment building shown on the plan, for example, would be ideal for a HUD 202 (senior independent living) project. The location near shopping, medical and other senior services, and public transportation would all boost the chances of winning competitive Federal funding (capital grant, tax credits, etc.) An alternative design team might include a non-profit housing developer.

Lastly, we think that the DEIR for this project should also include all scoping comments submitted by the community.

Sincerely,

ULTRA Steering Committee
Thomas Dolan
John Gatewood
Karen Hester
Hiroko Kurihara
Joan Lichterman
Larry Mayers
Randy Reed
Joyce Roy
Christopher Waters



Commercial

Safeway:	62,000 sf
Other Retail:	38,500 sf
Office:	21,500 sf
Total Commercial:	121,000 sf

Residential

Flex "Hoffices":	19
Apartments:	46
BR Flats:	54
Liner Flats:	32
Townhouses (2 story, & over flats):	70
Townhouses (3 story w/ garage):	70
Dorm Rooms	43-58
Total Units:	334-349

Parking

Safeway (1/200):	310
Other Retail (1/400):	97
Office (1/400):	54
Residential* & Other On-Site Parking:	343
Total Parking	804 Full Size Spaces

*Excludes extra tandem spaces in townhouse garages

Color Legend

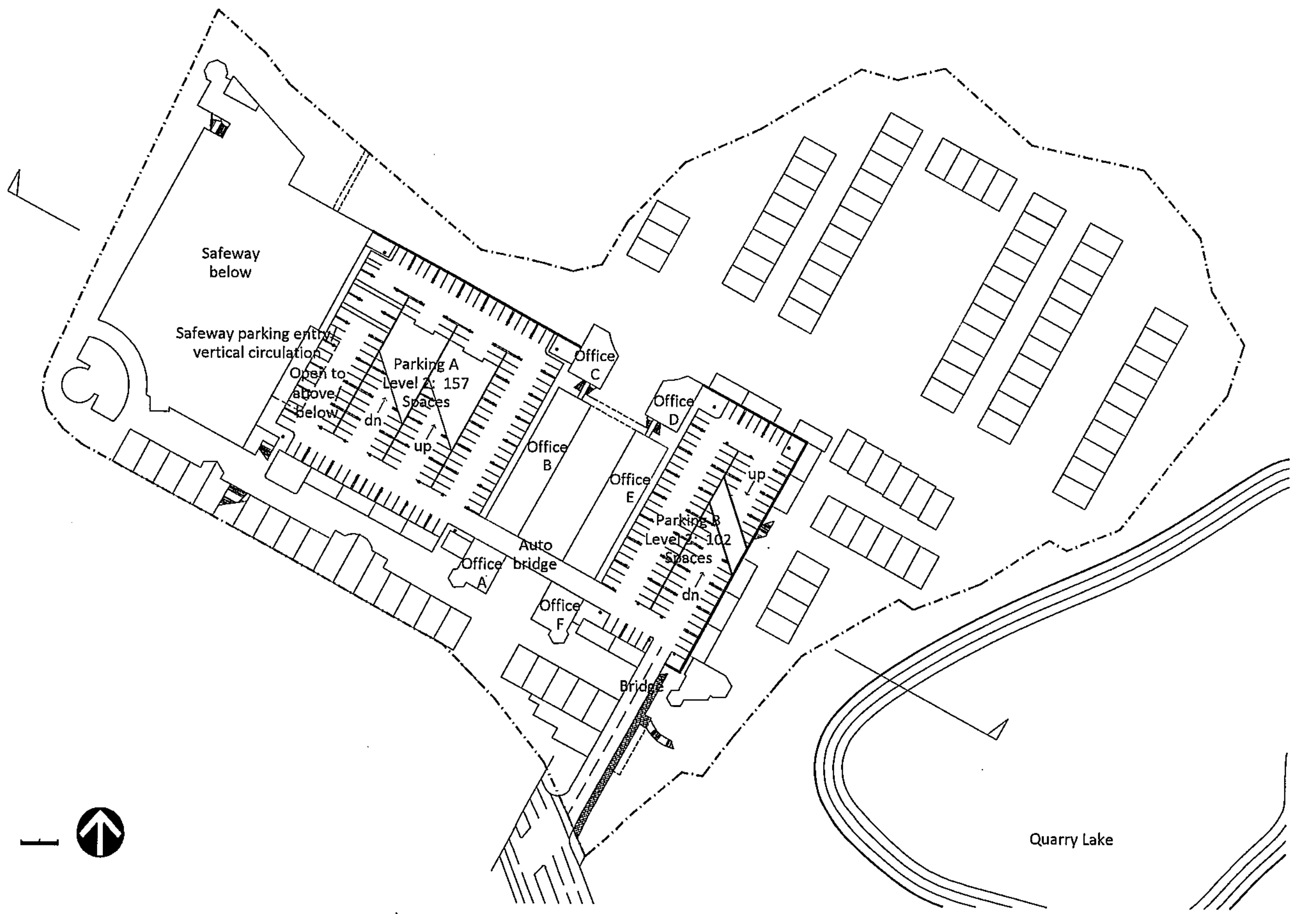
Commercial
Residential
Flex "Hoffices"
Open Space/Park
Pedestrian Circulation
Vehicle Circulation
Other Service/ Circulation

SHOPPING PLAZA LEVEL CONCEPT PLAN

ULTRA OAKLAND
www . ultraoakland . org

Rockridge Shopping Center Proposed Alternative

MAYERS ARCHITECTURE
Oakland, CA
www.mayersarch.com

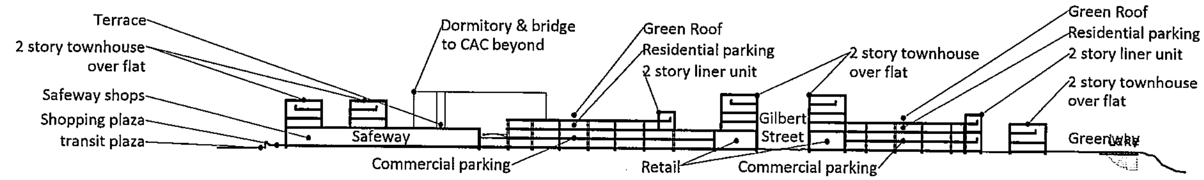


MID-PARKING/OFFICE LEVEL CONCEPT PLAN

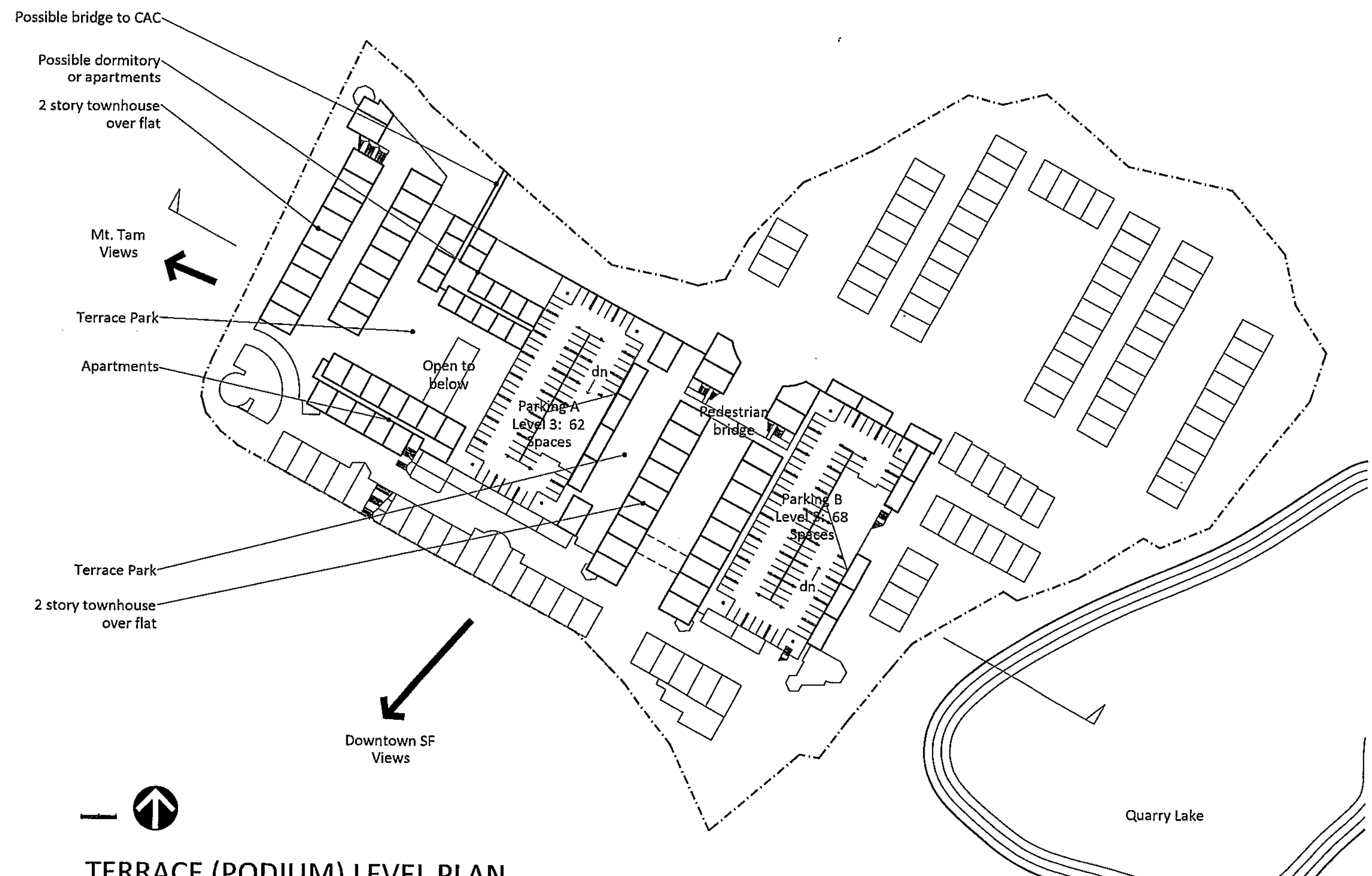
ULTRA OAKLAND
www . ultraoakland . org

Rockridge Shopping Center
Proposed Alternative

MAYERS ARCHITECTURE
Oakland, CA www.mayersarch.com



CONCEPTUAL EAST/WEST SECTION



TERRACE (PODIUM) LEVEL PLAN

ULTRA OAKLAND
www . ultraoakland . org

Rockridge Shopping Center
Proposed Alternative

MAYERS ARCHITECTURE
Oakland, CA
www.mayersarch.com

STAND Oakland

Standing Together for Accountable Neighborhood Development

RECEIVED
JUL 27 2009
City of Oakland
Planning & Zoning Division

July 24, 2009

Darrin Ranelletti, Planner III
City of Oakland Planning Department
250 Frank H Ogawa Plaza
Oakland Ca, 94612
Re: Cases CMD09-135; CP09-090; ER09-007
Rockridge Center/Safeway redevelopment

Dear Mr. Ranelletti;

This letter is a follow-up to the comments made by STAND Oakland Steering Members at the July 15, 2009 Planning Commission EIR Scoping Session for the Rockridge Center/Safeway redevelopment project. We are writing to re-emphasize the points that STAND spoke to, and insure that these issues are given adequate study within both the draft & final Environmental Impact Report on this project.

Areas that STAND is most concerned about include the impacts that the enlarged development of this node (center of density) will have to the surrounding neighborhoods. Impacts studied (with mitigations proposed) should include:

1. Probable increased noise to surrounding neighbors (esp. to the south) due to reflection from higher facades along Pleasant Valley & Broadway;
2. Probable increased noise & exhaust fumes from delivery vehicles & loading docks for the larger number of stores;
3. The possibility that this project will cause retail blight along upper Broadway from 40th to Hwy 24, Telegraph from 40th to Alcatraz, on Piedmont Ave from 40th to Pleasant Valley, and along College from Broadway to Alcatraz. There is currently an excess of underused retail space within all these nearby commercial zones, as well as a history of blight.
4. Visual & esthetic impacts, Placement & configuration of housing atop the retail for minimum visual & noise impact upon the surrounding residential & mixed-use neighborhoods. While the General Plan, current zoning, & Conley report call for or allow mixed-use, or some housing, at this site, STAND asks that any housing proposal be configured for minimum impact. The Conley report, calling for this site to have the most density of any location along Broadway north of 40th St. does not make specific recommendations other than speaking of a 4 story limit along the rest of this stretch of Broadway. We would ask that studies include the possibility of housing that rises no higher than the top of the hillside at the rear of the site, with building heights over 2 stories only near that hillside. In addition, we would ask that building placement & massing options be considered with the mitigation goal of remedying the current situation where the center creates a 'hole' & 'dividing line' within the north Oakland urban fabric. This development should serve as a keystone of this part of the city, uniting the surrounding neighborhoods in both design & use.
5. Traffic studies that cover all primary streets & highways for a minimum radius of 2 miles; secondary/feeder street impacts need to be studied for no less than a 1.5 mile radius, & neighborhood streets including parking impacts for no less than a 10 block radius. Traffic studies need to include both present and projected traffic impacts from AC Transit routes, including the proposed BRT along Telegraph and service cuts on routes that currently serve the development site.

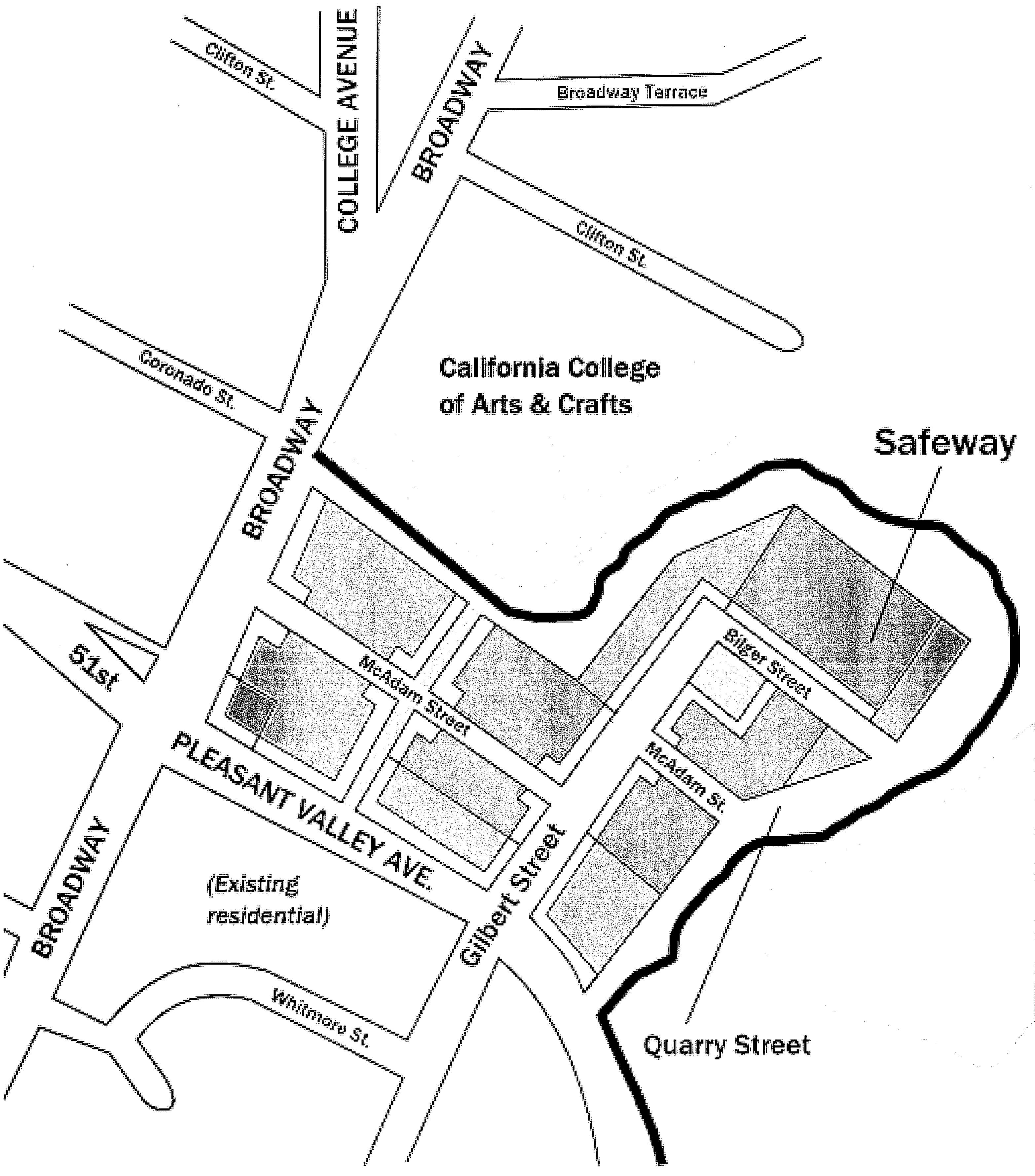
6. Transit options, including in-center stops and curb cut-ins (instead of the current in-lane stops) as well as ways to increase transit usage by employees, project residents, & shoppers need to be studied. In addition, the proposed Broadway light-rail line and how it would affect traffic access should be included.
7. Bicycle options, including ways to increase bicycle usage such as providing monitored bike parking or lockers, as well as internal bike paths, need to be studied.
8. Pedestrian safety & accessibility options need to be studied. Items should include project configuration options with less curb cuts (1 or 2 along Broadway instead of the current 3), (1 or 2 along Pleasant Valley instead of the proposed 3); a 'refuge' island in the median of the Pleasant Valley – main entrance crosswalk; a design option with the primary retail buildings at the front, which could lessen safety issues from crossing long parking lots; and a 'refuge' island at the Broadway crosswalk.
9. Air quality issues should include not only idling deliver truck issues, but studies of the expanded effects of idling and circling auto traffic due to the expanded parking structures. Mitigations could include 'smart' parking info at the entrances detailing real-time space availability for each section; in addition, lowering the number of entrances and configuring the garage for access from the main entrance instead of a separate street entrance could lessen circling & idling. Alternatively, the garage could be designated for employees and residents only.
10. Energy usage. Studies of the current & projected development's energy usage and mitigation possibilities should include the installation of active photovoltaic solar over parking, significant numbers of skylights in retail spaces to reduce artificial lighting usage, recycling of rainwater for landscape watering, carbon capture through the planting of significant numbers of trees & areas of groundcover, heat-island reduction through the use of light-color surfacing of parking areas and rooftops; and highest-level LEED standards (or equivalent) used in construction.
11. Open space. The quarry reservoir needs to be included in areas of the EIR relating to water-quality as well as usable open-space. Significant setbacks of both buildings and parking along the quarry face to prevent runoff contaminated by autos or other uses, with a design for a green buffer that includes a walkway and other usable features as well as continuous plantings should be studied.

As a final point, STAND agrees with RCPC's call for project alternatives to be studied, including the "community amenities", "mixed use with residential", "continued street grid", "transit-oriented", as well as the required "no build" option.

Please keep us informed as this project moves forward.

Sincerely Yours,

Dahn Van Laarz,
Tamara Nicoloff
STAND Oakland Co-chairs



Clifton St.
COLLEGE AVENUE
BROADWAY
Broadway Terrace
Clifton St.
California College
of Arts & Crafts
Coronado St.
BROADWAY
Safeway
51st
McAdam Street
Bilger Street
PLEASANT VALLEY AVE.
McAdam St.
Gilbert Street
(Existing
residential)
BROADWAY
Whitmore St.
Quarry Street

Joint Report Regarding the Design of the Proposed Safeway Redevelopment Plan for the Rockridge Shopping Center

December 8, 2010

The following neighborhood organizations have contributed to this report –

FANS – Friends and Neighbors of Safeway
PANIL – Piedmont Avenue Neighborhood Improvement League
RCPC – Rockridge Community Planning Council
STAND – Standing Together for Accountable Neighborhood Development
ULTRA – Urbanists for a Livable Temescal Rockridge Area

We want this to be a successful project for Safeway, our neighborhoods and the City as a whole.

Table of Contents –

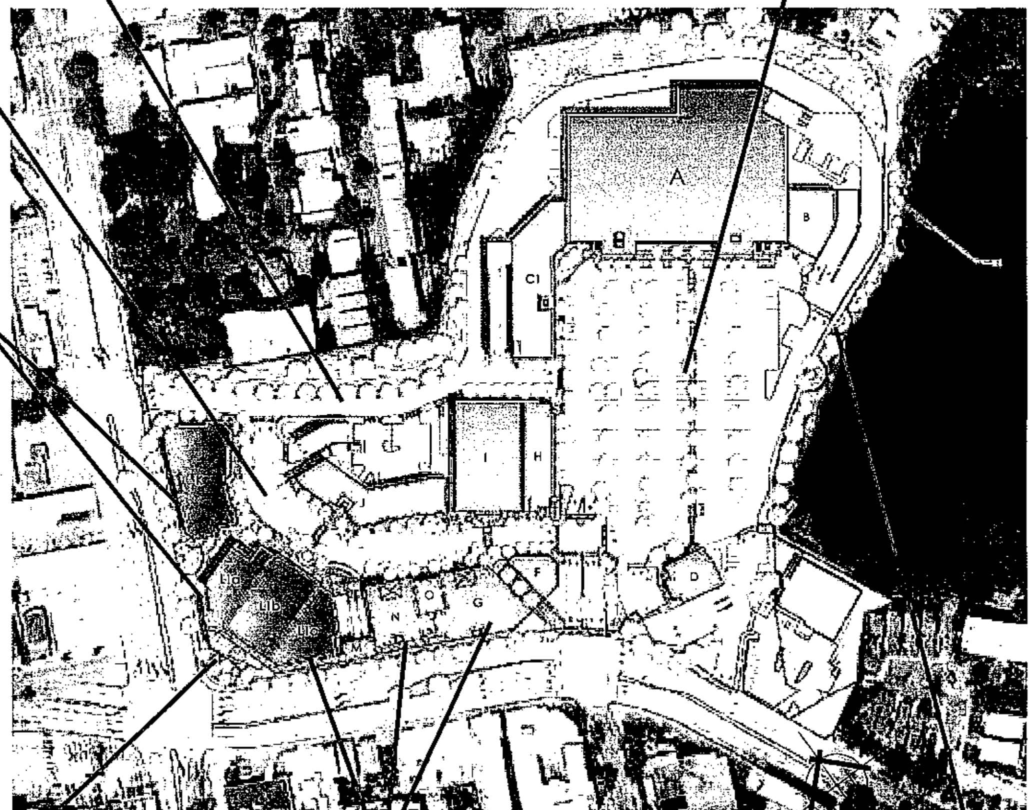
Deficiencies in the present proposal –

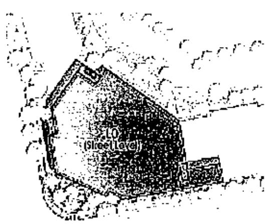
This road is an uninviting featureless blind drive leading to the loading docks and the parking lot.

The eastern half of the site is still a typical suburban super-market strip mall. The Safeway is poorly situated, poorly accessible to pedestrians and transit patrons and not easily visible from the street. The large surface parking lot is both unattractive and an inefficient use of space, especially in this urban setting.

This drive should be an internal street that connects to the existing streets. In this proposal it is artificial and contrived and nothing more than a parking lane.

For as much as possible there needs to be store entrances along Broadway.





This is the most prominent corner of the site. Instead of retreating from it the project needs to meet the street.

The project walls itself off from Pleasant Valley. These storefronts need to have entrances here too.

The project design makes poor use of the quarry pond amenity and what is proposed next to the pond will not atract patrons to it.

The fundamental flaw in this proposal is that it is inward facing and does not respond to or integrate itself with the adjacent urban neighborhoods. And in an attempt to disguise this it is sheathed in a bewildering array of textures, styles and articulations.

City, Bay Area and State policies regarding urban in-fill development –

We strongly believe that Safeway's proposal for the Broadway & Pleasant Valley rebuild is contrary to the goals of City of Oakland policies and initiatives, Metropolitan Transportation Commission, Bay Area Air Quality Management District and the Bay Conservation and Development Commission goals as well as state law.

City of Oakland Policies and Initiatives –

In 1998 Oakland adopted a visionary General Plan whose explicit intent is to promote higher density mixed-use development along our city's transit corridors.

Oakland is in the midst of updating the zoning for the city's commercial corridors to comply with the vision articulated in the General Plan by allowing for higher-density, mixed-use development on our transit corridors. This site is proposed to be a higher density mixed-use node.

The city is also in the process of preparing a Climate Action Plan for Oakland. A draft of this plan is already circulating and the city is soliciting public comment on it. Multiple sections of this plan call for higher-density, mixed-use development along transit corridors as well as even higher density Transit Oriented Development at transit nodes.

The city has commissioned at least one six figure retail study and analysis of our city, the Conley report, and the Safeway at Broadway & Pleasant Valley is one of only five finalist nodes specifically called out in the report with more detailed analysis and proposals. What Safeway has proposed does NOT reflect the conclusions of the Conley report.

Metropolitan Transportation Commission, Bay Area Quality Management District and the Bay Area Air Quality Management District Policies –

All three organizations have formed a joint regional planning initiative known as FOCUS, which is the regional blueprint plan for the San Francisco Bay Area. The centerpiece of the FOCUS strategy is the creation of Priority Development Areas (PDAs) in which incentives for compact, transit-oriented development will be used to help bridge the gap between regional objectives and local land-use authority. Oakland has designated Safeway at Broadway & Pleasant Valley as a Priority Development Area. What is presently proposed does NOT reflect the goals of the "Transportation 2035 Plan" as adopted by the MTC.

California Laws –

At the state level we have at least two laws that also promote transit-oriented development – SB 375 (2008) and AB 32 (2006). Both compel local planning agencies to make planning choices that reduce Vehicle Miles Traveled (VMT.) What is proposed is a car-centric mall and opposite the intent of these laws.

The Conley Report and how it pertains to this site –

a. The Nodes Combined

Major development changes will occur in these two nodes in the near to intermediate term. These two nodes abut some of the City's most affluent neighborhoods, yet neither provide the kind of neighborhood gathering places that are found in the Rockridge, Montclair, and Lakeshore nodes, or is emerging in the nearby Temescal node. Challenges and opportunities for retail enhancement in this node include the following:

- The Rockridge Shopping center underutilizes a rare commodity in Oakland: a retail site over 10 acres in a prime location. Today the center operates as a suburban retail solution in a key urban location. A proposal to relocate and expand the Safeway store only partially begins to intensify the use of the site by adding parking above the supermarket. More intensive use of this site could provide an expansion opportunity for the supermarket and also meet the City's strategic goal of expanding its supply of comparison retail stores.

- Existing development at the intersection of 51st and Broadway is auto-oriented and internally focused, with little encouragement for pedestrians to patronize retail on adjacent sites.

- In addition to the shopping center, the south western and south eastern corners of the intersection are likely to be redeveloped in the near future, creating an opportunity for re designing the way this important junction functions as one of the City's prime retail locations.

- Just north of Oakland Technical High School the site of the former Dave's Coffee Shop is available for development in conjunction with an adjacent site now operated as a Toyota used cars lot. Mixed-use development on this site has been discussed, but plans are currently on hold due to the economy.

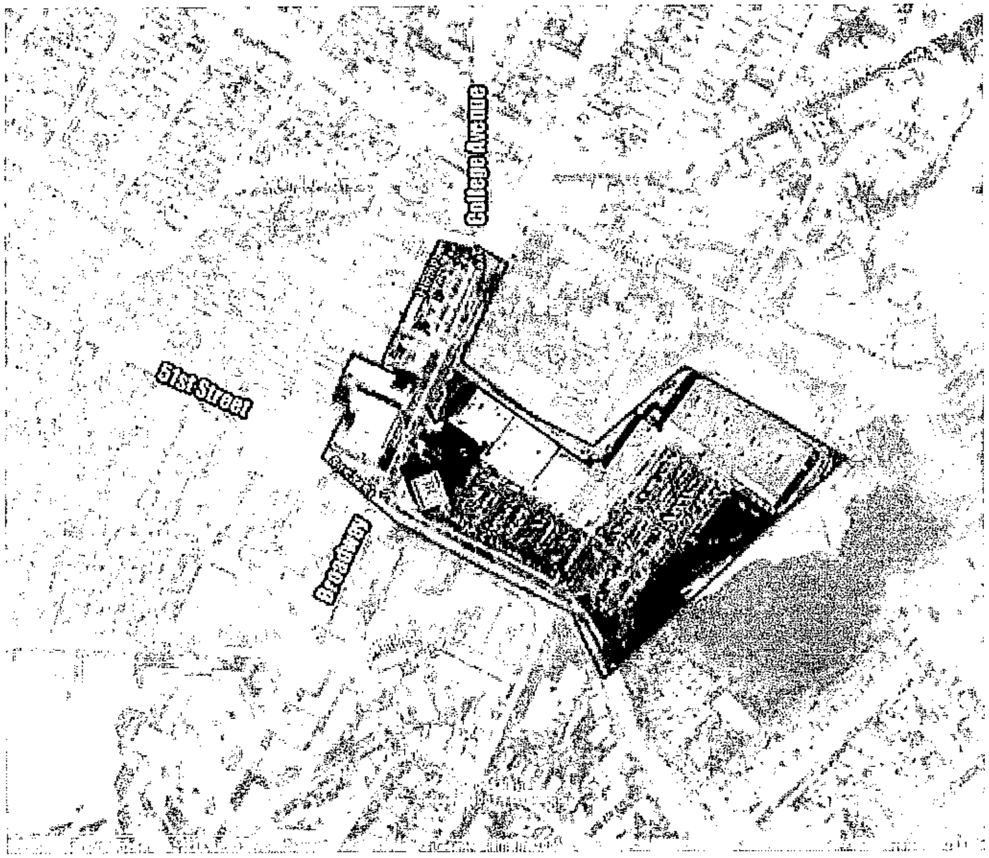
- In the Oakland Tech node the available development site backs up to single family homes that will need to be protected from the impacts of shopper access, service and circulation.

- Retail on Broadway in the Oakland Tech node has diminished overtime, and with few exceptions, the current mix is underperforming and underutilized.

2. Enhancement Strategy

❖ Major development changes in these nodes provide an opportunity to redevelop the pattern of land use to one that is less auto-oriented, and supports creation of a pedestrian environment that serves the adjacent neighborhoods.

❖ Incorporate a viable comparison goods component into large scale retail



51st/ Broadway

The 51st and Broadway node is located along Broadway, between the Rockridge and Upper Broadway/Oakland Tech retail nodes. It contains the Rockridge Shopping Center, an auto oriented neighborhood shopping center with surface parking on a key 12 acre site. The shopping center is anchored by Safeway and a 100,000 SF Longs Drug store that operates more like a big box comparison store than a drug store. Safeway, which controls most of the site though a long term ground lease, has plans to relocate and expand its store. In 2006, this area had well over $10 million in total sales. More than 40 percent of total sales were in convenience good shopping. The immediately surrounding areas have high per-capita incomes and smaller households than are average for Oakland. Only a small portion of neighboring households include children.

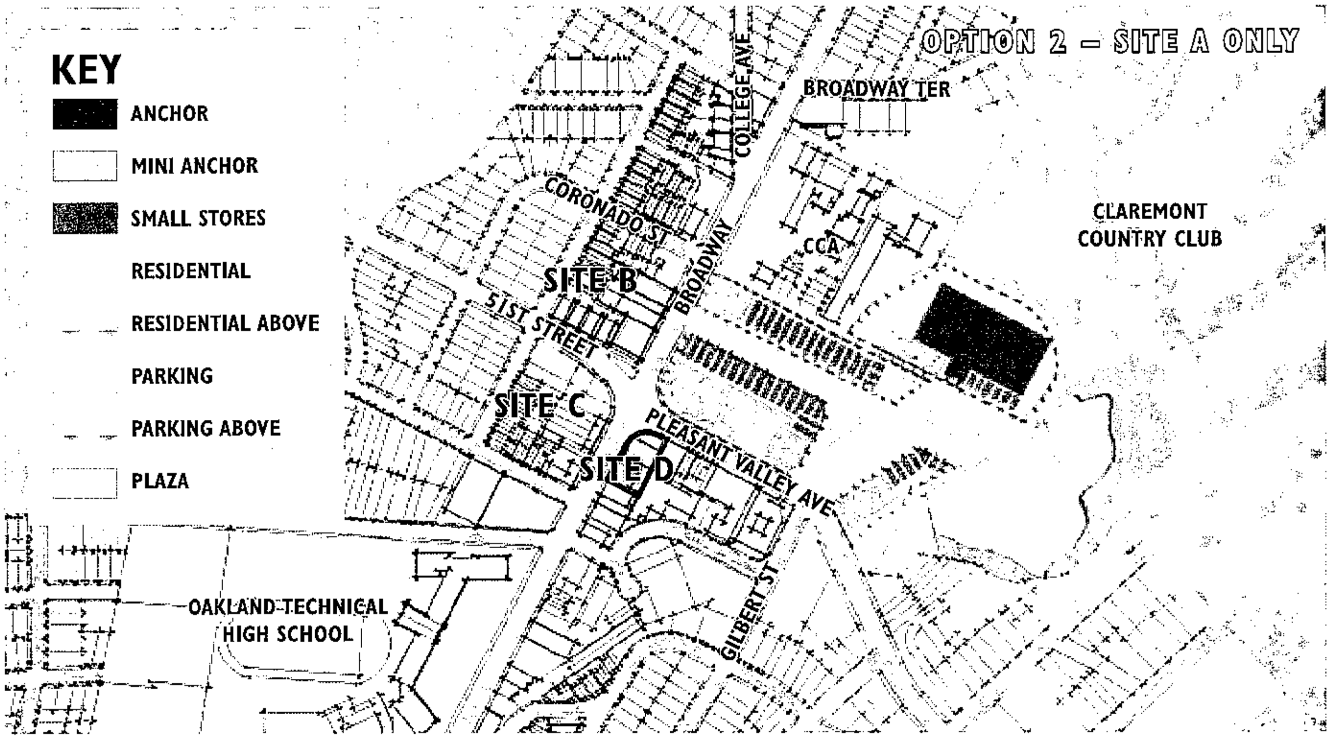
Other comparison and eating and drinking outlets are located on outlying sites surrounding the shopping center. The long-standing Poppy Fabric store recently closed and both that site and the adjacent vacant lot are available for new development. The Rockridge Shopping Center is well located to serve affluent neighborhoods in Oakland and Piedmont, and is thus a valuable retail enhancement opportunity for the city.

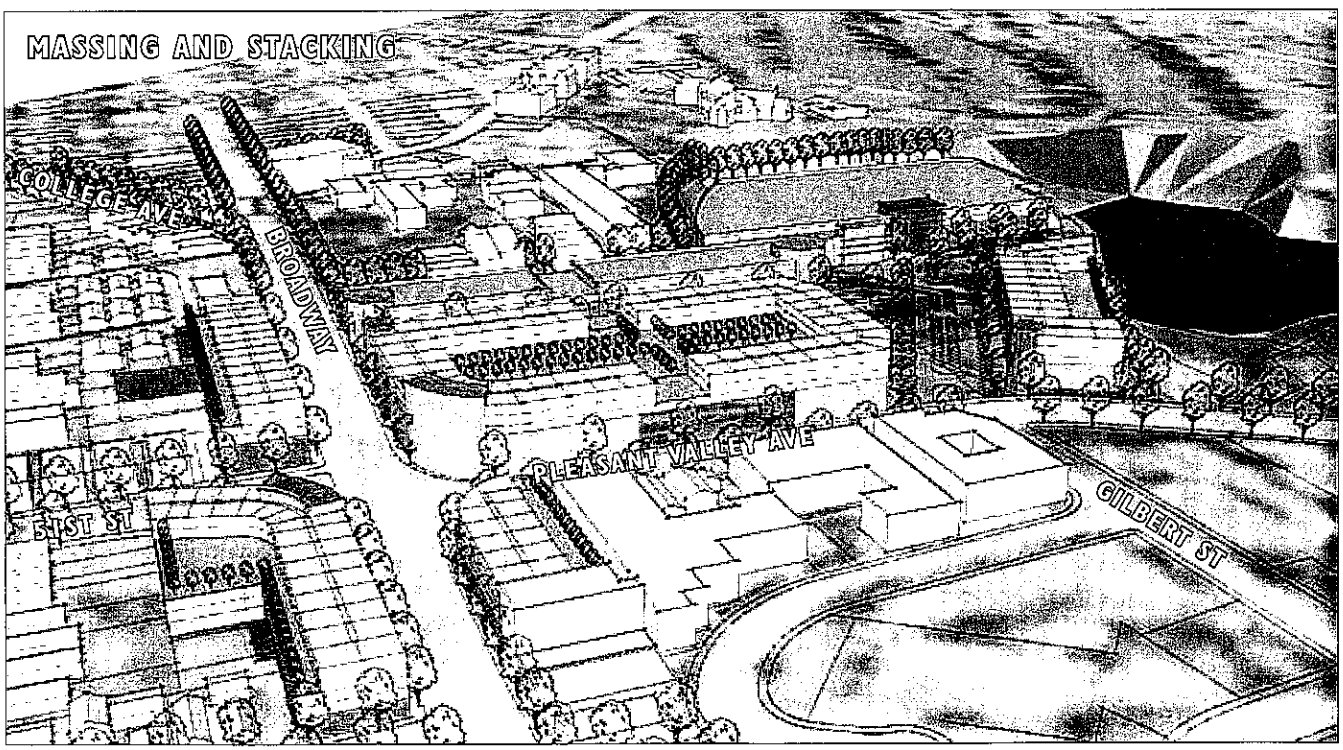
The City should carefully consider future development in this node and how those proposals enhance and protect the City's overall retail sector. This node is classified as a grocery, comparison, and restaurant node that is performing well.

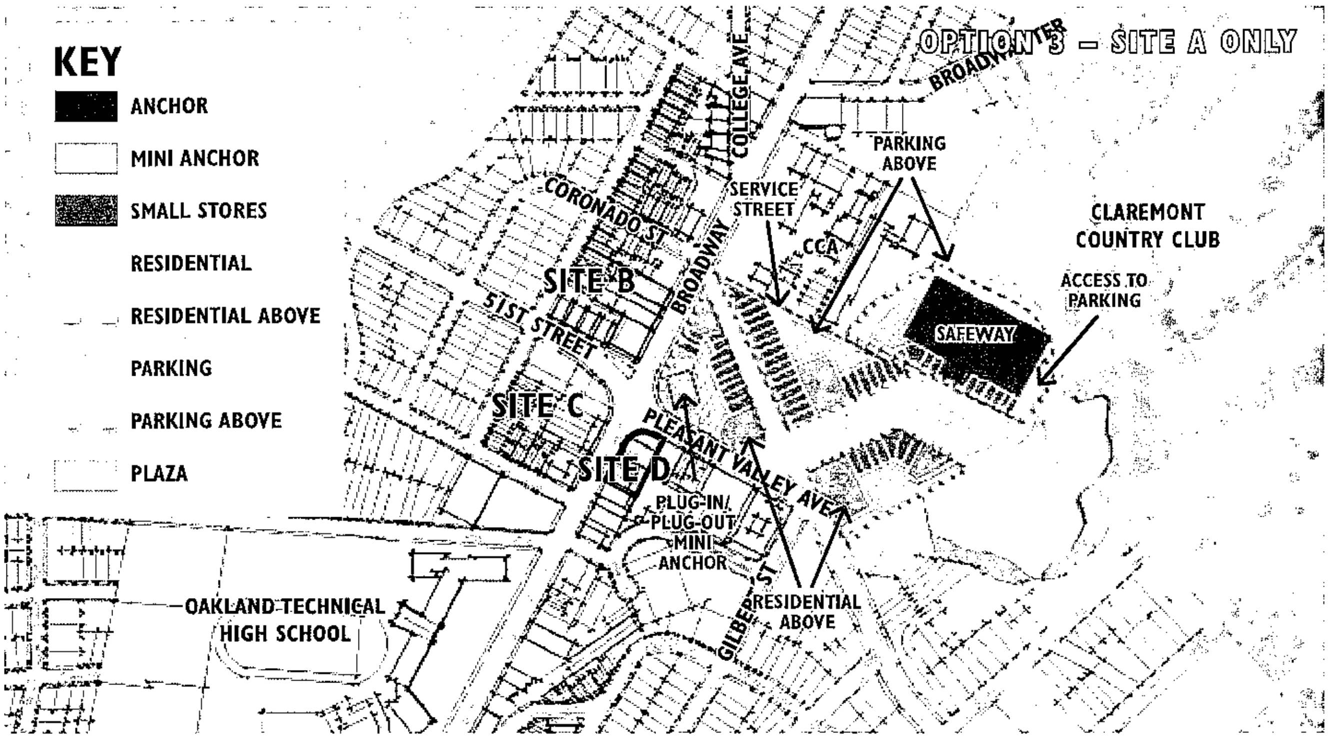
Node Demographics

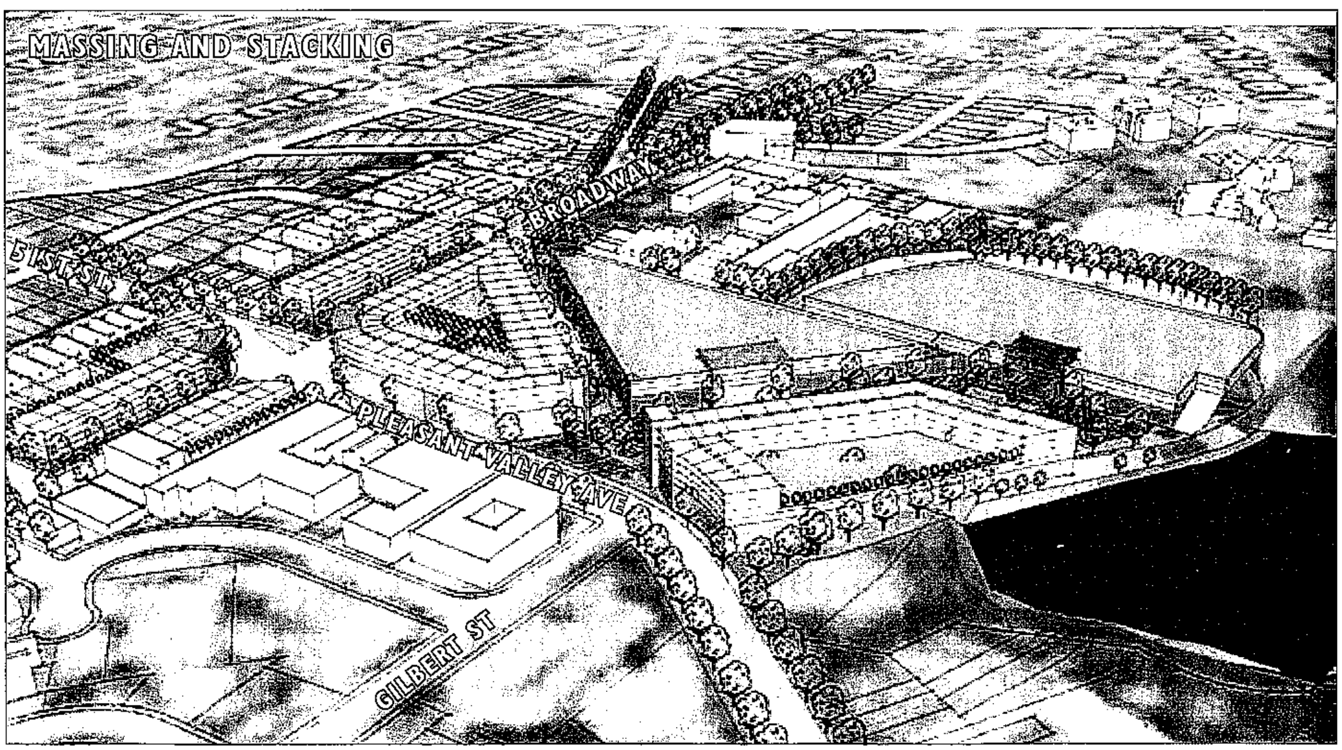
51st & Broadway 2006	1/2 Mile Radius	1 Mile Radius	3 Mile Radius	City of Oakland
Population	7,333	31,143	257,617	400,377
Households	3,916	15,611	115,072	149,082
Households Size	1.86	1.97	2.16	2.64
Per Capita Income	$43,711	$41,131	$32,839	$25,469
Number of Households with Children	594	2,967	25,408	49,976

Source: Conley Consulting Group, JRDV, Strategic Economics, Claritas, 2008.


OPTION 2 – SITE A ONLY
KEY
ANCHOR
MINI ANCHOR
SMALL STORES
RESIDENTIAL
RESIDENTIAL ABOVE
PARKING
PARKING ABOVE
PLAZA
BROADWAY TER
COLLEGE AVE
CORONADO ST
BROADWAY
CCA
CLAREMONT
COUNTRY CLUB
SITE B
51ST STREET
SITE C
SITE D
PLEASANT VALLEY AVE
GILBERT ST
OAKLAND TECHNICAL
HIGH SCHOOL


MASSING AND STACKING
COLLEGE AVE
BROADWAY
PLEASANT VALLEY AVE
51ST ST
GILBERT ST


OPTION 3 – SITE A ONLY
KEY
ANCHOR
MINI ANCHOR
SMALL STORES
RESIDENTIAL
RESIDENTIAL ABOVE
PARKING
PARKING ABOVE
PLAZA
BROADWAY
COLLEGE AVE
CORONADO ST
SERVICE STREET
PARKING ABOVE
CCA
CLAREMONT COUNTRY CLUB
ACCESS TO PARKING
SAFEWAY
SITE B
51ST STREET
BROADWAY
SITE C
SITE D
PLEASANT VALLEY AVE
PLUG-IN/ PLUG-OUT MINI ANCHOR
GILBERT ST
RESIDENTIAL ABOVE
OAKLAND TECHNICAL HIGH SCHOOL


MASSING AND STACKING
BROADWAY
51ST ST
PLEASANT VALLEY AVE
GILBERT ST

Concept with a residential emphasis –

Commercial

Safeway:	62,000 sf
Other Retail:	38,500 sf
Office:	21,500 sf
Total Commercial:	121,000 sf

Residential

Flex "Hoffices"*:	19
Apartments:	46
BR Flats:	54
Liner Flats:	32
Townhouses (2 story, & over flats):	70
Townhouses (3 story w/ garage):	70
Dorm Rooms	43-58
Total Units:	334-349

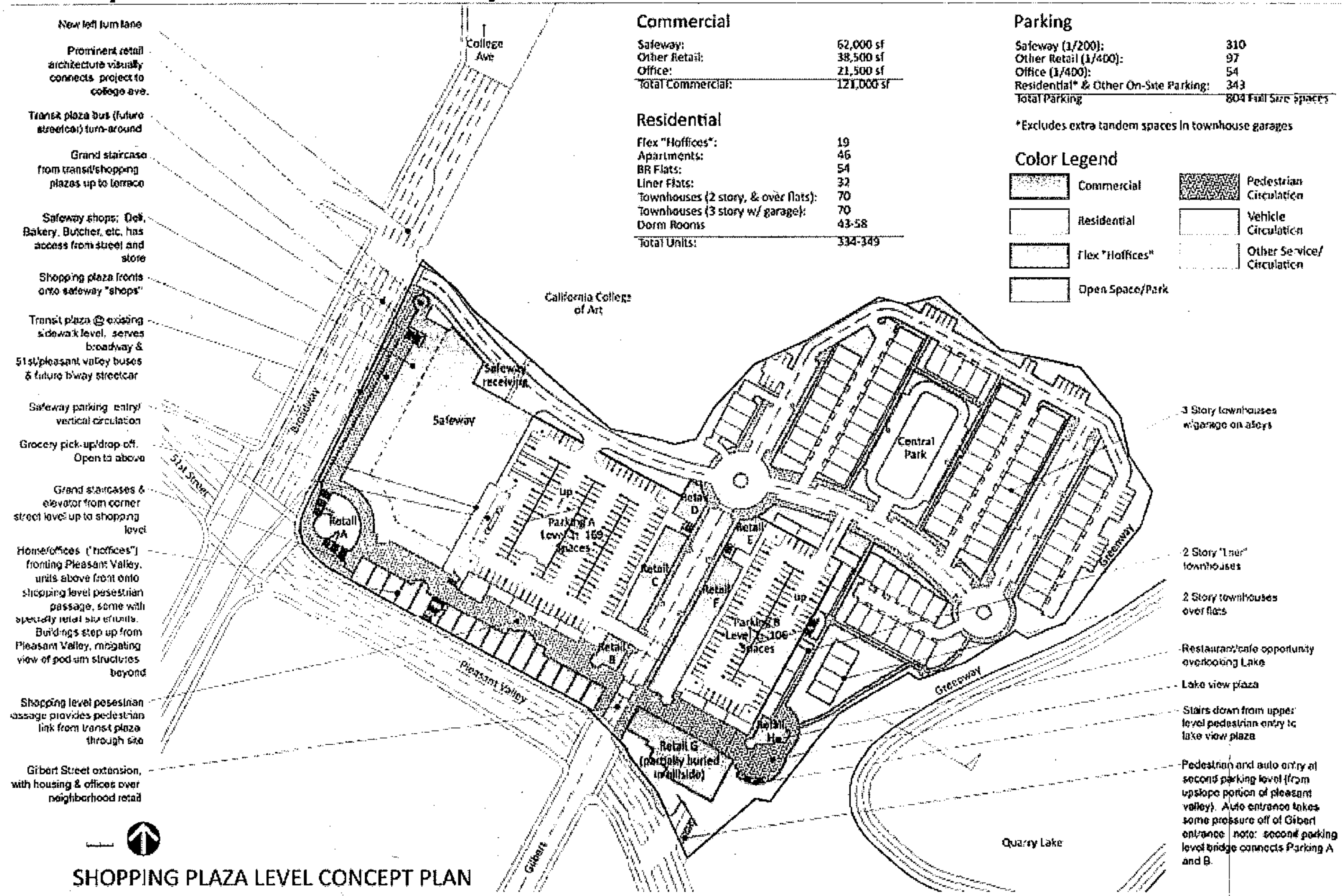
Parking

Safeway (1/200):	310
Other Retail (1/400):	97
Office (1/400):	54
Residential* & Other On-Site Parking:	343
Total Parking	804 Full Size Spaces

*Excludes extra tandem spaces in townhouse garages

Color Legend

Commercial
Residential
Flex "Hoffices"
Open Space/Park
Pedestrian Circulation
Vehicle Circulation
Other Service/ Circulation



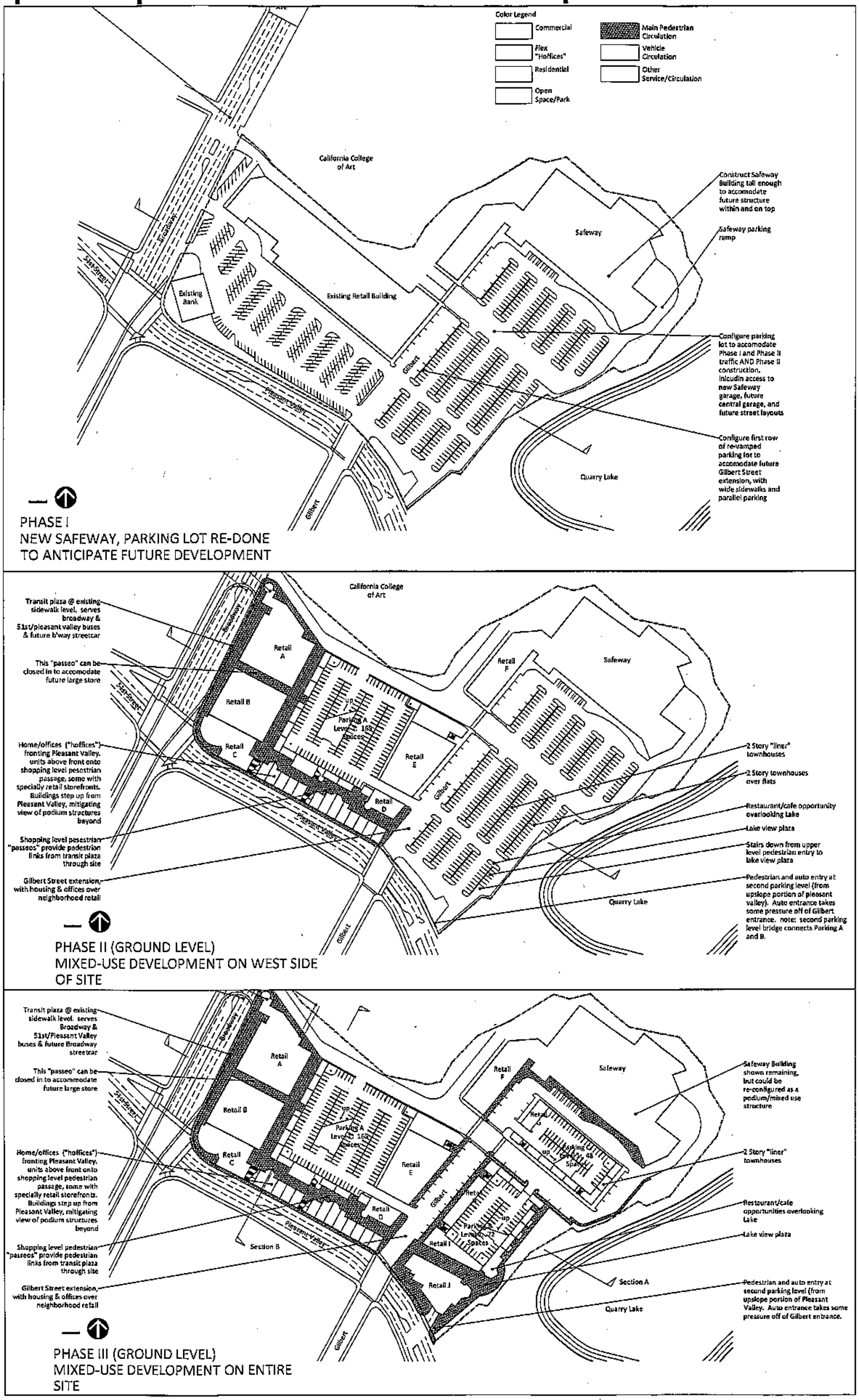
SHOPPING PLAZA LEVEL CONCEPT PLAN

ULTRA OAKLAND
www.ultraoakland.org

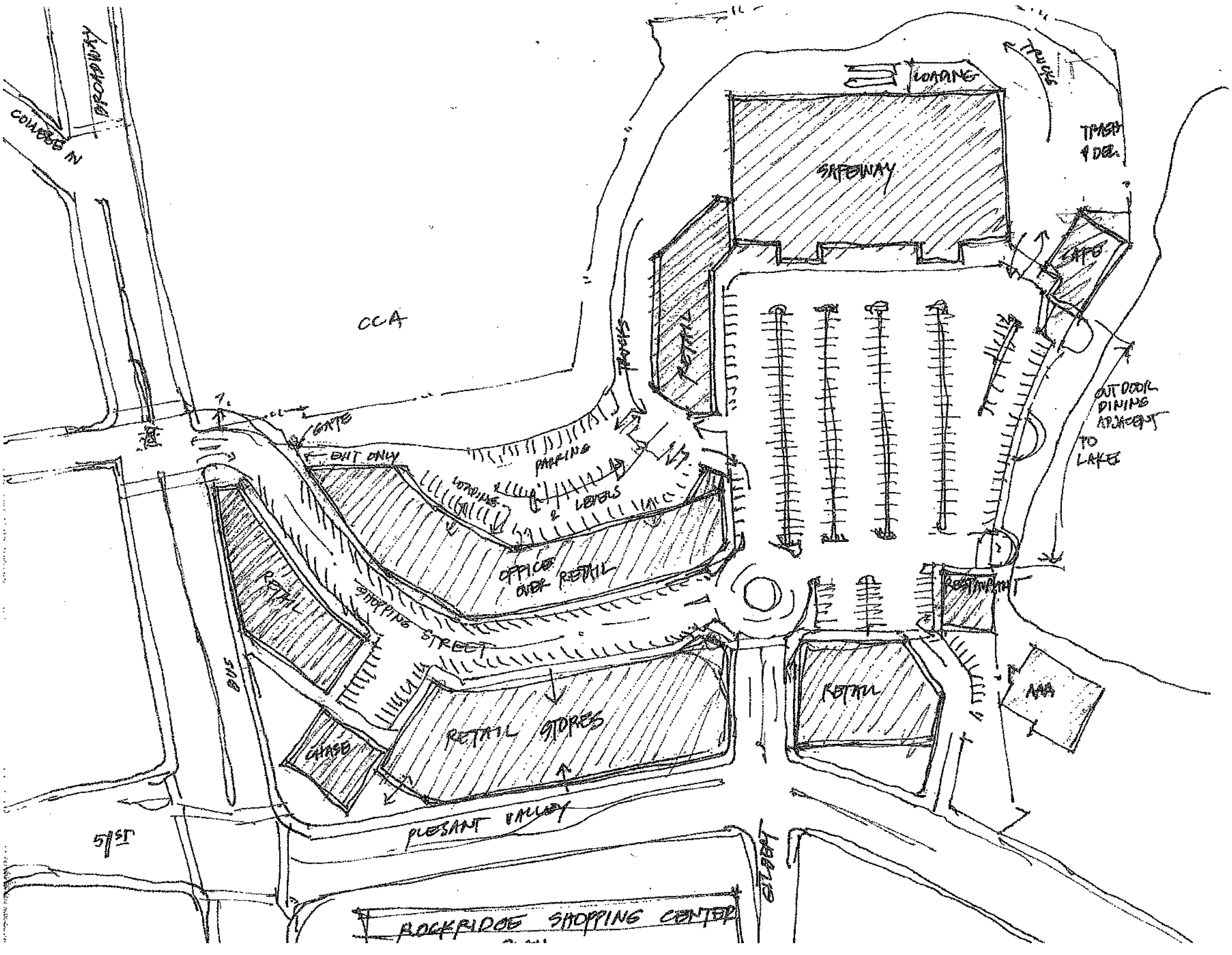
Rockridge Shopping Center
Proposed Alternative

MAYERS ARCHITECTURE
Oakland, CA
www.mayersarch.com

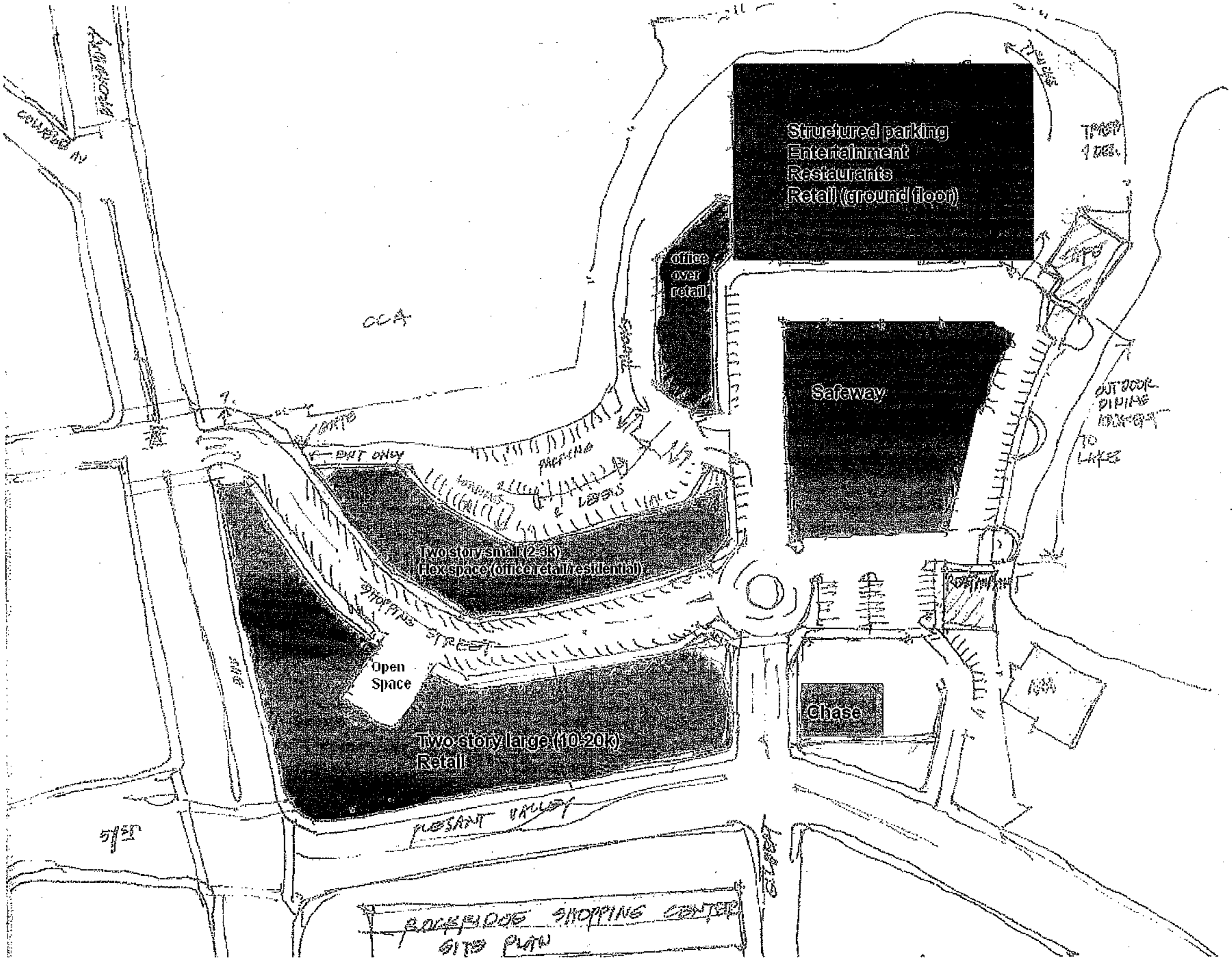
Concept with phased-in commercial emphasis –



Concept with commercial emphasis that keeps the bank in the same location –



Concept with a more intense commercial emphasis –



SIERRA CLUB
FOUNDED 1892

Northern Alameda County Group
(Alameda-Albany-Berkeley-Emeryville-Oakland-Piedmont-San Leandro)
2530 San Pablo Avenue, Suite I, Berkeley, CA 94702
510-848-0800 (voice) · 510-848-3383 (fax)

February 23, 2011

Dear Oakland Planning Commission:

The Rockridge Shopping Center at Broadway and Pleasant Valley presents a special opportunity to fill an underutilized, large site in a prime location with a new development that is more fitting for a city. We commend the Planning Commission for the support you have previously voiced, which has amplified the robust community support for:

(1) Dense, urban retail and housing at this location
(2) Prioritization of the pedestrian, cyclist, and transit user experience, including safe linkages with adjacent neighborhoods

We are concerned that the revised Safeway proposal is too similar to the initial proposal. The proposed suburban style development has a few urban window dressings, but overall it is unresponsive to the broad community support for high density mixed use development. We can't accept missing the opportunity to redevelop the pattern of land use on this 15+ acre site to one that is less auto-oriented and that will do much more to support neighborhood needs and help meet City goals. We'd like to see this site planned in tandem with empty or underused buildings/lots across the street, to transform the Broadway and Pleasant Valley node to a vibrant neighborhood center that supports both anchor and smaller businesses.

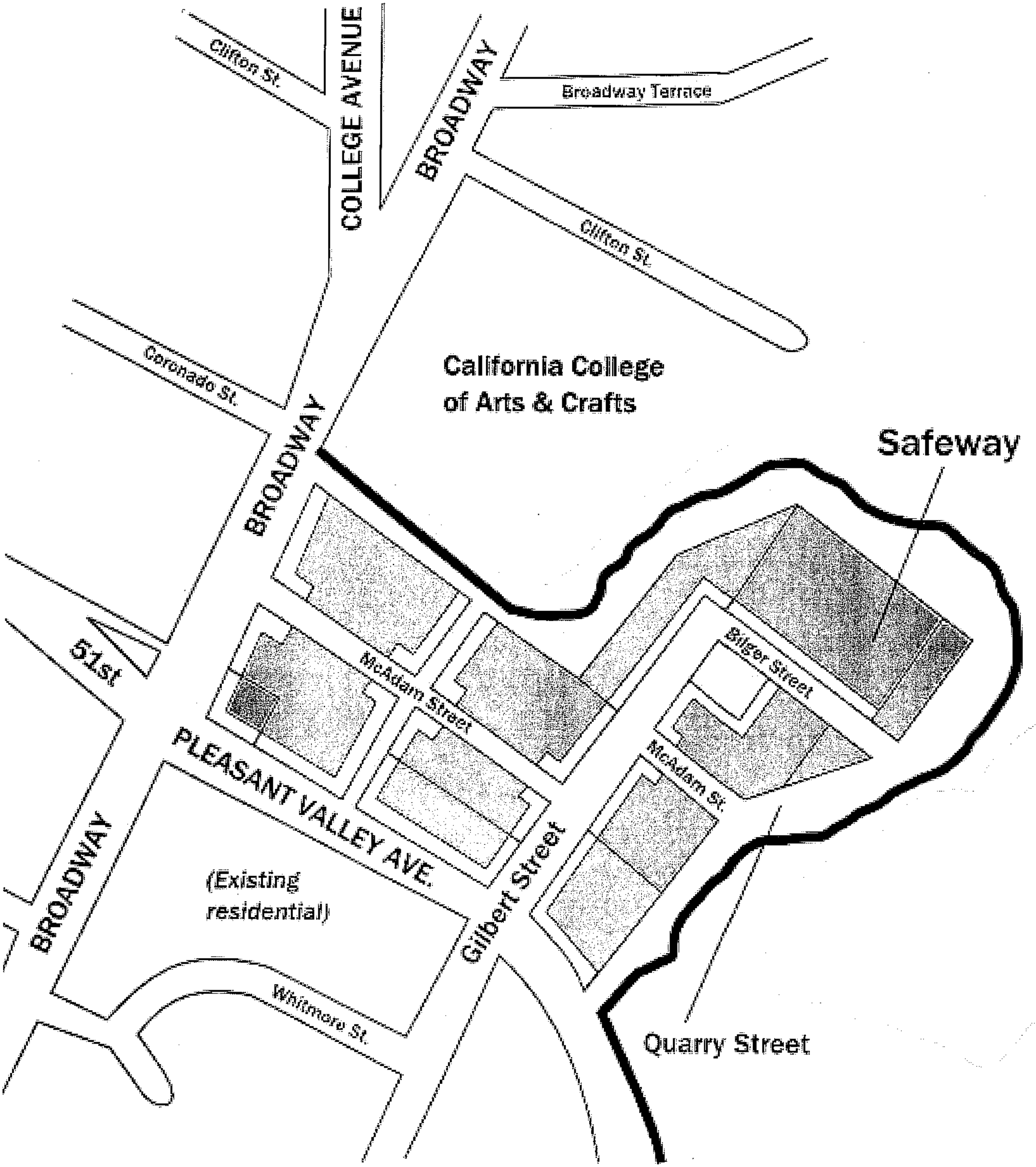
We further recommend the City of Oakland designate this area as a Priority Development Area (PDA) to establish it as a preferred location for "encouraging growth near transit and in the existing communities that surround transit by enhancing existing neighborhoods and providing good housing and transportation choices for all residents." This is a top priority action in the City's Climate and Energy Action Plan, recently adopted in draft form by the City Council in December 2010. PDAs are part of a regional sustainability initiative that also includes an explicit focus on promoting housing that will be affordable to low-income residents and attempts to minimize the displacement of existing residents.

The Sierra Club urges you to send the project applicants back to the drawing board to prepare a high density mixed use retail and residential development option for consideration. In particular, the Sierra Club supports a project which minimizes parking, prioritizes pedestrian, bicycle, and transit circulation, includes affordable housing, and is at the higher end of the allowable density/intensity range for this General Plan designated "Community Commercial" area. The Sierra Club also supports smart parking management and study of a shared residential and retail parking strategy. We encourage the City to not require the applicant to design for overprovision of parking for 95% of the year just to serve the peak parking demand on a couple of busy days. Such a level of parking supply will greatly suppress walk, bike, and transit trips to the new neighborhood retail center.

Please maintain your previous support and hold out until a project is submitted that respects both the community and the environment. Many neighborhood organizations and individuals have submitted illustrations more in keeping with the community vision for this site; the Sierra Club attaches one as an example for your consideration.

Sincerely,

Sarah Syed
Chair, Northern Alameda County Group
Sierra Club, SF Bay Chapter



Clifton St.
COLLEGE AVENUE
BROADWAY
Broadway Terrace
Clifton St.
Coronado St.
California College
of Arts & Crafts
Safeway
BROADWAY
51st
McAdam Street
Bilger Street
PLEASANT VALLEY AVE.
McAdam St.
Gilbert Street
BROADWAY
(Existing
residential)
Whitmore St.
Quarry Street

COMMENTS: I AM RESPONDING TO SAFEWAY'S "MAKE OVER" OF THE SHOPPING CENTER AT 51ST & BROADWAY. I AM CHOOSING NOT TO SEND MY COMMENTS TO THE PROPERTY DEVELOPMENT CENTER IN PLEASANTON. I ATTENDED THE "INFORMATIONAL" OPEN HOUSE ON THURSDAY, JUNE 25 2009. THE DESIGN OF THE PROPOSED SAFEWAY LOOKS VERY SLEEK AND MODERN. HOWEVER, I HAVE A REAL ISSUE WHEN SAFEWAY INDICATES THAT THIS NEW STORE WILL BE USING "GREEN CONSTRUCTION". IT WAS, I BELIEVE, 2001 WHEN SAFEWAY AT 51st COMPLETED IT'S CURRENT REMODEL. NOW WE ARE IN THE ERA OF DISPOSABLE SHOPPING CENTERS. I DON'T SEE ANYTHING "GREEN" ABOUT DEMOLISHING A, NOT YET, DECADE OLD, SERVICEBALE STORE. FURTHERMORE, I DON'T SEE ANYTHING "GREEN" ABOUT DISPLACING A TRULY ALIVE & GREEN GARDEN CENTER (CVS, LONGS) THAT HAS LONG BEEN A STAPLE OF THIS COMMUNITY. I SPEAK FROM THE VANTAGE POINT OF BEING AN OAKLAND NATIVE.

SO SAFEWAY, WATCH YOUR LOOSE USAGE OF THE LANGUAGE AND CHECK YOUR EXPANSIONIST PLANS!

NAME: MICHAEL ZABRISKIE ADDRESS: 5276 MILES AVE.
PHONE (510) 658-6215 EMAIL MICHAELPZ@SBC GLOBAL. NET

☐ CONTACT ME, I'D LIKE TO HELP.

(Please tear here and return your comments.)

Property Development Centers

Ranelletti, Darin

From: Camille Holser [cholser@berkeley.edu]
Sent: Friday, January 07, 2011 6:02 PM
To: Ranelletti, Darin
Cc: cholser@berkeley.edu
Subject: Re: Broadway Safeway - Design Review Committee Jan. 26

Dear Darin Ranelletti:
Thank you for notifying me about the public meeting concerning the Safeway Redevelopment Project at the Pleasant Valley Shopping Center.

I don't like to be out at night, so I don't plan to attend the meeting. But I'd like to tell you a concern I have. I hope the committee will consider this.

The CVS store has all the departments that PayLess, then RiteAid, then Long's had. This includes arts & crafts supplies, sports equipment, auto repair and hardware items, a wonderful nursery for plants and garden supplies, cloth & yarn & notions for sewing, household furnishings, clothing, electronics, office supplies, pharmacy, pet supplies, books & magazines, cards & gift wraps, toys, even groceries. Because I can buy just about anything there, I go to that CVS store first when I want something.

If that building is torn down, I'll probably buy almost everything on Amazon.com. Amazon is like that CVS store except that in the CVS store I can feel the rugs, towels, etc. I can't feel them on Amazon.com.

I don't have time to spend hours going from store to store and from one part of town to another trying to find what I want. The Rockridge Shopping Center and the Grocery Outlet store are about the only places I shop in Oakland. I also spend some money in Berkeley near the UC campus since I work on campus.

Mainly I want convenience in shopping. I don't want to have to travel much or spend much time shopping. Shopping by mail order, from catalogs, and shopping via the internet are convenient because I can do that shopping at home. The CVS store in the Rockridge Shopping Center is convenient because it has just about everything.

If the CVS building will be torn down, could you please make sure another building just as large is erected in the Rockridge Shopping Center first and that CVS, with all its departments, is moved into that building before the current CVS building is torn down? The new building should have good conditions for plants. I've bought nearly all of my plants from that PayLess/CVS store.

Thank you,

Respectfully,

Camille Holser
2820 Richmond Ave.
Oakland, CA 94611
cholser@berkeley.edu

At 03:31 PM 1/7/2011, you wrote:
>Dear Interested Parties:

>The Design Review Committee of the Oakland Planning Commission will
>hold a public meeting concerning the Safeway Redevelopment Project
>located at Broadway and Pleasant Valley Avenue. The meeting will be
>held on Wednesday, January 26, 2011, at 5:00 p.m. in the Sgt. Mark
>Dunakin Hearing Room (Hearing Room 1) of City Hall located at One Frank
>H. Ogawa Plaza. Please see the attached agenda for more information.
>
>Please contact me if you have any questions.
>
>Regards,

>
>Darin Ranelletti
>
>--
>Darin Ranelletti, Planner III
>City of Oakland, Planning and Zoning Division 250 Frank H. Ogawa Plaza,
>Suite 3315 Oakland, California 94612
>510-238-3663 direct phone
>510-238-6538 fax
>
>

Ranelletti, Darin

From:	John Gatewood [jgatewood@xyzgraphics.com]
Sent:	Wednesday, December 08, 2010 12:17 PM
To:	Ranelletti, Darin
Cc:	Ronnie Spitzer; Stuart Flashman; Dahn van Laarz; Valerie Winemiller; Jerome Buttrick; Glen Jarvis; John Chalik
Subject:	Joint Neighborhood Report Re: Safeway @ Pleasant Valley & Broadway
Attachments:	SafewayJointReport_Final.pdf

Hi Darin,
Attached is the joint report that we prepared for tonight's, now canceled, Design Review meeting. We would be happy to meet with you as a group or with the applicant as a group to discuss this further.
Sincerely,
John Gatewood
Co-Founder of ULTRA
Urbanists for a Livable Temescal Rockridge Area

Ranelletti, Darin

From: Becci Haskew [becci.haskew@msn.com]
Sent: Wednesday, July 08, 2009 2:04 PM
To: Ranelletti, Darin
Cc: Lon Haskew
Subject: CMD09-135;CP09-090;ER09-007

Darin:

Pursuant to our telephone conversation Monday, July 6, 2009, I am writing you to express our concerns regarding the Development of the Rockridge Shopping Center and the effect it will have on our property which is located on the bluff above the current Safeway store on 225 Upper Clifton Street, adjacent to the College of Art which is also located on the bluff above the store.

Systematically, for the past few years the Safeway store has been removing the eucalyptus trees from the cliffs that are directly behind the store on the basis that they are concerned that the trees will fall on their buildings. During this process of removing the trees, the company that they hired has caused the dirt to slide off of the steep wall that the trees were growing on into their back parking and delivery area.

This last year as a result of the trees being removed, enough dirt has sloughed off the cliffs to expose our irrigation lines and has caused our perimeter safety fence to fall over. We have warned them several times and yet they have continue to remove the trees without any effort to stabilize the cliffs and hill side. There are also concerns that the area was once a rock quarry. The reason the quarry closed, we understand was because they ran out of rock and hit clay soil, which if disturbed may give way, also resulting in the cliff becoming unstable and falling into the shopping center.

In addition to the immediately adjacent damage, it has caused several small cracks in our walkways to appear as the soil moves toward the cliffs. We are concerned that further erosion will occur if you allow them to continue to remove the trees and or disturb the steep cliffs by removing soil at the bottom of the cliffs for a parking structure or excavation for a new building or buildings.

You are welcome to view the situation from our buildings above the shopping center by calling me at (925) 253-1714.

We are also concerned with respect to the noise and dust that will occur during demolition and construction. We own and operate a 72 unit apartment complex that sets on top of the cliffs directly above the center. It would cause a significant inconvenience for all of our residents.

Please confirm that you have received this email and advise me as to what procedures we need to follow going forward to protect our property from sliding down the cliffs and becoming part of the shopping center.

Respectfully, Becci Haskew

Ranelletti, Darin

From: justin horner [justinhorner@sbcglobal.net]
Sent: Tuesday, July 14, 2009 2:06 PM
To: Ranelletti, Darin
Cc: Wald, Zachary; michaelcolbruno@clearchannel.com
Subject: Safeway EIR Scoping Comments

Darin:

Hope you're well. Please take the following as recommendations to the Planning Commission in their EIR Scoping Plan hearing tomorrow evening, as appropriate.

1) Transportation: The environmental review should include analysis of how the proposed urban design encourages or discourages certain modes of travel. Most generally, the auto-oriented, suburban form of the current and proposed shopping center a) prioritizes, and thereby encourages, travel by private automobile; b) creates an urban environment inhospitable to pedestrian and bike travel, thereby discouraging it; and c) appears to make no provision to improve transit access. I believe the proposed plan--with its plazas, clear pedestrian pathways, and instances of designed "choke-points" to slow traffic--is an effort to move in this direction. Nevertheless, by insisting on the same footprint with insufficient design effort, the fundamentals of the project will remain auto-oriented and suburban.

By keeping the storefronts far back from surrounding streets, and with vast, largely uncontrolled parking lots in between, a Safeway customer arriving at the property from the surrounding neighborhood has a tenth of a mile walk across the parking lot to get from the corner of Gilbert and Pleasant Valley to the front door of Safeway, and someone walking from Rockridge has almost an additional 1/4 mile to walk (each way) from the entrance near the CCAC. A driver, on the other hand, has ample parking available and a far shorter walk in all cases. This is not consistent with the surrounding urban fabric and has significant environmental implications. Safeway needs to do more with the design to make pedestrians and bikers feel safe, and to make walking more pleasant and likely. Connected, grid-like streets with street level retail and active public spaces encourage walking. Vast parking lots do not.

I would recommend a detailed analysis of the parking need for the project. Although the provision of parking is not an environmental impact in and of itself, the cost and availability of parking have major impacts on travel behavior, and thereby the environment. I do not happen to believe, as others do, that traffic impacts can be minimize by providing every possible visitor with a free parking space. I would rather see what can be done to minimize the parking footprint.

There also appears to be no effort to increase transit access to the site. Both AC Transit 12 and 51 buses run by the site. Staff and the project planners should be asked to explore design options that will a) make the bus stops at Gilbert and Pleasant Valley more pleasant and accessible, including detail to the crossing at Gilbert across Pleasant Valley; and b) accomodate northbound 51 bus travelers somewhere along Broadway between Pleasant Valley and College Ave. After being dropped on the southwest side of Broadway and Plesant Valley, a rider has an added 1/4 mile walk (each way) to Safeway's front door.

Staff and the project sponsor should be asked whether the new auto entrance along Pleasant Valley (between Gilbert and Broadway) is necessary. Although I suspect the idea is to keep cars on Pleasant Valley as long as possible to minimize travel within the parking lot, yet another driveway along Pleasant Valley promises to make an already poor pedestrian experience even worse. Additionally, the backup on Pleasant Valley for right turns onto Broadway could confound this intention anyway.

2) Housing: I strongly encourage the Planning Commission to recommend housing as a possibility for the site. Sites of this size are rare in North Oakland, and this is a fantastic opportunity for dense, mixed use development near transit, which as been demonstrated to reduce vehicle travel and emissions. It would be a pity to pass this up merely because Safeway "does not do housing." The city has a significant interest in

encouraging this type of development.

3) Reservoir: I'd encourage the project sponsor to preserve, at least, and perhaps enhance sightlines and visual, if not physical, access to the adjacent reservoir. This is a unique feature of the site. Design elements that could capitalize on it would be welcome.

4) Water Quality: Urban runoff is the #1 source of water pollution in the US. Related to the parking comment above, I would encourage analysis of the need for so much impervious paved parking, the materials used in paving, and the viability of Low Impact Development and stormwater recapture approaches to infrastructure.

5) Litter: The litter generation from the project should be examined and mitigations proposed. The City of Oakland already has determined that in certain cases, businesses are responsible for the litter they generate (thereby making them eligible to pay an excess litter fee). This large, retail project, which presumably will accomodate fast food businesses, should be held similarly accountable.

Thank you for your time and attention. Best of luck.

Sincerely,
Justin Horner
Shafter Ave.

Ranelletti, Darin

From: dan harvitt [danharvitt@yahoo.com]
Sent: Wednesday, July 15, 2009 7:34 AM
To: Ranelletti, Darin
Subject: Proposed re-development of the Safeway plaza at Broadway and Pleasant Valley

Dear Darin,
I am writing to express a couple of concerns and questions about this proposed expansion.

I bike from Grand Ave via Pleasant Valley to this plaza, and bike access both on the streets and entering this plaza is inadequate. Can provisions for bike lanes be made to increase the safety of biking to, around, and in this plaza be improved.

Currently, the parking lot is often at capacity. It seems that there are plans to greatly increase the amount and/or size of stores. How is this problem being addressed?

Thank you,
Dan Harvitt
Oakland

RECEIVED

JUN 1 5 2009

City of Oakland
Planning & Zoning Division

July 15, 2009
Case File #: CMD09-135; CP09-090; ER09-007
Safeway Redevelopment Project

Before I address the issues, I have a few questions:

1. Any changes in Zoning?
2. Any changes in the southern portion of Pleasant Valley Ave? I mean the portion south of main traffic entrance.
3. I noted Plans from the principal architects were using "51st & Broadway" .in the heading, but 51st street has nothing to do Rockbridge Shopping Center. Why 51st was used? Does it mean the street name is also to be changed?
4. Who pays the street modifications?
5. Who is to take care of the landscaping of the center divider in this section of Pleasant Valley Ave (north of Piedmont Ave)? At present, this section has the worst look in the neighborhood.

About the issues, I have some comments to make.

1. Transportation/Traffic
During demolishing and construction period, the traffic would be extra heavy during office hours, I think we should restrict construction trucks to operate on non-rush hours; say from 10:00 am to 4:00 pm., or before 8:00 or after 6:00, so that local residents will not be badly disturbed. The expanded shopping mall would certainly increase more traffic in the neighborhood; we like to see the study report before we make further comments.

2. Noises
Law provides people fundamental rights of having quiet and peaceful enjoyment of life. The original Rockridge Shopping Center has all these consideration in it as it can be seen in the zoning and development planning at that time. It has residential zoning to separate the commercial zoning and also commercial buildings are all on the back, the only exception was the previous Emil Villa. We think the zoning should be maintained and all shops should be in commercial zone.

3. Off-street Parking
The original zoning and development of land use provides residents in the neighborhood plenty of off-street parking. With present redevelopment plan, there is little doubt that the off-street parking would be taken away in the course of time. We don't think it is fair to the neighborhood residents to suffer just because the business people want to expand the business for making more money. How to compensate? One way is to make arrangement in the planning to make up the loss of off street parking by allocating 20-30 spaces in the new shopping center for neighborhood residents to park their cars. If off street parking remain unchanged along Pleasant Valley Ave, the above would be unnecessary.

4. Dusts
   Dusts from demolishing is unavoidable but the menace of dusts can be prevented by limiting operation to "calm" or "light" wind conditions, especially in demolishing operation; just like soot from wood burning BBQ. We had bad experience from Emil Villa in the past; wind caused a menace of it in the neighborhood buildings. Good planning is half work done.

5. Reservoir
   It is, as is; just a body of dead water but it is non-separable part of the shopping center. Dead water may have health problems apart from ugly views. If this shopping center is going to be redeveloped, this body of dead water should be "environmentally friendly", and should be an important part of environmental concern

6. Complaint Center
   During demolishing and construction period, surely, there will be a lot of problems concerning visitors, shoppers, and neighbors, as Safeway and other unaffected stores/banks still open, while work is in process. I think we need a place that can address problems.

Peter Hsi
1985 Pleasant Valley Ave, Oakland

Ranelletti, Darin

From: dlouislevy@gmail.com on behalf of Daniel Levy [levyd@carleton.edu]

Sent: Wednesday, July 15, 2009 4:10 PM

To: Ranelletti, Darin

Subject: Pleasant Valley Safeway

Dear Darin Ranelletti,

I am writing to encourage you to force the developer of the Pleasant Valley Safeway to adopt a more livable and pedestrian friendly plan than currently proposed. I want to support the ideas that Eric came up with on the TransbayBlog. See below:

http://transbayblog.com/2009/06/30/more-pleasant-on-pleasant-valley/

We have a chance to really improve the neighborhood, to make it a gathering place, and a place where people want to hang out. Let's do it! Let's not just build another suburban shopping center.

Daniel Levy
Oakland

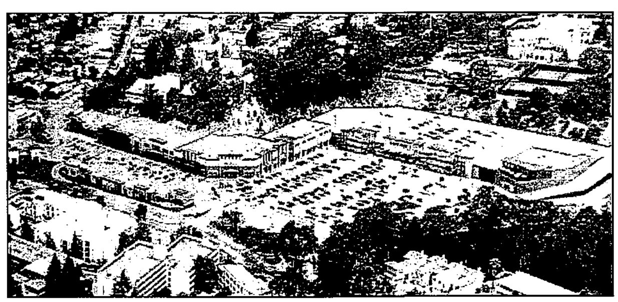
TRANSBAY BLOG

Transit and urban planning in the San Francisco Bay Area

More Pleasant on Pleasant Valley

with 45 comments

Most streets in North Oakland — lined as they are with trees, bungalows, and low-rise apartment buildings — have been built out on a comfortable and pleasant scale. But the shopping center located north and east of the intersection of Broadway and Pleasant Valley Avenue stands apart as, well, anything but pleasant. It is an uninspired 1960s autocentric strip mall, featuring a collection of low-slung buildings centered on a mighty surface parking lot. The shopping center has housed a large Longs Drugs; a smaller but still sizable Safeway; and a collection of smaller retail spaces. But some changes are afoot for this shopping center. The Longs will close, and Safeway will covet the larger space, even while it moves forward with plans to expand another of its stores at College and Claremont, just one mile north of this shopping center. Safeway's proposal for the Broadway & Pleasant Valley shopping center would relocate an expanded Safeway (65,000+ square feet) to the northeastern corner of the site, which currently houses an 87,220 square foot Longs. Here is a picture and diagram of Safeway's initial proposal for the site:



Aerial of Safeway proposal, courtesy of Eric Fischer (link to community mtg. photo set).

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Upcoming

- *Transbay Transit Center, Public Meeting:* Wednesday, July 15, 12:15-1:15 p.m. 201 Mission Street, Suite 2100, San Francisco.

Recent Comments

- Janet on Jerry Brown to Pleasanton: Housing and Climate Change Are Connected
- Berkeley Interested in Becoming Actual City on Downtown Berkeley's Growing Pains
- InBerkeley » High time Berkeley grew up? on Downtown Berkeley's Growing Pains
- Eric on Downtown Berkeley's Growing Pains
- Jon on Downtown Berkeley's Growing Pains

Land Use Planning & TOD

Cities around the Bay Area are updating their General Plans, rezoning to support increased density, and planning transit-oriented development at stations. This page attempts to keep track of it.

Click here for more.

Transit Projects

We take a long, hard look at the next generation of Bay Area transit expansion. This page includes facts, opinions, and links to previous posts on specific projects.

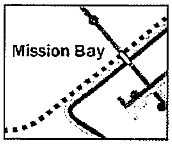
Click here for more.

Regional Transportation Plan

The RTP is a 25-year blueprint for transportation spending in the Bay Area. This page examines the plan at bird's eye view and includes links to more specific posts.

Click here for more.

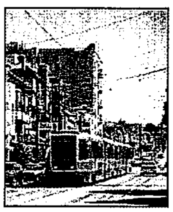
Fantasy Transit Maps



Many transit enthusiasts enjoy maps of fantasy transit, and this blog is no exception. This page summarizes our indulgence in that field.

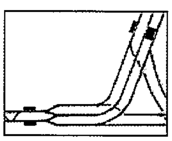
Click here for more.

Better Neighborhoods



This page discusses how we can use transit, planning, and urban design to create neighborhoods that are more livable and vibrant. Unlike the TOD section above (which discusses existing plans), this page is best categorized as a collection of visions -- efforts are not now underway, but could be. Click here for more.

Track Maps



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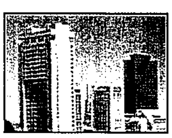

We firmly believe that cities are comprised of people first, buildings second; but special buildings deserve special remarks.

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Water Resources

Water planning may seem like an odd topic for a website about transit and land use, but water issues are raised in our pursuit of smart growth. Besides, this is critical to California's future. (Image courtesy of Delta Vision.)

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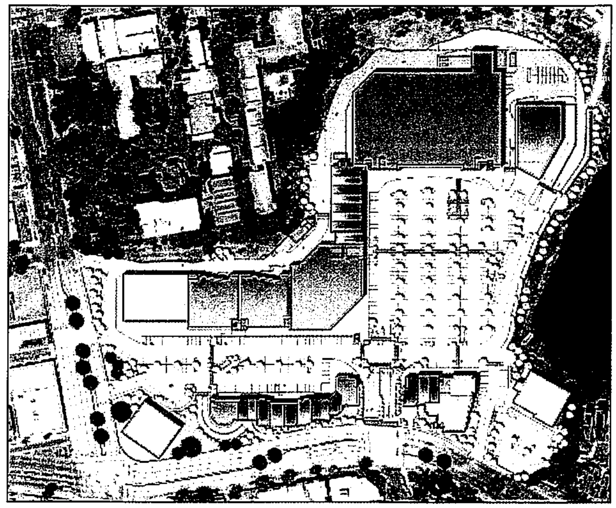
- Newsom to biotech: Come home to S.F.



Courtesy of Safeway. Click here for a packet of diagrams and drawings (external link).

The design is, unfortunately, flawed. It basically perpetuates the current design, by maintaining long, squat buildings that surround the surface parking lot. It does add office space, and it fills in the perimeter of the site. But buildings remain set back from the street, offset by landscaping, and the prominence of the central parking lot is maintained; moreover, additional parking is added to the roof of the Safeway. In other words, the design remains wholly suburban. Pedestrian access to the shopping center is currently pretty miserable — sidewalks at the entry and exit points break off for the convenience of automobile navigation, or are omitted altogether. Based on these sketches, the new design does not completely address that problem either, except for including a few colored crosswalks.

Safeway's proposal is a misstep in an urban setting. Indeed, a quick glance at a Google satellite image makes it clear that the current suburban layout is an anomaly in North Oakland. So why should it be carried forward any longer? This site presents a special opportunity to fill a vast hole with a development pattern that is more fitting for a city. We would encourage Safeway to take the time to think this through carefully, rather than rush into unimaginative proposals like the one above. Here is our (more ambitious) concept for this site.

The first step is to completely eliminate the surface parking lot, and instead use the land to extend the street grid. Currently, Gilbert Street runs through the apartment block located just to the south of the site and turns into a driveway to the parking lot after it crosses Pleasant Valley. Under this proposal, Gilbert would continue north for two blocks, toward what is now the Longs building — not as a driveway, but as a true street with sidewalks. There would also be a new east-west street that would run the length of the site, starting at Broadway and splitting the large site into small city blocks. As a nod to history, we named it McAdam Street, which was the name of the original street before Pleasant Valley Avenue was created to run from Broadway to Grand Avenue. Once the site is split into blocks, then we can apply the tried and true formula of ground-floor retail and several stories of upstairs housing, to fill in the new neighborhood:

15 July 2009
Four biotech startups are moving to Mission Bay as the University of California expands its QB3 incubator program into vacant space leased by FibroGen Inc.

- Front-runner for Oakland Army Base development hits a snag 15 July 2009
The city's efforts to choose a master developer for the Oakland Army Base before the summer recess hit a snag Tuesday when one council member requested more financial analysis...
- Heavy rail cars the likely choice by SMART board 15 July 2009
Sonoma and Marin rail planners on Tuesday were favoring an American-style, heavy rail car over the lighter European versions to run on the 71-mile Cloverdale-to-Larkspur line.
- BART union overwhelmingly rejects contract proposal 15 July 2009
Train operators and station agents in BART's second biggest union soundly rejected a management contract proposal Tuesday evening...
- Commission critiques Stanford's campus plan 15 July 2009
Stanford's plan to build 13 office buildings on a new 35-acre campus in Redwood City could catalyze an exciting revitalization of the surrounding industrial area...
- 49ers reveal details of 68,500-seat Santa Clara stadium plan 15 July 2009
The 49ers haven't decided whether the proposed new stadium in Santa Clara will have grass on the field, but they know for sure it will have plants on the roof.

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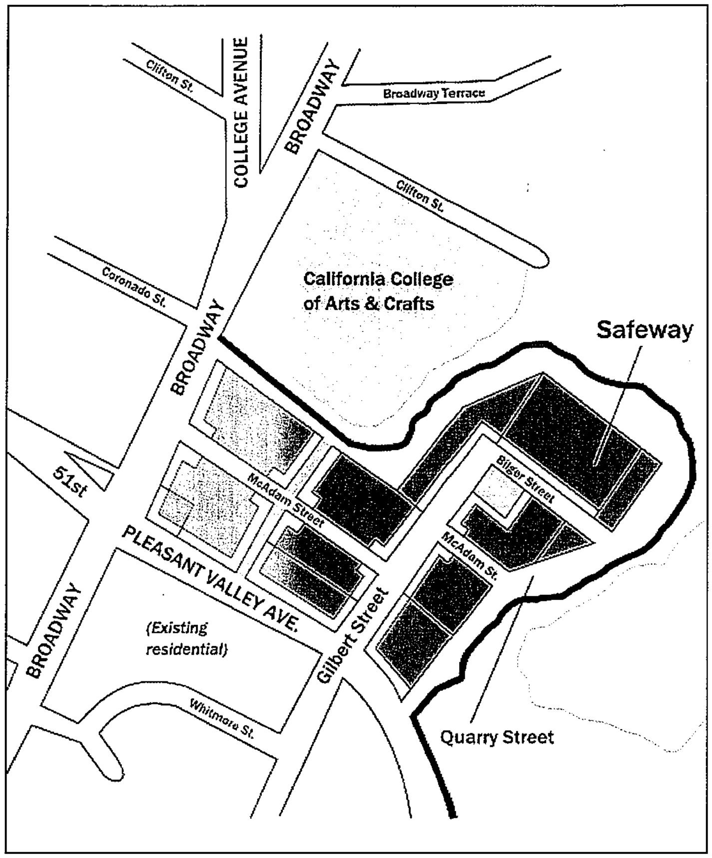

Our alternative concept for the Broadway & Pleasant Valley site. Green = two height classes.
Pink = pedestrian alley/plaza. Yellow = commercial storefront (does not represent a different height).

The above concept maintains one larger building, with an approximately 65,000 footprint, to accommodate the Safeway; here, too, we had in mind a ground-floor grocery and apartments above. An example, pictured at right, is the Whole Foods on 4th Street in San Francisco. That particular structure is bulkier than it needs to be, because the layers of parking were built above ground, between the store and the apartments; a better design would relocate (a reduced amount of) parking underground. But that is what the general feel of the Safeway would be; something that is a better fit for an urban environment. And in the case of the Broadway & Pleasant Valley shopping center, the northern back end of the site, at the bottom of the hill, is naturally dead space — so it seems like a good place to locate deliveries and parking entrances, in order to increase pedestrian safety on the interior streets.

The Broadway & Pleasant Valley intersection already has good access to transit; it is served by AC Transit lines 12, 51, 59/59A, and is less than one mile from Rockridge BART. The 7 bus line, which currently terminates at the BART station, could conceivably be extended south to serve the new development. These transit options should be emphasized at any new development on this site, with kiosks, maps, and clear signage installed in prominent locations that indicate the location of bus stops on Broadway, 51st Street, and Pleasant Valley, as well as the BART station. The adjacent bus stops should be upgraded to a more hospitable shelter design. Bicycle parking should also be placed throughout the site. The development would increase pedestrian and bicycle activity in the area, suggesting that some traffic calming at this wide intersection would also be in order.

The shopping center site was, until midway into the 20th century, the Blake & Bilger Co. quarry, which was then later replaced by this shopping center. So the land is sunken and is already set apart from the surrounding neighborhood. This development concept takes advantage of that distance and feeling of separation (as well as the natural barriers on the northern and eastern boundaries of the site) to include buildings that are somewhat taller than what currently populates the surrounding blocks, in the hope that North Oakland neighbors won't mind extra height that does not directly shadow their backyards. Retail storefronts would face not just onto Broadway and Pleasant Valley, but also the interior streets. A pedestrian plaza and alley, both lined with storefronts, have also been included to provide a gathering place neighbors and visitors. The new retail would create a new commercial district anchoring the southern edge of Rockridge, hopefully also increasing pedestrian traffic on Broadway and on the quieter south end of College Avenue.

Lastly, as for urban form: building heights would vary to increase visual interest, somewhere in the 45-85 feet range, extending and intensifying the character of the apartment block located just to the south of Pleasant Valley. The map shows one possibility: concentrating taller buildings toward the center of the site, with the addition of a taller building on the prominent northeast corner of Broadway and Pleasant Valley. Splitting the blocks into relatively fine parcels, and then building out a variety of design proposals, would also increase visual interest by giving the impression that the new blocks grew out organically. This will be especially important here because, as mentioned above, the site is already set off from the surrounding streets. The development must not resemble a gated or master-planned community. Instead, it should become a truly public place that draws people in, activating the surrounding streets and neighborhood.

Written by Eric

30 June 2009 at 8:53 am

Posted in East Bay, Oakland

« Jerry Brown to Pleasanton: Housing and Climate Change Are Connected
Bay-Delta: Shaking Things Up »

45 Responses

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1. Apologies: already noticed a bit of an anachronism... I've been calling it the College of Arts & Crafts for ages, and it clearly has not quite sunk in yet that they changed the name a few years back. Will correct that later.

   Eric

   30 June 2009 at 9:03 am

2. I still think of it as CCA&C, too. I remember when the ice cream place in Elmwood (blanking on the name) had a flavor called CCA&C that had ingredients for each initial.

   I like your alternative plan. It'd be more costly (non-surface parking costs more than surface parking to construct) which would make it a harder sell, but it'd make it *soooo* much more appealing than what's there now, as well as be a much better use of space.

   Gene

   30 June 2009 at 9:58 am

3. Thanks for this—I've been meaning to sit down and play with it and haven't had any time, but this is a great stab at an alternative scenario. The interface of retail with the street is particularly important (and particularly lacking in the current plan). While below-grade parking is costly, I would expect that much of this cost could be recouped through the additional development.

   On the transit front, it's worth mentioning that the currently proposed AC Transit service cuts will eliminate the 59/59A, and frequencies on the 7 will be reduced to every 30 minutes. (Notably, though, there is a new crosstown route proposed to replace some of this and other cut service that would run from Grand across Pleasant Valley/51st to MLK between downtown Oakland and downtown Berkeley; this would actually be a huge improvement as there's currently no crosstown service in that part of town, and would enhance access to the Safeway plaza. It would also, I expect, significantly increase the number of pedestrians accessing the plaza from Pleasant Valley/Gilbert versus from Broadway, which could be a game changer on the traffic front.)

   This plan is going before the Oakland Planning Commission on July 15th (6 pm, Hearing Room 1 at City Hall), so I'd STRONGLY encourage people to show up and voice concerns and alternatives there! (Sadly I'll be out of town then, or I'd be there myself.)

Oh, and given the huge number of things that still say CCAC (and given how much better that rolls off the tongue!) I think you're covered calling it that even with the new name. ;)

artemis

30 June 2009 at 10:46 am

4. Their plan is terrible! New built area would be great, but they're adding over 300 new parking spaces (50% increase) which will mean more emissions and more congestion. They are also apparently proposing to remove the sidewalk along most of the street frontage, in favor of an auto entrance to the parking garage. I find it doubtful they would even have the guts to do that, so maybe it's a drawing error, but they DO show a sidewalk along the street in the southeast portion of the site.

   John

   30 June 2009 at 10:55 am

5. Hi artemis, thanks for your comment, and for mentioning the AC Transit proposals (bus riders should scroll down to about halfway through this PDF to read about those). I refrained from mentioning those here, because my hope, anyway, is that some of these service reductions and eliminations will eventually be restored, since a plan like this would take awhile to get going in any case. The real point for the purposes of this post is not so much the exact lines and their numbers, but the fact that transit serves and will continue to serve the streets immediately adjacent to the site.

   Eric

   30 June 2009 at 11:09 am

6. Oh yes, please, Safeway folks, build this instead!

   And that's great to bring back the McAdam name, even if it doesn't quite match the alignment of the original McAdam.

   Eric Fischer

   30 June 2009 at 11:12 am

7. *And that's great to bring back the McAdam name, even if it doesn't quite match the alignment of the original McAdam.*
   Yeah, that actually bugged me a little bit too, but I suspect we haven't yet seen the end of "Pleasant Valley." ;-)

   Eric

   30 June 2009 at 11:36 am

8. Point taken. My note was mainly about the character of the lines that run there—the 59/59A and the 12 are what I tend to think of as "little lines"—serving a fairly limited area (albeit my area!) with relatively low ridership compared to the trunk lines (51, etc.). Both stop running around 7 pm, for instance, and have pretty limited weekend service as it is. A new cross-town line connecting to Downtown Berk and Oak would be another animal altogether, though, and would provide very different transit service along Pleasant Valley/51st from what exists today. Just food for thought!

   artemis

   30 June 2009 at 11:57 am

9. I saw the headline and was hoping you'd explore one of my pet peeves – the name Pleasant Valley. It's not that the street is rather unpleasant (though that's true), but the street is a wayfinding disaster. 51st becomes Pleasant Valley which becomes Grand which becomes W Grand, which is parallel to 51st but 30 blocks south. Enormous U-shaped streets are problematic enough, but does it really require four different names?

   Thanks for the mock-up of an urban infill-style development. Safeway claims they can't build residential because the lease is only 50 years, but that seems like enough time to me. Considering how desirable this area is, and the limited development potential of nearby College and Piedmont Avenues, this is a unique opportunity for North Oakland.

dto510

30 June 2009 at 11:59 am

10. Artemis:
A new cross-town line connecting to Downtown Berk and Oak would be another animal altogether...
Yes, it would, in fact it might be just the thing to recharge the 12, which ought to see more riders than it does.

dto510:
51st becomes Pleasant Valley which becomes Grand which becomes W Grand, which is parallel to 51st but 30 blocks south. Enormous U-shaped streets are problematic enough, but does it really require four different names?
This is actually one of my pet peeves too. I'd like to see "Pleasant Valley" scrapped altogether and just replaced with 51st, but there, we run into problems. The intersection of Piedmont Ave & Pleasant Valley isn't 5100 Piedmont Ave, so it throws the numbering scheme off. You could potentially change to "Grand" on the east side of Broadway, but then you'd have two intersections of Grand & Broadway, 30 blocks apart.

...this is a unique opportunity for North Oakland.
Well said. An opportunity, which, I'm afraid, Safeway's proposal rather squanders.

Eric

30 June 2009 at 12:11 pm

11. Interesting alternate design. My only concern is that this is clearly planned to be a "destination" Safeway (65k sqft is on the larger side for their stores). I doubt that having the Safeway at the back of the development with no frontage on either Pleasant Valley or Broadway would work for them – and having hundreds of cars turn into Gilbert just to go to the parking garage would negatively affect the pedestrian experience (and living experience) on that street, but perhaps I'm seeing it wrong or missed something – where would the garage entrance for the Safeway and other retail be? It would be great to not have to deal with garage entrances, but unfortunately that's not happening any time soon.

Chris

30 June 2009 at 12:28 pm

12. Chris: the hope was to use what I've labeled as "Quarry Street" (which actually extends around the perimeter of the site, from Broadway north of "McAdam" to Pleasant Valley east of Gilbert) for grocery deliveries and parking garage entrances — exactly to keep curb cuts and garage entrances off of pedestrian-heavy streets. Of course, in the real world you'd do some sort of circulation study to see how that works.

I doubt that having the Safeway at the back of the development with no frontage on either Pleasant Valley or Broadway would work for them.
Yeah, this was another thing I considered. I justified putting Safeway in the back because really large grocery stores are usually well-known by the neighborhood anyway, and it would be easier for Safeway to advertise itself prominently on entrances than it would be for small retail shops. Also, the line of sight down Gilbert from Pleasant Valley isn't really all that far (these are quite small blocks I drew in on here).

One concern was integrating pedestrians throughout the development. Having Safeway right upfront might encourage people to walk in, do their errand, then leave without exploring the smaller shops. Putting Safeway in the back, but still within sight, encourages pedestrians to walk through other parts of the district before getting to Safeway — hopefully lingering, making the area a bit more vibrant. In any case, there is room to play around with it. The takeaway is the general framework, more than the exact placement of this or that.

Eric

30 June 2009 at 12:41 pm

13. Great alternative Eric. The main concern I'd have would be the similar to Chris' – I doubt Safeway would want to loose the prominent store placement they have right on the corner of Pleasant Valley and Broadway. Perhaps if the Safeway were dropped on the primary, high-visibility corner and a taller residential building were placed at the

back they'd be more amenable to the idea.

carbonxt

30 June 2009 at 12:55 pm

14. carbonxt: The place where I put Safeway on this map is where they are planning to relocate per their own plans (i.e. where Longs is now). The big difference, of course, is that in their plan, nothing blocks your view of the Safeway from Pleasant Valley Ave. because they keep the big parking lot.

    As I mentioned in my previous comment to Chris, that doesn't seem like an insurmountable problem. I do think having Safeway at the back could carry greater benefits for the development as a whole — in addition to giving Safeway a building footprint that would better accommodate aisles in a 65-67K square foot store. But I agree that Safeway would most likely raise this issue, and there's room on this site to move things around a bit in response. Also, some kind of advertising for Safeway could be maintained on the more prominent street frontages, and they could take advantage of the line of sight down Gilbert.

    Still, a few takeaways here, as I see it, are to (i) build housing, since the site could support hundreds, or north of a thousand units; (ii) have more opportunities for small retail by building some interior streets and breaking up a huge site; and (iii) improve pedestrian safety and add dedicated pedestrian space to make it more public and vibrant. Within those parameters, there's a fair amount of rearranging you can do of what goes where.

    Eric

    30 June 2009 at 1:17 pm

15. The consultant team who did Oakland's retail revitalization study said that this site could host a large high-end mall. I don't think it got into their report since they didn't consider it a real possibility - Safeway's plans have been well-known in the Oakland real estate industry for several years. Also, according to OaklandNorth.net, Safeway claims that they cannot build housing on this site for legal reasons, which isn't true. I don't know how much leverage the city of Oakland has in this situation. It seems pretty harsh to demand a higher-intensity use of land during a recession, but car-oriented retail in Rockridge doesn't seem like a fit with the General Plan.

    dto510

    30 June 2009 at 2:33 pm

16. It does seem questionable. Besides countless mentions of transit-oriented and mixed-use, the LUTE marks 51st and Broadway as an activity center particularly suitable for "small open spaces such as public plazas or tot lots, and *housing* for seniors and others who appreciate easy access to shops, services, and transportation." And of course, the western edge of the site fronts onto Broadway, a corridor "envisioned as mixed-use *urban environment* with concentrations of commercial and civic uses" and housing in between. (emphasis mine)

    Safeway's proposal, meanwhile, includes no housing, has inadequate public space and pedestrian amenities, and it does not resemble an urban environment. It moreover treats Broadway like a driveway, rather than a major commercial pedestrian corridor (note that the plan retains the two existing buildings on the Broadway side, neither of which actually activate Broadway itself at all).

    Admittedly, the map I drew is fairly intense, in that it basically suggests Tenderloin-level density. At the same time, though, there are not many large sites like this in the urban core that offer this much potential.

    Eric

    30 June 2009 at 3:15 pm

17. I like your idea much better. A question though. One of the arguments made for strip malls is the convenience to park right in front of your store (or very close by at least). Regardless of how we feel about that argument it's something shopping center developers seem to care about. Could your plan address this by including a couple of below ground parking structures? Say, one near the Safeway and another near the pedestrian alley/McAdam intersection? Perhaps it could spread out the auto traffic as well as address a possible developer's argument against your superior plan?

Turin

30 June 2009 at 4:19 pm

18. Hi Turin, thanks. I included just a very brief comment on that in the post, that was easy to miss. This map does assume there would be some below-grade parking, as you mention. The idea was to use the alleyway that runs around the whole site, behind the buildings, for most parking garage entrances and delivery trucks. Many grocery stores in urban settings, like the pictured Whole Foods, put parking in a garage in the same building as the store.

    The garage can be integrated into the store, making it easy and safe for both drivers and pedestrians to enter the store. Shoppers with full shopping carts can roll their carts right from the grocery store and into the garage to their cars. Pedestrians, meanwhile, benefit from not having to navigate a large parking lot to get to the store.

    Eric

    30 June 2009 at 4:34 pm

19. Great post. I'd like to see the pedestrian plaza extended with some steps up to CCA (C) to create more of a college-town atmosphere. Also, bike and bus access to Piedmont Avenue must be improved, since currently the 59/59A service is pretty bad and Pleasant Valley is a bicyclist's nightmare.

    Daniel

    30 June 2009 at 8:26 pm

20. I don't see how anyone is going to be willing to build residential now in this environment - look at the big empty lot at the Uptown near the Fox. That said, I think anyway to more fully integrate the development into the neighborhood fabric and get away from a totally auto-centric plan is a good idea, but housing is going to be tough sell, and Oakland needs much more retail, here and downtown.

    Patrick

    30 June 2009 at 10:45 pm

21. [...] at Transbay Blog proposed this: Green = two height classes. Pink = pedestrian alley/plaza. Yellow = commercial storefront (does [...]

    What do we want for the Pleasant Valley Safeway project? « Living in the O

    1 July 2009 at 8:44 am

22. Obviously, Oakland planners aren't learning from El Cerrito Plaza's mistake earlier this decade...a disgusting, auto-oriented strip mall with no housing or integration into the San Pablo commercial strip across the street from a BART station.

    I think greatergreaterwashington.org has recent coverage of Safeway/Giant proposals in the District that replace 60's suburban-inspired stores with buildings that are not set back from the street with parking lots. Instead, they try to integrate housing and other retail into the schemes which aim for a seamless commercial/residential flow in the neighborhood. I also think there once was something similar slated for the big Market St. Safeway in SF, but after the recent remodel I doubt anything will happen.

    Mark

    1 July 2009 at 10:08 am

23. You'd think that Safeway would want to carve up some land for real estate... After all, one surface parking spot is worth something like 10,000-20,000 dollars.

    Daniel

    1 July 2009 at 10:22 am

24. First, thanks for an alternate vision-so much better.
    Second, Indeed the site has great potential to correct mistakes of the past. More housing should come on line as the sprawlburbs are being abandonned due to gas cost.

    Although AC is in death spiral (fares up, service down) we can only hope this will get turned around. As a part of their cuts they are proposing to split the 51 @ Rockridge-

the backdoor double fare increase for riders.
Doing this @ 51st could be more useful as the strip mall gets redone.

david vartanoff

1 July 2009 at 10:41 am

25. David, a quick note on the 51 changes—splitting the route is actually unrelated to the service cuts. That was the recommendation of a study to try to improve service on the 51 (which I think everyone can agree is appalling right now!) The idea is that splitting it will cut off the section that's causing a lot of the delays (College into Berkeley) and allow the Alameda/Broadway section to function more effectively....and theoretically it will then be easier for ACT to adjust service on the problematic sections to improve them. The unfortunate side effect of fixing the line may be a transfer for some riders, but it's not a fiscal strategy—the study was underway long before the current budget scenario played itself out.

    I would, however, *love* to see the split at 51st instead of at Rockridge BART—and then would love to see some sort of rapid line from there into downtown Oakland (since this is feasible on Broadway, but not on College). I'd actually support a second split of the corridor in that case: a bus from 51st and Broadway north to Berkeley Amtrak, a short rapid line (maybe even a center median streetcar, if money starts falling from the sky) from 51st and Broadway to Jack London Square, and a bus from Uptown into West Alameda, since presumably more service will be needed there anyway as that area develops and the Posey/Webster traffic gets worse.

    I think Rockridge BART was identified as the split in large part because there's space for buses to queue up there while they're waiting, so for ACT to be open to pushing it to 51st, the Safeway design would probably need to include a similar dedicated space.

    artemis

    1 July 2009 at 11:22 am

26. Some very nice aspects to your alternative site plan for the Pleasant Valley Safeway site. Although I would be surprised if the Safeway would be willing to build residential since they don't own the land. It might be possible for the city to work with Safeway and the land owner to make it more attractive, but there would almost certainly need to be incentives to both from the city for them to do so. I don't think that residential would really be critical in moving towards a denser development, retail and office should be enough.

    I do think that you totally gloss over the parking issues. Although the present parking lot seems excessive, it is full at times, and adding more retail area as in the Safeway plan would leave the parking lot undersized, and so I can see why Safeway would want more parking. Also, the underground and elevated parking that Safeway is proposing is expensive, and I really don't think they would be planning on it if their data didn't say it was needed. And if you add in the additional retail and residential in your plan, even more parking would be needed.

    Location of that parking is another factor. Underground parking is horribly expensive, and it is very unlikely that the developer would be able to recapture costs through the modest density in your proposal. Much denser, i.e. higher, development would be needed to recapture costs. I think that the recent developments in Walnut Creek, or even Emeryville, with an elevated parking garage surrounded and hidden by enclosing retail and/or residential, would be a more economically viable approach to reducing the amount of surface parking lot.

    Also, the apparent total absence of surface, e.g. street, parking is a problem. Many trips to the grocery store, and to other retail establishments, are only to peck up a couple of items. The parking garage is a disincentive to this, as more time is spent parking and walking to the store than actually inside the store. A limited amount of short term street parking, say 20 minute duration, would get around this problem. Short term parking for the quick errand, and the garage for the weekly shopping trip.

    Robert

    1 July 2009 at 11:26 am

27. This is great Eric. I think they should leave space for a subway station. But seriously, I've often wondered why groups never move their buildings to the edges and have the parking in the center. This front parking scheme is gross. Also, why not just excavate the whole space and have the whole area of the underground for parking.

Just one big podium. Then build a sweet village on top. There's going to be more than enough time for the market to rebound for housing. Considering this won't be for a few years I imagine. Gotta time it right.

The Overhead Wire

1 July 2009 at 11:34 am

28. *Robert:* I believe it's safe to assume there will still be parking available on surrounding streets, and maybe some short-term spots as well. Surely you didn't expect street parking to be labeled on the map? Anyway, re: other parking. It's "glossed over" because there's really little point at such an early stage of mentioning it beyond a general level. You needn't take the concept to be more than what it is — a concept. As I explained above, it's more about design principles than the literal design. You'd want to do a study with actual numbers before moving forward with anything.

    Underground is preferable from a design perspective, but if it doesn't pencil out, then above ground (like you see in the Whole Foods image) is better than using land specifically for parking and no other purpose, esp. surface parking. Some parking is needed, but we don't want to overbuild it either. The idea that grocery stores need to be surrounded by gargantuan parking lots to survive is outmoded and outdated.

    Eric

    1 July 2009 at 11:46 am

29. Or another thought, use the second story of each building for parking...then when less parking is needed later on, that area can be retrofitted into something else.

    The Overhead Wire

    1 July 2009 at 11:49 am

30. *David, Artemis:* Thanks for raising the 51 split issue. In some instances, splitting lines can be a good thing, but it needs to be done in a way that minimizes inconvenience to riders. If too many riders have to transfer at 51st to ride another route up College Avenue, trip times are longer, total fare is higher for those who don't buy a pass, and we'll lose choice riders.

    I'm actually not convinced 51st Street is the best place to split. I don't think the ACT study contemplated that intersection, but about 2500 riders per day would be forced to transfer if the line was split at Rockridge BART, about 2/3-mile away. Just anecdotally, based on my trips on that line, 51st Street isn't a big "shuffle point." Most riders stay put, and actually, Rockridge BART isn't even as big of a shuffle point as one might think it would be.

    Anyway, a 51R would be a natural service to add, since the 51 local is already quite popular. Having a mixed-use activity center at Pleasant Valley would for sure generate more transit trips starting at 51st. But given that 51st isn't a big shuffle point now, you have to wonder if we wouldn't attract more riders on a 51R by just running a longer rapid route. College Ave. is too narrow for the service to be literally "rapid," but you'd at least save the dwell time, and then you'd have room for dedicated lanes on Broadway. People getting on at 51st and going toward downtown would have a truly rapid route, but then you'd also open up incrementally improved service to Rockridge and Berkeley.

    Eric

    1 July 2009 at 11:58 am

31. Oh, and I forgot to mention, re: Robert's comment. It's an important observation that the City would need to get more involved here. We shouldn't really expect Safeway to do great urban planning of its own accord. Safeway's primary goal here is to expand and upgrade its store, and so it makes sense that they would pursue a design that does just that, and little else. But there should be a discussion about how Safeway's goals can be fit into a long-term vision of how to improve this location, rather than just building Safeway's initial proposal and calling it a day. The City would ideally step in with a vision, and then take steps to partner with Safeway so that the part of the plan that concerns Safeway can be implemented, as one step in the process.

    Eric

    1 July 2009 at 12:28 pm

32. The transfer issue is a very real one—but as one of the riders who would have to transfer, I would readily do it if it shaved significant time off my commute. (In fact, right now I often take the 1R to downtown Berkeley and pick up the 51 there; at peak hours, it can cut my door-to-door travel time by as much as half an hour on my seven-mile trip, so I happily pay the extra quarter.) I guess my thought was that Lower Rockridge and Temescal riders would be willing to walk to 51st to pick up a truly rapid line, but that might be a little idealistic. It would be interesting to see how the numbers affected compare between 51st and R'ridge BART, though—I've only seen MacArthur for comparison.

    A 51R could be a good alternative, though. My big concern there is just that, anecdotally, it seems that much of the 51's delay along College and Bancroft comes not from dwell time but from traffic congestion and (near UC) pedestrian congestion. I'd worry about the buses themselves getting caught up there and then bunching by the time they're back in the rapid corridor, where they'd move rapidly but in posses (which is already a huge 51 problem). On Broadway, in contrast, the delay is basically all from dwell time or hitting lights at a bad point, so it seems like there's a lot more potential to fix that with infrastructure (BRT or otherwise).

    artemis

    1 July 2009 at 12:40 pm

33. Eric, regarding the parking, I was just going off your phrase that a reduced amount of parking would be available underground. No I would not expect street parking to be diagramed in at this point. But I do think that the amount of parking vs. amount of commercial/residential is something that needs attention early in the concept phase.

    The city does need to step in with a vision if this site is to be anything special. Currently both Plesant Valley/51st and Broadway are extremely pedestrian unfriendly. I think it is unreasonable to ask Safeway to plan a little pedestrian enclave without a plan and timeline for how and when their development would integrate into the overall environment. I am hard pressed to see Oakland ever providing this vision.

    Robert

    1 July 2009 at 12:54 pm

34. @TOW "I've often wondered why groups never move their buildings to the edges and have the parking in the center."

    Be careful what you wish for! God forbid we end up with another 9th and Bryant/Brannan Shopping center showing nothing but its butt to the sidewalk.

    Josh

    1 July 2009 at 1:44 pm

35. *Artemis:* There is the possibility that a transfer would eat up whatever time savings you get from dedicated lanes, particularly when switching from a reliable BRT route to a route on College Avenue that is subject to the whims of traffic. And then there's the issue that many or most riders don't really like to transfer. In any case, our discussion is basically just laying some groundwork for the type of alternatives that a well-done Broadway BRT study should look at it. It's important to get a sense of how riders are using the line, and to craft service improvements accordingly.

    Robert: You're right, it should be planned carefully, and my apologies if I sounded a bit flippant in my earlier comment. Completely eliminating parking won't happen, but at the same time, if you create a high quality destination with less parking than is "needed," people will still want to visit — but those who can use transit will find that to be the better option. Encouraging patrons to find alternatives is also a component of ensuring good circulation. You can't really build something of high urban density and then have everyone drive to it.

    By "reduced amount," I really just meant reduced as compared to the current amount, which is an overabundance. I stated underground as a preference because the Whole Foods (and similar structures with garages embedded in between the ground floor retail and the upstairs apartments) do tend to look a bit bulky, and not as nice as buildings where the parking is hidden. Financial realities determine the final product, but to the extent that some parking can be moved underground, the option should be investigated.

    Eric

1 July 2009 at 2:06 pm

36. At a local meeting a few years ago, I suggested alternative treatments for different parts of the site. The area towards Broadway would be developed like you suggest Eric, but the back area could remain "big box". This part of Oakland doesn't need a "mall", however fancy. We have Rockridge, Temescal, Lakeshore, Piedmont Ave. and Broadway is clearly the next destination street. However, it is better to keep some big box stores in the city, than simply see them leave and create even more traffic. This is a big concern of many locals. Clearly the Chase bank building has to go if anything is to be done with this site.

    Mike Jones

    1 July 2009 at 3:09 pm

37. Hi, Mike: I am sympathetic to a desire to keep tax revenue within Oakland, goodness knows too much has leaked out already. And I agree, it's necessary to have useful stores near where people live. Big box retail serves its purposes, and actually, I didn't have an upscale mall in mind for this site. The post is silent as to what type of stores would go into these buildings, but as I imagined it, at least some shops would be neighborhood-serving retail, cafes, casual eateries, etc. rather than destination retail.

    In any case, it's not so much the identity of the stores that I was after, but rather, what the built environment looks like. Adapting big box stores to an urban setting is no longer a new thing. See, for example, the Target stores in Chicago or Minneapolis. It's possible to have both big box and a walkable environment.

    Eric

    1 July 2009 at 3:36 pm

38. I drove up Broadway on my way home today, and had a thought afterwards. There is currently nothing between 580 and Pleasant Valley now, and Auto Row redevelopment is still but a dream, but the College Ave scene is only a few blocks away. It seems much more realistic to focus on College as a location to tie the Safeway site in with. Development of Broadway above 580 is 20 to 30 years away, by which time the Pleasant Valley Safeway will be ready for its next incarnation. So maybe the focus should be on facilitating connection to College Ave. And if that is the city's goal, it might be better to have more parking rather than less.

    Why you ask? The BART end of lower College currently has lots of parking evenings and weekends at the BART station. This currently doesn't exist at the B'way end. More convenient parking might indeed allow better utilization of lower College. This would allow College to expand down to Broadway organically, and eventually up and down Broadway, much sooner than waiting for development to spread from Uptown to Safeway. This provides a second focus for commercial and residential development, which will always be faster than spreading from a single focus. While this doesn't force folks onto transit immediately, it does provide a path for higher density development that will allow the natural evolution to non-auto oriented means of transit. By the time that Safeway is ready to remodel again, natural evolution of transportation will have decreased the need for parking. In the meantime, building elevated paring on the Safeway site will allow that to be repurposed gradually as parking needs decline.

    Robert

    1 July 2009 at 9:01 pm

39. Robert: I appreciate that you're thinking carefully about the best way to treat this part of town — but, to be honest, it kind of sounds like you're just rationalizing Safeway's proposal. The Pleasant Valley shopping center has been there for decades. During those decades, there has been a *ton* of parking near the intersection of Broadway & College — in the form of the existing parking lot. And yet, no development from College has expanded organically to Broadway during that time period. Broadway has remained essentially an expressway: cars speed through, but few pedestrians linger. Why would adding rooftop parking for the new Safeway suddenly attract development, when an already enormous parking lot failed to do so for decades? Safeway's plan itself would only add a modest amount of development to the site.

    Also, the lower end of College is already quieter than the area near the BART station. There aren't as many popular commercial establishments packed in a row on the south stretch. It seems unlikely that the somewhat dispersed businesses on lower College would suddenly give rise to development on Broadway, when that hasn't happened so far.

The point is: more parking doesn't suddenly create a destination if there isn't already one there. You need to give people a reason to visit a place.

The need for parking declines in part because we shape development that lends itself to carfree living. Change doesn't occur in a vacuum — it occurs because we support and implement policies that effectively guide behavior in a certain direction.

I'm not sure we need to think of this as development "spreading" from Uptown or from College. What we're doing is concentrating on important nodes along Broadway, and improving those individually. The Upper Broadway Specific Plan would address Broadway through 27th. There's the area around Pill Hill, and MacArthur/Kaiser. There's already a little node at 40th that could be expanded and reinvigorated. And now we're talking about 51st. Once we've really done a solid job on reinvigorating those hotspots, then, it's easier to connect the dots, so to speak — to fill in the gaps to make the entire length of Broadway the really great street that Oakland deserves and has been missing.

Lastly, I would just point out that planning itself takes a long time. It can take years to produce a finished plan (if it covers a large area), and then it takes even longer to implement, depending on economic cycles. If Broadway is really 20-30 yrs away from being developed, then serious corridor planning should begin now — not in 20 to 30 years.

Eric

1 July 2009 at 9:36 pm

40. Thank you for envisioning an alternative to Safeway's plan! I think generally it's quite good, but two things concern me: one, there's quite a bit of driving going on. I would be interested in seeing if the eastern stretch of McAdam is necessary (in terms of car traffic). Basically, I'm seeing a lot of potential pinch points at intersections, and a lot of car movement through the space in general, and I'm wondering if that could be simplified (I really hate all the aimless driving through the complex if I am in the unfortunate position of going to the Emeryville Apple store).

    The other thing is that the wetland/pond is a nice view from a plaza, so I would want to take advantage of that. Instead of just having the one plaza smack in the middle of cars and shoppers (which can still be an enjoyably busy place to be), I would add another, possibly somewhat narrow stretch along the east side of the property that would connect to CCA and include bike paths.

    Overall it is a much more appropriate design that Safeway's. I could see a bit more open space- as much as I dislike the creepy plastic vibe at San Jose's Santana Row, their middle strip of pocket parks with benches and fountains is really well used.

    gem s.

    2 July 2009 at 6:41 pm

41. gem: Don't forget about the street around the whole perimeter of the site, behind the buildings. That street (which would mostly be out of view for pedestrians in the interior) would, at least in theory, host many of the parking entrances, so that's a more natural access point for drivers. I envisioned the interior streets being narrow with cars driving slowly. Design cues would make it clear to drivers that this is firmly a pedestrian area, and that they should tailor their driving accordingly. And, I know this will sound like blasphemy, but a few cars aren't really a bad thing; it will make it seem more like an authentic city street, rather than a mall.

    Adding open space on the eastern end makes sense, and it's not precluded here. In fact, Safeway's drawing also included something to that effect. I was most interested in the interior of the site, because that's where Safeway's proposal was really inadequate. Note that you could enlarge the pedestrian plaza I included, or potentially even close "Bilger Street" or the last chunk of "McAdam Street" off to cars altogether, as well. And the pedestrian alley storefronts could have outdoor seating, making a bit more open space.

    Eric

    2 July 2009 at 10:56 pm

42. Eric, Artemis, and all, indeed, the 51 split IS in the service restructuring(CUTS)plan. And for the many riders who use it this will be a DOUBLE fare increase. I agree that transferring costs time-many transit studies show riders prefer a single slow ride over two faster rides w/ a wait between.

As to actual ridership, a 51R overlay could be useful. Looping it through the center and then running it west to pick up the previous 12 route, but all on 51st not 55th could be useful to link the revived Temescal and ever metastasizing Children's Hospital.
The design of the rebuild needs to be pedestrian/transit friendly enough to stop some of the customers driving. (I am reminded of a deceased former neighbor who used to drive two blocks to buy cigarettes.) Insisting that the perimeter buildings have show windows and entry doors at the widened sidewalks is critical.

david vartanoff

6 July 2009 at 10:22 am

43. I read all the comments and agree with most; although I have concerns about adding residential to the plan. The city of Oakland has been overbuilding condos in the recent past and they are not being filled; i.e. the large development @ Broadway & Grand, Pleasant Valley & Piedmont Ave and buildings around the Jack London area. I am concerned about retail in Oakland. There just isn't any to speak of...its fine if you are looking for small restaurants, coffee, boutiques and the like; but there isn't any place to buy soft goods. My tax dollars are spent in the suburbs of Walnut Creek, Pleasanton, and Concord where I can purchase clothing, furniture, etc...Oakland just doesn't have that available. Most women I've spoken to prefer one-stop shopping with accessible FREE parking. Currently if we chose to go to Sears we must park blocks away at a meter and pay now $2 per hour and that's not enough time for serious shopping, and then to walk with packages to a car parked blocks away. Talking of buses is fine, but not for shopping...carrying groceries on a bus is not easy; especially for a family. I think the reality of it is that Safeway will build a large store on that site like it or not, and we will enjoy shopping at it...getting to that point will be a long and tedious process. The neighborhood doesn't need another coffee shop, phone store, cleaners, bike shop, bakery...we need serious family retail available.

   Carol Neveu

   6 July 2009 at 7:09 pm

44. what was on the site before the shopping center? a large parcel like that clearly housed something before. was it ccac land?

   that longs formerly payless was at one time (80s/early 90s) oakland/berkeley/emeryville/piedmont's only "big box" store (and its a real stretch to call a drug store big box)... back in the days before emeryville and the shopping centers along 880 between downtown and the airport. big box retailers were definitely late to arrive to the east bay.

   i think safeway is one of the few supermarket companies that is willing to think outside the suburban box, though they only seem to on really urban sites. but the broadway/college safeway site was promising.

   re: 59/59A bus service, not that it was even remotely a major transit destination or had the ridership but montclair bus service has been drastically scaled back. look at the bus service there 10 years ago and look at what it will be when the service cuts are enacted.

   Jon

   10 July 2009 at 12:21 am

45. Jon: the site used to be a quarry. In the post, I linked to an old quarry picture, and a couple of the made-up street names in the map are chosen to reflect that history.

   Eric

   10 July 2009 at 12:33 am

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JUN 15 2009

City of Oakland
Planning & Zoning Division

July 15, 2009
Statement for Oakland Planning Commission EIR Scoping Session
Safeway Redevelopment Project at 5050-5100 Broadway

Hello Chairman Colbruno and members of the Planning Commission.
My name is Susan Shawl and I am here representing a coalition of neighborhood groups that were selected by Safeway as stakeholders for the proposed expansion of their College Ave store.

We have continued to be involved concerning Safeway's plans for our community and are using the name **FANs'** for **Friends and Neighbors** of College Ave Safeway.
Our coalition includes:
RCPC, Rockridge Community Planning Council
CENA, Claremont Elmwood Neighborhood Association
RDA, Rockridge District Association
Contiguous Neighbors
Contiguous Merchants
Concerned Neighbors
Local Architects and Planners Guidelines Group

FAN's Board of Directors is made up of representatives of the coalition members. Time constraints did not allow RCPC and RDA to endorse FAN's position, however, the FANs' Board of Directors has unanimously approved it.

As part of its scoping process, it is important that the City not evaluate the Safeway expansion at Broadway/Pleasant Valley in isolation of Safeway's other expansion plans, particularly on College Avenue, and significant development proposals by others in the area, but that the City evaluate the project and all other reasonably foreseeable projects with **potentially significant cumulative effects**. These effects include, but are not limited to:

Air quality: The EIR must evaluate all air emissions, including diesel emissions from truck traffic and backup generators, for the proposed expansion projects at Broadway/ Pleasant Valley and College Avenue and other reasonably foreseeable development projects, as well as the generation of greenhouse gas (GHG) emissions associated with these projects. The analysis of GHG emissions should take into account the California Air Resources Board's proposed regulations for addressing GHG emissions in CEQA documents. The analysis should evaluate the GHG emissions associated with the supply-chain for the proposed expanded stores at Broadway/Pleasant Valley and College Avenue. Any analysis of emissions must also consider human health risk due to exposure to toxic air contaminants as well.

Traffic: The EIR must evaluate all potential traffic impacts and all feasible means of mitigating those impacts, including alternative public transit options, pedestrian and bicycle access and safety, associated with the proposed expansion projects on Broadway/Pleasant Valley and College Avenue, as well as other reasonably foreseeable development projects.

Socioeconomic impacts: The EIR must evaluate the environmental effects associated with the socioeconomic impacts attributable to the proposed expanded stores on Broadway/Pleasant Valley and College Avenue, as well as other reasonably foreseeable development projects. This analysis should investigate the impacts to the environment, including the impacts to the delivery of public services by the City of Oakland, attributable to National Chains taking local dollars away from local, independently-owned small businesses. Please see the attached article from the East Bay Express for additional details, titled "The Corporate Co-Opt of Local."

Finally, the EIR should include a thorough discussion of the need for this project and the proposed expansion of the store on College Avenue. The analysis of need should not focus on Safeway's needs. Rather, the analysis should focus on the needs of the locally impacted communities and the City of Oakland. In particular, the analysis should consider the services already provided by local, independently-owned small businesses, as well as the services provided by existing significant commercial developments, including the existing Safeway stores, Trader Joe's, Market Hall, Whole Foods, Berkeley Bowl and Piedmont Market.

Contact information;
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The Corporate Co-Opt of Local

As "buy local" movements gain in strength, big-box retailers and national manufacturers are trying to redefine the terms of the debate.

By Stacy Mitchell

July 8, 2009

Brought to you by those neighborly folks at the International Council of Shopping Centers.

HSBC, one of the biggest banks on the planet, has taken to calling itself "the world's local bank." Winn-Dixie, a 500-outlet supermarket chain, recently launched a new ad campaign under the tagline, "Local flavor since 1956." The International Council of Shopping Centers, a global consortium of mall owners and developers, is pouring millions of dollars into television ads urging people to "Shop Local" — at their nearest mall. Even Wal-Mart is getting in on the act, hanging bright green banners over its produce aisles that simply say, "Local."

Hoping to capitalize on growing public enthusiasm for all things local, some of the world's biggest corporations are brashly laying claim to the word "local."

This new variation on corporate greenwashing is, like the buy-local movement itself, most advanced in the context of food. Hellmann's, the mayonnaise brand owned by the processed-food giant Unilever, is test-driving a new "Eat Real, Eat Local" initiative in Canada. The ad campaign seems aimed partly at enhancing the brand by simply associating Hellmann's with local food. But it also makes the claim that Hellmann's *is* local, because most of its ingredients come from North America.

And the movement is now spreading well beyond food. Barnes & Noble has launched a video blog site under the banner, "All bookselling is local." The site, which features "local book news" and recommendations from employees of stores in such evocative-sounding locales as Surprise, Arizona, and Wauwatosa, Wisconsin, seems designed to disguise what Barnes & Noble is and to present the chain instead as a collection of independent-minded booksellers.

Across the country, scores of shopping malls, chambers of commerce, and economic development agencies are also appropriating the phrase "buy local" to urge consumers to patronize nearby malls and big-box stores. In March, leaders of a new Buy Local campaign in Fresno assembled in front of the Fashion Fair Mall for a kick-off press conference. Flanked by storefronts bearing brand names like Anthropologie and The Cheesecake Factory, officials from the Economic Development Corporation of Fresno County explained that choosing to "buy local" helps the region's economy. For anyone confused by this display, the campaign and its media partners, including Comcast and the *Fresno Bee*, followed the press conference with more than $250,000 worth of radio, TV, and print ads that spelled it out: "Just so you know, buying local means any store in your community: mom-and-pop stores, national chains, big-box stores — you name it."

In one way, all of this is good news for local economy advocates: It represents the best empirical evidence yet that the grassroots movement for locally produced goods and independently owned businesses now sweeping the country is having a measurable impact on the choices people make. "Think of the millions of dollars these big companies spend on research and focus groups," observed Dan Cullen of the American Booksellers Association, a trade group for independent bookstores. "They wouldn't be doing this on a hunch."

Signs abound that consumer preferences are trending local. Locally grown food has soared in popularity. The United States is now home to 4,385 active farmers' markets, one third of which were started since 2000. Food co-ops and neighborhood greengrocers are on the rise. Driving is down, while data from several metropolitan regions shows that houses located within walking distance of small neighborhood stores have held value better than those isolated in the suburbs where the nearest gallon of milk is a five-mile drive to Target.

A growing number of independent businesses are trumpeting their local ownership and community roots, and reporting a surge in customer traffic as a result. In April, even as Virgin Megastores prepared to shutter its last US record store, independent music stores across the country were mobbed for the second annual Record Store Day. A celebration of local music retailers that featured in-store concerts and exclusive releases, the event drew hundreds of thousands of music fans into stores, was one of the top search terms on Google, and triggered a sixteen-point upswing in album sales, according to Neilson SoundScan.

In city after city, independent businesses are organizing and creating what could become a powerful counterweight to the big business lobbies that have long dominated public policy. Local business alliances — like Stay Local in New Orleans, the Metro Independent Business Alliance in Minneapolis-St. Paul, and Arizona Local First in Phoenix — have now formed in more than 130 cities and collectively count some 30,000 businesses as members. Through grassroots "buy local" and "local first" campaigns, these alliances are calling on people to choose independent businesses and local products more often and making the case that doing so is critical to rebuilding middle-class prosperity and ensuring that our daily lives are not smothered by corporate uniformity.

Surveys and anecdotal reports from business owners suggest these initiatives are changing spending patterns. A survey of 1,100 independent retailers conducted in January by the Institute for Local Self-Reliance found that, amid the worst economic downturn since the Depression, buy-local sentiment is giving local businesses an edge over their chain competitors. While the Commerce Department reported that retail sales plunged almost 10 percent over the holidays, the survey found that independent retailers in cities with buy-local campaigns saw sales drop an average of just 3 percent.

None of this has escaped the notice of corporate executives and the consumer research firms that advise them. Several of these firms have begun to track the localization trend. In its annual consumer survey, the New York-based branding firm BBMG found that the number of people reporting that it was "very important" to them whether a product was grown or produced locally jumped from 26 to 32 percent in the last year alone.

"Food is one of the biggest gateways, but we're seeing this idea of 'local' spread across other categories and sectors," said Michelle Barry, senior vice president of the Hartman Group. A report published by Hartman last year noted, "There is a belief that you can only be local if you are a small and authentic brand. This isn't necessarily true; big brands can use the notion of local to their advantage as well." Barry added: "Big companies have to be much more creative in how they articulate local. ... It's a different way of thinking about local that is not quite as literal."

One way corporations can be "local" is by stocking a token amount of locally grown produce, as Wal-Mart has done in some of its supercenters. The chain's local food offerings are usually limited to a few of the main commodity crops of that particular state — peaches in Georgia or potatoes in Maine — and sit amid a sea of industrial food and other goods shipped from the far side of the planet. Yet, this modest gesture has won Wal-Mart glowing coverage in numerous daily newspapers.

Wal-Mart, like other chains, has learned that, with consumers increasingly motivated to support companies they perceive to be acting responsibly, tossing around the word "local" is a far less expensive way to convey civic virtue than the alternatives. "Local is one of the lower-hanging fruits in terms of sustainability," Barry said. "It's easier for companies to do than to improve how their employees are treated or adopt a specific sustainability practice around their carbon footprint, for example."

Other companies are pushing marketing messages that work by association. One example that caught Dan Cullen's eye was a CVS television commercial that begins in a Main Street bookshop, following the owner around as she tends to her customers. The bookshop then transforms into a CVS. The bookshop owner is now the customer. The feel is still very much Main Street. "Suddenly the kind of unique, enjoyable, grassroots bookstore experience morphs into a CVS experience," Cullen said. "There's a Potemkin facade that a lot of chains are trying to put up because consumers now want something other than a cookie-cutter experience."

Still another corporate strategy is to redefine the term "local" to mean, not locally owned or locally produced, but just nearby. "With the term 'local' being so nebulous, it seems ripe for manipulation," noted Mintel, another consumer research firm that counsels companies on how to "craft marketing messages that appeal to locally conscious consumers" and how to avoid "charges of 'local washing.'"

Corporate-oriented buy-local campaigns that define "local" as the nearest Lowe's or Gap store are now being rolled out in cities nationwide. Some represent desperate bids by shopping malls to survive the recession and fend off online competition. Others are the work of chambers of commerce trying to remain relevant. Still others are the half-baked plans of municipal officials casting about for some way to stop the steep drop in sales tax revenue.

Many of these Astroturf campaigns are modeled directly on grassroots initiatives. "They copy our language and tactics," said Michelle Long, executive director of Sustainable Connections, a seven-year-old coalition of 600 independent businesses in northwest Washington state that runs a very visible and successful "local first" program. "I get calls from chambers and other groups who say, 'We want to do what you are doing. It took me a while to realize that what they had in mind was not what we do.' Once I realized, I started asking them, what do you mean by 'local'?"

Examples abound. In Northern California, the Arcata Chamber of Commerce is producing "Shop Local" ads that look similar to the Humboldt County Independent Business Alliance's "Go Local" ads, except they feature both independents and chains. Spokane's Buy Local program, started by the local chamber, is open to any business in town, including big-box stores. Logon to the Buy Local web site created by the chamber in Chapel Hill, North Carolina, and you will find Wal-Mart among the listings.

When billboards proclaiming "Buy Local Orlando" first appeared in Orlando, Florida, Julie Norris, a cafe owner who last year co-founded Ourlando, an initiative to support indie businesses, was excited to see the concept getting such visibility. But she soon realized that the city-funded program, which provides businesses who join with a "Buy Local" decal, seminars at the Disney Entrepreneur Center, and a listing on the web site, was open to any business in Orlando. "We sat down with the city and said, 'What you guys are doing is a real disservice to the local business movement,'" she said.

The city did agree to remove from its press materials and web site a reference to a study that found that, for every $100 spent locally, $45 stays in the community. The problem was that the study, conducted by the firm Civic Economics, found that to be true only if the money was spent at a locally owned business. Shop at a chain store, the analysis found, and only $13 of that $100 spent stays in the community.

The Economic Development Corporation of Fresno County also appropriated the $45-stays-local statistic when it kicked off its Buy Local campaign at the Fashion Fair Mall. The figure was repeated on a TV news story without any clarification that it did not apply to the types of chains visible in the background. Like the Orlando initiative, the Fresno campaign aims to boost sales tax revenue by deterring online and out-of-town shopping. It goes out of its way in every radio and TV spot to make sure people know that "local" means national chains and big-box stores. "Buy Local" stickers and posters are now visible on malls and chains throughout the Central Valley. "For someone to say you are not local if you are a big box, I say baloney," explained Steve Geil, CEO of the Economic Development Corporation. "They invested here."

When the City of Santa Fe decided to launch a campaign to encourage people to shop locally, the Santa Fe Alliance, a coalition of more than 500 locally owned businesses that has been running a buy-local initiative for several years, signed on. But the city's message, according to Kate Noble, a city staffer who runs the program, is that shopping at Wal-Mart is fine, as long as it's not Walmart.com. "It has only diluted our message and confused people," complained Vicki Pozzebon, director of the Alliance. "The city asked me not to push the $45 versus $13, but just say 'local,'" she added.

These sales-tax-driven campaigns may well be doing more harm to local economies than good, according to Jeff Milchen, co-founder of the American Independent Business Alliance, a national organization that helps communities start and grow local business alliances. "If you encourage people to shop at a big-box store that takes sales away from an independent business, you're just funneling more dollars out of town, because, unlike chains, local businesses buy lots of goods and services, like accounting and printing, from other local businesses."

The irony of trying to solve declining city revenue by trying to get people to shop at the local mall is that the mall itself may be the problem. While many California cities are facing budget cuts and even bankruptcy, Berkeley has managed to post a small increase in revenue. Part of the reason, according to city officials, is that Berkeley has more or less said no to shopping malls and big chain stores and is instead a city of locally owned businesses that primarily serve local residents. That creates a much more stable revenue base. Berkeley hasn't benefited from the temporary boom that a new regional mall might create, but neither has it gone bust.

Can corporations succeed in co-opting or so muddling the term local that it no longer has meaning? The Hartman Group's Barry thinks that's possible. "For many consumers, these things are not being called into question much. They say, 'Hey, it's my local Wal-Mart or my local Frito-Lay truck.' It depends where you are on the continuum and how you define local, which is a term that is really up for grabs."

Milchen is less concerned about what he calls faux-local campaigns in cities where there is already a strong local business organization. "It's more of an educational opportunity than a problem, so long as they respond to it," he said. But in places where local enterprises are not organized, he fears these corporate campaigns may succeed in permanently defining "local" for their own benefit. Michelle Long shares that concern: "That's my fear. People are going to do diluted versions and hold the space so that real campaigns don't get started."

Such dilution has prompted local business advocates to reconsider their language. Many are now using the word "independent" more than "local." Controlling language is critical, said Ronnie Cummins, director of the Organic Consumers Association, who is pushing for tighter regulation of the word organic, as well as rules governing terms like natural, sustainable, and local. "We've been fighting so long without the help of federal regulators that some people have forgotten that tool."

Perhaps all of this will ultimately make corporations even more suspect and further the case for shifting our economy in the direction of small-scale, local, and independent. "I think the fact that the chains are trying to play the local card, in a way makes it easier for us," said Cullen of the American Booksellers Association. "I think people are going to recognize that these aren't authentic and that's going to make the real thing all the more powerful."

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Catchment Area

Fact: Proposed 306,000 sf Center is sub-regional—not Community Commercial

Scope: Extend traffic study accordingly, at a minimum to the extent that Safeway is marketing to proposed retailers.

Blight Generation:

Fact: Oakland has problems filling neighborhood and downtown retail. An additional 120,000 sf more retail/office space has the potential to suck more life out of existing retail streetscapes.

Scope: Study the potential of this project to promote blight downtown and in the Catchment Area.

Phasing

Fact: The Phasing as proposed opens the possibility that if leasing does not go as planned, we could be stuck with a sea of parking with the store way over in the back corner.

Scope: Study alternate locations for the Safeway store on the project site.

Integration of Transit

Fact: The distance to the proposed Safeway store entrance is **MORE THAN ¼ MILE** from either of the bus stops for the 51 at Pleasant Valley.

Scope: Study alternate locations for the Safeway store on the project site, and methods of integrating pedestrian, bicycle, and transit access to the store.

General Plan and Zoning

Fact: The staff report states that the entire site is classified Community Commercial, but the on-line CEDA map shows a large portion of the site is in the Urban Open Space classification.

Scope: Study what are the ramifications of this relative to the "best fit" staff recommendation to upzone the entire site to C-30.

Conformance with AB32

Fact: The rules—and penalties—for local jurisdictions to be in conformance with AB32 are currently being written. Among things being discussed are changing the way sales tax revenues are distributed.

Scope: Study the possible impacts of allowing a non-complying development—and the possible loss of sales tax revenues as a result.

Alternate Proposal(s)

In acknowledgement of the above Facts, the EIR should study at least one alternative that responds accordingly, including the possibility of reaching out to other development partners that can provide a total solution that integrates Safeway's needs within the Community fabric.

ULTRA has done a conceptual design that confirms such a project is feasible, which we would be happy to share. It will be included in our written comments.

Comments by Larry Mayers, Oakland, CA info@mayersarch.com

Ranelletti, Darin

From: Anne Marie Miguel [amiguel13@yahoo.com]

Sent: Wednesday, July 15, 2009 10:57 PM

To: Ranelletti, Darin

Hi Darin, I'm emailing after reading belofw post to the Piedmont Neighborhood News. From what I read, it seems not much consideration nor value is being placed upon making the new shopping centers more than the usual drive-in, drive-out places to shop. Why not a walking circuit built into the plans? Where people actually go to the shopping center to do more than shop? It doesn't have to be a track, but a sidewalk that joins all the shopping areas and minimal car hazard. A premium should be placed on people being able to get from one area to another on foot. I do already shop at the plaza, and do NOT usually walk from Safeway to CVS/Long because it is too unfriendly to walk and even dangerous with little kids. What is designed looks to be more of the same.

As it is a large space and a new design, as as Safeway promises a better life by patronizing their store, I expect a premium to be placed on the healthy lifestyle that accompanies such promotion. And such incorporation would increase the longevity of the shopping center.

Please let me know what else I can do to press my view. Will there be open to the public discussions about the center's planning?

Thank you, Anne Marie Miguel

The New Broadway/Pleasant Valley Safeway Plaza ... on Steroids

Posted by drewbendon on July 14, 2009

The Oakland Planning Commission is set to hear the proposal to re-develop the plaza where the Safeway and Longs are (and Emil Villa's was) tomorrow, July 15, 2009. The new development will be substantially bigger and will likely include CVS as well as Safeway as anchor tenants. It seems like Longs would be out. You can view the plans here. Some of it may be an improvement (e.g., 2 left turn lanes from Pleasant Valley into the mall and proposed shops along PV – if they are accessible from the street and not just the parking lot), but much of it appears to lack the types of bike/pedestrian-oriented amenities that make communities livable. For example it looks like the entrances to the mall are all auto-centric, including the one directly across from the senior center! If this get's built it will be there for a long time, so if you have something to say about it you might want to contact the "case planner" Darin Ranelletti at (510) 238-3663 or by e-mail at dranelletti@oaklandnet.com

drew

Ranelletti, Darin

From: Garlynn Woodsong [garlynn@gmail.com]
Sent: Friday, July 17, 2009 7:07 PM
To: Ranelletti, Darin
Subject: Safeway Redevelopment Project (Case File #CMD09-135; CP09-09-; ER09-007)

Dear Mr. Ranelletti,

I'm writing to you to urge a reconsideration of the current Safeway plan for the site at 51st and Broadway. Let me make my appeal simple: This plan makes it appear as if the site will be a nice village center, when in fact it is just putting a nice facade on more suburban-sprawl-style schlock being built in the urban center. This is, simply, unacceptable for the future of Oakland.

At a minimum, this project needs to be mixed-use and needs to include some housing on-site. That much is REQUIRED, even by current zoning. There is no reason this requirement should be waived. Even despite the current housing downturn, there are two million additional residents expected in the Bay Area over the next 25 years. Some of them should be able to live above their shops and services in neighborhood centers. This site represents a great opportunity zone to become a mixed-use neighborhood center; the chance to make the place better should not be lost.

Further, the site needs to become more bicycle, pedestrian and transit oriented, rather than just building more parking to make it more convenient to arrive by automobile.

Finally, the site is served by multiple high-frequency transit lines, which again should be a trigger to a fully-functioning local government that it would best be served by a mix of uses including housing, rather than more single-use suburban sprawl-type development.

Thank you very much for your consideration of this matter.

o o o o o o o o o o o o o o o o o o o o o
Mr. Garlynn G. Woodsong, Esq
860 42nd Street
Oakland, CA 94608

Ranelletti, Darin

From: ruby long [roobeedew@sbcglobal.net]
Sent: Tuesday, July 21, 2009 8:39 PM
To: Ranelletti, Darin
Cc: 51andbroadway@pdcenters.com; standnorthoakland@gmail.com
Subject: 51st & Broadway - from Ruby Long

As a long time resident of this area, here are my concerns about the proposed changes to this location.

1. Loss of drug/variety/nursery complex Longs/CVS. Not only will this inconvenience those of us who depend so much on that store, it will lure the potential customers of that establishment out of the neighborhood to shop in Emeryville.

2. Lack of consideration of pedestrian traffic. With the high density housing across Pleasant Valley from the shopping center, much of which houses senior citizens, I think the crossing at Gilbert & Pleasant Valley needs lengthy study. For instance, a pedestrian overpass could be installed to allow them to cross without competing with automobiles.

3. Parking. I'm not convinced that the parking plan proposed in the sketches I've seen will be adequate if additional shops are added along Pleasant Valley. Those shops will take up a lot of the spaces that are there now. AND, those shops will increase traffic - see above.

4. A suggestion: Safeway, or the shopping center, could sponsor a shuttle bus service, as the Emeryville merchants do. If, for instance, the route went from the MacArthur BART to Piedmont Ave. and through the neighborhood, down Gilbert, buses could deliver residents, especially of the high density housing mentioned above, to the shopping center, go on to the Rockridge BART, then back to MacArthur BART, etc. This would cut down on traffic in the parking lot, promote shopping at the Center, and provide safe transportation for residents. In addition, brightly painted buses with the name of the Center on them would provide publicity and public relations support for the Center.

Ranelletti, Darin

From: caroline stern [carolinestern@sbcglobal.net]
Sent: Tuesday, July 21, 2009 8:48 PM
To: 51andbroadway@pdcenters.com; STAND
Cc: Ranelletti, Darin
Subject: development

Having lived in Rockridge for 20 years I would like to see any new "developments" include sidewalks, child friendly play areas, benches, plants and greenery draught resistant if possible, public art, open space and shade.

Community means a place to sing, a place to dance, a place to make art and social and business contacts as well.

Sincerely,

Caroline Stern

Ranelletti, Darin

From: Nina Lindsay [ninalindsay@gmail.com]
Sent: Wednesday, July 22, 2009 9:26 AM
To: Ranelletti, Darin
Cc: 51andbroadway@pdcenters.com; standnorthoakland@gmail.com
Subject: 51st and Broadway Safeway EIR

Mr. Ranelletti,
I'm writing to add my support to the requests put forward by local organizations for considerations of pedestrian and bicycle access, mixed use/housing, and transit concerns in the EIR for the 51st and Broadway Safeway.

I'm an advocate of urban density, but also of locating density in appropriate areas. This shopping area seems like a perfect area to locate more housing options in the Rockridge/Piedmont/Temescal area. It has easy access to BART and the freeway, and to three shopping/restaurant areas all within walking distance. Because of the footprint and the grading, it seems that there is space for significant housing square footage without overpowering residential housing....and probably creating a more attractive and viable shopping center.

As a lifelong resident in this neighborhood, my biggest hope for this development is to make a better bicycle and pedestrian connection from Coronado to Gilbert. These are the best local access roads on bicycle, but--especially crossing Broadway at Coronado, are very dangerous.

Thank you,
Nina Lindsay
438 Avon St., 94618
(510) 420-1425

Ranelletti, Darin

From: Loni [connected@covad.net]
Sent: Wednesday, July 22, 2009 11:22 AM
To: Ranelletti, Darin
Cc: 51andbraodway@pdcenters.com; standnorthoakland@gmail.com
Subject: 51st & Broadway - Ripe potential

Dear Mr Ranelletti,
Finally! A site that begs for density!! The 51st Safeway site is ripe with potential to make it a very livable hub, and a model of Oakland's commitment to greening itself that can also be economically successful.

As you know, the City's General Plan as well as the Conley Report, look for ways to revitalize upper Broadway. In both, pedestrian orientation and the presence of easy transit are recommended. With the multi-story hillsides surrounding the site, this large parcel can easily absorb several floors of interesting housing options atop the retail. Live/work and creative studios as well as other residential appropriate to the neighborhood's economic mix. And for once, this density would be seen as a win win. It would not cause overshadowing of neighboring residences (if situated to the site's rear), and would increase the success of the retail upon which it is built. Plus, having people living in the area, not just driving there to shop as we do now, would create a wonderful activity center. Lastly, it would serve to connect the lower-density surrounding neighborhoods. They would benefit from the vibrancy created.

In re-developing the center, insist that Safeway include healthy living, sustainable elements - walkable, bike-able paths, parks and greenspace, by Quarry Lake for example. Express our desire for a development using the most energy-efficient design, including skylights, active solar, rainwater collection for irrigation, transit stops, and 'smart' parking. This can be a profitable design option for Safeway as well; they just need to be encouraged to think in a new direction.

So maybe you'll finally have the public backing density. Wouldn't that be a first! Please, by your recommendations and requirements, urge Safeway to make green, human-centered choices that will show off its own store, making it a flagship center of sustainability.

Most Sincerely,
Loni Gray

Ranelletti, Darin

From: Colleen Lang [clang@adobe.com]
Sent: Wednesday, July 22, 2009 11:53 AM
To: Ranelletti, Darin
Cc: '51andbroadway@pdcenters.com'; 'standnorthoakland@gmail.com'; 'Gail.Truman@Sun.COM'
Subject: 51st and Broadway shopping

Greetings,

As a member of this community and patron of the 51st and Broadway shopping plaza for 10 years and years to come, it would be extremely appreciated if you would consider pedestrian, bicycle transit-centered options and pathways that would better link the Piedmont Avenue community with the Rockridge community with better walking access to the Rockridge BART from Piedmont Avenue, when redesigning this great space.

Oh, and would it be too much to ask for you to consider beautifying the median space in front of the shopping plaza along Pleasant Valley. Chicago does a great job of managing these spaces as part of the business / community integration with regard to the overall design.

Thank you for your consideration.

Colleen Lang

Ranelletti, Darin

From: Theo Fram [tfram2003@yahoo.com]
Sent: Wednesday, July 22, 2009 4:00 PM
To: Ranelletti, Darin
Cc: standnorthoakland@gmail.com
Subject: safeway redevlopment

Dear Sir:

I have been following the information about renovation of the 51st and Pleasant Valley Site. I would very much like to see it break from the suburban Car oriented model. My husband and I walk from our house at 52nd and Shattuck up to the center several times a week and would like to see a pedestrian, bike friendly model that will be beneficial to more than just commerce.

Yours truly,

Livia C. Stein

Ranelletti, Darin

From: Bill Kramer [wekramer@sylvanpiedmont.com]

Sent: Wednesday, July 22, 2009 5:52 PM

To: Ranelletti, Darin

dear darrin -

i live on 5253 shafter avenue in oakland, and i own a business at grand & linda in piedmont, so i often either bike or drive right by the 51st & broadway shopping center every day. traffic is already heavy during many parts of the day, and i am concerned about the increase in traffic that a larger safeway would incur. also, it would be nice to include peestrian & transit-centered options.

best regards,

bill kramer
510-428-4125

Ranelletti, Darin

From: Ellen Gierson [ellenrocs@gmail.com]
Sent: Thursday, July 23, 2009 6:44 PM
To: Ranelletti, Darin
Cc: 51andbroadway@pdcenters.com; standnorthoakland@gmail.com
Subject: Safeway project up on 51st and B'way

Hello Darrin,
Hope you are well!

Are there plans for including some
kind of housing in this big project, with transit options connecting to BART? This parcel, with its connections to the Tem
make it a very important site that can transform, and finally "connect"
all these neighborhoods! This shopping area can turn into a jewel if developed right! I'm hoping that Safeway can make a
"neighborhood walking and bicycle" friendly. I am looking at this space, hoping that it can also become greener, by adding a park, with places to sit and enjoy the quarry view. I strongly believe the parking issue can be dealt with so that it doesn't dominate the grounds.
In this day, Safeway, I presume and hope, will be thinking of energy saving options, and not just building another unattractive Safeway building, continuing business as usual. We have an opportunity, even, obligation to make a great tree lined shopping/living/transit hub at this spot. Let's have some City support for these suggestions!

Thanks,
Ellen Gierson
4175-Opal Street
510-658-8713

Ranelletti, Darin

From: Charles Blakeney [chblakeney@yahoo.com]
Sent: Friday, July 24, 2009 1:48 PM
To: Ranelletti, Darin
Subject: Safeway remodel concerns @ 51st & Broadway location

Mr. Ranellatti,

I have concerns about all of the items listed on the EIR. My primary concerns are traffic, pollution, and noise pollution. I live right across the street from the shopping center, therefore, I have a great personal investment in the quality of life in this neighborhood. I would like to see improved foot access to the new center, as well as greatly improved car access. Every day, but much worse on Saturdays, the parking lot is full. That impacts cars waiting on the streets to enter the parking lot and park, which in turn causes a traffic jam and the resulting pollution from stopped cars with their motors running. This entire area must be improved with respect to traffic movement.

The construction of the new Kaiser facility at West MacArthur and Broadway has already greatly negatively impacted traffic flow in the area. I would be happy to apply for the obiously vacant job of traffic foreman in this area. It is clear that the person(s) doing that job are asleep at the switch, because numerous obvious improvements to traffic flow have not been put into effect. I have ideas that could SAVE THE CITY A TON OF MONEY, while IMPROVING TRAFFIC FLOW. I would appreciate your directing me to the appropriate person(s) for these suggestions.

Thank you,

Charles Blakeney

Ranelletti, Darin

From: Francesca Myman [cameo@sonic.net]
Sent: Saturday, July 25, 2009 1:46 PM
To: Ranelletti, Darin
Subject: Community feedback about the Rockridge Safeway project

First, I'd like to say thanks so much for making an effort to canvass community opinion. I'm not sure I know very much about the potential environmental impact of the Rockridge Safeway project, but since I missed the planning meetings (didn't hear about them till after the
fact) I'd like to chip in with a few ideas anyway, and I'm hoping you can pass them on to the appropriate people. . .

Feedback on the current center: Although I live right across the way from the shopping center, the only places I visit regularly are the pet food store, Safeway itself, and the amazing local Longs (or CVS). I LOVE the garden center in the local Longs, birdsong and all. I also love the fact that it's a 24 hour shop. It's a great
community resource, and I'm glad to see that some effort is being made to retain current employees and perhaps (I hope) to somehow keep the garden center itself. I don't shop at any other local garden centers, because the variety doesn't compare, and the choices don't include local plants -- there's a certain canned quality to a place like Home Depot, whereas that garden center has been there since
before it became a Longs, and has a nicely lived-in feeling. Plus,
I think there are bird families that actually live there. I understand the Safeway will be moving to that location? Is there another spot in the center for the garden shop? I hope so.

In terms of clothing stores, I know there's a Dress Barn, but as a woman I've never seen anything interesting there, and given the current economic climate I'd like to put in a loud vote for a Marshalls or Ross, if chain clothing and household stores are under consideration. I would never shop at a place like Target or Bed Bath & Beyond. Just too expensive for the same items you get at a Marshalls or Ross! I'd also love to see a local, community-based restaurant of some sort. If there's no way to accomplish that, and chain food stores are under consideration, I'd love to put in a vote for an Askew Grill or a Panda Express (relatively food-conscious) or a Taco Bell (just convenient). I'd definitely come and eat at any of those. Other possibilities: a video store? A Curves fitness location?

I'm THRILLED to see that a walking path around the lake is being considered. . . It always looks so beautiful, and I crane my neck to see over that chain-link fence!

Best,

Francesca Myman
(288 Whitmore St.)
510-339-9196

Ranelletti, Darin

From: Kar Trageser [kartrageser@earthlink.net]
Sent: Sunday, July 26, 2009 3:31 AM
To: Ranelletti, Darin
Subject: Regarding the redevelopment of Safeway on Broadway /Rockridge Shopping Center

Dear Darin Ranelletti,

I sure hope Oakland will be brave and forceful and not not allow Safeway to simply build whatever will make money for Safeway. Having zoning restrict itself to saying what is not allowable rather than having Zoning creatively push developers to build what is best for the communities has not worked very well. Be aggressive for Oakland because this building site is high profile.

The Safeway development if done well will enhance my property value at the Condominiums across Pleasant Valley Ave from Safeway. If done poorly this development will hurt my property value.

Stores usually have an attractive front side and a hidden ugly back side. These stores to be built along Pleasant Valley Ave can not be allowed to have an ugly back side. You can't do some cosmetic fix to transform what is basically an ugly backside into an acceptable backside in this location. These stores must have two front sides. One front side with windows and doors and stairs facing Pleasant Valley Ave and another front side facing the Parking lot. Do not compromise. It would be better for the project to be scrapped and for Safeway to take Oakland to court than it would to give in on this point. Don't let the developer promise to make a backside facing Pleasant valley attractive with some gimmicks because the gimmicks won't work. These buildings must have two genuine front sides.

Next, I want stairs from Pleasant Valley Ave up to the parking lot. Have a look at the bushes along side Pleasant Valley Ave now and notice all the trails leading to the parking lot. The Washington Mutual/Chase stairway is built wrong so people don't use it. I want a straight stairway on the Broadway end of the string of buildings to be built along Pleasant Valley Ave.

Parking currently gets tight at peak times. It would be good if the project had sufficient parking.

Finally, the Quarry. When I was visiting a small city in India I met a young Australian man there. This Australian man said, "your from Oakland, I have been to Oakland". I said, "Oh, what did you see in Oakland? What did you like?" The first thing he mentioned was the quarry at the Rockridge shopping center. I laughed because that was across the street from my home. The sad thing was there was nothing else about Oakland that struck him as noteworthy. This Quarry is attractive but we keep people from getting close to it. I guess everybody fears that somebody would hurt themselves if people were allowed access to the quarry and then there would be law suits. Damn this mentality and the lawyers. If there was any way to get this project to incorporate the quarry rather than to wall off the quarry the whole project would become more attractive. Ideally the Quarry would be taken over by parks and recreation and there would be public swimming. I am sure the that was already discussed 30 years ago and rejected by Oakland's lawyers. Anything that could be done to integrate the quarry would be good.

Hoping for the best.

Sincerely,

Ken Trageser

Ranelletti, Darin

From: Eric Chase [galoisgroupie@gmail.com]
Sent: Monday, July 27, 2009 3:45 PM
To: Ranelletti, Darin
Subject: Broadway & Pleasant Valley Safeway EIR Scoping - Public Comment
Attachments: blogpost_broadway_pleasant-valley.doc; blogpost_comments.doc; alternative_bway-pv-map.jpg

Hello,

It is my understanding that this is the correct email address to send comments to re: scoping for the Broadway & Pleasant Valley site. If I am in error, my apologies, and I would appreciate knowing the correct email to contact.

On the whole, I believe Safeway's proposal for this site is inadequate, and is incompatible with many ideas:
* Good urban design, that facilitates safe and natural pedestrian and transit travel to the site
* The cultivation of Broadway as an important retail and pedestrian corridor. Safeway's proposal turns its back on Broadway, facing inward to a large parking lot, rather than emphasizing Broadway's transit orientation.
* Maintaining poor, unsafe pedestrian access.
* Maintaining a large, auto-centric parking lot.
* No provision of housing, despite realization on the local, regional, and state level that infill housing and mixed-use projects not only create better cities, but also serve environmental goals by locating housing closer to retail and and employment opportunities, thereby reducing greenhouse gas emissions.

Safeway's proposal maintains the outdated suburban design that now characterizes this site, and the proposal actually increases parking, replacing lost spots with a rooftop lot. We know better than to reproduce a 1959 design in 2009.

I would like to see an EIR for this site consider an ambitious, mixed-use project alternative -- and a discussion of how Safeway's short-term goals can be fit into a long-term vision to create a new mixed-use neighborhood and retail district out of this very valuable land. I believe that such an alternative would most likely emerge as the environmentally superior alternative.
To build Safeway's proposal as is, and to stop there, would be to squander the full potential of and incredible opportunity posed by this site -- a rare large open site in an urban setting that is begging for more sensitive treatment than what Safeway has suggested. For example, the new Safeway building could be sited in a way that makes sense in the context of a larger proposal, and the building could be constructed so as to support housing added later, even if Safeway is not in a position to construct housing just right now. Ideally, the site would be subject to its own specific planning effort by the City, so that new developments are proposed pursuant to that specific plan. The building housing Safeway could be a component of that specific plan, with the understanding that the plan would be built over 10-20 years, perhaps longer.

To spread more interest about this project, I wrote a post on my blog about one month ago with an alternative plan. I understand that my alternative is ambitious, but I think it gives an idea of the sort of plan the City should pursue -- in a nutshell: dense, urban, mixed-use, and pedestrian/transit-friendly. The sketch includes a small extension of the street grid into the parking lot, and it includes housing and pedestrian spaces.

What's more, a comment thread with 45 comments followed the blog post, and the vast majority of readers supported exactly this sort of dense, mixed-use plan. This corroborates many of the views expressed at the Planning Commission earlier this month, in which many citizens and citizen groups supported a more urban-appropriate design. In any case, my blog post and the comments following can be accessed at this URL:

http://transbayblog.com/2009/06/30/more-pleasant-on-pleasant-valley/

Alternatively, I've copied those materials into these attachments for your convenience:
1) The text of the blog post, which fleshes out the ideas I've stated here, and includes a map I drew of a more ambitious

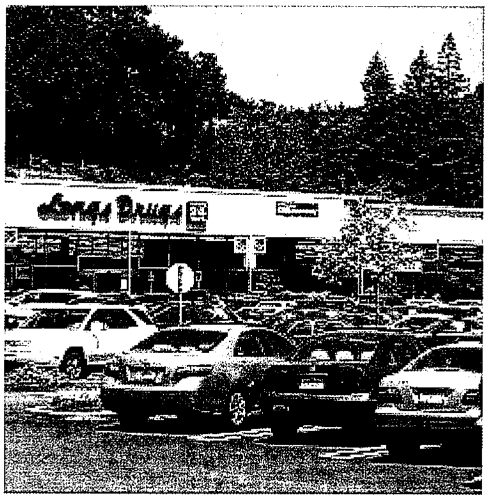
alternative proposal.
2) Readers' comments to that blog post, copied into a separate file, which provides further thoughts and public comment that may be of interest.
3) A separate image file of the map that is contained in the blog post.

Please let me know if there's anything else I should provide. Thanks again,
Eric Chase

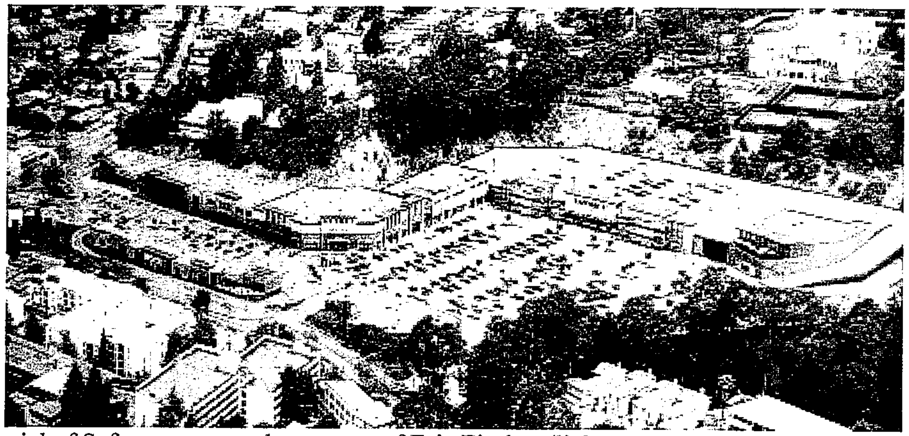
More Pleasant on Pleasant Valley

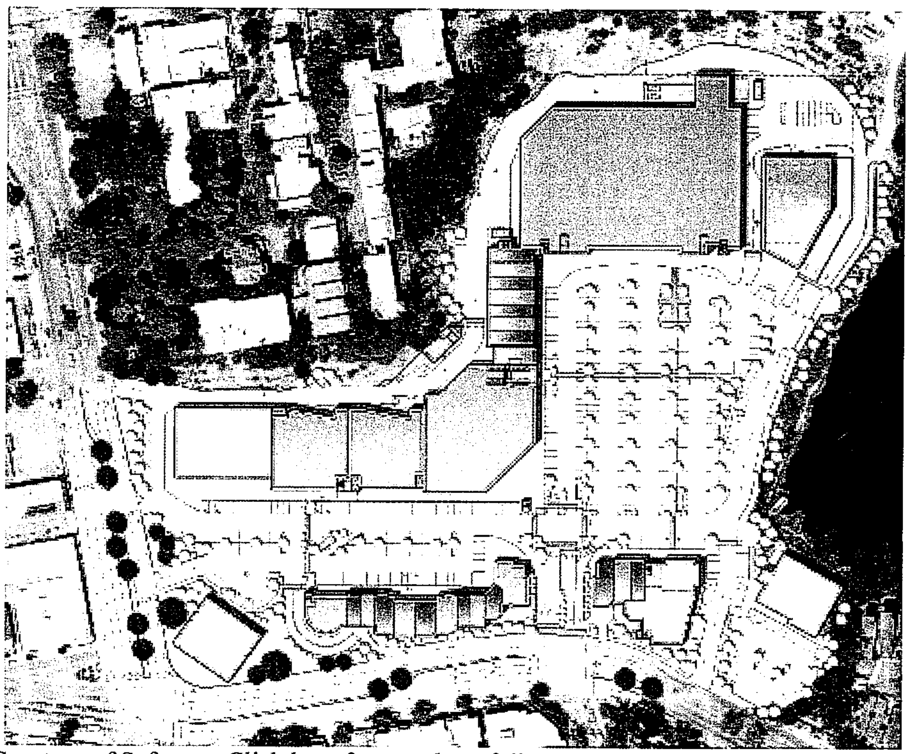
with 45 comments

Original post URL:
http://transbayblog.com/2009/06/30/more-pleasant-on-pleasant-valley/



Most streets in North Oakland — lined as they are with trees, bungalows, and low-rise apartment buildings — have been built out on a comfortable and pleasant scale. But the shopping center located north and east of the intersection of Broadway and Pleasant Valley Avenue stands apart as, well, anything but pleasant. It is an uninspired 1960s autocentric strip mall, featuring a collection of low-slung buildings centered on a mighty surface parking lot. The shopping center has housed a large Longs Drugs; a smaller but still sizable Safeway; and a collection of smaller retail spaces. But some changes are afoot for this shopping center. The Longs will close, and Safeway will covet the larger space, even while it moves forward with plans to expand another of its stores at College and Claremont, just one mile north of this shopping center. Safeway's proposal for the Broadway & Pleasant Valley shopping center would relocate an expanded Safeway (65,000+ square feet) to the northeastern corner of the site, which currently houses an 87,220 square foot Longs. Here is a picture and diagram of Safeway's initial proposal for the site:


Aerial of Safeway proposal, courtesy of Eric Fischer (link to community mtg. photo set).

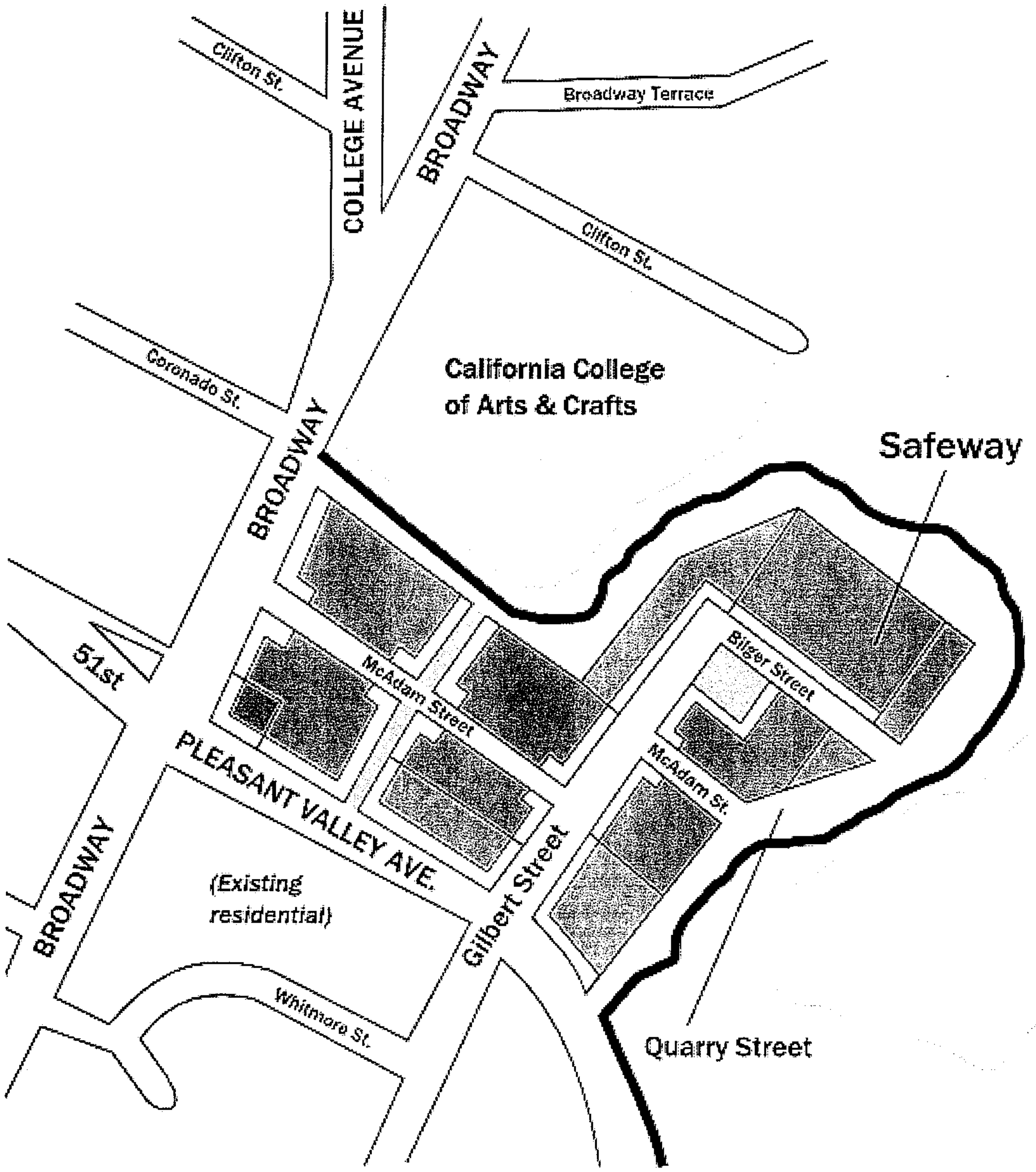

Courtesy of Safeway. Click here for a packet of diagrams and drawings (external link).

The design is, unfortunately, flawed. It basically perpetuates the current design, by maintaining long, squat buildings that surround the surface parking lot. It does add office space, and it fills in the perimeter of the site. But buildings remain set back from the street, offset by landscaping, and the prominence of the central parking lot is maintained; moreover, additional parking is added to the roof of the Safeway. In other words, the design remains wholly suburban. Pedestrian access to the shopping center is currently pretty miserable — sidewalks at the entry and exit points break off for the convenience of automobile navigation, or are omitted altogether. Based on these sketches, the new design does not completely address that problem either, except for including a few colored crosswalks.

Safeway's proposal is a misstep in an urban setting. Indeed, a quick glance at a Google satellite image makes it clear that the current suburban layout is an anomaly in North Oakland. So why should it be carried forward any longer? This site presents a special opportunity to fill a vast hole with a development pattern that is more fitting for a city. We would encourage Safeway to take the time to think this through carefully, rather than rush into unimaginative proposals like the one above. Here is our (more ambitious) concept for this site.

The first step is to completely eliminate the surface parking lot, and instead use the land to extend the street grid. Currently, Gilbert Street runs through the apartment block located just to the south of the site and turns into a driveway to the parking lot after it crosses Pleasant Valley. Under this proposal, Gilbert would continue north for two blocks, toward what is now the Longs building — not as a driveway, but as a true street with sidewalks. There would also be a new east-west street that would run the length of the site, starting at Broadway and splitting the large site into small city blocks. As a nod to history, we named it McAdam Street, which was the name of the original street before Pleasant Valley Avenue was created to run from Broadway to Grand Avenue. Once the site is split into blocks, then we can apply the tried and true formula of ground-floor retail and several stories of upstairs housing, to fill in the new neighborhood:

(map on following page)



Our alternative concept for the Broadway & Pleasant Valley site. Green = two height classes.
Pink = pedestrian alley/plaza. Yellow = commercial storefront (does not represent a different height).

(mixed-use Whole Foods in San Francisco)

The above concept maintains one larger building, with an approximately 65,000 footprint, to accommodate the Safeway; here, too, we had in mind a ground-floor grocery and apartments above. An example, pictured at right, is the Whole Foods on 4th Street in San Francisco. That particular structure is bulkier than it needs to be, because the layers of parking were built above ground, between the store and the apartments; a better design would relocate (a reduced amount of) parking underground. But that is what the general feel of the Safeway would be; something that is a better fit for an urban environment. And in the case of the Broadway & Pleasant Valley shopping center, the northern back end of the site, at the bottom of the hill, is naturally dead space — so it seems like a good place to locate deliveries and parking entrances, in order to increase pedestrian safety on the interior streets.

The Broadway & Pleasant Valley intersection already has good access to transit; it is served by AC Transit lines 12, 51, 59/59A, and is less than one mile from Rockridge BART. The 7 bus line, which currently terminates at the BART station, could conceivably be extended south to serve the new development. These transit options should be emphasized at any new development on this site, with kiosks, maps, and clear signage installed in prominent locations that indicate the location of bus stops on Broadway, 51st Street, and Pleasant Valley, as well as the BART station. The adjacent bus stops should be upgraded to a more hospitable shelter design. Bicycle parking should also be placed throughout the site. The development would increase pedestrian and bicycle activity in the area, suggesting that some traffic calming at this wide intersection would also be in order.

The shopping center site was, until midway into the 20th century, the Blake & Bilger Co. quarry, which was then later replaced by this shopping center. So the land is sunken and is already set apart from the surrounding neighborhood. This development concept takes advantage of that distance and feeling of separation (as well as the natural barriers on the northern and eastern boundaries of the site) to include buildings that are somewhat taller than what currently populates the surrounding blocks, in the hope that North Oakland neighbors won't mind extra height that does not directly shadow their backyards. Retail storefronts would face not just onto Broadway and Pleasant Valley, but also the interior streets. A pedestrian plaza and alley, both lined with storefronts, have also been included to provide a gathering place neighbors and visitors. The new retail would create a new commercial district anchoring the southern edge of

Rockridge, hopefully also increasing pedestrian traffic on Broadway and on the quieter south end of College Avenue.

Lastly, as for urban form: building heights would vary to increase visual interest, somewhere in the 45-85 feet range, extending and intensifying the character of the apartment block located just to the south of Pleasant Valley. The map shows one possibility: concentrating taller buildings toward the center of the site, with the addition of a taller building on the prominent northeast corner of Broadway and Pleasant Valley. Splitting the blocks into relatively fine parcels, and then building out a variety of design proposals, would also increase visual interest by giving the impression that the new blocks grew out organically. This will be especially important here because, as mentioned above, the site is already set off from the surrounding streets. The development must not resemble a gated or master-planned community. Instead, it should become a truly public place that draws people in, activating the surrounding streets and neighborhood.

45 Responses

Original URL: http://transbayblog.com/2009/06/30/more-pleasant-on-pleasant-valley/

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1. Apologies: already noticed a bit of an anachronism… I've been calling it the College of Arts & Crafts for ages, and it clearly has not quite sunk in yet that they changed the name a few years back. Will correct that later.

   Eric

   30 June 2009 at 9:03 am Edit

2. I still think of it as CCA&C, too. I remember when the ice cream place in Elmwood (blanking on the name) had a flavor called CCA&C that had ingredients for each initial.

   I like your alternative plan. It'd be more costly (non-surface parking costs more than surface parking to construct) which would make it a harder sell, but it'd make it *soooo* much more appealing than what's there now, as well as be a much better use of space.

   Gene

   30 June 2009 at 9:58 am Edit

3. Thanks for this—I've been meaning to sit down and play with it and haven't had any time, but this is a great stab at an alternative scenario. The interface of retail with the street is particularly important (and particularly lacking in the current plan). While below-grade parking is costly, I would expect that much of this cost could be recouped through the additional development.

   On the transit front, it's worth mentioning that the currently proposed AC Transit service cuts will eliminate the 59/59A, and frequencies on the 7 will be reduced to every 30 minutes. (Notably, though, there is a new crosstown route proposed to replace some of this and other cut service that would run from Grand across Pleasant Valley/51st to MLK between downtown Oakland and downtown Berkeley; this would actually be a huge improvement as there's currently no crosstown service in that part of town, and would enhance access to the Safeway plaza. It would also, I expect, significantly increase the number of pedestrians accessing the plaza from Pleasant Valley/Gilbert versus from Broadway, which could be a game changer on the traffic front.)

   This plan is going before the Oakland Planning Commission on July 15th (6 pm, Hearing Room 1 at City Hall), so I'd STRONGLY encourage people to show up and voice concerns and alternatives there! (Sadly I'll be out of town then, or I'd be there myself.)

Oh, and given the huge number of things that still say CCAC (and given how much better that rolls off the tongue!) I think you're covered calling it that even with the new name. ;)

artemis

30 June 2009 at 10:46 am Edit

4. Their plan is terrible! New built area would be great, but they're adding over 300 new parking spaces (50% increase) which will mean more emissions and more congestion. They are also apparently proposing to remove the sidewalk along most of the street frontage, in favor of an auto entrance to the parking garage. I find it doubtful they would even have the guts to do that, so maybe it's a drawing error, but they DO show a sidewalk along the street in the southeast portion of the site.

John

30 June 2009 at 10:55 am Edit

5. Hi artemis, thanks for your comment, and for mentioning the AC Transit proposals (bus riders should scroll down to about halfway through this PDF to read about those). I refrained from mentioning those here, because my hope, anyway, is that some of these service reductions and eliminations will eventually be restored, since a plan like this would take awhile to get going in any case. The real point for the purposes of this post is not so much the exact lines and their numbers, but the fact that transit serves and will continue to serve the streets immediately adjacent to the site.

Eric

30 June 2009 at 11:09 am Edit

6. Oh yes, please, Safeway folks, build this instead!

   And that's great to bring back the McAdam name, even if it doesn't quite match the alignment of the original McAdam.

Eric Fischer

30 June 2009 at 11:12 am Edit

7. *And that's great to bring back the McAdam name, even if it doesn't quite match the alignment of the original McAdam.*
   Yeah, that actually bugged me a little bit too, but I suspect we haven't yet seen the end of "Pleasant Valley." ;-)

Eric

30 June 2009 at 11:36 am Edit

8. Point taken. My note was mainly about the character of the lines that run there—the 59/59A and the 12 are what I tend to think of as "little lines"—serving a fairly limited area (albeit my area!) with relatively low ridership compared to the trunk lines (51, etc.). Both stop running around 7 pm, for instance, and have pretty limited weekend service as it is. A new cross-town line connecting to Downtown Berk and Oak would be another animal altogether, though, and would provide very different transit service along Pleasant Valley/51st from what exists today. Just food for thought!

artemis

30 June 2009 at 11:57 am Edit

9. I saw the headline and was hoping you'd explore one of my pet peeves – the name Pleasant Valley. It's not that the street is rather unpleasant (though that's true), but the street is a wayfinding disaster. 51st becomes Pleasant Valley which becomes Grand which becomes W Grand, which is parallel to 51st but 30 blocks south. Enormous U-shaped streets are problematic enough, but does it really require four different names?

   Thanks for the mock-up of an urban infill-style development. Safeway claims they can't build residential because the lease is only 50 years, but that seems like enough time to me. Considering how desirable this area is, and the limited development potential of nearby College and Piedmont Avenues, this is a unique opportunity for North Oakland.

dto510

30 June 2009 at 11:59 am Edit

10. Artemis:
   A new cross-town line connecting to Downtown Berk and Oak would be another animal altogether...
   Yes, it would, in fact it might be just the thing to recharge the 12, which ought to see more riders than it does.

   dto510:
   51st becomes Pleasant Valley which becomes Grand which becomes W Grand, which is parallel to 51st but 30 blocks south. Enormous U-shaped streets are problematic enough, but does it really require four different names?
   This is actually one of my pet peeves too. I'd like to see "Pleasant Valley" scrapped altogether and just replaced with 51st, but there, we run into problems. The intersection of Piedmont Ave & Pleasant Valley isn't 5100 Piedmont Ave, so it throws the numbering scheme off. You could potentially change to "Grand" on the east side of Broadway, but then you'd have two intersections of Grand & Broadway, 30 blocks apart.

   ...this is a unique opportunity for North Oakland.
   Well said. An opportunity, which, I'm afraid, Safeway's proposal rather squanders.

Eric

30 June 2009 at 12:11 pm Edit

11. Interesting alternate design. My only concern is that this is clearly planned to be a "destination" Safeway (65k sqft is on the larger side for their stores). I doubt that having the Safeway at the back of the development with no frontage on either Pleasant Valley or Broadway would work for them – and having hundreds of cars turn into Gilbert just to go to the parking garage would negatively affect the pedestrian experience (and living experience) on that street, but perhaps I'm seeing it wrong or missed something – where would the garage entrance for the Safeway and other retail be? It would be great to not have to deal with garage entrances, but unfortunately that's not happening any time soon.

    Chris

    30 June 2009 at 12:28 pm Edit

12. Chris: the hope was to use what I've labeled as "Quarry Street" (which actually extends around the perimeter of the site, from Broadway north of "McAdam" to Pleasant Valley east of Gilbert) for grocery deliveries and parking garage entrances — exactly to keep curb cuts and garage entrances off of pedestrian-heavy streets. Of course, in the real world you'd do some sort of circulation study to see how that works.

    I doubt that having the Safeway at the back of the development with no frontage on either Pleasant Valley or Broadway would work for them.
    Yeah, this was another thing I considered. I justified putting Safeway in the back because really large grocery stores are usually well-known by the neighborhood anyway, and it would be easier for Safeway to advertise itself prominently on entrances than it would be for small retail shops. Also, the line of sight down Gilbert from Pleasant Valley isn't really all that far (these are quite small blocks I drew in on here).

    One concern was integrating pedestrians throughout the development. Having Safeway right upfront might encourage people to walk in, do their errand, then leave without exploring the smaller shops. Putting Safeway in the back, but still within sight, encourages pedestrians to walk through other parts of the district before getting to Safeway — hopefully lingering, making the area a bit more vibrant. In any case, there is room to play around with it. The takeaway is the general framework, more than the exact placement of this or that.

    Eric

    30 June 2009 at 12:41 pm Edit

13. Great alternative Eric. The main concern I'd have would be the similar to Chris' – I doubt Safeway would want to loose the prominent store placement they have right on the corner of Pleasant Valley and Broadway. Perhaps if the Safeway were dropped on the primary, high-visibility corner and a taller residential building were placed at the back they'd be more amenable to the idea.

    carbonxt

30 June 2009 at 12:55 pm Edit

14. carbonxt: The place where I put Safeway on this map is where they are planning to relocate per their own plans (i.e. where Longs is now). The big difference, of course, is that in their plan, nothing blocks your view of the Safeway from Pleasant Valley Ave. because they keep the big parking lot.

    As I mentioned in my previous comment to Chris, that doesn't seem like an insurmountable problem. I do think having Safeway at the back could carry greater benefits for the development as a whole — in addition to giving Safeway a building footprint that would better accommodate aisles in a 65-67K square foot store. But I agree that Safeway would most likely raise this issue, and there's room on this site to move things around a bit in response. Also, some kind of advertising for Safeway could be maintained on the more prominent street frontages, and they could take advantage of the line of sight down Gilbert.

    Still, a few takeaways here, as I see it, are to (i) build housing, since the site could support hundreds, or north of a thousand units; (ii) have more opportunities for small retail by building some interior streets and breaking up a huge site; and (iii) improve pedestrian safety and add dedicated pedestrian space to make it more public and vibrant. Within those parameters, there's a fair amount of rearranging you can do of what goes where.

Eric

30 June 2009 at 1:17 pm Edit

15. The consultant team who did Oakland's retail revitalization study said that this site could host a large high-end mall. I don't think it got into their report since they didn't consider it a real possibility – Safeway's plans have been well-known in the Oakland real estate industry for several years. Also, according to OaklandNorth.net, Safeway claims that they cannot build housing on this site for legal reasons, which isn't true. I don't know how much leverage the city of Oakland has in this situation. It seems pretty harsh to demand a higher-intensity use of land during a recession, but car-oriented retail in Rockridge doesn't seem like a fit with the General Plan.

dto510

30 June 2009 at 2:33 pm Edit

16. It does seem questionable. Besides countless mentions of transit-oriented and mixed-use, the LUTE marks 51st and Broadway as an activity center particularly suitable for "small open spaces such as public plazas or tot lots, and *housing* for seniors and others who appreciate easy access to shops, services, and transportation." And of course, the western edge of the site fronts onto Broadway, a corridor "envisioned as mixed-use *urban environment* with concentrations of commercial and civic uses" and housing in between. (emphasis mine)

    Safeway's proposal, meanwhile, includes no housing, has inadequate public space and pedestrian amenities, and it does not resemble an urban environment. It moreover treats Broadway like a driveway, rather than a major commercial pedestrian corridor (note that the plan retains the two existing buildings on the Broadway side, neither of which actually activate Broadway itself at all).

Admittedly, the map I drew is fairly intense, in that it basically suggests Tenderloin-level density. At the same time, though, there are not many large sites like this in the urban core that offer this much potential.

Eric

30 June 2009 at 3:15 pm Edit

17. I like your idea much better. A question though. One of the arguments made for strip malls is the convenience to park right in front of your store (or very close by at least). Regardless of how we feel about that argument it's something shopping center developers seem to care about. Could your plan address this by including a couple of below ground parking structures? Say, one near the Safeway and another near the pedestrian alley/McAdam intersection? Perhaps it could spread out the auto traffic as well as address a possible developer's argument against your superior plan?

Turin

30 June 2009 at 4:19 pm Edit

18. Hi Turin, thanks. I included just a very brief comment on that in the post, that was easy to miss. This map does assume there would be some below-grade parking, as you mention. The idea was to use the alleyway that runs around the whole site, behind the buildings, for most parking garage entrances and delivery trucks. Many grocery stores in urban settings, like the pictured Whole Foods, put parking in a garage in the same building as the store.

    The garage can be integrated into the store, making it easy and safe for both drivers and pedestrians to enter the store. Shoppers with full shopping carts can roll their carts right from the grocery store and into the garage to their cars. Pedestrians, meanwhile, benefit from not having to navigate a large parking lot to get to the store.

Eric

30 June 2009 at 4:34 pm Edit

19. Great post. I'd like to see the pedestrian plaza extended with some steps up to CCA(C) to create more of a college-town atmosphere. Also, bike and bus access to Piedmont Avenue must be improved, since currently the 59/59A service is pretty bad and Pleasant Valley is a bicyclist's nightmare.

Daniel

30 June 2009 at 8:26 pm Edit

20. I don't see how anyone is going to be willing to build residential now in this environment – look at the big empty lot at the Uptown near the Fox. That said, I think anyway to more fully integrate the development into the neighborhood fabric and get away from a totally auto-centric plan is a good idea, but housing is going to be tough sell, and Oakland needs much more retail, here and downtown.

    Patrick

    30 June 2009 at 10:45 pm Edit

21. [...] at Transbay Blog proposed this: Green = two height classes. Pink = pedestrian alley/plaza. Yellow = commercial storefront (does [...]

    What do we want for the Pleasant Valley Safeway project? « Living in the O

    1 July 2009 at 8:44 am Edit

22. Obviously, Oakland planners aren't learning from El Cerrito Plaza's mistake earlier this decade…a disgusting, auto-oriented strip mall with no housing or integration into the San Pablo commercial strip across the street from a BART station.

    I think greatergreaterwashington.org has recent coverage of Safeway/Giant proposals in the District that replace 60's suburban-inspired stores with buildings that are not set back from the street with parking lots. Instead, they try to integrate housing and other retail into the schemes which aim for a seamless commercial/residential flow in the neighborhood. I also think there once was something similar slated for the big Market St. Safeway in SF, but after the recent remodel I doubt anything will happen.

    Mark

    1 July 2009 at 10:08 am Edit

23. You'd think that Safeway would want to carve up some land for real estate… After all, one surface parking spot is worth something like 10,000-20,000 dollars.

    Daniel

    1 July 2009 at 10:22 am Edit

24. First, thanks for an alternate vision–so much better.
    Second, Indeed the site has great potential to correct mistakes of the past. More housing should come on line as the sprawlburbs are being abandonned due to gas cost.

    Although AC is in death spiral (fares up, service down) we can only hope this will get turned around. As a part of their cuts they are proposing to split the 51 @ Rockridge–the backdoor double fare increase for riders.
    Doing this @ 51st could be more useful as the strip mall gets redone.

david vartanoff

1 July 2009 at 10:41 am Edit

25. David, a quick note on the 51 changes—splitting the route is actually unrelated to the service cuts. That was the recommendation of a study to try to improve service on the 51 (which I think everyone can agree is appalling right now!) The idea is that splitting it will cut off the section that's causing a lot of the delays (College into Berkeley) and allow the Alameda/Broadway section to function more effectively….and theoretically it will then be easier for ACT to adjust service on the problematic sections to improve them. The unfortunate side effect of fixing the line may be a transfer for some riders, but it's not a fiscal strategy—the study was underway long before the current budget scenario played itself out.

    I would, however, *love* to see the split at 51st instead of at Rockridge BART—and then would love to see some sort of rapid line from there into downtown Oakland (since this is feasible on Broadway, but not on College). I'd actually support a second split of the corridor in that case: a bus from 51st and Broadway north to Berkeley Amtrak, a short rapid line (maybe even a center median streetcar, if money starts falling from the sky) from 51st and Broadway to Jack London Square, and a bus from Uptown into West Alameda, since presumably more service will be needed there anyway as that area develops and the Posey/Webster traffic gets worse.

    I think Rockridge BART was identified as the split in large part because there's space for buses to queue up there while they're waiting, so for ACT to be open to pushing it to 51st, the Safeway design would probably need to include a similar dedicated space.

artemis

1 July 2009 at 11:22 am Edit

26. Some very nice aspects to your alternative site plan for the Pleasant Valley Safeway site. Although I would be surprised if the Safeway would be willing to build residential since they don't own the land. It might be possible for the city to work with Safeway and the land owner to make it more attractive, but there would almost certainly need to be incentives to both from the city for them to do so. I don't think that residential would really be critical in moving towards a denser development, retail and office should be enough.

    I do think that you totally gloss over the parking issues. Although the present parking lot seems excessive, it is full at times, and adding more retail area as in the Safeway plan would leave the parking lot undersized, and so I can see why Safeway would want more parking. Also, the underground and elevated parking that Safeway is proposing is expensive, and I really don't think they would be planning on it if their data didn't say it was needed. And if you add in the additional retail and residential in your plan, even more parking would be needed.

    Location of that parking is another factor. Underground parking is horribly expensive, and it is very unlikely that the developer would be able to recapture costs through the modest density in your proposal. Much denser, i.e. higher, development would be needed to recapture costs. I think that the recent developments in Walnut Creek, or even Emeryville, with an elevated parking garage surrounded and hidden by enclosing retail and/or residential, would be a more economically viable approach to reducing the amount of surface parking lot.

Also, the apparent total absence of surface, e.g. street, parking is a problem. Many trips to the grocery store, and to other retail establishments, are only to peck up a couple of items. The parking garage is a disincentive to this, as more time is spent parking and walking to the store than actually inside the store. A limited amount of short term street parking, say 20 minute duration, would get around this problem. Short term parking for the quick errand, and the garage for the weekly shopping trip.

Robert

1 July 2009 at 11:26 am Edit

27. This is great Eric. I think they should leave space for a subway station. But seriously, I've often wondered why groups never move their buildings to the edges and have the parking in the center. This front parking scheme is gross. Also, why not just excavate the whole space and have the whole area of the underground for parking. Just one big podium. Then build a sweet village on top. There's going to be more than enough time for the market to rebound for housing. Considering this won't be for a few years I imagine. Gotta time it right.

The Overhead Wire

1 July 2009 at 11:34 am Edit

28. *Robert:* I believe it's safe to assume there will still be parking available on surrounding streets, and maybe some short-term spots as well. Surely you didn't expect street parking to be labeled on the map? Anyway, re: other parking. It's "glossed over" because there's really little point at such an early stage of mentioning it beyond a general level. You needn't take the concept to be more than what it is — a concept. As I explained above, it's more about design principles than the literal design. You'd want to do a study with actual numbers before moving forward with anything.

    Underground is preferable from a design perspective, but if it doesn't pencil out, then above ground (like you see in the Whole Foods image) is better than using land specifically for parking and no other purpose, esp. surface parking. Some parking is needed, but we don't want to overbuild it either. The idea that grocery stores need to be surrounded by gargantuan parking lots to survive is outmoded and outdated.

Eric

1 July 2009 at 11:46 am Edit

29. Or another thought, use the second story of each building for parking…then when less parking is needed later on, that area can be retrofitted into something else.

The Overhead Wire

1 July 2009 at 11:49 am Edit

30. *David, Artemis:* Thanks for raising the 51 split issue. In some instances, splitting lines can be a good thing, but it needs to be done in a way that minimizes inconvenience to riders. If too many riders have to transfer at 51st to ride another route up College Avenue, trip times are longer, total fare is higher for those who don't buy a pass, and we'll lose choice riders.

    I'm actually not convinced 51st Street is the best place to split. I don't think the ACT study contemplated that intersection, but about 2500 riders per day would be forced to transfer if the line was split at Rockridge BART, about 2/3-mile away. Just anecdotally, based on my trips on that line, 51st Street isn't a big "shuffle point." Most riders stay put, and actually, Rockridge BART isn't even as big of a shuffle point as one might think it would be.

    Anyway, a 51R would be a natural service to add, since the 51 local is already quite popular. Having a mixed-use activity center at Pleasant Valley would for sure generate more transit trips starting at 51st. But given that 51st isn't a big shuffle point now, you have to wonder if we wouldn't attract more riders on a 51R by just running a longer rapid route. College Ave. is too narrow for the service to be literally "rapid," but you'd at least save the dwell time, and then you'd have room for dedicated lanes on Broadway. People getting on at 51st and going toward downtown would have a truly rapid route, but then you'd also open up incrementally improved service to Rockridge and Berkeley.

Eric

1 July 2009 at 11:58 am Edit

31. Oh, and I forgot to mention, re: Robert's comment. It's an important observation that the City would need to get more involved here. We shouldn't really expect Safeway to do great urban planning of its own accord. Safeway's primary goal here is to expand and upgrade its store, and so it makes sense that they would pursue a design that does just that, and little else. But there should be a discussion about how Safeway's goals can be fit into a long-term vision of how to improve this location, rather than just building Safeway's initial proposal and calling it a day. The City would ideally step in with a vision, and then take steps to partner with Safeway so that the part of the plan that concerns Safeway can be implemented, as one step in the process.

Eric

1 July 2009 at 12:28 pm Edit

32. The transfer issue is a very real one—but as one of the riders who would have to transfer, I would readily do it if it shaved significant time off my commute. (In fact, right now I often take the 1R to downtown Berkeley and pick up the 51 there; at peak hours, it can cut my door-to-door travel time by as much as half an hour on my seven-mile trip, so I happily pay the extra quarter.) I guess my thought was that Lower Rockridge and Temescal riders would be willing to walk to 51st to pick up a truly rapid line, but that might be a little idealistic. It

would be interesting to see how the numbers affected compare between 51st and R'ridge BART, though—I've only seen MacArthur for comparison.

A 51R could be a good alternative, though. My big concern there is just that, anecdotally, it seems that much of the 51's delay along College and Bancroft comes not from dwell time but from traffic congestion and (near UC) pedestrian congestion. I'd worry about the buses themselves getting caught up there and then bunching by the time they're back in the rapid corridor, where they'd move rapidly but in posses (which is already a huge 51 problem). On Broadway, in contrast, the delay is basically all from dwell time or hitting lights at a bad point, so it seems like there's a lot more potential to fix that with infrastructure (BRT or otherwise).

artemis

1 July 2009 at 12:40 pm Edit

33. Eric, regarding the parking, I was just going off your phrase that a reduced amount of parking would be available underground. No I would not expect street parking to be diagramed in at this point. But I do think that the amount of parking vs. amount of commercial/residential is something that needs attention early in the concept phase.

    The city does need to step in with a vision if this site is to be anything special. Currently both Plesant Valley/51st and Broadway are extremely pedistrian unfriendly. I think it is unreasonable to ask Safeway to plan a little pedistrian enclave without a plan and timeline for how and when their development would integrate into the overall environment. I am hard pressed to see Oakland ever providing this vision.

Robert

1 July 2009 at 12:54 pm Edit

34. @TOW "I've often wondered why groups never move their buildings to the edges and have the parking in the center."

    Be careful what you wish for! God forbid we end up with another 9th and Bryant/Brannan Shopping center showing nothing but its butt to the sidewalk.

Josh

1 July 2009 at 1:44 pm Edit

35. *Artemis:* There is the possibility that a transfer would eat up whatever time savings you get from dedicated lanes, particularly when switching from a reliable BRT route to a route on College Avenue that is subject to the whims of traffic. And then there's the issue that many or most riders don't really like to transfer. In any case, our discussion is basically just laying some groundwork for the type of alternatives that a well-done Broadway BRT study should look at it. It's important to get a sense of how riders are using the line, and to craft service improvements accordingly.

Robert: You're right, it should be planned carefully, and my apologies if I sounded a bit flippant in my earlier comment. Completely eliminating parking won't happen, but at the same time, if you create a high quality destination with less parking than is "needed," people will still want to visit — but those who can use transit will find that to be the better option. Encouraging patrons to find alternatives is also a component of ensuring good circulation. You can't really build something of high urban density and then have everyone drive to it.

By "reduced amount," I really just meant reduced as compared to the current amount, which is an overabundance. I stated underground as a preference because the Whole Foods (and similar structures with garages embedded in between the ground floor retail and the upstairs apartments) do tend to look a bit bulky, and not as nice as buildings where the parking is hidden. Financial realities determine the final product, but to the extent that some parking can be moved underground, the option should be investigated.

Eric

1 July 2009 at 2:06 pm Edit

36. At a local meeting a few years ago, I suggested alternative treatments for different parts of the site. The area towards Broadway would be developed like you suggest Eric, but the back area could remain "big box". This part of Oakland doesn't need a "mall", however fancy. We have Rockridge, Temescal, Lakeshore, Piedmont Ave. and Broadway is clearly the next destination street. However, it is better to keep some big box stores in the city, than simply see them leave and create even more traffic. This is a big concern of many locals. Clearly the Chase bank building has to go if anything is to be done with this site.

Mike Jones

1 July 2009 at 3:09 pm Edit

37. Hi, Mike: I am sympathetic to a desire to keep tax revenue within Oakland, goodness knows too much has leaked out already. And I agree, it's necessary to have useful stores near where people live. Big box retail serves its purposes, and actually, I didn't have an upscale mall in mind for this site. The post is silent as to what type of stores would go into these buildings, but as I imagined it, at least some shops would be neighborhood-serving retail, cafes, casual eateries, etc. rather than destination retail.

    In any case, it's not so much the identity of the stores that I was after, but rather, what the built environment looks like. Adapting big box stores to an urban setting is no longer a new thing. See, for example, the Target stores in Chicago or Minneapolis. It's possible to have both big box and a walkable environment.

Eric

1 July 2009 at 3:36 pm Edit

38. I drove up Broadway on my way home today, and had a thought afterwards. There is currently nothing between 580 and Pleasant Valley now, and Auto Row redevelopment is

still but a dream, but the College Ave scene is only a few blocks away. It seems much more realistic to focus on College as a location to tie the Safeway site in with. Development of Broadway above 580 is 20 to 30 years away, by which time the Pleasant Valley Safeway will be ready for its next incarnation. So maybe the focus should be on facilitating connection to College Ave. And if that is the city's goal, it might be better to have more parking rather than less.

Why you ask? The BART end of lower College currently has lots of parking evenings and weekends at the BART station. This currently doesn't exist at the B'way end. More convenient parking might indeed allow better utilization of lower College. This would allow College to expand down to Broadway organically, and eventually up and down Broadway, much sooner than waiting for development to spread from Uptown to Safeway. This provides a second focus for commercial and residential development, which will always be faster than spreading from a single focus. While this doesn't force folks onto transit immediately, it does provide a path for higher density development that will allow the natural evolution to non-auto oriented means of transit. By the time that Safeway is ready to remodel again, natural evolution of transportation will have decreased the need for parking. In the meantime, building elevated paring on the Safeway site will allow that to be repurposed gradually as parking needs decline.

Robert

1 July 2009 at 9:01 pm Edit

39. Robert: I appreciate that you're thinking carefully about the best way to treat this part of town — but, to be honest, it kind of sounds like you're just rationalizing Safeway's proposal. The Pleasant Valley shopping center has been there for decades. During those decades, there has been a *ton* of parking near the intersection of Broadway & College — in the form of the existing parking lot. And yet, no development from College has expanded organically to Broadway during that time period. Broadway has remained essentially an expressway: cars speed through, but few pedestrians linger. Why would adding rooftop parking for the new Safeway suddenly attract development, when an already enormous parking lot failed to do so for decades? Safeway's plan itself would only add a modest amount of development to the site.

    Also, the lower end of College is already quieter than the area near the BART station. There aren't as many popular commercial establishments packed in a row on the south stretch. It seems unlikely that the somewhat dispersed businesses on lower College would suddenly give rise to development on Broadway, when that hasn't happened so far.

    The point is: more parking doesn't suddenly create a destination if there isn't already one there. You need to give people a reason to visit a place.

    The need for parking declines in part because we shape development that lends itself to carfree living. Change doesn't occur in a vacuum — it occurs because we support and implement policies that effectively guide behavior in a certain direction.

Ranelletti, Darin

From: Roko Kawai [rokoka@gmail.com]
Sent: Monday, July 27, 2009 2:59 PM
To: Ranelletti, Darin
Subject: PANIL/Safeway input

Mr. Ranelletti,

thank you for fielding my email comments re: Safeway PANIL.

my largest concern is environmental impact -- pollution, noise.
aesthetically, i would appreciate if the mall could be seen as less of a "chain" or super-store, but fit with the beauty of Rockridge & Piedmont.

thirdly, the Long's Garden Center is exceptional & I hope that it would be preserved somehow. i just moved in to the area & was surprised that when I searched online for the best local nurseries Long's came out the top on people's list. it seems important to the community to have an attraction like this -- a unique gem in a sea of chains.

Roko Kawai
288 Whitmore ST 94611

Ranelletti, Darin

From: Leah Slyder Vass [slydervass@yahoo.com]
Sent: Thursday, July 30, 2009 10:51 AM
To: Ranelletti, Darin
Cc: Nadel, Nancy; Starks, Carletta; Kernighan, Pat
Subject: Safeway expansion

Dear Mr. Ranelletti,
I am an Oakland resident who just heard today of the plans to close the Longs/CVS at the end of their lease in 2010 in order for their landlord, Safeway, to occupy the space. I have nothing against Safeway (or their right to expand), however, what Safeway offers the residents of Oakland nothing that can't already be had in numerous other Safeways and other grocery stores in Oakland. Longs/CVS has been my go-to place for gardening, craft supplies, yardage (especially now that we've lost Poppy Fabric), pharmacy items...you name it. My company, an event producer in Berkeley, often finds supplies that can't be found anywhere else...and needs at odd hours as well. If, indeed, Safeway wants to exercise their right to take over the Longs/CVS space, Oaklanders will be well-served if a concessions are made to keep Longs/CVS in a comparable space in Oakland.
Sincerely,
Leah Vass

Ranelletti, Darin

From: Camille Holser [cholser@calmail.berkeley.edu]
Sent: Thursday, July 30, 2009 12:10 PM
To: glenechopark@yahoogroups.com
Cc: Ranelletti, Darin; camille berkeley
Subject: Re: [glenechopark] Closure of Longs/CVS at 51st

I agree with Catherine McBride.

Most of my blouses were made with cloth and buttons I bought at PayLess/CVS. I've bought yarn there, snaps & zippers, small rugs, furniture, pet supplies, nutritional supplements, picture frames, hardware items, lots of plants & seeds, fertilizer & mulch, arts & crafts supplies, purses, books, magazines, a camera & film, wallet inserts, shoes & some clothing, concrete stepping stones for my yard, bricks, and many other things in that store. It's an absolutely essential store. Safeway might sell nutritional supplements (although their present store doesn't have many), but it isn't likely to have all the departments that Payless originally had and which, thank goodness, Rite Aid, Long's and CVS have kept and stocked.

Camille Holser

Catherine McBride wrote:
>
> *This isn't just a neighborhood issue, a district problem, or an area
> concern. The loss of Longs/CVS at 51st is a city-wide loss of
> consumer options, tax revenue, and jobs.*
> **
> Public comments were due on 7-27 on the changes to Safeway at 51st,
> but I've just heard of this and feel compelled to spread the word and
> urge people to consider how it will result in the closure of the
> Longs/CVS. I sincerely hope I have misunderstood the situation and
> someone will correct my understanding. However, I have no knowledge
> of any plans to relocate a Longs/CVS of the same size and inventory in
> the same area.
>
> My concerns fall into 3 categories: shopping options for West and
> North Oakland residents; loss of retail tax revenues to Oakland; loss
> of many jobs which employ residents from all areas of Oakland
> including special needs employees.
>
> *Shopping Options*
> Safeway plans to take over the Longs/CVS site when the Longs/CVS lease
> expires in 2011. To my mind, if I have a certain amount of food
> shopping dollars and a store changes with massive expansions, it will
> have little impact on my spending because of the fixed available
> grocery dollars.
>
> However, since my arrival in Oakland in 1981 I've seen stores such as
> Woolworths, Newberry's, etc. close all over West/North Oakland leaving
> Longs (ye ole Payless aka Rite Aid aka Longs aka CVS) where one could
> pick up essential items for home, garden, camp, sports, and health. I
> and thousands of others need someplace in Oakland to spend THOSE
> non-grocery dollars.
>
> Of course, Longs/CVS is a premier stop for plants and a growing
> assortment of green gardening products. But you can also pick up a
> spool of thread, some blank CDs, a new nozzle for the hose, that
> special hair coloring, a loaf of bread, and a bottle of allergy pills.
> Don't forget the can of WD-40.
>
> We need Longs/CVS to stay. We need a large store with a wonderful
> inventory of reasonably priced garden supplies, children's books,
> hobby materials, fishing equipment, holiday specialties, greeting

> cards, and every sort of odd and end that just isn't found in this
> part of Oakland anymore. With free parking, too!
>
> Shopping options have dwindled to near nothing in Oakland. We've lost
> our large vibrant Sears, Capwells, Liberty House, Navelets,
> Woolworths, Newberry's, New York Fabrics, lighting stores, sporting
> goods stores, hat shops, shoe stores - every kind of large and small
> retail business. Lets not send anymore dollars to El Cerrito,
> Emeryville, Walnut Creek, San Leandro, and any place else EXCEPT in
> Oakland.
>
> *Retail Tax Revenue*
> I can't think of any store (Ace, Home Depot, etc) where there is such
> a growing variety of green garden products and so many reasonably
> priced plants as at Longs/CVS, where a spool of thread can be picked
> up along with a bag of compost and a bicycle tire patch kit.
>
> There will be no store in this part of Oakland to take the place of
> Longs/CVS. There will be no place to spend our dollars. I have no
> intention of driving to the Home Depot near the airport for plants and
> then someplace else in San Leandro for green natural garden
> fertilizers, etc. I will, of course, be driving to El Cerrito for a
> spool of thread (usually at 50% off) because that's the closest place
> I'll find reasonably priced sewing supplies in wide variety. And I
> have no intention of doing much shopping at the Walmart near the
> airport (a whole other problem).
>
> If I can't spend my money in Oakland, Oakland doesn't get that retail
> tax dollar. Its madness to have plans in development for business
> expansions along Broadway between 20th to MacArthur while a thriving,
> needed, and profitable business is lost to us just blocks away from there.
>
> *Jobs*
> I worked a holiday season at the old Payless and sometimes I think it
> must be a rite of passage because half of Oakland seems to have worked
> there. But the number of year-round jobs, both full- and part-time,
> added to the seasonal employment of many others is very significant.
> And this store has long been an employer of a high number of special
> needs workers who are capable of work beyond a sheltered workshop.
>
> CalJobs, youth employment, special needs employment, senior
> employment, regular employment - all lost to Oakland residents ...
> some of whom travel a long distance from East Oakland.
>
> *This isn't just a neighborhood issue, a district problem, or an area
> concern. The loss of Longs/CVS is a city-wide loss of consumer
> options, tax revenue, and jobs.*
>
> Of course, the focus of available information is the Safeway move NOT
> the impact or options of the Longs/CVS closure. I'd like to hear and
> learn more about this. I have no concern about Safeway's expansion
> unless it is based on the loss of a much needed Oakland business.
>
> Some info is available at the following sites. If others have info,
> please share and circulate it so you can inform or correct our
> understanding. Thanks.
>
> Piedmont Avenue Improvement League (PANIL)
> http://panil.org/newsletter/Panil_July_2009.pdf
> <http://panil.org/newsletter/Panil_July_2009.pdf>
>
> Documents for review at this site and you need Word to read them
> http://www.docstoc.com:80/docs/7400347/Rockridge-Center-Safeway-Pre-Ap
> plication-Plans
> <http://www.docstoc.com:80/docs/7400347/Rockridge-Center-Safeway-Pre-A
> pplication-Plans>
>

> Comments to
> dranelletti@oaklandnet.com <mailto:oaklandnet.com@oaklandnet.com>
> Darin Ranelletti at the City at (510) 238-3663
>
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> _
> .
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> __,_._,___

Ranelletti, Darin

From: Kathy Foster [kefoster1@comcast.net]
Sent: Thursday, July 30, 2009 11:07 PM
To: Ranelletti, Darin
Subject: Closure of Longs/CVS at 51st
Attachments: ma_grp_160.gif; ATT1568700.txt; ATT1568701.txt; serv.gif; ATT1568702.txt; ATT1568703.txt

Dear Mr. Ranelletti,

The long comments below about the potential closure of the Longs/CVS at 51st due to Safeway expansion is the first I've heard about it. While I am presently a resident of Redwood Heights, and so perhaps not considered an affected "neighbor", I have shopped at "Payless/Rite-Aid/Longs/CVS" since 1975 and it is one of my favorite stores. I heartily agree with all the points made below about the negative impact its closing would have on the city, from reducing the already limited shopping options in Oakland, to the loss of needed sales tax revenue, to the loss of jobs. This particular store is unique in offering the most amazing variety of wares for sale at reasonable prices that truly makes it a valuable one-stop-shopping place. Its closing would be a terrible loss, not only for the North Oakland neighborhood, but for the entire city.

Kathy Foster
Gregory Street

Begin forwarded message:

> **From:** "SJ Hoffmann" <sjhoffmann@bba.com>
> **Date:** July 30, 2009 10:04:46 PM PDT
> **To:** "'Redwood Heights'" <redwoodheights@yahoogroups.com>
> **Subject: [RedwoodHeights] FW: [15X_NCPC] Closure of Longs/CVS at 51st**
>
> FYI -- Pulled this info about potential closing of Rockridge Longs/CVS from another list serv – this is news to me. More information below. Anyone else familiar with this issue? I'm posting as I believe I'm not the only one around here that this would effect. - Susan on Atlas
>
> ### FW: [15X_NCPC] Closure of Longs/CVS at 51st
>
> ### Posted by: "Pluff Mud" pluff_mud@hotmail.com portsmouth53
>
> **Thu Jul 30, 2009 1:00 am (PDT)**
>
> To: mosswood_dog_run@yahoogroups.com; ncpc_beat8@yahoogroups.com; OPD@yahoogroups.com; harrioak@yahoogroups.com; glenechopark@yahoogroups.com; d3oaklanddtownlake@yahoogroups.com; APAC_14X@yahoogroups.com; 15X_NCPC@yahoogroups.com; jquan@oaklandnet.com; pkernighan@oaklandnet.com; atlarge@oaklandnet.com; NNadel@oaklandnet.com; jbrunner@oaklandnet.com
> From: cmcbride@pacbell.net
> Date: Wed, 29 Jul 2009 16:04:45 -0700

Subject: [15X_NCPC] Closure of Longs/CVS at 51st

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My concerns fall into 3 categories: shopping options for West and North Oakland residents; loss of retail tax revenues to Oakland; loss of many jobs which employ residents from all areas of Oakland including special needs employees.

Shopping Options
Safeway plans to take over the Longs/CVS site when the Longs/CVS lease expires in 2011. To my mind, if I have a certain amount of food shopping dollars and a store changes with massive expansions, it will have little impact on my spending because of the fixed available grocery dollars.

However, since my arrival in Oakland in 1981 I've seen stores such as Woolworths, Newberry's, etc. close all over West/North Oakland leaving Longs (ye ole Payless aka Rite Aid aka Longs aka CVS) where one could pick up essential items for home, garden, camp, sports, and health. I and thousands of others need someplace in Oakland to spend THOSE non-grocery dollars.

Of course, Longs/CVS is a premier stop for plants and a growing assortment of green gardening products. But you can also pick up a spool of thread, some blank CDs, a new nozzle for the hose, that special hair coloring, a loaf of bread, and a bottle of allergy pills. Don't forget the can of WD-40.

We need Longs/CVS to stay. We need a large store with a wonderful inventory of reasonably priced garden supplies, children's books, hobby materials, fishing equipment, holiday specialties, greeting cards, and every sort of odd and end that just isn't found in this part of Oakland anymore. With free parking, too!

Shopping options have dwindled to near nothing in Oakland. We've lost our large vibrant Sears, Capwells, Liberty House, Navelets, Woolworths, Newberry's, New York Fabrics, lighting stores, sporting goods stores, hat shops, shoe stores - every kind of large and small retail business. Lets not send anymore dollars to El Cerrito, Emeryville, Walnut Creek, San Leandro, and any place else EXCEPT in Oakland.

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CalJobs, youth employment, special needs employment, senior employment, regular employment - all lost to Oakland residents ... some of whom travel a long distance from East Oakland.

This isn't just a neighborhood issue, a district problem, or an area concern. The loss of Longs/CVS is a city-wide loss of consumer options, tax revenue, and jobs.

Of course, the focus of available information is the Safeway move NOT the impact or options of the Longs/CVS closure. I'd like to hear and learn more about this. I have no concern about Safeway's expansion unless it is based on the loss of a much needed Oakland business.

Some info is available at the following sites. If others have info, please share and circulate it so you can inform or correct our understanding. Thanks.

Piedmont Avenue Improvement League
(PANIL)
http://panil.org/newsletter/Panil_July_2009.pdf

Documents for review at this site and you need Word
to read them
http://www.docstoc.com:80/docs/7400347/Rockridge-Center-Safeway-Pre-Application-Plans

Comments to
dranelletti@oaklandnet.com
Darin Ranelletti at the City at (510) 238-3663

Ranelletti, Darin

From: Lakeshore Children's Center [lcc4me@pacbell.net]
Sent: Thursday, August 06, 2009 11:09 AM
To: Ranelletti, Darin
Subject: Rockridge Safeway

I do a lot of shopping at the Rockridge Longs store and have noticed that quite a few special needs citizens are employed at that location and am wondering how this will impact their jobs and lives. They remodeled that Safeway store several years ago and I don't see the need for change now, other than to do a better job of cleaning the bakery and food areas.

Rae Rita Thompson

Ranelletti, Darin

From: Laura Prival [lprival@yahoo.com]
Sent: Saturday, August 08, 2009 1:59 PM
To: Ranelletti, Darin
Subject: Please Don't Close Longs at 51st!

Dear Darin,

I am hoping that you are the appropriate person to contact regarding a rumor I have recently heard that the large Longs at 51st/Pleasant Valley and Broadway may be closing and replaced with another Safeway.

I am an Oakland Public School teacher, and I cannot tell you how many evenings I have zipped over to Longs to purchase supplies for my lessons. Everything from plants and seeds for our school garden to yarn and googly eyes for art projects can be found in the aisles there at reasonable prices. I often see another teacher or two cruising around, picking out the sparkly pencils for student prizes or selecting a healthy snack for the little ones. This Longs is an oasis for us teachers: easy to get in and out of, helpful staff, and such a breadth of goods. After a long, 10 hour day of teaching, grading, and planning, it is so wonderful to know that I can find all the materials I need, plus toothpaste, lightbulbs, and environmentally-sound detergent for my family, just 10 minutes from my house. I can only imagine how much my carbon-footprint (and exhaustion) will increase if I need to make the trip to Target in Albany for these items.

I am also aware that the Longs at 51st is a major employer in Oakland, and I value and admire its connection with the Stepping Stones program. I know that CVS has recently purchased Longs, and I truly hope that CVS does not disrupt this decades-long resource for our community.

Thanks for your time. Please let me know of any updates, or if there is another person I should contact about this concern.

Sincerely,
Laura Prival
Oakland resident

-----Original Message-----
From: sheri vail [mailto:ron-sheri@comcast.net]
Sent: Tuesday, October 06, 2009 8:57 AM
To: Vollman, Peterson
Subject: rockridge safeway-broadway/pleasant valley

the plan to close the cvs.drug center- seems to be an extreme choice-so that safeway will have space.. think about the amount of retail in the north oakland area-that the average working class person can afford. the cvs center like the longs and payless that came before them serves the needs of many people in the oakland area.where do people in oakland buy their plants and garden supplies, if this is taken away they have no place with in reason to purchase these items and many other items that are not available at safeway..there are no shopping malls with in a reasonable area,the shops on college are upscale and not visited by 90 % of the people.people really depend on the drug store for many everyday items they need, there is no where else in the inner city area one can purchase garden supplies an d healthy plants . not to mention their holiday shopping..why punish the public

thank you

sv

Ranelletti, Darin

From: dscarritt@springmail.com
Sent: Tuesday, August 24, 2010 11:15 AM
To: Brunner, Jane
Cc: Ranelletti, Darin
Subject: Safeway Redevelopment Project(Broadway and Pleasant Valley)

Dear Ms. Brunner and City Council Members:
I have been a resident of the Broadway and Pleasant Valley to Grand and Lakeshore area since 1970. Yesterday (8/23/09) a developer was trying to gain signatures for a proprosed redevelopment of the shopping center. Although I have heard rumors, this was the first time anyone attempted to describe the scope of the project and the displacement of the shopping amenities I have enjoyed for the past 40 years.
Frankly, I think the developer is out of step with the economic realities of the neighborhood. We have always enjoyed the convenience and value of shopping at both Safeway and Long's (now CVS). The single story of the shopping makes for easy access and there has always been more than enough parking. Frankly, the small businesses in the mall do not seem to be well patronized, other than Starbucks. I am now told that CVS is not interested in what the developer is proposing. In March, Safeway did some sort of downsizing of their inventory items, to be more cost effective, I presume. Unfortunately they eliminated some products for which I used to make a special trip.
If the proposed changes are made, I will have even less of a reason to patronize the stores in this area. I fear that Safeway is trying to compete with other well-established upscale groceries (Piedmont Grocery, Whole Foods) and that they would do better to continue providing good value, to allow for the diverse population of shoppers, including the elderly and people of modest means.
I am delighted CSAA has decided to locate in the complex, and who would not like to see the reservoir behind it cleaned up and improved. These improvements can happen without losing Longs/CVA (the superstore, not the glorified pharmacies on Piedmont Ave. and Lakeshore).
Please listen to the long-term residents of Oakland, not the developers.
Sincerely,
Diane Scarritt
645 Chetwood St. #202
Oakland,CA 94610

Ranelletti, Darin

From: Angstadt, Eric
Sent: Wednesday, September 15, 2010 9:20 AM
To: Ranelletti, Darin
Subject: FW: Rockridge shopping center

From: Brunner, Jane
Sent: Wednesday, September 15, 2010 8:16 AM
To: Laura gardinier
Cc: Angstadt, Eric
Subject: RE: Rockridge shopping center

Thank you for your email, I will pass it along to the planning department so it becomes part of the record.

Jane

From: Laura gardinier [mailto:lgardinier@pacbell.net]
Sent: Wed 9/15/2010 8:03 AM
To: Brunner, Jane
Subject: Rockridge shopping center

Dear Councilmember Jane Brunner,

I am a Oakland native, born and raised on 63rd street, attended Oakland Public Schools, and have raised my own children on Shafter Ave. here in Oakland.

I am writing in protest against the New Plan for Rockridge Shopping Center.

My first issue is that they (Safeway) has eliminated room for a Payless/RiteAid/Longs/CVS. This is a big mistake, as a parent I have rushed to that pharmacy at night for necessary drugs, as a teacher, and a parent I have picked up school supplies, or plants for the sidewalk plot. I believe that the store adds to the walk ability of our neighborhoods.

Safeway is too big as it is, and it feels like with their two projects they have in the plans, (College Ave. and Rockridge) they are getting greedy. Safeway seems to be trying to take business away from the many smaller businesses in our neighborhoods, by adding their own flowers, cafes, and bakeries. If they succeed in their plans, I for one, will boycott this franchise

My second issue is the size of this development, and the long term affects on the quality of life in a already heavily trafficked area.

Please, on behalf of your fellow Oakland neighbors, vote no to this overly sized, greedy grab.

Thank you,

Laura Gardinier

Ranelletti, Darin

From: Angstadt, Eric
Sent: Thursday, August 26, 2010 8:44 AM
To: Ranelletti, Darin
Subject: FW: Oppose Rockridge Shopping Center

From: Brunner, Jane
Sent: Thursday, August 26, 2010 8:11 AM
To: Craig Conly
Cc: Angstadt, Eric
Subject: RE: Oppose Rockridge Shopping Center

Thank you for your email and opinion. I will forward it to the planning department for the record.

Jane

From: Craig Conly [mailto:craig@di-sys.com]
Sent: Wed 8/25/2010 12:33 PM
To: Brunner, Jane; Blake.Huntsman@seiu1021.org
Subject: Oppose Rockridge Shopping Center

Dear Ms. Brunner and Mr. Huntsman:

I wish to express my opposition in the strongest possible terms to the proposed development at the Rockridge Shopping Center. I believe this proposal is totally antithetical to the nature of the neighborhood. It would create undesirable competition for the existing merchants on Piedmont Avenue. Traffic and parking problems would be multiplied if not intolerable. If I wanted to live in a Walnut Creek type of environment, I would move there. Please, please, please oppose this proposal!!!

Craig Conly
4357 Montgomery Street
Oakland, CA 94611

Ranelletti, Darin

From: Madeleine [mzm@att.net]
Sent: Monday, October 25, 2010 12:05 PM
To: Ranelletti, Darin
Cc: Miller, Scott
Subject: Safeway Broadway follow up

Hi Darin,

I really appreciate your taking the time to meet with me to discuss my concerns about the Safeway Broadway's proposal. In its current form, this proposal is still timid in nature and does not fully respond to the wishes that were clearly articulated in previous public hearings for a true pedestrian-oriented, neighborhood mixed-use development. The purpose of this email is to outline more clearly my views regarding the non-architectural, design oriented issues affecting the overall design, feel and function of this development. The good news is that our goals to make this a development the community will fully support and be proud of, as well as a very profitable development for Safeway, are not mutually exclusive. In fact, they are symbiotic.

To re-state my position, given the proximity to transit, services, surrounded by a diverse set of wonderful and unique neighborhoods, and sitting at the head of Oakland's main transit corridor, it is my belief that this site could be developed as a much denser, regional serving retail mixed-use center. However, even as a more modest proposal, we want to ensure its success and am willing and happy to work with Safeway, staff and the other Commissioners to make this happen. For this project to be a true catalyst for this underutilized street intersection, and possibly for upper Broadway as a whole, it needs to be a true pedestrian oriented mixed-use development. Notwithstanding the fact that the Safeway's store and related parking is and will continue to be suburban in nature, the rest of the development, in its current form, still feels more like an inward oriented single-use suburban mall. A big part of the current proposal has to do with architectural design, (in a narrow sense), which I mentioned already in more detail during our meeting. But a big reason why this proposal still feels suburban has to do with site design, land use, density, traffic, massing and building orientation. I have confirmed this view with many professionals and community members.

Would CEDA staff support my recommendation to work with Safeway, City Council members, Commissioners, and the community at large on these issues outlined below?:

1. In addition to the proposed retail, Safeway should consider including one or two levels of housing and office space into this development (3+stories in height). Given the proximity to CCA and Rockridge Bart, can some housing with minimum parking requirements be added along Pleasant Valley facing the street (above the retail), and possible along Broadway too? (I have done some sketches to show how this is possible given the grades, etc). This will help the overall massing, make the retail successful as it would provide enough density to support smaller scale retail, eyes on the street, and a night-time population that would make this area feel safer. If housing is not feasible right now, can flex space (live-work lofts?), be included as place holders? It would be interesting to know how the Emeryville Bay Street developers phased the housing over time. We can learn something from their financing model (but NOT their design). Do you have any ideas?

2. As I mentioned earlier, I believe that Pleasant Valley and Broadway need to be lined up with pedestrian friendly uses. Also, the street realm needs to be re-designed for greater pedestrian safety and comfort. As you mentioned, there is much pedestrian traffic going on right now, despite the current street conditions. For additional ground level retail/flex space/office space to succeed, a number of street improvements would need to take place:

a. Narrow traffic lane widths to slow down traffic along Pleasant Valley

b. Add bulbouts at all street intersections to shorten the crossing distance (esp. along Pleasant Valley and at the Pleasant Valley/Broadway intersection)

c. Add on-street parking along Pleasant Valley and Broadway. East of this development there is on-street parking on both sides of PV. I know b/c I use it myself to visit my dentist. On-street parking makes it convenient for customers in the area to use retail and other services in the community. Why not here?

d. Make sidewalk improvements: plant trees at 25' o.c., consider swales/stormwater management techniques, create an interesting paving pattern, improve street lighting and add other street furniture as necessary…

e. Increase permeability, ie, increase the number of pedestrian pass-throughs from sidewalks into the development. Interior street should be accessible and visible from the sidewalk.

I have observed Pleasant Valley's traffic patterns and have noticed how wide and overdesigned for cars this street currently is. It is clear to me that this street can fit two lanes of traffic in each direction, on-street parking on each side, bulbouts at intersections, wider sidewalks and even a north-bound turning lane from Pleasant Valley to Broadway, without affecting car movement along Broadway itself. Can city staff explore a number of street plan and section diagrams to demonstrate how this idea might be accomplished?

Finally, we need more clarity about who owns the land and what their long term intentions with this parcel are. Can you provide a contact name? Also, how long is Safeway's latest lease? You mentioned a 100 years. Can you please confirm this? If the lease is still a 40 year lease, how can the city as a whole support/advocate for a longer term lease? Is Safeway interested in this direction?

I am still very interested in having a meeting with your public works colleagues to discuss the above before the Design Review Committee hearing on December 8th. Your advise on all the above would be greatly appreciated.

Sincerely,

Madeleine

Madeleine Zayas-Mart

Oakland Planning Commission

Chair, Design Review Committee

Madeleine Zayas-Mart

MZM Design Works

Architecture I Urban Design & Planning

510-282-7287 ph I 510-601-8858 fax I mzm@att.net cell

Ranelletti, Darin

From: Gregory Mock [gmock@sbcglobal.net]
Sent: Monday, December 06, 2010 10:25 AM
To: Brunner, Jane; Ranelletti, Darin
Subject: RE: Oakland City Planning Commission Meeting December ,
Attachments: December 8, Oakland City Planning Commision, Design Review Committee.docx

Ms. Brunner and the Oakland City Planning Commission,

Please have the attached document entered into the minutes of the meeting slated for December 8th, 201 Oakland City, Design Review Committee Meeting. I have attached a word document and have provided the text below for your use.

Regards,

Gregory Mock

December 6, 2010

RE: Safeway Shopping Center Redesign Meeting December 8, 2010, Case File CMD09-135

Ms. Brunner and the Oakland City Planning Commission,

The reason for my correspondence is to address the redesign and construction of the Safeway/Shopping Center located at Broadway and Pleasant Valley, in Oakland , California.

My name is Gregory Mock and I reside at 4459 View Place Court, just above the new AAA Office. I have resided at this address since 1999. Since living here, there have been numerous incidents of noise disturbances and traffic incidence. I will address each separately.

The noise disturbances occur at the rate of at least 2 per week, most at late hours and many have gone unreported to police. Here are examples of the problems; loud playing of music from cars in the parking lot (I believe this to be an someone who is picking an employee up from work because of the frequency), car alarms in numerous consecutive incidents, late evening delivery of products to Jamba Juice at least 3 times per month at 12AM and Starbucks Coffee at least two time per month at 10PM, power washing the side walk outside of Starbucks at 11PM. The Starbucks and Jamba Juice continue violate Oakland California, Code of Ordinances, Title 8 of Health and Safety, Chapter 8.18 Nuisances, despite correspondence from the Safeway Property Manager, Kim Daniels.

It should be noted that both Jamba Juice and Starbucks do not have adequate access for deliveries from the back of the premises.

Last year, 2 ambulance companies were using the parking lot near the Old Emile Villa Restaurant as a staging area for their vehicles. The ambulances would turn on their sirens before leaving the lot. I spoke to the Safeway Property Manager about this problem. She didn't even know the code for parking enforcement for her own shopping center. It is posted in the parking lot. She admitted that she has not visited the center in a long time. Frankly, I have no confidence in Ms. Daniels abilities to affect any remedy to these problems. In fact, it was not until AAA opened its' doors, did the ambulance problem disappear (probably at the AAA's request).

The traffic incidents happen daily. My street crosses Montgomery. At the corner of Montgomery and Pleasant Valley, there are no stop signs (4 way aterial). Many motorist going to Safeway, bypass the turnout and make a u turn back at Pleasant Valley and Montgomery in order to enter the Safeway Shopping Center. This intersection **NEEDS STOP LIGHTS/SIGNS.** Many of the vehicles that traverse the parking lot, traveling at unsafe speeds and show disregard for travel direction in the parking lot. Cars regularly enter the lot at Broadway through the island break across for the Wendy's. The vehicles then travel down the wrong way past the Boston Market Restaurant, to enter the parking lot. I have witnessed many accident near misses and I have nearly been hit walking across this small section of the parking lot to Broadway. **Directly across the street from this shopping center is a large retirement and long term care facility.**

In addition to the traffic problems, there has been homeless people overnight parking in the lot, making loud noise late into the evening, skateboarding late in the evening, car alarms during the day and evening, and auto body work during the evening (this is a person who performs this work by pounding out dents). **I have seen signs in the parking lot at the Whole Foods that discourages noise and would like to see the same for this shopping center.**

During the construction of the AAA building, special considerations were given to Safeway, to allow the construction to begin at 7:00AM. No explanation was given why they were allowed to do this since code states 8:00AM is the start time.

In Safeway's first attempt in the new design of the Shopping Center, it was proposed that a restaurant be built with an open patio facing the pond. I assure you that the noise from the patio would be intensified by the rock walls that border the pond. An open patio would create additional noise, most probably into the late evenings.

I have spoken to many of my neighbors, those who live along the ponds edge, who also hear some of the disturbances from the Safeway Center at all hours of the day and night. I would like to ask you to defend my neighbors and myself against any design that would create more disturbances and endanger the people of our neighborhood.

Ranelletti, Darin

From: Susan Lee [gingerleaf@gmail.com]
Sent: Monday, January 17, 2011 8:10 AM
To: Ranelletti, Darin
Subject: Safeway at Pleasant Valley

Hi Mr. Ranelletti -- I'm a resident of Oakland and would like to go on record to register my support for high density mixed use for the Safeway at Pleasant Valley & Broadway. So many of us in the neighborhood would like the development project to be more amenable to pedestrians, bikers, and others who can't/don't want to depend on cars.

Thank you!
Susan Lee

Ranelletti, Darin

From: Jerome Buttrick [jerome@buttrickwong.com]
Sent: Tuesday, January 18, 2011 4:36 PM
To: Ranelletti, Darin
Subject: Safeway at Pleasant Valley

Mr Ranelletti
I want to add my voice to those in favor of high density development --including housing-- at the Rockridge center development.
This lot is a prime piece of real estate and needs to show what Oakland is capable of. Thus far the design seems to not take advantage of the street. Whatever happens there we need the project to make the street pedestrian life better.
Maintaining the 60's strip mall approach is not the way to the future.
Thanks,
--Jerome Buttrick

Jerome Buttrick, AIA, LEED AP
BUTTRICK WONG Architects
t 510.594.8700 x15

Ranelletti, Darin

From: Matt Bjork [bjork.matt@gmail.com]
Sent: Thursday, January 20, 2011 6:40 AM
To: Ranelletti, Darin
Cc: Oakland Neighbors
Subject: Case file number CMD09-135.

Hello Mr. Ranalletti,

I have 3 main concerns about the 51st&Broadway Safeway development.

1) It seems that a critical element is the square footage assignments of the retail spaces. If the retail spaces are as large as proposed on the site data, then they will attract tenants who are "big box" types - and people may want to be driving shopping carts back and forth from the parking areas to the internal street. I would like to see a strong mix of business sizes so that this center can weather uncertain economies - and not become "hollowed out" in changing times. This center has remained relatively vibrant given its ugliness - possibly becasue of its retail mix.

2) The proposal talks about businesses opening up to Broadway and 51st - but I do not see this effectively done from the proposal.

3) If this becomes a regional center - like Bay Street - then traffic access should be done better - much better. Given that the existing traffic flow is problematic and there to study everyday, it should be easy to propose something better than what I see here.
Main access would likely be Eastbound 51st..
3a) From there, the largest entrance is Pleasant Valley - but there is not enough space in the 2 left lane turnouts to hold enough cars based on current traffic patterns there right now. Stealing a lane from PV West turning south on Broadway might be best alternative.
3b) Better would be to make the Broadway entrance a proper entrance with 2 lanes in instead of the existing 1. Then make 51st East have 2 left turn lanes into Broadway north - and do not loose a lane traveling north on Broadway. Both these do take up some development space - but not much. This path would then have drivers only stopping at the Broadway&51st light, but then have a very direct path into the main parking areas. One of the main exiting problems is the bunch up always happening at the 4-way internal stop at PV.
3c) Doing 3b also improves flow southbound from College ave.
3d) Putting a bus stop just after turning from PV west into Broadway North is nutz. The biggest back up in the area is this turn - which could use 2 right turn lanes effectively right now. A bus (or 2-3 the way AC transit runs...) would gum up this turn horribly. Pull the bus stop more north on Broadway to get it and the lined up busses out of the intersection.
The biggest problem with Bay Street is traffic in and out of it. If the developers and city want to make this a success, then they should be willing to sacrifice some retail space on the Broadway side and improve the traffic flows into the Broadway entrance.

- Matt Bjork, Oakland

dboxer@gmail.com;VienV.Truong@gmail.com;Blake.Huntsman@seiu1021.org;sgalvez@phi.org;mzmdesignworks@gmail.com;VinceGibbs.opc.@gmail.com

January 21, 2011

Dear Members of the Safeway Redevelopment Committee,

Please review the issues below that will impact the neighbors of the Oakland Safeway Redevelopment Project.

Safeway is supporting the redevelopment of their property as it states: the redevelopment will increase MORE shopping vendors, a NEW movie theatre, and NEW restaurants for the area. With more volume to the area, we are concerned that:

- **Increased noise levels** will affect the mental health of the elderly, infants and children in the community. The **architectural design** of the restaurants and potential theatre should be designed, in so, **the noise will not carry towards the homes above and around the quarry OR restrict "outdoor" restaurant areas.** We request commercial quality window coverings that will retain our quality of life.

- **Increased traffic volume** will affect the safety of the elderly, infants and children in the community and shopping center patrons. Please take concise considerations and **ADD traffic controls at the 4-way intersections of Pleasant Valley Road and Montgomery Street.** Frequently, drivers make **U-TURNS** at this intersection to double back to the Safeway Shopping Center and the new AAA office. In addition, **car accidents or unsafe driving** occur at this intersection due to speeding cars.

- **Lighting poles and light schedules should not impede the residents of the neighborhood. The lights should not cast light that will impede their quality of life while sleeping.** We request commercial quality window coverings that will retain our quality of life.

- Construction should occur ONLY between the hours of 8:00 to 5:00PM Monday to Friday. NO construction Saturday and Sundays.

- The **nursery and fabric departments** in the CVS store **MUST remain** available in the shopping center.

- The project MUST provide **affordable GREEN housing**. HOUSING SHOULD BE THE FIRST PHASE OF THE REDEVELOPMENT TO INSURE THAT THE PROJECT DOES NOT RUN OUT OF MONEY.

Sincerely,
Darlene Mock
darmock@sbcglobal.net

Ranelletti, Darin

From: Gail Cooper [coop602@sbcglobal.net]
Sent: Monday, January 24, 2011 8:41 PM
To: Ranelletti, Darin
Cc: coop602@sbcglobal.net
Subject: Safeway project at 51 & Pleasant Valley

Dear Darin:

I live at 4352 Montgomery St, just off of Pleasant Valley. I am very disturbed with the nature of Safeway's proposed project.

The site is already developed so the issues presented are not NIMBY, but rather how to use the site most effectively and attractively. I truly wished Safeway would develop mixed use residential/commercial - housing is sorely needed in Oakland, as you know, and the location is perfect. I also feel that the areas facing the street should be attractive and pedestrian friendly - among other things, why can't the parking be behind Safeway? And while I either walk or drive there, depending on the amount of shopping I need to do, I think it's important for there to be excellent transit connections close to Safeway and the stores.

Gail Cooper

Ranelletti, Darin

From: Tim Anderson [anderstim@gmail.com]

Sent: Tuesday, January 25, 2011 6:23 PM

To: Ranelletti, Darin

Cc: dboxer@gmail.com; VienV.Truong@gmail.com; Blake.Huntsman@seiu1021.org; sgalvez@phi.org; michael.colbruno@gmail.com; mzmdesignworks@gmail.com; VinceGibbs.opc@gmail.com

Subject: Safeway Redevelopment Project (5050-5100 Broadway)

Dear Mr. Ranelleti,
As a property owner in the Temescal District, I encourage the Planning Commission to approve Safeway's redesign proposal (Case file number CMD09-135).

Any concerns I had with the original proposal have been alleviated by the current redesign. Safeway has taken our community input to heart and incorporated many of the requests into the design. Pedestrian and bicycle access are improved, parking is being increased without wasting space and the buildings are brought up along Broadway and 51st. In addition, the expanded retail space will bring a variety of businesses to this location. I'm particularly looking forward to adding to our growing stable of excellent restaurants.

I'm hopeful that the Commission will also recognize the financial benefits to our City by implementing this plan. That private sources are willing to invest millions in this corner is a real win for Oakland (particularly the Temescal, Rockridge, and Piedmont districts). Not only will the construction bring investment dollars, the increased retail space will generate additional sales tax revenue. The new businesses will also create new entry and mid-level jobs which would benefit our young people or others looking for employment.

Safeway at Broadway and 51st has been a good neighbor. They listened to the community input and adopted nearly all of the recommendations put forth. They are willing to invest millions of dollars in Oakland and provide ongoing sources of revenue for our cash-strapped City. Because of the time and resources dedicated to this project thus far, I understand that this is Safeway's final submission. The plan is a good one and to squander this opportunity would be a real shame.

Regards,
Tim Anderson
397 43rd Street

Oakland Planning Commission
Design Review Committee
January 26, 2011

Re: Redevelopment of Safeway site at 51st and Broadway, Oakland

To whom it may concern,

I am an architect and homeowner in Temescal. I am also a frequent customer at the 51st and Broadway stores. I appreciate that fact that Safeway is willing to reinvest in this important Oakland site, and feel that important changes need to be made to the proposed plan to make the development a good neighbor in the short and long term.

First, the corner of the site is at the intersection of the Piedmont, Rockridge and Temescal neighborhoods -- a great opportunity to create a genuine and well-loved civic square. This means a pedestrian-oriented green space with limited or no access for cars, no loading docks and a vibrant mix of uses and diverse architectural façades.

Second, the Oakland Retail Enhancement Strategy diagrams included at the end of the staff report show a brilliant small orthogonal blocks strategy that creates a continuous, transparent, porous street wall, which the Safeway proposal does not emulate. This simple grid plan should be the blueprint for any new development at the site.

Third, housing must be as part of this redevelopment. Including housing would be a great benefit to the stores; and having people actually living at the site reduces car usage and increases overall public safety. I understand that the housing market is not strong right now, but ten years from now, we will truly regret not having housing here.

Lastly, the intersection of 51st and Broadway is an extremely dangerous place for bicyclists and pedestrians. By reducing the project's overall parking count, limiting the spaces only to garages at the rear of the site, and by incorporating basic urban design strategies like bulb outs and narrow lanes, and shared street, this will be a much safer and pleasant place for everyone.

In summary, this project proposal would greatly benefit from a public neighborhood square, a more urban grided street pattern sensitive to pedestrians, sustainable urban housing, and minimal on-site parking and the traffic it generates. If these items are incorporated, it will be an asset to Oakland for many years to come and will benefit everyone, including Safeway.

Sincerely,
Amit C. Price Patel, AIA
480 43rd Street
Oakland, CA 94609
510-428-9694

Ranelletti, Darin

From: Garlynn Woodsong [garlynn@gmail.com]
Sent: Wednesday, January 26, 2011 11:03 AM
To: Ranelletti, Darin
Subject: Re: Broadway Safeway - Design Review Committee Jan. 26

Hi Darin,

I'm not sure that I can get off work early to make it tonight's meeting about Safeway, so I'd like to email you my comments on the project:

Regardless of how well Safeway has tarted up their plans architecturally, any proposal that does not include a significant amount of residential uses should be denied. This is one of North Oakland's most significant infill opportunity sites. The City of Oakland has agreed to participate in the regional planning program for implementing SB 375 by designating this area a Priority Development Area. In keeping with the philosophy underlying the PDA system, Oakland should seek to provide housing on large-scale infill sites wherever possible. This location is particularly attractive because it allows new residents to be added to a healthy, desirable, middle-class neighborhood that is already well-serviced with amenities and public transit, and is likely to receive future transit and other infrastructure improvements.

If Safeway is unwilling to play ball by bringing forward a proposal that includes a residential component (something they have already embraced as a corporation with their SOMA location in San Francisco, and their Jefferson Street location in downtown Portland, OR, among many other examples nationwide), then the City of Oakland should deny their application until that time when they are prepared to embrace residential uses.

This opportunity site is too large and too important to waste by spending the resources to construct another suburban-style center. The urban nature of Oakland needs to be embraced and acknowledged by providing a significant number of residential infill units on this site.

Thank you very much for considering my comments, and I hope you are able to share them on my behalf at the meeting tonight.

Sincerely yours,

Garlynn Woodsong
860 42nd Street
Oakland, CA 94608

On Fri, Jan 7, 2011 at 3:31 PM, Ranelletti, Darin <DRanelletti@oaklandnet.com> wrote:
> Dear Interested Parties:
>
>
>
> The Design Review Committee of the Oakland Planning Commission will
> hold a public meeting concerning the Safeway Redevelopment Project
> located at Broadway and Pleasant Valley Avenue. The meeting will be
> held on Wednesday, January 26, 2011, at 5:00 p.m. in the Sgt. Mark
> Dunakin Hearing Room (Hearing Room 1) of City Hall located at One
> Frank H. Ogawa Plaza. Please see the attached agenda for more information.
>
>
>
> Please contact me if you have any questions.
>
>
>
> Regards,
>

>
>
> Darin Ranelletti
>
>
>
> --
>
> Darin Ranelletti, Planner III
>
> City of Oakland, Planning and Zoning Division
>
> 250 Frank H. Ogawa Plaza, Suite 3315
>
> Oakland, California 94612
>
> 510-238-3663 direct phone
>
> 510-238-6538 fax
>
>
>
>

Ranelletti, Darin

From: Gretchen Till [grt.till@gmail.com]
Sent: Thursday, January 27, 2011 2:04 PM
To: Ranelletti, Darin
Subject: Safeway / Rockridge Broadway Junction

Dear Mr. Ranelletti,

I attended the Design Review Committee hearing for the Safeway project last evening. Unfortunately the information packets that were distributed ran out. I would like to be able to review the information and comment. How can I get the packet? Is there information on the City's website? Typing in Safeway into the search bar does not return an obvious link. If there is a link could you please send it to me? Thank you.

My contact information is:

Gretchen Till
336 40th Street #4
Oakland, CA 94609
grt.till@gmail.com

I have some preliminary questions and comments.

Institutions & Civic Space
I was not able to stay through the evening comments but I am concerned about a conspicuous absence of involvement from CCA in this project. Treating this as a retail only project does simply dress up a strip-mall. I am impressed by the involvement of my neighbors and their continuing push for a greater vision that includes all and can be executed. In fact this is a significant opportunity for the City of Oakland to make a public place that includes a major educational institution, a major commercial center, and the integration of neighborhood and civic scale at the intersection of Broadway and College. Safeway is interested in access to their site. The City of Oakland is the caretaker of how these things come together. I would be remiss if I neglected the Oakland Tech High School which is a significant edifice and institution and could also be a tie-in to the public space, civic institution element of this area. Additionally, if Oakland doesn't actively engage CCA it looks like they will be happy to move wholesale over to their San Francisco campus where they have much more play in creating their urban environment. This would be a tremendous loss to Oakland and to the Bay Area art and design community.

Retail & Design Studies for Other Planning Projects: Broadway Jack London Square to Rockridge Junction
The City of Oakland has been undertaking major planning projects for the downtown sections of Broadway: Uptown, Broadway Auto Row, Kaiser. Does the area from 38th to College fall under another plan? If so, what are the design ideas from that plan and how do they relate to this project. I understand that these plan relationships are more likely to be treated in the EIS process. However, each of these plans obviously includes major design concept development which could be relevant to this area. The Auto Row study specifically dealt with large retail design which is exactly what this project is doing. It can't be overlooked that Broadway starts with Jack London Square, another major redevelopment project and comes to an apex with this project. What are the design lessons and linkages that can be learned from that project.

Architectural History & Potential
Similarly, the history and environmental impact, and adjacent properties review elements of an EIS are necessary and informative for a design. This strip mall has gone through several stages of architectural redesign. I cannot imagine that the Chase Bank was always pink stucco with teal tile. Understanding the changes over time could help avoid trendy stylistic overlay that appears in the bungalow and pergola false front treatment proposal. The base of the new Cathedral of Light is a more responsive architectural treatment on a grade change. Some sense of the massive, artfully executed would be appropriate in this location where there are large features. A major improvement in the design does appear

intermittently in the activation of the vertical. The second level promenade is a very important development to the actual urbanization of this scheme. Again, please take advantage of the neighboring art and design school in this area.

New Environmental Design
I was specifically unimpressed in the area of sustainability and environmental vision in the presentation last night. In fact, these weren't mentioned at all in the main Safeway presentation. What are the City of Oakland's goals for new developments in these areas. The only long-term thing that was mentioned was the viability of a 40 year retail lease. Walking and biking are great but do not cover deeper material and energy sustainability goals. There are many requirements nowadays for on-site stormwater treatment to say the least about landscape integration into a design. The quarry and system of lakes reaching up into the cemetery need to be considered as a sub-regional landscape and the quarry not just relegated to a pocket viewing puddle. The reconstruction of the AAA building in advance of this overall site design proposal was a loss of potential in this area.

Public Outreach
Finally, I am generally disappointed by the public posting requirement. Visiting the site before the meeting I saw two signs total posted at about shin height facing intersections. These were legible to no-one and there were more "Get your Flu Shot" signs that were more visible. ONE sign of similar dimension posted at the actual entrance to the Safeway Store would get this information to many many more people. Berkeley's size and height requirements should be looked at and perhaps emulated or even improved upon. Clearly there is a lot of citizen involvement in this project. That does not mean that the 'public', which means everybody, should not be given a chance to know about it. As a designer, I believe that the more people who know about what is going on, even if they are not going to directly comment, the better the overall civic knowledge base for continued urban design.

I will be happy to put these comments into a more specific letter once I have reviewed the information packet. Thank you for your efforts on this project.

Best Regards,
Gretchen Till

--
Gretchen Till grt.till@gmail.com 336 40th Street, #4 Oakland, CA 94609 510.682.4102

REDEVELOP THE ROCKRIDGE SHOPPING CENTER

As a neighbor and patron of the Rockridge shopping center, I urge you to approve the proposed renovation of the site located at 51st/Pleasant Valley and Broadway. After viewing the current plans I can confidently say the input from the community has been taken seriously and implemented accordingly.

This development successfully incorporates:

- Adequate, responsible parking
- Focus on pedestrian and bicycle access
- Community gathering areas, green space
- Increased retail
- Prevention of street congestion during and after construction

This project is an example of responsible development that will bring multiple benefits to the city and drive prosperity for Oakland.

ART SCULPTERS

Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1-25-11	Steve Ranzbi	4252 Piedmont Ave	(510) 219-5947	Roozcafe@mac.com	(Maybe)	[signature]
1-25	Jin An	4197 Piedmont	(510) 594-0269			[signature]
1/25	Quan To	4008 Piedmont Ave	(510) 593-8127	Moc.Quan.To@gmail.com		[signature]
1/25	Karen Anderson	4188 Piedmont Ave	510-654-5599	Karen@mercyvintage.com	No	[signature]
1/25	Erica Skone-Rees	3883 Piedmont Ave	510 653 2473	erica@therarebird.com	NO	[signature]
1/25	Joshua Huber	3691 Piedmont Ave	510 655-3303	mastercat@gmail.com	NO	[signature]
1/26	Tom Clifford	191 Ridgeway	510 658-7003	tomc@tramutola.com	yes	[signature]
1/26	Larry Tramutola	191 Ridgeway	510-658-7003	larry@tramutola.com	Yes	[signature]

REDEVELOPE THE ROCKRIDGE SHOPPING CENTER

As a neighbor and patron of the Rockridge shopping center, I urge you to approve the proposed development at 51st/Pleasant Valley and Broadway. After viewing the current plans I can confidently say the community's input has been taken seriously and implemented accordingly.

I also call upon you to stand strong by ensuring the plan does not stray from its cooperative course. It is important that the community's voice remain influential in the following areas:

- Adequate, responsible parking
- Focus on pedestrian and bicycle access
- Community gathering areas, green space
- Increased retail
- Prevention of street congestion during and after construction

This project is an example of responsible development that should be duplicated in future Oakland development and look to your leadership to keep the project's momentum going.

Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/20	Phillippa Roberts	4176 Piedmont	510 655 0656	philippa@philipparoberts.com	NO	[illegible]
1/21	Elizabeth [illegible]	4007 Piedmont (crackerjacks)	(510) 654 8844	[illegible]@AOL.com	[illegible]	[illegible]
1/23	Idowu Koyejo	(Salon) 4125 Piedmont Ave Ste 3	(510)938-1065	Idowukdowk@yahoo.com	Maybe (email reminder)	[illegible]
1/22	Chris Lee	(SPARKYS) 4151 Piedmont Ave	(510) 547-8701	JUHong8903@Yahoo.	No.	[illegible]
1/23	Klavi Taylor	4314 Piedmont Ave	510 355-9260	k.taylor-wireless.stores	maybe	[illegible]
1/24	Anh Nguyen	4158 piedmont Ave	510 653 5448	FOLKSART@gmail.com	MAYBE	[illegible]
1/24	Taiwo Koyejo	4125 #3 Piedmont Ave	(510)517-8411	TrueEssenceinc@yahoo.com	Maybe	[illegible]
1/24	Daniel Alper	4058 Piedmont AV.	(510)594-1052	danjalper@sbcglobal.net	maybe	[illegible]
1/24	Glenn Parajo	4186 Piedmont Ave	510 985-1252	glennp@landmarktheatre.com	NO	[illegible]
1/24	CAN CHEN	4299D Piedmont Ave	510-388-2030	fscqing@hotmail.com	Maybe	[illegible]

REDEVELOPE THE ROCKRIDGE SHOPPING CENTER

As a neighbor and patron of the Rockridge shopping center, I urge you to approve the proposed development at 51st/Pleasant Valley and Broadway. After viewing the current plans I can confidently say the community's input has been taken seriously and implemented accordingly.

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/14	FEDERICO MURTAGH	4184 PIEDMONT AVE	510-708-0766	fedemurtagh@lushgelato.com	NO	[illegible]
1/15	Ann S. Kraynak	3871 Piedmont Avenue	510-428-2698	piedmontsys@sbcglobal.net	maybe	A Kraynak
1/17	Autumn Schwemer	127 41st Street	510.601.0100	autumn.schwemer@cancer.org	will try	A. Schwemer
1/17	Marcia Lam	4179 Piedmont Oak	510-594 8322	mlam@lamyx.com	NO	[illegible]
1/18	Niels Daul Jensen	90 RAMONA AVE PIED 94611	510-339-6505		MAYBE	[illegible]
1/20	[illegible]	4025 Piedmont Ave	510 428.9638	NTHNCO@YAHOO.COM	NO	[illegible]
1/20	Kareena Hamilton	5351 Masonic Oakland CA	510 3339947	Kareenah@gmail.com	NO	[illegible]
1/22	Jan Kuukleo	565 Bellevue ave	510 8395107		no	[illegible]
1/22	MARILYN McGRAW	3966 PIEDMONT AVE	510 428-1599	MARILYNTHEHUN@YAHOO	NO	[illegible]
1/22	CHRIS VAVROSKY	4489 PIEDMONT AVE	510-719-8851	CHRISVAV@YAHOO.com	NO	[illegible]

REDEVELOPE THE ROCKRIDGE SHOPPING CENTER

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
entered 1/13/11	Marty	3818 Piedmont Avenue, Oakland	547-1205	I dont chek it		Marty Parker
entered 1/13	Spitzer	4224 Wilshire Oakland	452-3456	kenspitzer@aol		[illegible]
entered 1/13	Edmond Gue	11 Rio Vista Ave Oakland, CA 94611	658-8981	pioneerweb@aol.com	No	Edmund [illegible]
entered 1/13	Ann Cyprano	191 Ridgeway Ave Oakland	504-1777	annte tramfdn.com	can't	Ann [illegible]
1/14	[illegible]	4018 Piedmont AV	335-0500	ASTEPFORWARDSHOES@HOTMAIL.COM	YES	[illegible]
1/14	Katie Kelly	4018 Piedmont Ave	" "	" "		[illegible]
1/14	Rina Herzig	4018 Piedmont Ave	"		no	Rina Herzig
1/14	Lumi Sexton	4018 Piedmont Ave	" "		Have to WORK	Lumi Sexton
1/14	Kelly Tomicic	4172 Piedmont Ave	(510) 601-8739	service@sewimages.com	YES	Kelly Tomicic
1/14	Cecilia Franklin	SEWIMAGES 4172 Piedmont Ave	(510) 601-8739	sewimages@mindspring.com	YES	Cecilia N. Franklin

Q ~ Visibility → U can drive (UIIA)

REDEVELOP THE ROCKRIDGE SHOPPING CENTER

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Please
APPROVE
ROCKRIDGE SHOPPING CENTER
OAKLAND, CALIFORNIA

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/15	Ellen Moyer	5373 James Ave Oakland	510 595 7588		No	Ellen Moyer
1/15	Robert Powell	1108 Windermere Menlo Park	650-644-8661		no	Robert Powell
1/15	Ruby McAlonay	~~5510~~ 15 Bicks Oakland, CA	510 547-5510		NO	[illegible]
1/15	Nico Riskin	634 Oakland Ave	619 339 6031		Call to remind me.	[illegible]
1/15	Johan Kp	5781 Buena Vista Ave	5109239610		No	[illegible]
	Harry Hamilton	365 Euclid Ave #401 Oakland CA 94610	510 697 0585		No	[illegible]
	Mike Butler	59 Garland Ave Oakland CA 94611	(510) ~~[illegible]~~ 689-4780		MAYBE	[illegible]
	Krystal Butler	59 Garland Ave Oakland, CA 94611	510 689-4780		Maybe ~~NO~~	[illegible]
1/15	Jennifer Schwarz	5122 Desmond Oakland CA 94618	510 654.529		No	[illegible]
1/15	Boyd Duckett	216 Wayne Ave Oakland CA 94606	510 465 7647		No	Boyd Duckett

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/12/11	BYRON SOUS	640 MORAGA RD. #211 MORAGA, CA 94556	~~510~~ 510-221-5704	bsous@gmail.com		[signature]
1/10/11	Lavette Wright	1862 Chapin St Alameda 94501	510-310-5994	wright3@yahoo.com	yes	[signature]
1/10/11	Supansa Chalaidchgreen	2345 26th Ave Oakland, CA 94601	510-590-0409	Thongstay@hotmail.com	Yes	[signature]
1/10/11	Tonia Chatman	943 [illegible] Oakland	(510)435-3122		after work (Kaiser)	[signature]
1/12/11	Sandra Ferrell	360 Grand Ave Oakland	510 (355-4526)	ykidohar@yahoo.com		[signature]
1/12/11	REBECCA TEMPLE	2972 HEDGE CT OAKLAND 94602	510 842 3234	beccaburb@gmail.com	YES	[signature]

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/12/11	Dolores Ramirez	969 Belmont Plc. Pittsburg	925.470.7012	lolisramirez@yahoo.com	Yes	[signature]
1/12/11	London Robinson	993 Adiline	(510) 938-41-51			[signature]
1/12/11	Jenny Stouffer	1078 72nd Ave Oakland CA	510 467 6982	jennyjenny@berkeley.edu		[signature]
"	[illegible] Lo-Lowry	151 El Camino Real Berk 94705	—	—	—	[signature]
1/12/11	JEFF SPRAGG	240 Ridgeway Ave 94611	(510) 757-5463	jeffspragg@mac.com	Really try	[signature]
1/12/11	Aleida Robinson	creekside Walnut Creek	925 478 8356			[signature]
	Miles Power 59					Miles

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1-12-11	LEE O. ODOM	720-52ND ST	510-652-713[illegible]	NO	NO	[illegible]
1-12-11	T. BARLOW	1709 CRESTVIEW DR	925.978.0811	—	MAYBE	J. Barlow
1/12/11	R. WEATHERLY	868-58th St	(510) 658-1646	—	?	[illegible]
[illegible]	[illegible]					
1/12/11	V Cole	212 Mt. Ave	510-547-5616	—	no	V Cole
	O. HATTER	785 Gollett 2	510-653 3723	—	no	[illegible]
1-12-11	Greg CHAWIN	1100 Victory LN.	510-274-5113 *	—	7	[illegible]
1/12/2011	BONZ RISTE	2001 Milvia St Berkely	510·~~986~~·979 9629	—	NO, in Sac.	[illegible]
	Donna Block					

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1/12	Daniel Weinzveg	4174 Howe St.	707-547-7966	dweinzveg@gmail	Yes	[signature]
1/12/11	Charlotte Burkhart	85 Oakland Ave	Private Phone 271 0017	—	Yes	[signature]
1/12	Scott Lobdell	1148 Waltz Court Vallejo, 94591	510-685-4477	Lobdellscott@hotmail.com	no	[signature]
1/12	Gerald Perkind			bullitt55@comcast.net	NO	[signature]
1/12	Terry Clark	6076 63rd St Oakland CA	925-352-5549	s.carter357@Gmail	but cant speak @ it Yes	[signature]
1/12	Steve Harlow	4765 Fair Oakland CA	734-732-5978	STHarlow@gmail.com	No	[signature]
1/12	Dorothy Shull	6432 Heather Ridge Way Oakland, CA 94611			NO	[signature]
1/12-11	Frank Blackmon	3564 Brookdale # Oak 94619	510 535-0824		Maybe	[signature]
	Evelyn Livingston	1226-65th Ave Oakland	568 8532	Evelyn12@att.net	no	[signature]
1/11	Andriana Chilimidos	206 Hermosa Ave	428 0879			[signature]
1/12	Sal Miranda dr	3221 Hillsview	510-461-9157			[signature]

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1/12/11	LAURA CROTTY	3933 Harrison St Apt. 362, Oakland 94611	408 839.5556	lkcrotty@gmail.com	YES	[signature]
1/12/11	Aliyah Brooks	2812 69th Ave apt 305	510-314-1641	/	NO	[signature]
1/12/11	Doris Cheiney				NO	[signature]
1/12/11	Mia Rojas	318 Arroyo Ave San Lorenzo, CA 94580	(510) 575-1134	mrag420@yahoo.com	NO	[signature]
1/12/11	Brenda Hatfar	5001 LAWTON OAKLAND CA 94609	510-653-1283	neekadoga sbcglobal.net	?	[signature]
1/12/11	Edna Pucci	280 Lee St #207 Oakland 94610	—	—	no	Edna Pucci
1/12/11	Atera Kennedy	6850 macarthur BVD Oakland, CA 94605	(510) 695-8467	cruzinanselle28 @yahoo.com	no	[signature]
1/12/11	Sybil Raymo	386 Jayne Ave Oakland, Ca.	510-763-9058	NO	NO	[signature]
1-12-11	Jan Comi	201 St. James Dr Piedmont, CA	510-482-8762	—	NO	[signature]
1/12/11	Jeanine Paz	475 Canyon Oaks Dr. Oakland, CA			No	[signature]

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/16/11	Jack R Stenmelz	2066 Drake Dr	339-0913	none	no	[illegible]
1/16	Julie Fujimoto	66 Calvert Ct 94611	428-9606	julieryoo@yahoo.com	NO	[illegible]
1/16	Jolene Sullivan	367 49th St Oak 94611			NO	[illegible]
1/16	Lourdes Ferris	5750 [illegible] Dr	(510) 381-5083	Lgferris@[illegible].com	NO	[illegible]
1/16	Sophie So	4040 Manila Ave #6 Oakland Ca, 94609	510/547-0691	Naylorday@gmail.com	NO	[illegible]
1/16	LYNN TOMARCHIO	4 ANCHOR DR #340 EMERYVILLE CA 94608	510 450-8549		NO	Lynn Tomarchio
1/16	Monica Ricardo	378 Van Buren Ave #207 Oakland, CA 94610	510 735-9460	ricardom@aetna.com	maybe	Monica A Ricardo
1/16	John Denning	1249 Garfield Ave Albany, CA 94706	510 333-3345	Johndenning@yahoo.com	maybe	[illegible]
	William Patton	80 Village Loop Rd Pomona CA 91766	909-623-5700	WILL91766@VERIZON.NET	NO	William Patton
1/16	Darren Ellis	4326 [illegible] St	916 313 7429	darrenellis@gmail	NO	[illegible]

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	Janet Bilomb	~~330 A St~~ 340 51st Oakland Ca	510 6018164	—	no	Janet B. [illegible]
	Matt Shapiro	5273 Broadway	5075363367	— CCA student	no	[illegible]
	ANDY Singer	4800 Manila Ave Oakland 94609	5105957715	—	NO	[illegible]
	Jeanne Silver	740 Oakland Av. Oakland 94611	510-654-7245		n	Jeanne Silver
	Ronald Kaye	1706 CHURCH San Francisco		—	No	[illegible]
	Jonathan Swee	121 Fairmount	—	—	—	[illegible]
	Nadia McCrud	300 Yuba Rdg	510-847 0933			[illegible]
	Matthew Lew	1007 Clarendon Cres	510-323-6061	—	No	[illegible]

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	John Cooks	539 59th	510 450-0629			John Cooks
	Liz LaMarra	5354 Lawton,	94618		No	[illegible]
1/16/11	Cici Hoover	46 Sotelo Ave Piedmont, CA	94611		?	C. Hoover
1/16/11	WAYNE SWISLER	310 FAIRMOUNT	510 645-1338	Wayne553@pacbell.net	?	W J Swisler
01/16/11	KENNY KRÖLL	251 PARK VIEW TER #206 OAKLAND, CA 94704	510.599.2347	krolbear1980@yahoo	Remind me?	[illegible]
1/16	ANTHONY VANRY	5499 CLAREMONT APT 32			?	A. Vanry
	RICHARD ADAMCZYK	2710 HARRISON ST oakland	510 465 9780			[illegible]
	BRUCE TURNER	14 LACE REDWOOD 94611	510 209 5299		NO	[illegible]
1/16	Sabrina McQueen	PO Box 785 Laf. CA 94549	510-658-8693		NO	[illegible]
	LIZ ANDORS	479 44th ST Oak 94609			?	[illegible]

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1/15	Jourdan Carrido	14 Whitmore Pl #17 Oakland, CA	(510)384-4833	jcarrido@gmail.com	No	
1/16	Raul Rangel	251 Park View Ter. #206 Oakland 94610	510 922-1185	rrangel72@comcast.net	No	
1/15	Ernest Grafe	484 Lake Park Ave Oakland 94610	(510)557-576		No	Ernest Grafe
1/16	Claudine Bach	446 Elwood Ave Oakland 94610	510-834-7727		No	Claudine Bach
	GLEN MCKNIGHT	664 28TH ST	510 299-2666	glipzoom@gmail.com	No	
	Phyllis Tait	4179 Manila Ave 94609	510 653-9774	pmtait@gmail.com	don't know	Phyllis Tait
	Chris Myers	335 Mather Ave Oakland				
	Ken C. Twining	487 7th St Oakland, CA 94609	510 655-4735	KCTwining@Earthlink.com	Yes!	
	Gaill Harge	4208 Lakeshore Av Oakland 94610	510-912-0224	sfotxhe@comcast.net	NO	
	KENT WILLIAMS	4421 GILBERT ST. #319 OAK, CA 94611	510-597-1138	Y2KDUB@GMAIL.COM	NO	

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1/15	Cory Smegal	360 Magnolia Ave Piedmont 94611	510-654-6998	corysmegal@gmail.com	N	Cory Smegal
1/16	TERRY TAYLOR	80 VILLAGE LOOP RD POMONA, CA 91766	909-623-5900	Terry91766@verizon.net	N	Terry Taylor
	Lee Vu	2202 [illegible] Berkeley CA 94702	(510) 809-[illegible]			[illegible]
	GREG GILBERT	2 LINCOLNSHIRE OAK CA			N	[illegible]
	VIRGINIA ROSE	2361 E 29 ST			N	Virginia C. Rose
	SUSAN HOFFMANN	4320 ATLAS AVE OAKLAND		sjhoffmann@hotmail.com	N	[illegible] Hoffmann
	Dave Mclarty	110 Waldo Ave Piedmont 94611			No	[illegible]
1/16	VIRGINIA DOBBINS	4488 Moraga Ave	(510) 653-9434	—	yes	V. Dobbins
1/16	Kathleen Russell	413 Opal St	510-595-1677		yes	[illegible]
1/16	RICHARD GRANBERG	150 RICARDO AVE PIED 94611	510-547 2250		N	R. Granberg

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1/15	Dolnes Ritzen	4466 Harbord Dr	510 654 0363	dcr5858@aol.com	maybe	[illegible]
1/16	Eddie Husband	123 False Drive, Oakland	651-281-5731	ejh1207@hotmail.com	maybe	[illegible]
1/16	William Roby	3809 Shafter Ave. Oakland CA	717-9356	willroby009@gmail.com	try	[illegible]
1/16	Leigh B. Seggerman	P.O. Box 19292 Berkeley, 94712	326-0403		no	Leigh B. Seggerman
	Fran Delegeane	7115- Berk Marlborough Terrace	841-2876		?	Fran Delegeane
	Joe GUERRERO	956 ESTUDILLO SL 94577	4833627			[illegible]
1/16	CHRISTOPHER RAY	1619 5TH ST. ALAMEDA 94501	510 865 2982		MAYBE	[illegible]
1/16	Nancy Finkle	191 40th St. Way Oakland, CA		nfinkle@pacbell.net	maybe	[illegible]
	Michael Wilkerson	4340 Shafter Ave Oakland, CA	510 7735874	mj0017@pacbell.net		[illegible]

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1/15/11	Benie Miller	395 Ridgeway Ave. Oakland 94611	510-305-1667	millerb@yahoo.com	Yes after 6	[signature]
1/15/11	JEFFREY BELCHER	~~[illegible]~~ CLIFTON	/ /	/ /	Yes	[signature]
1/15/11	Cynthia Crimmins	6300 Leona St Oakland CA 94605	510-409-3697		No	[signature]
1/15/11	Alan Perry	6210 Buena Vista	510 3391505	None		[signature]
1/15	William Moller	3026 Texas St Oak Ca	510-604-6066	[illegible]	NO	[signature]
1-15	CAROLYN CRENSHAW	407 PERKINS St. #301 OAKLAND 94610	510 271-6788		"	[signature]
1/15	Jeff Crowl	~~[illegible]~~ 4180 Opal St Apt 5 Oakland 94609				[signature]
1/15	Betty Toth	1201 Mt. Blvd.	654-9280	—		[signature]
1/15	B Fleming	5551 Mt Blvd	658-4837			[signature]
1/15	Karen Black	6110 N. Rockridge	510-919-0255	—	no	[signature]

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1/15/11	Norma Ramos	Oakland Ca	827-7674			Norma Ramos
1/15	Julian Coffin-Lohner	23rd ave Oakland Ca	510-228-2003			[illegible]
1/15/11	CHALISA Betterncourt	Oakland ca	510-595-3445			[illegible]
1/15/11	Mark Huang	Milpitas CA	(408) 518-0716			[illegible]
1/15/11	Alicia Landes	Sweetwater Dr San Leandro, CA	510-772-2250			
1/15/11	Ethel Jackson	Hayward	510-325-8853			[illegible]
1/15/11	DENNIS BARNARD	EL SOBRANTE	510 965 8224			[illegible]
1/15/11	ONDREA TARNOWITZ	Delmonto St LIVERMORE CA 94551	(510) 685-6612	newcheese68@comcast.net		[illegible]
1/15/11	David Thomas	2526 Taylor Ave	(510) 638-7464			David Thomas
1/15/11	Chaungaminve Wilson	Oakland CA	510 208-5003			Chaungaminve Wilson

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1/16	Spencer Pittenger	367 24th St				[signature]
1/16	Gina Zetts	367 24TH ST				[signature]
1/16	Tamelia Wooten	1121 40th St emeryville, CA 94608		wheeliegirl1@yahoo	maybe	T. Wooten
1/16	Ricke Oftolf	3751 Harrison			?	[signature]
1/16	Julia Waters	240 41st St			No	Julia Waters
	Claude Clark	974 42nd street		c.l.clark@claudeclark		Claude L. Clark
1/16	Karen Goldman	484 37th St #201		xposure120@gmail.com		Karen
1/16	CAROL STEVENS	2820 14th Ave #10 OAKLAND 94606		Carol4oakland@yahoo.com	yes	C Stevens
	Preston Williams	2735 73rd Ave Oak.			Yes	[signature]
	Kate Peters *enthusiastic*	4260 Z7th St Oakland, CA	510 [illegible] 4188	[illegible]@comcast.net	Yes	[signature]

REDEVELOP THE ROCKRIDGE SHOPPING CENTER

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1-17	John Woodley	1617 Grand Ave	510 652.3383	jp1617woodley@yahoo	—	[signature]
1-16	CLAYTON WRIGHT	1024 63rd. ST. OAKLAND	510 601 0489		NO	[signature]
1/16	Shawne Jones	1024 63rd st Oakland	510 601.0489	sweet221@yahoo.com	NO	[signature]
1/16	Peggy Nauw	840 54th St #3	510 985 1029		NO	Peggy Nauw
1/16/11	OLIVIA LANDMAN	407- ORANGE St	465-8662		NO	Landman Olivia
1/16/11	LARRY DUNNIGAN	5487 HALES	652-7280		?	L Dunnigan
1/16/11	Tanisha Stewart	408 56th St Oakland, 94608		tstewart_220@yahoo.com		[signature]
1/16/11	Rita Nagel	308 Somerset Rd Oakland CA			Maybe	Rita Nagel
1/16/11	Denise Nadal	225 Clifton St Oakland Ca.	601-908-0661	dnadal@cca.edu	Maybe	Denise Nadal
1/16	Robert Pryor	3000 Richmond Blvd #15 Oakland	510-834-4644	bob.pryor@att.net	No	Robert Pryor

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/5/2011	[illegible]	383 Palm[illegible]	510-323-[illegible]8	[illegible]	Email if can	[illegible]
	Karen Nyberg	86 Linda	2039353		try	[illegible]
	Anne Black	23 Bay Forest	486-2663		maybe	Anne Black
	[illegible]	25[illegible] Filbert	408 5623		[illegible]	[illegible]
	[illegible]	Oakland, CA 94612			most likely	[illegible]
	J. [illegible]	1503 Curtis St. Berkeley	(510) 527 9558		?	[illegible]
1-16	Debbie Zike	335 Newton Ave.	510-268-0955	"I want to go!"	YES!	Debbie Zike
1/16	Carol Neveu	4470 Pleasant Valley Ct 94611	6543189	cmneveu@aol.com	maybe	Carol Neveu
1/16	LOUISE ENDERLIN	5502 TAFT Ave	510 6016460		no	Louise Enderlin
1/16	John Richard	630 Canyon Oaks	510 638-8212		No	[illegible]

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/15	Mildred Rose	325 Garnet St.	510(428-0966	Mildred_Rose@comcast.net		Mildred Rose
1/15	Wilma Thomas	P.O. Box 28031, Oak CA.				[illegible]
1/15	[illegible]	17478 Knight Castro Valley	(510)881-8938			[illegible]
1/15	Beniashaf.	2155 Belvedere Blvd Apt 3	(510)479-3247			[illegible]
1/15	Courtney McGhee	927 71st Avenue Oakland, Ca	510-343-4553			[illegible]
1/15	Chan So Link	16160 Via Harriet San Lorenzo CA 94580	(510) 332 8466			[illegible]
1-15-11	Ernesto Gonzalez	3145 Fairmede Richmond, CA	415-410-8893			[illegible]
1-15-11	[illegible]	2622 35th Ave Oakland CA 94619	510-423-9175			[illegible]
1/15	Eloise Rossiter	1607 Russell Berkeley	510 839-2920	MISSE2004@yahoo.com		[illegible]
	[illegible]	2600 San Leandro	510 350-7355			[illegible]

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1.15.2011	Jim Cohn	636 Santa Clara Ave Oakland	415.826.6060		NO SORRY :(	[illegible]
1-15-2011	ALICE CLARK	372 EUCLID, OAK	510-893-0711		NOT AVAILABLE	Alice Clark
1/15	Nancy Naum	496 MacArthur Blvd	510-653-2228		maybe	Nancy Naum
1/15	LISA Parker	3860 MLK Jr. Way	5109231396		Yes	L Park
1/15	Ann Boyd	1314 Burnett St. Berk	510472-4998	Sugamom@gmail.com	Maybe	[illegible]
1/15	Vivian Lee	1607 Alcatraz Ave Berkeley	510-652-2216		No - work in Sacramento CA	V Lee
1/15	EBEN BENSCHOP	1805-9TH AVE OAK. CA	510-273-9306		YES	[illegible]
1/15	Abdi Hussein	385 Adams St	4156910944	ahussein 487 @yahoo	[illegible]	[illegible]
1/15	NeiL GOLDEN	5683 Telegraph	510-655-4471	—	NO	Neil Golden
1/15	Maura Shannon	5421 Lawton Ave		—	No	[illegible]

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1/15	Jean Mangels	407 Orange St #303	510-839-3056	jemangels@juno.com	No	Jean E Mangels
	Marsha Carlton	360 Vernont Oakland	510-893-2884		no	Marsha Carlt
	Brenda Fitzpatrick	807 Santa Clara Oakland 94610	510-832 4849	bcabral@baaqmd.gov	Maybe	[illegible]
*	ELIZABETH ADAMS	6188 OCEAN VIEW DR, OAK	510-655-6552	elizabethsadams@yahoo.com	Yes	E Adams
*	Robert Ablon	125 2nd ST. #702 Oak 94607		Robert.ablon@gmail.com	Maybe	[illegible]
	Matt Bjork	4473 Pleasant Valley Ct N.	510 654.5260	Bjork.Matt@Gmail.com	Yes	[illegible]
	Scott Hannon	5443 30th St	510763-7526	—	No	Scott Hannon
	Alejandra Arias.	16115 E 14th St SL. CA 94578.				alejandra Arias
	Lee Edwards	375 50th Street * Temescal Crime Prevention	510-520-7929	caleesf@yahoo.com	No	Lee Edwards
	Randy	2221 Sycamore SF CA 94112	415-9255872			[illegible]

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/15	Dolores Kwas	5070 Parkridge Oakland			no	Dolores A Kwas
1/15	MADELINE MILLER	4329 TOWNSEND AVE OAKLAND CA		Maddysis@aol.com		M Miller
	~~[illegible]~~	~~[illegible]~~				
	Fran Bird	5573 Harbord Dr			Yes	[illegible]
	Judy Job	484 Lake Park Dr	—	—	?,	Judy Job
1/15	S Donahue	5249 Manila Ave	—	susan_donahue@comcast.net	No/?	S Donahue
1/15	Joyce Taylor	651 Poirier Oakland, CA		joycetaylor@yahoo.com	?,	Joyce Taylor
1/15	Rachael Hollay	4331 Montgomery st OAK CA	—	roxyhollay@yahoo.com	?	[illegible]
1/15	Noelle Boyd	443 38th St. Oakland, CA 94609	-	noelleBoyd73@hotmail.com	NO	Noelle Boyd
1/15	JOHN MILLER	30 RAMONA			NO	J. Miller

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1/15/11	JANETE BEELER	4399 WHITTLE AVE	5105304230	BESTBEE@SBCGLOBAL	?	[signature]
1/15/11	LeTanya Fleming	287 Euclid Ave # 201	7027438133	Tanyafleming2807@gmail.com	maybe	[signature]
	J. Redson	5423 Outlook Ave	—	teardown@yahoo.com		[signature]
1/15	David Lee	3830 Harrison #102	—	dalee72@gmail.com	maybe	[signature]
1/15	Sarah Stewart	3225 Arkansas	(510)6843952	sarahstewart580@gmail.com may come / comfortable spedcart	NO	Sarah Stewart
1/15	Erica Dean Glenn	4126 Opal St	—		no	[signature]
1/15	Esther Pinkhasov	5425 Lawton Ave	—	—	maybe	[signature]
1/15	Klara Pinkhasov	5425 Lawton Ave,				Klara P
1/15	Dirk Kindermann	4193 Shafter Ave.			No	[signature]
1/15	DIANE Holley	4455 Howe St				[signature]

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Date	Name	Address	Phone	Email	Attend Jan 26th Mtg?	Signature
1-16-11	Rick Valentine	400 Alcatraz 2 Oakland	925-705-9456	RICKVAL.RVE GMAIL.COM	I'LL TRY	K. Valentine
	JANE NJOKI	549 BUENA VISTA AVE	5102287175	Kabaikawa@yahoo.com	NO	[illegible]
	Sarah Oppenheim	2005 pleasant valley Ave #111 oakland 94611	415-706-1111	Oppies11@yahoo.com	NO	[illegible]
	Robert ganister	2005 pleasant valley #111 oakland, ca 94611	415-516-9215	gargery1@msn.com	No	[illegible]
	Constance Ericson	3351 RICHMOND Oakland CA	510-601-1178	constance2u@SBCGLOBAL.net	? send link	J Ericson
	Kira Gunther	4150 Gilbert Oakland CA	510.384.1829	Kagunther@gmail.com	no	[illegible]
	GLENN OPTERMAN	5758 Buena Vista OAKLAND CA			NO	[illegible]
	JOANN Connor	2342 Clarke St. Oakland, CA	—	jn309@live.com	No	J Connor
	BENSON Wong	2646 Humboldt Ave	510-533-2336		NO	[illegible]
	[illegible]	2512 26TH AV.	510 866 1332		NO	[illegible]

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	Rahul Mehta	5053 Telegraph Ave OIC	415-332-6906			[signature]

① DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/23/2010	Nicholas Bletsch	5319 Lawton Ave Oakland	510-520 1597		[illegible]
8/23	Monica Thomas	27 BAY FOREST CT	510 684-2055		[illegible]
"	Arden Curt	8 BINNACLE HILL OAK.	510-844-2975		A. Curt
"	Thomas J. Hoffman	4479A Hawe St.	312-370-4386		Thomas J. Hoffman
8/26	[illegible]	357 49th oak.	(510) 886[illegible]		Alma [illegible]
8/26	[illegible]	4496 Broadway	510 654 6993		Nick Sok
8/26	Melania Soto	1478 71st Ave. Oakland, CA 946[illegible]	(510) 692-1946.	gets off work @ 6:30 interested	Melania Soto
	B de S Laguna	250 Whitmore St, AA 307 Oakland Ca			B de S Laguna
	Sheba Taneklde	59th St			[illegible]
8/26	PAUL KERNICH	5716-ADELINE STREET.	cell (415) 596-5408.	kernichgroup@gmail.com	Paul Kernich
8/26	JOHN SANDERS	81 ECHO AVE. OAK CA. 94611			[illegible]
8/26	JANIELE TOVANI	535 HAMPTON PIEDMONT CA			[illegible]
8/26	TONYA Wilson	365-49th St Apt 5 OAKland CA. 94609			[illegible] Wilson

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DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8-25	Chris O'Neill	421 Fairmount Ave	925 339-3487	windtalker 189@yahoo.com	Chris O'Neill
8/25	Harold Reeder	220 Sunnyside Ave Piedmont	562 623-4018		[illegible]
8/25/10	GLORIA DAVIS	5757 Adeline st OAKLAND, CA	(707) 704-0094	—	[illegible]
	Debbie Gardner	548 TULSA San Lorenzo CA	510 278-6212		Deborah Gardner
8/25	J. Griffin	1315 Ballena Alameda, Ca			[illegible]
8/26	Shirley Golden	360 45th #12	510 594-1739		Shirley Golden
	Barbara Norfleet	284-38th St #2 Oakland	(510) 654-5825		Barbara Norfleet
	Eric VANDERVEN	540 Blvd Way PIEDMONT	510 444 7875		[illegible]
	YVONNE HAYES	3124 HARMON	(510) 457-4559		Yvonne Hayes
	Tom Thoma	1055 Sterling			Tom Thoma
	JoAnn Brandis	100 Sonia	510-547-3687		Joann Brandis
	Evelyn Gibb	5823 Seminary Ct	510 632 1445		[illegible]
	Maria Vaza-Kaczynski	225 Clifton Apt # 112	650-440-9643		[illegible]

③ DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/26/10	M. Ester	Afgan St			M.ESTER
8/26/2010	Kenneth [signature]	5819 MacCall St Oakland CA, 94608			Kenneth Bavrol
8/26/10	Martita Smith	1551 Vista St Oak 94602			[signature]
8/26/10	Elliott Moreno	393 Oakland Ave	415-586-5408		Elliott Moreno
8/	Larry Simpsson	1066 54th Steet	415-746-0356		[signature]
8/26	Emily Weinstein	241 Pershing Dr. Oakland, CA 94611	510-435-8248	emilyw@alum.mit.edu	Emily Weinstein
8/26	Lesley Pulaski call @ 3pm wife hubby	327 Hemphill Oakland 94618	510-658-9870	lesleyatz@gmail.com	Lesley H Pulaski *
8/26	Phil Fitzwater	327 Hemphill Pl Oakland CA 94618	510-658-9870	~~Phil 18~~ Pfitz18@gmail.com	*
8/26	MONICA CHADWICK	2486 BECKER DR UNION CITY	510-773-1442	onemoni@hotmail.com	[signature]
8/26	JOYNE TAYLOR	1400 Carpentier St. #112 SAN LEANDRO	510-469-3937	somejoy@hotmail.com	Joyne Taylor
8/26	Chanthira Gurney	482 48th St Oakland, CA	510-601-5610	g_chanthira@yahoo.com	[signature]
8/26	S. Isler	17153 President Dr castro valley ca 94546	510 402-9415	Isler2009@gmail.com	[signature]
8/26	Donnell [signature]	421 E18th st #420	(510) 472 3305	droc007@yahoo.com	[signature]

④ DB

Rockridge Shopping Center Support List

Date	Print Name	Address	Phone Number	Email	Signature
8/20	Malaika Johnson	1069 54th St #1	(510) 228-7283	—	[illegible]
	Richard Goodman	215 Uranus Ave	510 547-2170	—	[illegible]
	[illegible]	5662 Ocean View Drive Oakland	510-653-7660	BanjoRonC @aol.com	[illegible]
	Rachelle Noyes	PO Box 11416	510.568 8775	—	[illegible]
	Jon [illegible]	—	—	—	[illegible]
	[illegible]	350 Newton 94606	510 290-1660	RUDOIPH Thom	[illegible]
	Regina Johnson	492 59th St Oakland CA 94609	510-499-9531	MrsRMJohnson@aol.com	[illegible]
	Shirley Ramos	2747 19th St SF, CA 94110	510-594-1030	—	[illegible]
	James L Gardner	5274 [illegible] 94618	—	—	[illegible]
	CHARLES BLAKENEY	788 WHITMORE ST #217 94611		chblakeney @yahoo.com	Charles H Blakeney
	Bradley Harless	1231 Willow Ave Hercules 94547	510 5045223		[illegible]
	Joseph Bezzi	5158 Golden Gate Ave	510-547-0524		Joseph Bezzi
	Thomas Rutherford	5301 Telegraph Oakland, CA	510 652-1301		Thomas Rutherford

~~Please print~~ ~~legib~~

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Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/26/10	BINNETTE Thompson	6131 RACINE	510-658-2972		Binnette Thompson
	Barbara Wilson	2618 64th OAK	510 638-7580		Barbara Wilson
	Monica Gruhn	5132 Broadway	N/A ~~925-247-0637~~		[illegible]
	Tony Cataldo	131 ASCOT CT	925-247-0637		[illegible]
	Richard Dione	48 Ronada	Piedmont Ca.		[illegible]
	JAMES CHAMBERS	4650 CLAREWOOD DR	655-6975 OAKLAND		[illegible]
	AL TAN	439-50th st. OAKland	(510) 207-4847		
	Gregory Wesley			gregory.l.wesley@gmail.com	G. Wesley
	Nikole Wilson	425 Orange St., #402 Oakland, CA 94610	510-832-2375	nikoleaw@aol.com	Nikole Wilson-Ripson
	J. McLean, MD	6001 FAIRLANE DR OAK, CA 94611	510 612-6201		[illegible]
	Rita Pettit	1290 Hopkins St Berk 94702	510 649-5588		[illegible]
	Marjorie Ford	159 Maggiora Dr Oak. CA 94605	(510) 638-8696		Marjorie Ford
	Malin West	818 43rd Oakland	(510) 401-4842		[illegible]

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Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/18	John Baldo	482 44th St Oakland			[illegible]
8/19	Simon Abrams	625 Oakland Avenue #3 Oakland, CA 94611	510-652-6333		[illegible]
8/20	CAROL WOLLESON	758 Kingston Oak 94611	503-896-0505		[illegible]
8/20	Gary Benecke	6856 Balsam Way · Oakland 94611	510-655-5808		[illegible]
8/20	REINALD WELLS	7890 MICHIGAN AVE., OAKLAND 94605	/		R. Wells
8/20	Jillian Swift	232 Modoc Ave Oakland CA 94618	208 310 1722		[illegible]
8/20	Adrain Jackson	771 56th Oakland	(510)658-6642		[illegible]
8/20	JACK STEIN	5503 PROCTOR			[illegible]
8/20	Pema Lodoe	438 Vernon Oakland			[illegible]
8/20	V. gnia DIOGO	23 Echo Lane Piedmont	-		[illegible]
8/20	RICHARD ROSEN~~BERG~~	4023 #3 BROADWAY			[illegible]
8/20	Randeesha Weaver	3195 Olean ST	5263 9698		[illegible]
8/20	Camille Gebert	5117 Telegraph Ave.	— —		[illegible]

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Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/19 2010	Abaynesh Dorsis	5351 Telegraph Ave Oakland Ca 94609	(510) 652-1179		[illegible]
8/19	Cyrenius Young	680 14th st #201	415-632 2171		[illegible]
8/19	SETH Robinson	860 45 ST Oakland CA 94608	510 228 9085		[illegible]
8/19	De'Ante JORDAN	1247 MacArthur Blvd #C	510 472-2911		[illegible]
8/19	Philip Roam	1 Bay Forest Pl.	510 8482911		Phil R
8/19	Vilma Garnizr	1001 Stanford Ave Oakland	510 910 6525		VG
	Christopher Bermeo	863 Oakes Blvd. San Leandro CA 94577	(510) 910 4162		Christopher Bermeo
8/19	Kandie Mercadel	861 34th ST Oakland CA 94608			[illegible]
8/20	LINDA TSOTERO	5311 Golden Gate av Oak 94618	658-6821		[illegible]
8/20	IVORY EVANS		510-419-4466		Ivory Evans
8/20	SARAH Smith	3824 Broadway			Sarah Smith
8/20	Veta Williams	887-46 st	(510) 652-6549		Veta Williams
8/20	Carol Miller	41 Wildwood Ave	510-655-0541		Carol Miller

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Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/19	Donald Layne	15984 E 14th Street San Leandro	(510) 472-2096	work or bis case	[signature]
8/19	Dabra Toland	601 Oakland Ave Oakland 94611			[signature]
8/19	Jean Saung	225 Clifton St.			Jean Saung
8/19	Vita Williams	1537-165 Ave San Leandro 94578	510 575-5332	—	Vita Williams
8/19	Angel Williams	1900 E. 24th St Oakland, CA 94606	(901) 434-9095		[signature]
	[signature]	3201 Beaumont Ave-78 Oakland 94602			
	JAN HOWLAND	5912 BUENA VISTA OAK			J Howland
	Christian Peacock	One Olive Ave Piedmont			[signature]
	Annie Fang	1 Merrill Ct			af.
	Tara Wolf	483 Clifton St		510-428-1744	[signature]
	Lila Travis	7036 Balsam Oakland CA			[signature]
	Dolores Sattera	17 Contra Costa Pl.			[signature]
8/19	Aliana Gomez	1642 Tyler Berkeley		alianagomez @rocketmail.com	[signature]

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Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/18	FELTON MILLICAN	413-44TH STREET	510-6555192	F.M.ATYAHOO.COM	Felton Millican
8/18	Perri Walker	405-44th St. 94609			Perri Walker
8/19	Anthony Harris	10121 Dante Ave	(510) 384-5993		[illegible]
8/19	Cheryl WARD	5111 Telegraph Ave #241 Oak 94609			[illegible]
8/19	Joan Warner	135 Alta Oak 94618			Joan Warner
8/19	Crquil Naji	4111 Broadway	451-4747	ANTRONTA AOL.COM	[illegible]
	Dan Turner	4204 Shafter		dhturner@earthlink.net	[illegible]
8/19	SAL ARCHINI	4369-HOWE ST	510 547-6753		S. Archini
"	Lauren Jacober	379 50th St Oak. 94609			Lauren Jacober
8/19/10	Etarma Khangsar	5248 Claremont Ave #27 Oakland CA 94618			Etarma
8/19/10	Judith Fiene	288 WHITMORE #220 Oakland 94611	510-891-1422		Judith Fiene
8/19/10	Nancy DeRoche	2083 Oakland Ave. Piedmont 94611			Nancy B. DeRoche

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Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/19	Mary McInerney	39 Bowling Dr Oakland 94618			Mary V. McInerney
	Akayla Addison				Jaila Rodgers
	Jaila Rodgers				Akayla Addison
	Kayvon Petty	712 45th Oakland Ca			Kayvon Petty
	Lester Johnson	733 44th Oakland			Lester Johnson
	Thevon Brooks	Olean st Revere Hayward			Thevon Brooks

(11) DB

Carberry - TML

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/16/10	STEDMAN Dennis Stedman	Carberry 5654 Carberry	510-652-5923		Dennis Stedman
8/16/10	LISETTE PORELLE	5680 CARBERRY AVE	(510) 252-8118		[illegible]
8/17/10	Bart Watson	4173 Emerald St. Oakland, CA	(650) 906-1970		Bart Watson
8/17	ROTH Patricia Roth	4188 Man. L.	917 434-6144	triciar7 @mac.com	[illegible]
8/17	TED R BERNHADT 4178 MANILA Ave				Ted R. Bernhardt
8/17	Kimberly Kim	4194 Manila			Kimberly Kim
8/17	James Mullesch	4131 OPal	510 ~~[illegible]~~ 595 1671		James [illegible]
8/17	Beverly Davies	4183 OPA L	510 652-0853		Beverly Davies
8/18	Dan Cirlo	4124 Shafter Ave	510 652-2858		Dan Cirlo
8/18	Emily Friedberg	4109 Shafter Ave Oakland, CA			Emily Friedberg
8/18	Laura Merino	4121 Webster St Oakland			Laura M[illegible]
8/18	Angela Steele steele	4153 Webster Oakland			Angela Steele
8/18	Kathleen Parkinson McConnell	4200 Webster St	510-652-1902		KP McConnell

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DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/17	Lisa Nelson	4140 Emerald St.	5106537946	ldnelson80@sbcglobal.net	[illegible]
8/17	ROBERT GOTSCH	4179 MANILA AV	510 653 9784	TATGOTSCH@EARTHLINK.NET	Robert E. Gotsch
8/17	Mike Mosko	4134 Opal St.	5106546345		[illegible]
	Christine Peterson	412 41st St	653-4630	petersonchm@gmail.com	[illegible]
8/17	Demetris Washington	4116 Webster			Demetria Washington
8/17	John Schmid	4166 Webster			J Schmid
8/17	Bernard Kaye	4204 Webster			Bernard J. Kaye
8-17	Corinne Pepperell	4218 Webster			Corinne B. Pepperell
8/17	RuthAnn Friedland	4316 Webster St.	(510) 655-7179	ruthann67@hotmail.com	RuthAnn Friedland
8/18	JOHN ALEJO	4203 SHAFTER AVE	(510) 655 1407		John Alejo
	Sara Sens	414 43rd St	510-595-7829		[illegible]
	Melonee Mahood	448 43rd Street	510-923-0105		Melonee Mahood
	Thelma George	4400 Webster	510-658-5847		Thelma George
	CD				

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DB

Rockridge Shopping Center Support List

Date	Print Name	Address	Phone Number	Email	Signature
8/20	WILLIAM MIDDLETON	420 MERRITT #8 OAKLAND, CA 94610	510-444-4388	wpm12@PACBELL.NET	William Middleton
	Margot Nijsure	25 Glen Eden	510-832-3222		[illegible]
	Ayana Cutright	1650 Tyler St #C Berkeley CA	(510) 478 4555		[illegible]
	Charli Smith	398 Adams St Oakland			CHARLI SMITH
	DAVID MURRAY	5578 VICENTE WAY OAKLAND	510-654-3144		David Murray
	AARON Williams	324 51 st OAKLAND	510-420 8016		[illegible]
	Steph Cullhane	329 St #1	510 420-0740		[illegible]
	Heidi Lerner	1063 Warfield Ave Oakland 94610			H Lerner
	SHANNON JANSSEN	3869 SHAFTER AVE OAKLAND CA	(510) 386-4905		[illegible]
	Lucian Luera	611 Arleen Apt #2	(805) 757-1982		[illegible]
	SHERRY MITCHELL	1428 Linden ST OAKLAND	510 834-8228		[illegible]
	DENNIS DillARD	3539 Jordan Rd OAK CA 94619	510 534 6834		[illegible]
	P. Sisson	" "	510 652-3380		PATRICIA SISSON

(4)

DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/25/10	Sheila Donovan	5105 Jewett St	(510) 547 7883	Beingdangeroo @earthlink.net	[illegible]
8/25	MIKE McGOWAN	MIKE McGOWAN STER @GMAIL.COM			
	John Carver	670 Vernon St #401 Oak	415 285 4648	jcarver@ earthlink.net	[illegible]
	Joseph Seibel	4120 Howe St #A Oakland, CA 94611	510-926-8603		[illegible]
8/25	Jessica Bedeer	2005 Pleasant Valley Ave. #314 Oakland 94611	(510) 922-9454		[illegible]
8/25	LARRY RAIL	37 MOSS AVE #6 94610 OAKLAND			Ly Rail
8/25	Stephen Stoper	3600 Richmond Blvd Oakland Ca			[illegible]
8/25	Kathryn Griffit	5879 Broadway Oak	510 595-3640		KS
8/25	[illegible]	1571 Jefferson St #PH 9 Oakland, CA 94612			Olivia Yoo
8/25	Joseph Assaua	4797 Oakland CA 94906			[illegible]
8/25	Lance Fraser	452 38th St Oakland 94609			[illegible]
8/25	Krystle White	5470 Candler St Oakland CA 94609			[illegible]
8-25	Karen Beeman	4421 Gilbert St. Oakland CA 94611	cell (406) 687-7613	beemankaren @yahoo.com	K. Beeman

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Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/20	Carla Wright	402 Fairmont #300	585-9615		Carla Wright
8/23	Nancy Drappa	Po Box 9093 Berkeley Ca			Nancy Drappa
8/23	J B Lawton	225 Clifton St. Oakland. CA	~~58~~	JBlawtondesign @yahoo.com	J B Lawton
8/23	Pat Jameson	360 Grand Ave #255, Oakland CA 94610			Pat Jameson
	Robert Brown	443 41st Oakland 94609	510 428-1379		Robert Brown
8/23	ERIC NITZSCHE	611 YORK ST OAKLAND, CA			[illegible]
8/23	Wayne Kirchoffer	251 - Park View Terr. #101	510-836 4913		Wayne Kirchoffer
8/23	Izetta Perry	3501 Ruby st			Izetta Perry
8/23	DORIS PERRY	5050 Broadway Oakland Ca 94611	510·2891005		D Perry
8/23	Gia Calvillo	2584 Mather St Oakland 94611			Gia Calvillo
8/23	Mary Stevenson	3134 Magnolia St 94608	510-453-3823		Mary A Stevenson
	GARY BINGER	6103 CHABOT RD 94618			[illegible]
4-25-10	Phillip Lewis	967 60th ST OAKland 94608	(510) 652-6681	revpal@pacbell.net	Phillip A Lewis

(16) DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/23	SUSAN KIFUTHU	445 45th St. OAKLAND		KIFUTHU@ AOL.COM	Susan M. Kifuthu
8/23	Diane Gould	7 Littlewood dr. Piedmont			Diane Gould
	Andrea Gorma			ag1384@gmail.com	Andrea Gorma
8/23	Vera Brown	828 13th st OAK. 94607			Vera Brown
	Laurean Barton	1200 Lakeshore Oakland CA 94606			Lauren Barton
	KANi PALm	3629 13th AVE OAKLAND			
	KaTHERINE SPEAKMAN	" "			Katherine Speakman
	Eunice Igo	350 Hillside Ave P. 94611		mittiei@ sbcglobal.net	Eunice Igo
	DANIEL WEINZWEG	4874 Howe St. OAKLAND	707-547-7966		
	LOGAN COLE	355 STATEN AVE #303 OAKLAND	(510)798-0435	flatlandlogan@ yahoo.com	
	Stephanie DeHerrera	355 Staten Ave #303 Oakland	714-362-1478	stephanie.deherrera@gmail.com	

(7)

DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/26	Barbara Roth	200 Caldecott #111 / Oak 94618	510-435-3805	BarbaraRoth@comcast.net	Barbara J Roth
8/26	DAVID OPERARIO	2727 [illegible] AVE [illegible] CA 94602	510 479-3257	tdoperario@gmail	[illegible]
8/27	Kare Nelson	3522 Harrison St Oakland			[illegible]
8/27	H. Villata	6039 Lucretia ave Oak			Hazel Villata
8/27	al BROWN	4473 MONTGOMERY STREET OAK	510-654-2433		a.M.Brown
8/27	J Volin	3945 Harrison #24	510-4282655	—	JOHN Volin
8/27	Freddy Perez	857-54th Street	618-249-7485	—	Chef.
8/27	Jon Taylor	565 Bellevue #1108 OAKLAND	510-286-5294		[illegible]
8/27	[illegible]		510 773-7581		[illegible]
8/27	Mehrdad Pollet	541 28th St. 94609	510 922 9486		[illegible]
8/27	Stephanie Jackson	4216 Queensboro Way Union City CA 94587	510 684-4877		[illegible]
8/27	Crystal L. Lewis	1350 7th St. #A324 94607			Crystal Lewis
	Bill Emmett	401 GRANT ST HEALDSBURG	510 684 9489	billem@lyso.com	

(16) DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/27	William Fuller	3833 Telegraph Ave #7	510.383.0523	williamshawfuller@gmail.com	[illegible]
8/27	Keenan Greene	2001 Braemar Rd	510-967-5295	RGG692@yahoo.com	[illegible]
	L. Norwood	1629 LINDEN St	510 ~~444~~ 444-2558		L. NORWOOD
8/27	C Saechau	4496 Broadway suite D	510 8971763	N/A	[illegible]
8/27	L.A. Harris	235 Florence	94618	N A	L.A. Harris
	[illegible]	5433 [illegible]	510 547-3336		[illegible]
8/27	Richard Hawkins	6100 Chabot Rd	[illegible]		[illegible]
8/27	Marcia Alpert	250 Whitmore St. #201	—	—	[illegible]
8/27	Stacy Guerrier	320 Euclid	(510) 628-0413	stacy.guerrier@jud.ca.gov	[illegible]
8/27	Ellen Mart	650 KENWYN	(510) 832-2044	emm4@pacbell.net	Ellen [illegible]

(19)

DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
	Adam Banghart	124 Warren St Martinez CA 94553	(925) 451-8025	Banghart@yahoo.com	[illegible]
	Jodi Silva	14597 Wake Ave San Leandro CA 94578	510927 0910	Jobovin2518@aol.com	[illegible]
	Tracy Smith	1515 Center Oak 94607	510 575-6480		2 Smith
	Chalisa Bettencourt	332 Monte Vista Ave 94611 Oakland, CA			Chalisa
	Daisy Huynh	13895 Sausalito San Leandro	(510) 895-8283		[illegible]
	Joaquin Gameros	2147 Church Oakland CA 94621	510-903 1360	JOAK600@YAHOO	[illegible]
	Jia Chen	4120 Vale Ave Oakland CA	(510) 531-3281		[illegible]
	Can Zhu	2136 Pacific Ave Alameda	(510) 748-5962	—	Can Zhu

(20)
DB

Rockridge Shopping Center Support List

Date	Name	Address	Phone Number	Email	Signature
8/19	Robert Ross	41 St.			[signature]
8/20	Robin Carlson	5242 Miles Ave. Oakland 94618			[signature]
	Daphne Dicke	6007 Monadnock Oakland CA 94605			[signature]
	Mike Kirby	4323 View St Oakland 94611			[signature]
	Roberta Pressman	5616 Kales Ave ~~[illegible]~~ Oakland CA 94618			[signature]
	[signature]	716 80th St. 30th St. #B Oakland CA 94609			LaVoyce Johnson
	ELFRIDA KAMARA	813 42nd St OAK ca 94608			[signature]
	Chun Cheung	421 Oakland Ave Apt 8 Oakland, Ca 94611			Chun
	Alisa Amaral	240 Ridgeway Oakland 94611			[signature]
	[signature]	34 Elrod Ave Oakland, CA 94618			[signature]
	Eleanor Kirby	4323 View St Oakland			E. Kirby
8/20	Ajay Reed	83 Monte Cresta Ave #3 Oakland, CA 94611			[signature]
8/20	DENNIS CARROLL	1510 INTERNATIONAL BLVD OAKLAND CA 94606			[signature]

(2) DB

Rockridge Shopping Center Support List

Date	Name	Signature	E-mail
8/16	Amelia Driscoll	AMELIA DRISCOLL	amelia.driscoll@gmail.com
8/16	LAURA HEINEMANN	[illegible]	
8/16	Christian Schultz	[illegible]	
8/16	Leah Sykes	[illegible]	
8/16	Carenda Rudio	[illegible]	
8/16	Cynthia Nora	[illegible]	~~[illegible]~~
8/16	TED TERBOLIZARD	[illegible]	terboted@gmail.com
8/16	Russell Blume	Russell Blum	rdblume2001@yahoo.com
8/16	George Frankel	George Frankel	hugstersf@aol.com.
8/16	CAROLYN J. WILLIAMS	[illegible]	N/A
8/16	Janet Stone	Janet Stone	

Piedmont street canvass

9/13

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Rockridge Shopping Center Support List

Date	Name	Signature	E-mail
8/16	KAREN M. Noia	Karen M. Noia	karnoia@aol.com
8/16	Leslie Pave	Leslie Pave	fyrewomanehotmail.com
8/16	ELIZABETH KOENIG	Elizabeth Koenig	GRAVENIMAGE@MASSE-MAIL.COM
8/16	LENA BELLOW	[illegible]	BelloLena@yahoo.com

Letter of Support for Rockridge Shopping Center

Planning Commission
Oakland City Hall
One Frank H. Ogawa Plaza
Oakland, CA 94612

RE: Safeway Redevelopment Project (5050-5100 Broadway)
Case file number CMD09-135

Dear Members of the Planning Commission,

As residents of the Monarch Place Senior Community (4500 Gilbert St.) and neighbors of the Rockridge shopping center, we urge you to approve the proposed development at 51st / Pleasant Valley and Broadway. After viewing the current plans we can confidently say that the input from the community has been taken seriously and ideas implemented accordingly.

We are especially supportive of having an expanded selection of shopping and dining options adjacent to our homes. It is extremely valuable to have variety in retail options that are within walking distance. Improvements to the Gilbert / Pleasant Valley intersection will also enhance the safety of our path into the center.

The new design also has an improved layout and establishes appealing public areas that make the center much more attractive and inviting. The formation of green space and walkways alongside the quarry create a pleasant atmosphere to complement the shopping destinations.

We feel that this project is an example of responsible development that takes Oakland in a positive direction and we are relying on you to keep the momentum of the project moving forward.

Sincerely,

Residents of Monarch Place (undersigned)

Safeway Redevelopment
1/26/2011
Comments from Peter Hsi

My understanding: Safeway is at the corner of Broadway and Pleasant Valley Ave but the Project Description labeled it as 51st Street and Broadway. There is difference between 51st street and Pleasant Valley Ave. Pleasant Valley Ave is connected to Piedmont city whereas 51st street leads to west Oakland. The corner of 51st street and Broadway is an empty lot, people use it for car storage. Concept and consideration will be different.

Pleasant Valley is a residential area, we have houses, condos, retirement home, and apartments. These are all residential, people live there, they deserve "safety", "peace", "quietness". The expanded shopping center would put these basic living qualities in jeopardy. In this regard, I have two points for consideration:

My first point is "truck operation". I think trucks should be banned from using the Main Entrance on Pleasant valley Ave during demolition and construction stages.

1.1 Time and again, we experienced trucks stuck on the ramp in the main entrance in the P.V.Ave blocking and disturbing traffic flow, even in present day operations.
1.2 Trucks by its size and operation would disturb bicycles, smaller sedans using on road by the shoppers and neighbor residents; Trucks would badly disturb traffic flow especially when changing lanes or making turns.
1.3 Trucks would create lot of dirt and noise especially during demolition and construction period.
1.4 Pleasant Valley Ave is the main road from Piedmont city to Berkeley, Emeryville, and Freeways 24/80/13. Any truck accidents would paralyses the neighborhood for hours
1.5 Broadway is a much bigger street. More importantly, it's in commercial zone. Commercial operation should use roads in the Commercial zone. Trucks should use Broadway and Broadway entrance.

My second point is "parking". I suggest the section of P.V.Ave between Gilbert and Montgomery be designated for use by permit for the residents only.

2.1 At present, parking on P.V.Ave already causes concern because insufficient parking spaces in the shopping center and the neighborhood.
2.2 The new development would make the situation even worse because the parking space per 1000 sq. ft. ratio is less. At present the ratio is 3.61 (667/185000); new development 3.23 (956/295690). It seems the new development would attract more people to the shopping center as it will be the shopping center in north Oakland, the ratio of shoppers per sq. foot shopping space will also increase; more parking spaces would be needed. Where could people park their cars? The answer is obvious – the street outside.
2.3 We suggest the City designate the section between Broadway and Montgomery of Pleasant Valley Ave for residents use by permits.

No doubt, the new development, will create jobs and bring prosperity to the area, but the interest of residents needs also to be taken care of too.

Ranelletti, Darin

From: Ruth Miller [ruth.mil@gmail.com]
Sent: Wednesday, February 02, 2011 9:02 PM
To: Ranelletti, Darin
Cc: Brett Hondorp; Kassie Rohrbach
Subject: Design Review of Safeway Development

Hi Darin,

Thank you very much for your card at last week's design review discussion. I know I speak for WOBO when I say that we appreciate the City's willingness to receive input.

Brett Hondorp is a member of our policy and planning advisory group (and a principal at Alta Planning). I asked him to look at the Safeway proposal. He send the following notes and is cc'ed on this email. If you or someone on the project would like to meet to discuss these in person, I would be happy to arrange a time as soon as possible.

Thank you, and I look forward to your response,

Ruth

I'm not sure how much of this site design is up for discussion – I think there are some fundamental flaws in the overall site plan from a bike / ped and good urban design perspective. Most obvious is that the most important neighborhood-serving use on the site – the grocery store – is set back to the farthest point on the site behind a massive surface parking lot. Could they make it any less convenient for people from the surrounding neighborhoods to want to walk to Safeway? Same for transit users – getting off the bus at Broadway / Pleasant Valley still leaves a serious trek to get to Safeway. So my first comment is to start over, design something that makes the corner of Broadway / Pleasant valley an inviting gateway that people can walk through, rather than blocking it with the backsides of buildings. Put the supermarket near the corner where it is easy to access from neighborhoods and close to the bus stop.

Assuming the site plan stays the same, here are some initial thoughts:

The most direct bike / ped access to Safeway from College Avenue is the road / sidewalk between a tall parking structure and a steep hillside. Not a very inviting pedestrian environment. Same for the Gilbert entrance – the most direct path from this location is right through the middle of the surface lot (admittedly they at least provide a separate path through the parking stalls). I think this speaks again to the overall site design – putting the supermarket in the far corner of the site forces people to take some very undesirable routes through the site. If the site stays the same, those pedestrian walkways should be as wide as possible and well lit. But particularly for the route behind the parking garage I think there is a fundamental problem for pedestrians with the massing of that garage next to that roadway (look at section C-C).

Broadway north of Coronado. New curbside bike lanes are great, but there is also very heavy left turning movement by bikes to get onto College Ave. Install left turn bike pocket (similar to what is currently on Ashby turning onto Tunnel Rd) – this pocket could extend all the way back to the Coronado Intersection, giving a long distance for bikes to merge over to the turn pocket. Width for pocket (5') could come from removing the parking lane on the SB Broadway (this is a short ½ block segment in front of a fast food restaurant that does not need on-street parking). Could put a bike box in at the intersection of Coronado (NB direction) so that bikes who got stopped at the signal could use the bike box to maneuver over from the curbside bike lane to the turn pocket BL.

Broadway NB just north of Pleasant Valley – bike lane + bus stop 8'. This is an uphill climb, so forcing bikes out of the bike lane into an adjacent travel lane when buses are blocking the lane is not ideal. Granted it is a wide outside travel lane, but I would prefer to see extra width within the shared bus-bike portion. One option is to install a bus pullout into the sidewalk area (there is lots of sidewalk width here) or take width out of the wide adjacent travel lane to add to the shared bus / bike portion. There's also 8' of on-street parking on the opposite SB side right up to the intersection that probably isn't necessary and could be repurposed to shift the road lanes over and make a wider combined bike+bus lane

Right turn slip lane located in the plaza north of the Pleasant Valley / Gilbert intersection. Assume this is for trucks turning. However this creates an area where vehicles will be traveling quickly. Lose the slip lane, tighten up the corner – could make the outside lane wider to allow for truck turning.

T-intersection in plaza east of the Broadway/Coronado signal – huge turning radii on these corners. Peds would cross a 40-45' wide intersection just to get across 2 lanes of traffic because those corners are so wide. Tighten up the corners.

Bank drive thru – I generally hate drive thrus but in this case it might be better than having cars circulating or double parking in the fire lane in front of the ATM (which is what happens all day long at the current Chase and BofA in this plaza). Assume there will be a set of walk-up ATMs near the entrance that bikes/ peds can use.

Stop controls at internal intersections – STOP control is shown only in a couple locations (plaza intersection north of Pleasant Valley / Gilbert has Stop control on N/S movements but not E/W). Assume this is oversight and that all legs would be stop controlled.

All crosswalks within the site – make all crosswalks within the site raised speed tables to slow traffic. This includes crossings of the parking garage entry / exits – to slow cars down exiting the structures

Corner buildings (L1 A,B,C) – this is a pretty major entry to the site, and it appears to be totally blocked for pedestrian access into the internal site. Undoubtedly all the buildings will be oriented inward toward the parking area. Really seems like a missed opportunity to invite peds / bikes into the site from that critical corner. Instead they are forced to walk around that whole cluster of buildings – not a great way to integrate the site into the surrounding context.

Bike parking – haven't looked at this plan in too much detail. Lots of racks scattered about, but the capacities seem low. Most are 2-bike capacity. Even Safeway is only 13 bikes. I like the idea of some u-racks scattered throughout the retail areas, but I think some higher capacity clusters near some of the corner / plaza areas would be good as well. And the safeway capacity seems low, especially if they install a wave rack like a couple of the drawing show. Look at Trader Joes in rockridge – there are probably 10 inverted u's there and they get filled up during peak times.

Brett Hondorp, AICP
Principal, Alta Planning + Design
2560 9th Street, Suite 212
Berkeley, California 94710
Tel: 510.540.5008
Fax: 510.540.5039
www.altaplanning.com

Ranelletti, Darin

From: J Co [j_co@comcast.net]

Sent: Monday, April 25, 2011 1:19 PM

To: Office of the Mayor; michael.colbruno@gmail.com; mzmdesignworks@gmail.com; Ranelletti, Darin

Cc: Kaplan, Rebecca; Brunner, Jane; Schaaf, Libby; Brooks, Desley; Reid, Larry; Ranelletti, Darin; Angstadt, Eric; Miller, Scott; Law, Allen; Mach, Jimmy; vienv.truong@gmail.com; sgalvez@phi.org; Blake.Huntsman@seiu1021.org; Klein, Heather; Miller, Scott; Gray, Neil D.; Clevenger, Ann; info@rockridge.org

Subject: Safeway Redevelopment Project (5050-5100 Broadway)

Attachments: 2011 04 25 Safeway Redevelopment Project (5050-5100 Broadway).docx; 2011 04 25 Safeway Redevelopment Project (5050-5100 Broadway).doc

Dear All,

I am a 12 year resident and professional building practitioner, in the Oakland+Rockridge+Piedmont tri-community. I would like to share with you a forward-thinking interpretation of the proposed design. Please find attached, *2011 04 25 Safeway Redevelopment Project (5050-5100 Broadway)* document containing the following:

Table of Contents

Page 2 Introduction

The Safeway redevelopment is part of a much larger urban intervention that addresses the Oakland+Rockridge +Piedmont tri-communities at numerous levels.

Page 2 Safeway's Proposal Didn't Provide a Customized Design Vision / Essential Drawings for Safeway

This is one of Oakland's prime inner-community locations. It is an image and identity *node* that represents the local neighborhood and surrounding communities. Nodes act as the public face of a larger urban transformation.

Page 2 Five Design Features Consisting of:

- Existing Site Development
- Intersection = 51st Street/Pleasant Valley Road & Broadway
- Along 5050-5100 Broadway
- Along Pleasant Valley Road
- Parking Lot

Page 4 Conclusion

If designed and built with awareness, the redevelopment can improve the sense of community of the people who live there. Furnish new urbanism communities to our future generations.

Respectfully submitted,

JOAN CONNOLLY, Assoc. AIA, CSBA
Integrated Project Manager

G R E E N   B U I L D I N G   C H I C SM
Integrated Project Management Homes & Offices
Eco-Design + Efficient Systems + Green Building

Office: 510 652 9037 Cell Text: 510 866 8966

April 25, 2011

From:
GREEN BUILDING CHIC℠
Integrated Project Management Homes & Offices

Eco-Design + Efficient Systems + Green Building
Office: 510 652 9037 Cell /Text: 510 866 8966

To:
Oakland Planning Commission

Design Review Committee
Madeleine Zayas-Mart, Chair
Vince Gibbs, Vice Chair
Michael Colbruno

Re: Safeway Redevelopment Project (5050-5100 Broadway)
Case File Number: **CMD09-135**

Reference to:

- *January 26 meeting*
- *Joint Report Regarding the Design of the Proposed Safeway Redevelopment Plan for the Rockridge Shopping Center*
- *The Conley Report*
- *Node: 51st and Broadway; Rockridge/Upper Broadway/Oakland Tech*

Dear Design Review Committee,

I am a 12 year resident and professional building practitioner, in the Oakland+Rockridge+Piedmont tri-community. I would like to share with you a forward-thinking interpretation of the proposed design.

Table of Contents

INTRODUCTION

What makes a neighborhood alluring is when people are out in the green spaces, on the streets, using local businesses, running into people they know or, meeting new people.

The New Urbanism Includes:

- Environmentally-Friendly Lifestyle = Green Space **+** Sidewalks **+** Bike Paths
- Neighborhood-Friendly Lots = South-East is Nature's Green Space **+** North-West is Man-Made buildings

SAFEWAY'S PROPOSAL DIDN'T PROVIDE A CUSTOMIZED DESIGN VISION

Safeway ought to design a sustainable *node*, in support of Oakland to produce a green economy and lifestyle-friendly environment that benefits us all.

ESSENTIAL DRAWINGS FOR SAFEWAY TO PROVIDE:

Site Conditions Analysis, Existing and Proposed

1) **Intersection:** of 51st Street/Pleasant Valley Road & Broadway
2) **Street & Sidewalk:** along 5050-5100 Broadway
3) **Street & Sidewalk:** along Pleasant Valley Road

Requirements for Existing Site Conditions Analysis

- Natural Land Mapping
- Slope of Ground - leading to and onto the site
- Sun pattern
- Shade pattern
- Wind pattern
- Identify areas recurrently affected by shade and wind

Requirements for Proposed Site Conditions Analysis

- Transit Network - 1-mile radius defining approach and access of sidewalks **+** bicycle paths **+** streets
- Pedestrian and Bicycle Infrastructure = incorporated on the site
- Access to Green Spaces = incorporated on the site
- Pedestrian Network = sidewalk to and from:
  - California College of the Arts, 5212 Broadway
  - Oakland Technical High School, 4351 Broadway
  - Chapel of the Chimes, 4499 Piedmont Avenue
- Horizontal view perspective of site orientation at street to top of buildings
- Vertical view perspective from perimeter of site to top of buildings
- Where to Build and Where Not to Build

FIVE DESIGN FEATURES CONSISTING OF:

Existing Site Development
Intersection = 51st Street/Pleasant Valley Road & Broadway
Along 5050-5100 Broadway
Along Pleasant Valley Road
Parking Lot

Existing Site Development

Safeway designers ought to sculpt the site in relationship to climate, use, and setting and, respond the layout of the buildings to the movement of the sun, prevailing breezes, rain, heat and cold. The less building's fit-in climatically the greater their energy, community and,monetary costs.

Focus on:

- Weather averages across the site
- Environmental data across sloping land surfaces and buildings
- Equitable solar distribution
- Existing shading from buildings and gradients
- Street to building and building to street orientations
- Transit network site approaches and access
- Green areas

Intersection: of **51st Street/Pleasant Valley Road** & **Broadway**

Existing Chase Building Conditions:

- Situated on an uphill slope from street intersection
- Large masonry and glass façade building
- Proportionally to high for the street intersection
- Glass façade generates too much reflection and glare into street intersection
- The building, trees and vegetation generates too much darkness and wind on Chase patios and sidewalk = unusable

Sustainable Node Course of Action:

- Performance selection of building materials and, in relation to orientation
- Maximize daylight
- Equitable solar distribution
- Remove: trees surrounding Chase building
- Selective Removal: vegetation surrounding Chase building

Along 5050-5100 Broadway

Existing Conditions:

- Dense mixed-use
- Sidewalk is bumpy, mismatched and pitted
- Landscaping is overgrown and not maintained
- Objectionable walk ability of streetscape

Sustainable Node Course of Action:

- Universal approach and accessibility
- Obvious perception as walk able streetscape to all your destinations
- Environmentally-Friendly Lifestyle = green space + sidewalks + bike paths
- Implement sustainable Bay-friendly landscaping principles
- Design for flow of people, daylight & shade paths, and wind patterns

Along Pleasant Valley Road

Existing Conditions:

- Dense residential area surrounded by condominiums, homes and institutions
- Numerous residential vacancies and foreclosures in the immediate vicinity to the site
- Embankment = overgrown leafy vegetation; thus, collector of garbage from people & wind
- Sidewalk is bumpy, mismatched and pitted
- Shade and darkness from 4-story 300 unit residential complex across the street
- Objectionable walk ability of streetscape
- A/C Bus Transit

Sustainable Node Course of Action

- Universal approach and accessibility
- Obvious perception as walk able streetscape to all your destinations
- Environmentally-Friendly Lifestyle = Re-landscape embankment as green space + sidewalks + bike paths
- Neighborhood-Friendly Lots = Green areas to support activity and gatherings
- Design for flow of people, daylight & shade paths, and wind patterns
- Sustainable Bay-friendly landscaping principles
- Maximize daylight
- Equitable solar distribution

Parking Lot

Existing Conditions:

- One-way 45 angle parking
- Prevailing breezes and winds
- Veranda = obvious perception as walk able to all stores
- Benches in front of Safeway = concrete benches remain cold under the veranda; used during sun capture
- Rear public space = too dark, shaded & breezy; rarely used
- Seating in front of Starbucks = mobile seating that is moved according to position of sun; used
- Un-useable green space embankment; overgrown leafy vegetation
- Disconnect = pathway from street to building for pedestrians and cyclists
- Shopping Cart stalls = not a sufficient amount

Sustainable Node Course of Action

- Maximize daylight
- Equitable solar distribution
- Provide climate comfortable circulation and green spaces
- Connected pathways linking to destination points throughout site
- Environmentally-Friendly Lifestyle = Re-landscape embankment as green space; usable
- Sustainable Bay-friendly landscaping principles
- Design for flow of cars, bicycles, people and sun, shade paths, and wind patterns

Conclusion

If the design is a nondescript inward facing Safeway archetypal, the Redevelopment is nothing more than a design misappropriation. Oakland+Rockridge+Piedmont tri-community stakeholders can't approve a sustainable new urbanism *node* if one wasn't developed and, under-investing in the most valuable aspect of site, the neighborhood-friendly lots, for the benefit of us all.

Design awareness is such that people listen with all their senses and senses develop perceptions. Once Safeway commits to a performance-based architecture that is responsive to the new urbanism, folks will perceive the success as approachable and connected while using the local retail to meet their needs. Safeway ought to furnish new urbanism communities to our future generations.

Respectfully submitted,

Joan Connolly

G R E E N   B U I L D I N G   C H I C sm

I'M COMMITTED TO RETOOLING OUR BUILT ENVIRONMENT

INTO SUSTAINABLE DESIGN.

AND THE VALUE OF THE BUILDING IS BEAUTY,

AND THE VALUE OF ITS FUNCTION IS HUMAN COMFORT.

JOAN CONNOLLY

Ranelletti, Darin

From: Madeleine [mzm@att.net]
Sent: Friday, April 29, 2011 12:41 PM
To: Ranelletti, Darin
Cc: Angstadt, Eric; Wald, Zachary; Miller, Scott; Manasse, Edward
Subject: RE: Design Review Committee Comments 1-26-11
Attachments: BERKELEY BOWL.jpg; brochure-9812-8thhoward_2.pdf

Hi Darin,

I really appreciate your sending this list to me. This is a very good summary.

I concur with my fellow commissioners on their points. Below are additional comments and suggestions that support my previous comments as follows:

A. What I mean by community fit is twofold:

1. The project does not feel urban enough for a city like Oakland. The building setbacks, meandering landscape edges, the angled connections to the public streets, the lack of street definition, all make their proposal feel like it belongs in a suburb, not in Oakland. Consider looking at how buildings along College Avenue relate to the street. (I think the Safeway on College Avenue did a great job by putting small retail on the ground level as a way of responding to the small scale retail on the other side of the street). See attached image of
Berkeley Bowl.
2. The Architecture does not achieve the level of quality and thoughtfulness than the surrounding architecture (with the exception of banal 1960's buildings). Look at "Il Piedmonte" building on PV and Piedmont Ave, and attached image of Berkeley Bowl for two completely different architectural styles that achieves the level of quality this project should strive for.

B. Project internally focused, ie, disconnected from the rest of the city grid:
The project needs to be designed with fine grain grid pattern of blocks and "streets" that extend from Broadway to the reservoir, and from Pleasant Valley to the hill on the north. Suggestion: First, clearly define the public realm, and then fill in the blocks with buildings. The size of blocks can be determined by the minimum size of a building needed to make a retail work (within reason). The internal blocks should be deeper than the ones along Pleasant Valley and buildings against the hill so as to hide so all the back of house functions. That should free up the rest of the site for a true pedestrian experience. The buildings along Broadway and PV should be programmed and designed do function without all the back of house mess. Example: Urban Harvest Market on 8th and Howard in SF has no off-street loading zones at all! See attached pdf images.

C. The architecture is chaotic.
The current design lacks architectural integrity. One cannot distinguish one building from another. This makes the whole project feel more massive than it should. At the same time, the building edge is not designed to create sufficient street enclosure. The project should break the massing into smaller parts, and define each mass as a building design of its own.

See attached image of Berkeley Bowl in Berkeley, which captures the kind of urban edge that I am talking about.

D. Pleasant Valley –
- Street - The city should take the leadership and initiative to assure the developer that the traffic along Pleasant Valley will be slowed down and that the street character will improve over time. Without this assurance, we can't ask the developer to design a more pedestrian friendly edge along the street.
- Form and land use - The use of form based codes along pleasant valley can provide the flexibility that is needed in uncertain economic times. We don't need to establish the use along PV, just the form and quality of the space.
- Street definition - Also, the development should completely buffer the surface parking lot behind. (This point was missing from your list)

E. Green streets, green infrastructure and complete streets were more casually mentioned. Can these ideas be applied to both the internal streets as well as the public streets?

Please feel free to keep in touch as any progress is made. I am available to meet at your convenience. Thanks for all the good work and effort you have all done on this project so far to make it what it can be.

Sincerely, Madeleine

From: Ranelletti, Darin [mailto:DRanelletti@oaklandnet.com]
Sent: Friday, April 29, 2011 11:41 AM
To: mzm@att.net
Subject: FW: Design Review Committee Comments 1-26-11

Madeleine,

Per your request, I am forwarding you the e-mail and attached comments that I sent to the Broadway Safeway developer concerning the comments from the Design Review Committee.

Let me know if you have any questions.

Darin Ranelletti

Darin Ranelletti, Planner III
City of Oakland, Planning and Zoning Division
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, California 94612
510-238-3663 direct phone
510-238-6538 fax

From: Ranelletti, Darin
Sent: Tuesday, February 15, 2011 11:16 AM
To: 'Dave Zylstra'
Cc: 'Jon Anderson'; Rick Henderson; Owen Chrisman; Jeff Benner
Subject: Design Review Committee Comments 1-26-11

Dave,

Attached are comments made by the Design Review Committee at the meeting on January 26, 2011, concerning the Broadway Safeway project. Please respond in writing to these comments.

Note that the attached comments do not represent all of the comments made by the Committee; they only contain comments that warrant a response from the applicant. Comments regarding the review process and expressing support for the project, for example, are not included. The additional comments, including comments expressing support for the project, will be summarized for the full Planning Commission when the project goes to the full Planning Commission. Your response to the attached comments will also be forwarded to the full Planning Commission.

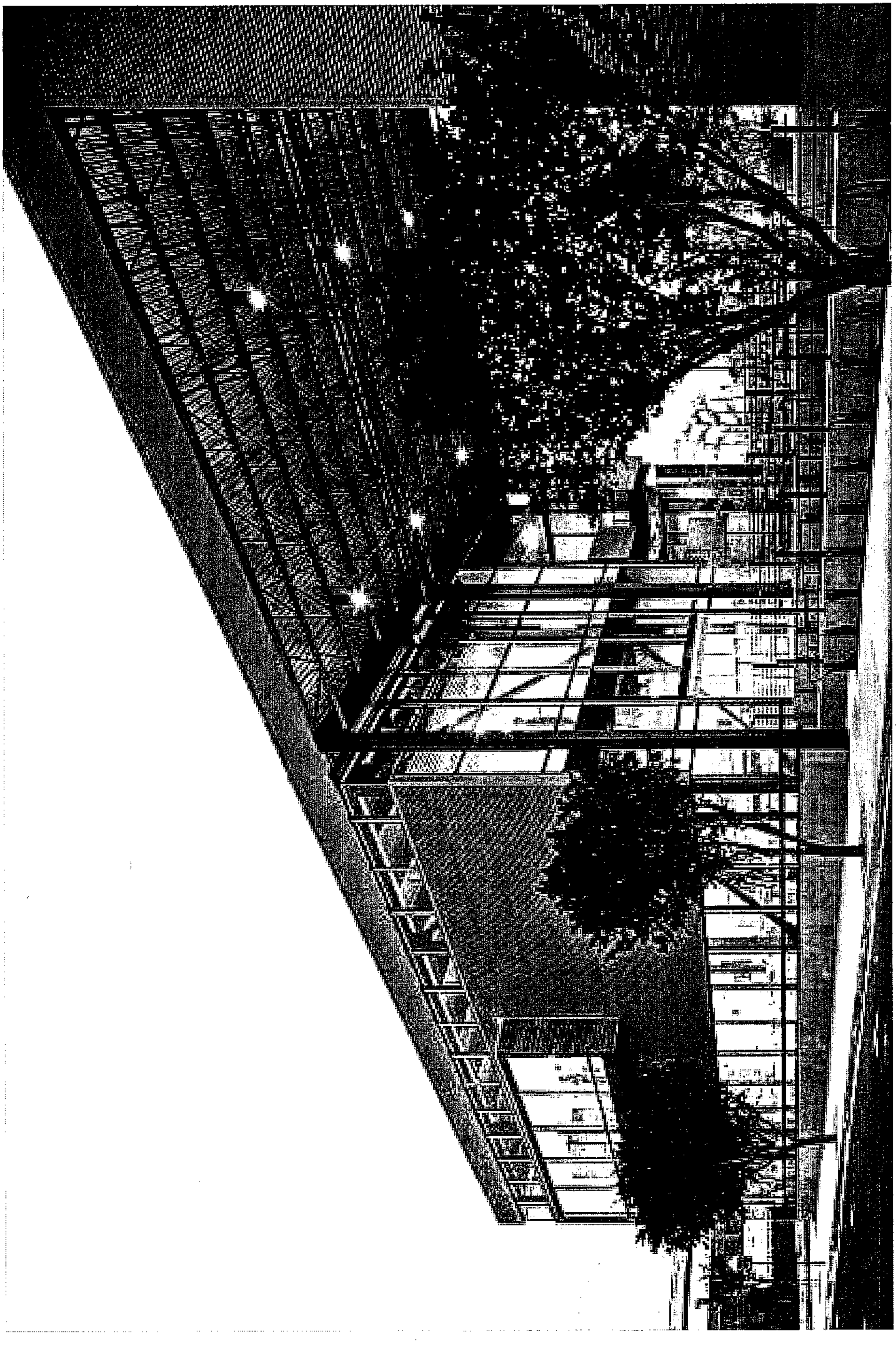
I'd like to schedule a meeting with you and your architects to discuss the comments and your thoughts on how you intend to respond to them and move forward with the project. Can you let me know your availability for the next two weeks?

Thank you,

Darin Ranelletti

Darin Ranelletti, Planner III
City of Oakland, Planning and Zoning Division
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, California 94612
510-238-3663 direct phone

510-238-6538 fax



PROJECT

8th + HOWARD FAMILY APARTMENTS/SOMA STUDIOS

This five-story affordable complex combines apartments and modern single-occupancy studios with a wealth of community services, including an on-site daycare. Each side features protected shared courtyards. The building is visually rich, with a bright geometric façade punctuated by long windows on one side, a sinuous wall creating curving rooms on the other. The careful, yet playful, design allows for a depth of detail uncommon in affordable housing. Reduced parking frees space for neighborhood-serving retail, including an organic grocery store.
CLIENTS: Tenderloin Neighborhood Development Corporation/Citizens Housing Corporation.

ADDRESS
1180-1190 HOWARD STREET
SAN FRANCISCO, CALIFORNIA

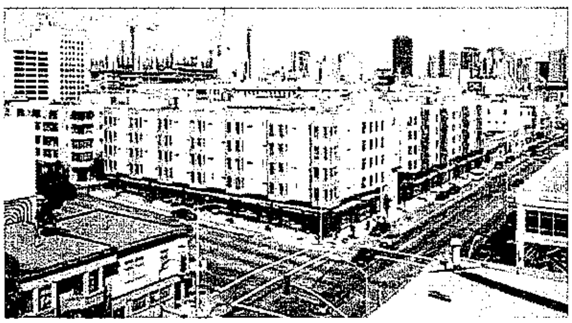
STATUS
COMPLETED 2003

UNIT COUNT	
STUDIO	88
1 BEDROOM	12
2 BEDROOM	40
3 BEDROOM	22
TOTAL	162

DENSITY RATIOS	
PROJECT SF	176,874
ACRES	1.0
UNITS/ACRE	155

AWARDS
2005 AIA NATIONAL HONOR AWARD: MULTIFAMILY HOUSING
2005 RESIDENTIAL ARCHITECT DESIGN MERIT AWARD
2004 BUILDER'S CHOICE MERIT AWARD: MIXED USE COMMUNITY
2004 GOLD NUGGET MERIT AWARD: BEST AFFORDABLE
2003 SF BUSINESS TIMES BEST AFFORDABLE RESIDENTIAL AWARD

PARKING	
TOTAL	66
SPACES/UNIT	0.38
TYPE	PODIUM
COMMERCIAL SPACE	
CHILDCARE SF	6,000
RETAIL SF	18,000



Ranelletti, Darin

From: Linda [sfkat@pacbell.net]
Sent: Monday, June 13, 2011 5:51 PM
To: Ranelletti, Darin
Subject: Safeway...

Hello,

Just to add my 2 cents, as a Rockridge resident...We DON'T NEED a huge, gimongous, ugly safeway on Broadway and 51st! There is already one, Plus the CVS is badly needed in the neighborhood. And this CVS is great, very big, with everything one could need! In addition, there is another Safeway on College, less than a mile from this location. We want to keep the Rockridge area intact. And there is NO close CVS. I know a lot of people depend on that store for medications and household items.
NO NEW SAFEWAY!!!
Is there a petition, Or any way to potentially Keep The CVS that is there?

Thank you,
Linda Yanac

Ranelletti, Darin

From: Angstadt, Eric
Sent: Tuesday, August 02, 2011 3:36 PM
To: Vollmann, Peterson; Ranelletti, Darin
Subject: FW: College Avenue Safeway and Rockridge Safeway = Comment to file with DEIR

-----Original Message-----
From: Sally Williams [mailto:williamssally@gmail.com]
Sent: Tuesday, August 02, 2011 3:35 PM
To: Angstadt, Eric
Subject: College Avenue Safeway and Rockridge Safeway = Comment to file with DEIR

Dear Mr Eangstadt,

I have been following planning issues for 50 years and I am very familiar with the effect of big box developments on small businesses and the over-all health of communities. I think anyone who has been involved in planning issues is aware that many areas ban big box because it has driven small businesses out of business and have left communities with empty stores that contribute to crime as well as being a turn-off to potential new businesses. Both of Safeway's over- whelming big box projects(College and Pleasant Hill)will drive our friends out of business. This will cause both Oakland and Berkeley to loose a substantial tax base rather than being an "economic stimulus". (History does not support the planning departments statement) It will also cause a shift in where locals can shop. We will have to drive to Emeryville or Walnut Creek to obtain many of the services and products that we have been able to obtain locally. In addition, if the Oakland Planning Dept. thinks these boxes with a history of selling inferior products will attract customers from elsewhere, the Oakland Health Department should be alerted. Safeway should be asked to reveal some of its past history of investigations for its poor practices. They exist.

The local stakeholders and tax payers in Oakland are attached to the quality of products and services that we presently receive from our long-standing local businesses. Other residents of Alameda County are attracted to the Rockridge because it has a reputation of having some of the highest quality shops in the East Bay. Huge Safeways will take away that reputation. Improved urban Safeway that decide to make an attempt to meet the standards of our local businesses and do not take away the parking of existing small businesses will be supported.
Please do not allow big box. It will diminish the reputation that Oakland is trying to create for itself as a wonderful place to live, work and shop.

Sara Williams
Hillcrest-Eucalpytus Neighborhood

August 2, 2011 Case File #ER090006

Ranelletti, Darin

From: Jame-Ane Ervin [jameane@gmail.com]
Sent: Wednesday, August 03, 2011 3:34 PM
To: Ranelletti, Darin
Subject: Safeway Design Proposal for Broadway/Pleasant Valley

Mr. Ranelletti,

I wanted to send you some comments on the latest proposed design for Safeway on Pleasant Valley/Broadway. I live in the neighborhood, closer to the Rose Garden, I am sure to date you have heard scores of comments on the loss of the "Super CVS" at this location (and the loss of the associated vendors -- Top Dog, the Shoe Repaor shop, the Watch Repair shop, Rockridge Health Food Store, etc).

Considering the size of this shopping area, I am hoping for a worthwhile replacement. After seeing the former Emil Villa slot stay cvacant for 15 years, causing blight on this important corridor it dawned on me how visible this project is. Today it is completely out of scale of the neighborhood and causes lots of traffic issues. It is difficult for drivers, pedestrians and transit users to navigate the site from the entrance. It is also difficult to plan a visit to multiple stores in the location during a typical errand: bank, groceries, and drugstore. I do not know if you frequent other suburban style shopping centers, but Hacienda Crossing in Dublin, Union Landing in Union City and El Cerrito Plaza in El Cerrito all come to mind. These huge "shopping centers"> are very difficult for pedestrians and drivers to navigate. To walk from shop to shop you need to traverse large parking lots with drivers speeding through without much regard for human sized traffic. The streetscape is not very user friendly since it offers a "wall" to buffer the shopping center from the rest of the neighborhood since all of the buildings are facing inward.

I think the redevelopment of this parcel offers a good opportunity to reintegrate this space into the rest of the neighborhood. The current proposal, while offering space for a variety of uses and retail, does little to offer an improved street presence or safety around the center. Today when I visit CVS in the evenings I do not feel very safe, knowing there is a huge empty parking lot wiating for me to return to my car. I do not feel comfortable walking from CVS to Safeway since there is minimal lighting and access to the other stores in the center, forget about walking all the way to the Chase bank. I am an able-bodied 30-something, I can imagine that for people with mobility challenges this is even more true. This new proposal continues to keep the stores pushed far from the street and forces pedestrians to cross an enormous parking lot to get to the key amenities. It also blocks off the view of the street from the shoppers and rest of the community. Safeway has presented an excellent proposal for the nearby Rockridge store that is well integrated into the neighborhood fabric and street space. I think something similar could also be accomplished in this proposal by moving the stores up to the main street level, reducing the number of curb cuts, incorporating a plaza or public seating area (or green space) and better integrating transit stops at street level. I'd also like to see housing on the site, although I realize this is a distant possibility based on the zoning and current market conditions. I think at the very least we can offer the residents nearby, weather traveling by foot, transit or bike a better design. Considering this section of Oakland is very dense and there is an abundance of senior housing within an quarter mile, I'd hope to make sure that we are considering all of the future shoppers in the proposal.

Thank you!

Jame Ervin
Oakland Resident

--
"Is it the beginning, the end or the intermission?"
mobile: 510.459.7620
voice: 510.269.4420
my blog, read it ;) http://jameane.wordpress.com

Ranelletti, Darin

From: Jeffrey Parkhurst [kparkhurst@sbcglobal.net]
Sent: Wednesday, August 03, 2011 11:10 PM
To: Ranelletti, Darin
Subject: RockRidge Safeway

I am writing to you concerning the plans for the remodel of the RockRidge Safeway. I am a lifelong Safeway shopper who has lived in many Safeway markets along the West Coast and have seen many different stores. Most recently, I moved to Piedmont from the Blackhawk area of Danville where they remodeled a store.

The RockRidge Safeway is the largest Safeway store near me and it is in desperate need of a revamp. The Montclair & Grand Avenue stores are a waste of time to drive to because they have only a fraction of what a family needs for their weekly shopping. Yet the RockRidge Safeway has horrible produce, a pitiful bakery where many of the displays holding the rolls are broken, and an overall senseless floor plan, especially in the produce/meat departments.

I am in favor of a remodel and revamp of the RockRidge shopping center and a newer and larger Safeway store. The RockRidge Center needs a fresh look and a better use of the retail space it has. I only wish they could also accommodate the CVS Pharmacy as well. The combination of the CVS Pharmacy and the Safeway are a draw for me, but the undesirable Safeway store leads me to drive more and more often to Trader Joes or Berkeley Bowl instead.

Ranelletti, Darin

From: Stuart Flashman [stuflash2@gmail.com]
Sent: Thursday, June 02, 2011 1:55 PM
To: Ranelletti, Darin
Subject: FW: Support for Rockridge Safeway

FYI. I thought you might want to see Mr. Fitzwater's comment and my response on behalf of RCPC.

Serving public interest and private clients since 1990

Stuart Flashman
Attorney

Law Offices of Stuart Flashman
5626 Ocean View Drive
Oakland, CA 94618-1533

tel: (510) 652-5373
fax: (510) 652-5373

stu@stuflash.com

-----Original Message-----
From: Stuart Flashman [mailto:stuflash2@gmail.com]
Sent: Thursday, June 02, 2011 1:44 PM
To: 'Phil Fitzwater'
Cc: 'pvollman@oaklandnet.com'; 'jbrunner@oaklandnet.com'; 'officeofthemayor@oaklandnet.com'
Subject: RE: Support for Rockridge Safeway

Dear Mr. Fitzwater,

A couple of people had pointed out to me that, based on where you live, it was more likely you were talking about the Rockridge Shopping Center project. Of course, RCPC has, along with other North Oakland community groups, also been critical of that project, but for almost the opposite reason from the College Avenue Safeway.

Unlike the College Avenue Safeway, the Rockridge Shopping Center is at the intersection of two major streets, and is a large site that could benefit from more intensive (and transit-friendly) development. Indeed, the City's General Plan identifies this site as one where new development should be focused. Our criticism of Safeway's plans for the site have centered on Safeway missing an extraordinary opportunity to develop the site in a way that would bring much more benefit to the community, and the City, than Safeway's current plans. (I might mention that if we had just uncritically accepted Safeway's initial proposal, we wouldn't have gotten the newer one, which, although still not what it could be, is far better than what Safeway first put forward.)

Safeway's current plans turn a blank face to Pleasant Valley Avenue, and bury the new Safeway at the very back of the lot. RCPC also has concerns about the site circulation, which, we think, will isolate the stores on the western half of the site from customers even more than currently happens to the stores in the stripmall area between the Safeway and CVS.

As with the College Avenue Safeway, RCPC is certainly not endorsing leaving the shopping center as-is. However, we don't think we should settle for a mediocre plan when, with a bit more effort, we could have a much more vibrant and successful development plan.

I should add that RCPC doesn't believe its critical comments have delayed getting a new shopping center built. Safeway voluntarily withdrew its initial plans after they were met with almost universal criticism, including from the entire planning commission. At the moment, the City's environmental review is moving forward on schedule. We are hopeful that the results of that review will allow Safeway and the City to select a better alternative without delaying the approval process.

Most sincerely,

Stuart Flashman
RCPC Board chair

Serving public interest and private clients since 1990

Stuart Flashman
Attorney

Law Offices of Stuart Flashman
5626 Ocean View Drive
Oakland, CA 94618-1533

tel: (510) 652-5373
fax: (510) 652-5373

stu@stuflash.com

-----Original Message-----
From: Phil Fitzwater [mailto:phil@irisenv.com]
Sent: Thursday, June 02, 2011 12:29 PM
To: stuflash@aol.com
Cc: pvollman@oaklandnet.com; jbrunner@oaklandnet.com; officeofthemayor@oaklandnet.com
Subject: Re: Support for Rockridge Safeway

Actually my comments were not related to the project that you discuss below.

My comments were applicable to the Safeway project at 51st and Broadway.

Thanks,

Phillip

From: Stuart Flashman <stuflash@aol.com>
Reply-To: "stuflash@aol.com" <stuflash@aol.com>
Date: Wed, 1 Jun 2011 22:17:00 -0700
To: Phillip Fitzwater <phil@irisenv.com>
Cc: "pvollman@oaklandnet.com" <pvollman@oaklandnet.com>, "jbrunner@oaklandnet.com" <jbrunner@oaklandnet.com>, "officeofthemayor@oaklandnet.com" <officeofthemayor@oaklandnet.com>
Subject: RE: Support for Rockridge Safeway

Dear Mr. Fitzwater,

Thank you for your comment on the College Avenue Safeway Shopping Center Project. As you note, RCPC has been critical of this project. The decision to oppose the project was made unanimously by the RCPC Board of Directors based on input from the Rockridge community and the Board's consideration of the project over the past four years. It was certainly not made lightly, and does not indicate that the Board wishes the current College Avenue Safeway store to remain in its current state.

RCPC acknowledges that the current aging store is less than satisfactory. However, RCPC is also aware of the severe traffic problems that have plagued College Avenue for many years. The Board's feeling, echoing that of many comments from the community, is that a 62,000 square foot shopping center will overburden College Avenue's traffic capacity and further exacerbate an already difficult situation. RCPC also shares with many College Avenue merchants a concern that further congesting College Avenue will lead potential customers to abandon Rockridge for other easier-to-access shopping areas. This would damage College Avenue's successful commercial area and further damage Oakland's financial situation by reducing sales tax revenue. There would also be damage to the surrounding community as cut-through traffic increases on neighboring streets such as Colby and Hillegass. Further, RCPC believes approving this large project would undercut the recently-enacted CN-1 zoning for College Avenue, which is intended to encourage pedestrian-oriented comparison shopping, something almost antithetical to a 50,000 sq. ft. multi-department supermarket.

RCPC remains ready to consider alternatives for redeveloping the College Avenue Safeway store, including a reasonable increase in the size of a replacement store. However, the RCPC Board is unanimous in its opinion that 62,000 square feet is beyond what is acceptable.

Most sincerely,
Stuart Flashman
RCPC Board Chair

-----Original Message-----
From: Phil Fitzwater [mailto:phil@irisenv.com]
Sent: Saturday, May 28, 2011 7:50 PM
To: info@rockridge.org; chair@rockridge.org
Cc: pvollman@oaklandnet.com; jbrunner@oaklandnet.com; officeofthemayor@oaklandnet.com; officeofthemayor@oaklandnet.com
Subject: Support for Rockridge Safeway

I live in Rockridge within 3 blocks of this project and our family would really like to see the project start. We have lived in our house for over 20 years and have waited for this end of College to improve for many years.

I have to say that the consistent negativity of RCPC is disheartening. That negativity certainly does not represent our interests or our desire to clean up and renew this part of Oakland.

I respectfully suggest that RCPC tone down its adversity, and instead do something that supports renewing Oakland and increasing the tax base to help us all.

And for the Oakland representatives listed in this email, please do everything that you can to push this project along so that we can renew this part of Oakland. It really needs it and so do the people that live nearby.

Thank you,

Phillip Fitzwater
327 Hemphill Place
Oakland, CA 94618

901 Portal Av
Oakland, CA 94610
26 Aug 2011

RECEIVED
AUG 31 2011
City of Oakland
Planning & Zoning Division

Scott Miller, Oakland Zoning Mgr.
250 Frank H. Ogawa Plaza, #2154
Oakland, CA 94612

Re: SAFEWAY expansion on College Av
SAFEWAY takeover of CVS space, Broadway & Pleasant Valley Rd

Sir:

I have read with interest all of the brouhaha concerning SAFEWAY'S expansion on College Av. I do think that it is Much Ado about Nothing. However, there is a much bigger issue down the road at Broadway &Pleasant Valley, and that is the prospective takeover of the CVS space by SAFEWAY. I understand that SAFEWAY is the anchor tenant at the latter location, and thus is able to effect a kind of Eminent Domain against (yes, against) CVS, due to the poor business practice of previous owner, Long's. But, what about a compromise on this: Allow SAFEWAY to do their expansion on College Av, but allow CVS to remain in the space that they now have. SAFEWAY, in that center, has a huge store. If they want to remodel, let them.

CVS is the ONLY store of its kind for miles and miles. It is the ONLY store where someone can go in and buy some jeans for their kids, some chips, a lipstick, get a prescription refilled, buy a plant, do a kind of one-stop shopping.

I was in the CVS store recently, and an older gentleman saw the sign that there had been a time reprieve on when CVS would vacate. He was completely unaware that this was imminent. When I told him what it meant, he said: "But where am I going to go now?" I too am "older," but aware of this. It cannot be allowed; the City of Oakland has to come to some agreement with SAFEWAY, that CVS stays WHERE IT IS! The effective Eminent Domain is not REALLY against CVS, but the people of Oakland. It is incumbent on the City of Oakland, the Zoning Manager, you, to effect something that is positive for the people of Oakland. The way it now stands, the PEOPLE lose: not a corporation!

Remember, SAFEWAY still has TWO (2) big locations within a mile of each other, with another, smaller store down on Grand Av. The closest CVS is at Lakeshore Av, and it is TINY, more a place to refill prescriptions than buy necessities.

I urge you, plead with you, to do something positive. Thank you...

Sincerely yours,

ADELAIDE C. RULE
cc: Pat Kernighan

Ranelletti, Darin

From: Tsosie [tsosie@nyu.edu]
Sent: Monday, February 27, 2012 5:38 PM
To: Ranelletti, Darin
Subject: Re: Rockridge Center Safeway

Darin,

Thank you for the update. I hope the new plans include options for filling the massive void left by the loss of Longs, which included a garden center, hardware selections, and sporting goods, all in store open 24 hours. The site has a lot of potential and I would much rather shop at Rockridge Center than battle traffic to drive my sales tax dollars to Emeryville.

Thanks,

Tsosie Reyhner

On Thu, Feb 23, 2012 at 8:59 AM, Ranelletti, Darin <DRanelletti@oaklandnet.com> wrote:

> Hello Tsosie,
>
> The City is preparing a Draft Environmental Impact Report (EIR) for the Rockridge Center Safeway project. I expect that it will be released for public review sometime in the early summer. We are also expecting more information from Safeway about details of the proposal, which we expect to receive shortly. Feel free to check in with me periodically and I can give you an update.
>
> Regards,
>
> Darin Ranelletti
>
> --
>
> Darin Ranelletti, Planner III
>
> City of Oakland, Planning and Zoning Division
>
> 250 Frank H. Ogawa Plaza, Suite 3315
>
> Oakland, California 94612
>
> 510-238-3663 direct phone
>
> 510-238-6538 fax

From: Tsosie [mailto:tsosie@nyu.edu]
Sent: Wednesday, February 22, 2012 5:01 PM
To: Ranelletti, Darin
Subject: Rockridge Center Safeway

Hello Darin,

I am writing to find out if there are any details on the status of the Rockridge Center Safeway project. I live a block away from this shopping center, and I have been watching the quality of the CVS store steadily degrade as they reduce inventory, yet I see no sign of progress on the Safeway project that I can only assume this is related to. Most of the news I see focuses on the more contreversial project that is planned for the Claremont Avenue Safeway location. I am looking forward to **something** being done with this outdated shopping center. Do you know when additonal details will be released to the public?

Thanks,

Tsosie Reyhner

230 Mather St.

Oakland, CA 94611

Ranelletti, Darin

From: Miller, Scott
Sent: Tuesday, April 03, 2012 9:00 AM
To: Ranelletti, Darin
Cc: Angstadt, Eric
Subject: FW: Solving the Moraga Canyon Controversy

FYI.

From: Connie Young [mailto:constancexyoung@gmail.com]
Sent: Saturday, March 31, 2012 1:21 PM
To: Miller, Scott
Subject: Solving the Moraga Canyon Controversy

Dear Mr. Miller,

Below is text from a letter that I have been circulating to various puclications and public officials. Perhaps you can put in a good word for potential redesign of the property located at 51st Street and Broadway in Oakland. Here are my thoughts.

The controversy over development of the "Sports Complex" in Moraga Canyon/Blair Park rages on. As is often the case, this situation has digressed into a "winners & losers" scenario. What we should instead be looking for is a solution to a problem.

It is true that Piedmont families do not have sufficient playing fields within a reasonable geographical distance to accommodate the number of Piedmont children that would like to engage in organized sports. What a sad symptom of poor urban planning. (Has the population of Piedmont really grown by that much?)

At the same time, harsh and dramatic modification of the natural landscape to create something large enough and level enough to build a playing field seems impractical. Add in all the other considerations and things really get complicated.

Why don't we instead think creatively about where else we CAN build playing fields that would not be too far away from Piedmont? The shopping center at the corner of Broadway and Pleasant Valley (51st Street) in Oakland is gearing up for redevelopment. Why not modify the design so that there are soccer fields and margin parks on top of the parking at this shopping center? Right now the community has only a vast expanse of asphalt. We could even put a soccer field on top of the new Safeway Store that is going to be built at this location. I would imagine that an arrangement like this would be attractive to retailers as they would receive more foot traffic. It would also enhance the site for those living in the neighborhood by creating "green space" rather than asphalt.

While this property is not located in Piedmont an arrangement could be made that guarantees Piedmont residents a certain amount of "field time" in exchange for financial contribution on their part. Perhaps the project would also qualify for federal grants as it would increase opportunities for urban children to exercise. There may also be corporate sponsors (Safeway, Kaiser Permanente) who would like to get in on this.

If we're out of land, how can we redesign buildings and parking structures to support a community that would like to be active, thereby creating an urban environment that is more than just concrete?

Constance Young

Resident of Oakland

RECEIVED

AUG 1 5 2012

City of Oakland
Planning & Zoning Division

Planning Commission
Oakland City Hall
One Frank H. Ogawa Plaza
Oakland, CA 94612

RE: (51st and Broadway) Safeway Redevelopment Project

Dear Members of the Planning Commission,

As a neighbor and patron of the Rockridge shopping center, I urge you to approve the proposed development at 51st/Pleasant Valley and Broadway. After personally viewing the current development plans, I can confidently say that input from the community has been heard and incorporated into the design of the future shopping center.

The newest design has an improved layout that includes smarter traffic circulation and parking solutions, as well as safer access for pedestrians, cyclists, and buses. Attractive landscaping and walkways alongside the quarry, in addition to community gathering spaces throughout the shopping center, will create a pleasant atmosphere that patrons and their families will enjoy.

I feel that this project is an example of responsible development that Oakland needs. It will stimulate the local economy by creating jobs, improving retail options for Oakland residents, and increasing tax revenue for the city. Oaklanders are relying on **you** to keep this project moving forward.

My one suggestion is to require Safeway to convey land to accommodate a right turn lane from Pleasant Valley onto Broadway toward Hwy 24. Otherwise, I genuinely think it is an outstanding plan. And, a launching point for the rebirth of Broadway down to Kaiser Hospital.

Sincerely,

DAVID T. BOWLES
Print Name

438 W. GRAND AVE #610
OAKLAND 94612
previously 5642 GLENBROOK DR.
OAKLAND, CA 94618
Address
10 years

DBowles
Signature
BORN IN OAKLAND!

510-655-5334
Phone

RECEIVED
SEP 13 2012
City of Oakland
Planning & Zoning Division

Planning Commission
Oakland City Hall
One Frank H. Ogawa Plaza
Oakland, CA 94612

RE: (51st and Broadway) Safeway Redevelopment Project

Dear Members of the Planning Commission,

As a neighboring merchant of the Rockridge shopping center, I urge you to approve the proposed development at 51st/Pleasant Valley and Broadway. After personally viewing the current development plans, I can confidently say that input from the community has been heard and incorporated into the design of the future shopping center.

The redeveloped Rockridge shopping center would serve as an anchor for local shopping districts and attract new customers who will visit nearby businesses, such as my own. It will stimulate the local economy by creating jobs, improving retail options for Oakland residents, and increasing tax revenue for the city. Oaklanders are relying on **you** to approve this project.

Sincerely,

John Moore

Name

9/7/12

Date

1140 Ashmount Ave Oakland 94610

~~Business~~ address

Phone

Email

Ranelletti, Darin

From: Doug Smith [doug@sutrovision.com]

Sent: Thursday, November 01, 2012 5:02 PM

To: Ranelletti, Darin

Subject: Rockridge Ctr Safeway

Dear Mr. Ranelletti,

I am a homeowner in the Piedmont Ave neighborhood. In searching for an update on the Rockridge Safeway project I came across your email. While I realize that suggested input on this may have long past I would like to express my support for the last redesign and hope that the project is moving forward.

Best,
Doug Smith

4410 View St.

Appendix 4.1:

Urban Decay Analysis

ALH Urban & Regional Economics

Safeway Rockridge Store
Shopping Center
Urban Decay Analysis

Prepared for:

Lamphier-Gregory

Prepared by:

ALH | ECON

ALH Urban & Regional Economics

October 2012

ALH | ECON

ALH Urban & Regional Economics

2239 Oregon Street
Berkeley, CA 94705
510-704-1599
aherman@alhecon.com

October 28, 2012

Scott Gregory
Lamphier-Gregory
1944 Embarcadero
Oakland, CA 94606

Re: Urban Decay Analysis for the Rockridge Safeway Expansion Project

Dear Mr. Gregory:

ALH Urban & Regional Economics (ALH Economics) is pleased to present this study regarding the urban decay analysis of the planned Rockridge Safeway expansion project in the City of Oakland. This study highlights the study findings regarding the economic impact/urban decay analysis of the planned 17,038-square-foot expansion of the existing Safeway store and additional development of 120,034 square feet of commercial and common space. The purpose of this report is to provide an assessment of the potential for the project to cause or contribute to urban decay.

It has been a pleasure working with you on this project. Please let me know if you have any questions or concerns.

Sincerely,

Amy L. Herman, AICP
Principal

C:\ALH Econ\2011 Projects\1109\Safeway 1109\Reports\Safeway Rockridge.r02.doc

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LIST OF EXHIBITS
(Appendix A)

LIST OF EXHIBITS
(Appendix A)

LIST OF SUPPORT EXHIBITS
(Appendix B)

I. EXECUTIVE SUMMARY

INTRODUCTION

The purpose of this study is to assess the economic impact and potential for urban decay resulting from redevelopment of the Rockridge Shopping Center located at the intersection of Pleasant Valley Avenue/51st Street and Broadway in Oakland, California (referred to as the "Project"). Site redevelopment will include relocation and expansion of the shopping center's existing Safeway supermarket within the site as well as the demolition of other existing retail space and development of a net increment in total retail space. The City of Oakland retained Lamphier-Gregory to prepare an Environmental Impact Report (EIR) for the proposed project. Accordingly, ALH Urban & Regional Economics ("ALH Economics") was retained to conduct this urban decay analysis. This study estimates the potential impacts of the expanded Safeway store and net new incremental space on existing retailers in the market area pursuant to diverted sales from existing retailers. The study estimates the extent to which the opening of the Project and other cumulative retail projects may or may not contribute to urban decay resulting from potential store closures attributable to existing retailer sales diversions.

The existing Safeway store totals 47,975 square feet. Upon relocation and expansion, the store will include 65,013 square feet, reflecting a net increase of 17,038 square feet. In addition to the Safeway store redevelopment, the Project will include the demolition of an existing 87,220-square-foot CVS store and the development of an additional net new 257,523 square feet of commercial and common space. This 257,523 net new square feet of commercial and common space will comprise restaurant space, additional retail space, and non-retail and common space. In all, there will be approximately 108,000 total square feet of net new commercial space, plus additional net new common space.

The new Safeway store will include roof-top parking. The additional tenants, which have not yet been identified, will occupy two-story office above retail space, and new street-facing retail buildings with parking behind and additional roof-top parking. The main entrance will front on Pleasant Valley Avenue, along the edge of the Project site, with an additional entrance along Broadway. With the exception of the existing Safeway space, all existing property structures will be demolished prior to the development of the new store and the phased development of additional commercial spaces. The development phasing will facilitate limited, if any, downtime for the Safeway store. After Safeway's relocation within the development site the existing store space will be demolished followed by other new construction.

The Project is part of an effort by Safeway Stores to upgrade many of its Northern California Safeway stores into Lifestyle stores. Among other elements, Lifestyle stores have a strong emphasis on providing quality perishables, such as produce, meat, delicatessen, bakery, prepared foods, and floral department. Lifestyle stores additionally include unique merchandising fixtures and a variety of island displays with specialty items. Safeway is additionally in the process of seeking approval to rebuild and expand the existing College & Claremont Safeway store located at the College & Claremont avenues in Oakland, and recently rebuilt the Berkeley store at Shattuck Avenue and Rose Street.

This study estimates the potential impacts of the Project's tenants on existing retailers in the Project's market area and other potentially affected areas, primarily in the form of diverted sales from existing retailers. The study estimates the extent to which the opening of the Project and other cumulative retail projects may or may not contribute to urban decay pursuant to potential store closures attributable to existing retailer sales diversions. The key indicator from a CEQA perspective is impacts on the physical environment, which includes existing stores and commercial real estate conditions, as measured by the current baseline. This is the baseline reflected by existing conditions discussed in this report. Fieldwork for this study was conducted in October 2011, with supplemental field visits in 2012.

The findings and analysis are presented in 2011 dollars. This generally reflects data availability but most importantly facilitates analysis of the Project in comparison to the proposed Safeway expansion project at the College & Claremont store in Oakland, with the environmental review and public approvals process for that store already underway, including a comparable urban decay analysis.

SUMMARY OF FINDINGS

Project Sales

ALH Economics estimates that net new stabilized Project sales will total $66.1 million in 2011 dollars. Of this amount, 80% is estimated to be generated by residents of the Project's market area, equivalent to $52.9 million in sales. The remaining 20% of sales are assumed to be attributed to consumers residing outside of the Project's market area, including consumers who work near the site but live elsewhere and destination shoppers originating from a widely dispersed area. It is not possible to identify the stores that these shoppers would otherwise frequent and accordingly assess their urban decay impacts.

The Project's market area is defined as portions of north and central Oakland and the City of Piedmont. Generally speaking, the boundary includes the border of the City of Berkeley on the north, San Pablo and Grand avenues on the west, Park Boulevard on the south, and Highway 13 in the Oakland Hills and the Rockridge Neighborhood in the east.[1]

By category of retail sales, based upon assumptions for the Project's net new retail space and pursuant to the State of California Board of Equalization's sales categories, the Project's estimated sales generated by market area residents comprise the following:

- $12.8 million in other retail sales;
- $11.6 million in clothing & clothing accessories;
- $10.9 million in food & beverage store sales;
- $6.5 million in home furnishings & appliances;
- $5.7 million in general merchandise; and
- $5.4 million in food services & drinking places (restaurants).

The other retail category is a broad category that includes a wide range of goods, such as office supplies, books, pet supplies, toys, pharmacy, jewelry, and sporting goods.

[1] See Map in Exhibit 3 for more detail, and more detailed text description in Chapter IV.

Stabilized sales are not expected to occur the first year of store operations, but rather the second or third year, which is typical of new retail operations. The longer it takes for the Project to stabilize sales, the less impact there will be on local retailers, due to the effects of new demand.

Project Absorption of Retail Sales Leakage

The Project's market area is estimated to have a $949.0 million sales base in 2011, comprising a portion of Oakland and the City of Piedmont. Despite this high level of sales, a substantial amount of demand generated by market area residents "leaks" from the market area, meaning that sufficient retail shopping opportunities are not available in the market area to fully capture demand generated by market area residents. The only exception to this leakage is in the food & beverage category, where the market area is estimated to achieve 23.3% sales attraction, meaning 23.3% more sales in this category are achieved than would be expected from resident spending alone. Inclusive of this sales attraction, the market area as a whole leaks 41.0% of resident spending potential, meaning that 41.0% of resident spending on average is spent outside the market area.

The Rockridge Safeway Project will provide opportunities for recapture of some existing retail leakage in categories other than food & beverage. The amount of recaptured leakage will depend upon the nature of the Project's retail opportunities and the complexity of the retail purchase. This study estimates that all of the Project's clothing & clothing accessories, food services & drinking places (e.g., restaurants & and bars), general merchandise, and other retail sales will be accounted for through recaptured leakage. This recapture will account for an estimated $35.5 million of Project sales generated by market area residents. Even after the Project's recapture of these sales, leakage in these categories will persist, with residents still needing to make purchases in these categories outside the market area to meet their needs.

There will also be potential for some of the Project's $6.5 million sales in the home furnishings & appliances category to be achieved through recaptured leakage. However, the study does not assume that all Project sales from market area residents in this category will represent recaptured leakage. This is because this retail sales category is a comparative shopping category, hence consumers are typically willing to travel longer distances to purchase these goods. It is therefore unlikely that all the Project's sales in this category will comprise purchases the market area residents would not otherwise make in the market area. Accordingly, the analysis assumes that one-half the Project's other retail sales will constitute recaptured leakage, totaling $3.3 in recaptured sales.

In total, the analysis assumes that $38.7 million in Project sales will be achieved through recaptured sales leakage. While this recaptured sales leakage amount translates into new Project and market area sales, the constituent recaptured sales will still occur to the detriment of other existing retailers. It is difficult to identify which existing retailers outside the market area may experience sales reductions as a result of the Project's recaptured leakage. These outside market area retailers are most likely located over a wide area, depending on the nature of the good, and probably include stores in other Oakland locations, Berkeley, Emeryville, and even San Francisco. This is such a widely dispersed area that it is unlikely that any particular store outside the market area would lose sufficient sales attributable to the Project resulting in store closure, and thus would not lead to urban decay in this more generalized area.

Sales Impacts

After consideration of out of market area sales and recaptured sales leakage, the Rockridge Safeway Project has the potential to divert $14.2 million in sales from existing market area retailers. This sales volume includes all of the Project's anticipated $10.9 million in food sales generated by market area residents as well as $3.3 million in home furnishings & appliances sales.

Grocery and Food Stores. The market area is characterized by food sales attraction. Consequently, the analysis conservatively assumes that any Project food sales generated by market area residents will occur to the detriment of existing food & beverage retailers in the market area. The study anticipates that grocery stores with conventional and upscale orientations are most susceptible to sales impacts from the expanded Rockridge Safeway store given the store's repositioning as a Lifestyle brand store, which is considered more upscale than the standard Safeway stores. These stores include the following Oakland stores: Safeway located at College & Claremont Avenues; the Safeway on Grand Avenue; Piedmont Grocery on Piedmont Avenue; Whole Foods on Bay Place; and Trader Joe's on College Avenue and Lakeshore Avenue. The distance of these stores from the Project site is 1.1, 1.6, 1.0, 2.1, 0.7, and 2.3 miles, respectively. Several other larger grocery stores outside the market area are also anticipated to incur some sales impacts, mostly due to changed shopping patterns among shoppers who live in portions of the market area that overlap with the market areas for these other stores. These stores include the Whole Foods on Telegraph Avenue in Berkeley, the Pak 'n Save on San Palo Avenue in Emeryville, the Berkeley Bowl Main store in Berkeley, and the Lucky and Safeway on Mountain Boulevard in Oakland's Montclair Village. It is possible that all of these stores might incur some degree of sales impacts following the redevelopment of the Rockridge Safeway store, as shoppers explore the broader options available at the expanded store while still continuing to shop at these other stores.

In addition, the nearby smaller niche food markets Village Market on Broadway Terrace, Monte Vista Food Center on Piedmont Avenue, and Lakeshore Produce & Health Foods on Lakeshore Avenue are anticipated to at least initially experience some sales impacts. It will be incumbent upon these small stores to continue to provide quality service and products to retain their loyal customers. This group of stores also includes Yasai Produce Market and Ver Brugge Meat-Fish Poultry, both on College Avenue, if the planned College & Claremont Safeway expansion is not approved. Even with the greater volume of goods that will be available at the expanded Safeway, all of these smaller niche stores are anticipated to continue to provide customer service and product selection not typically thought of by customers of these stores as being available at Safeway.

Many of the market area grocery stores are outperforming national averages. Because of their strong performance, the relatively low volume of sales impacts, and number and geographical dispersion of the potentially impacted stores, all of the conventional, upscale, and niche food stores are anticipated to be able to withstand the competition from the expanded Safeway store. Most of these stores are strong performers with a strong customer base, especially the larger stores. As experienced retailers, they are anticipated to be able to counterbalance product-based sales losses with new merchandising strategies, and thereby retain loyal customers.

In conclusion, existing grocery and food stores are not anticipated to experience sales impacts attributable to the Project so severe as to induce store closure. Impacts are anticipated to be spread widely, dispersed among a range of existing food stores. Moreover, the stores anticipated to experience the greatest impacts are the stores achieving among the highest sales performance, with these high sales buffering the potential impacts of any prospective sales losses.

Home Furnishings & Appliances. The $3.3 million in home furnishings & appliances sales impacts comprises a substantial percentage of the market area sales base in home furnishings & appliances. In absolute terms, however, this is a low sales impact figure, and the space equivalent of this amount of sales is about 10,000 square feet. Therefore, it is very unlikely that any one retailer in the home furnishings & appliances retail category in the market area will incur all these sales impacts, such that any existing stores will close. Accordingly, these impacts are anticipated to be minor and unsubstantial relative to the existing market area retail base.

Offsetting Effects of Future Growth

The Safeway expansion is estimated to be completed in 2014, with completion of the center anticipated to follow in 2015. There may be potential for new market area growth to generate yet additional demand for food sales in and near the market area. With 2015 estimated as the first full year of operations for the relocated and expanded Safeway store, demographic projections suggest the potential for 1,845 new households in the market area between 2012 and 2015. Although the amount of actual growth may prove less than that which is projected, it provides a sense of the potential demand that could be generated pursuant to residential development in the market area.

These 1,845 new households are estimated to generate $54.8 million in retail demand. The largest component of this demand is $9.1 million for food stores, the great majority of which would likely be captured in the market area given the propensity for consumers to purchase groceries relatively close to home. This level of demand, therefore, if realized, could offset up to 84% of the maximum $10.9 million in food sales impacts. There is demand for yet additional retail categories, which would also help offset the estimated Project impacts in the home furnishings & appliances category and generally boost the market area's retail sales base.

While the demographic growth projections may be overstated, with the estimated level of demand correspondingly aggressive, this analysis nonetheless indicates the potential for some increment of new household growth in the market area to be generated prior to the completion of the Rockridge Safeway Project. This new demand will offset some of the Project's anticipated negative sales impacts on existing market area grocery and food stores.

Cumulative Project Impacts

The study identified 16 potential cumulative retail development projects in the market area and surrounding areas. Of these 16 projects, 12 were determined to have the potential to contribute along with the Project to market area sales impacts. Given assumptions about project size, sales, and degree of market area overlap with the Project, these 12 projects are estimated to generate $56.4 million of sales assumed to be competitive with the Project and generated by residents within the Project's market area. Based on sales distributions and the potential for further absorption of existing leakage, these cumulative projects, in association with the Rockridge Safeway Project, have the potential to increase the market area sales impact from $14.2 million for just the Project to $59.7 million.

There are three retail categories that are estimated to experience incremental sales impacts on top of the sales impacts from the Project alone that are more than negligible, especially relative to the existing sales base. These include an incremental $19.4 million in food & beverage store impacts, an incremental $6.1 million in clothing & clothing accessories, and an incremental $20.0 in other retail impacts. As with the Project impacts, extensive market area retail leakage will still remain following development of the cumulative projects. This remaining leakage provides an opportunity for other retailers to enter the marketplace focused on satisfying unmet retail demand.

Clothing & Clothing Accessories Impacts. The incremental impact in this category is moderate, totaling $6.1 million in clothing & clothing accessories. The square footage equivalent of these impacts is fairly limited, comprising 14,000 square feet of space. This increment of space is small, so the more likely scenario is that existing retailers will lose some increment of sales, but not so much as to induce store closure. Therefore, ALH Economics does not believe the clothing/clothing accessories impacts will result in any store closures and will therefore have no potential to contribute to or cause urban decay.

Other Retail Sales Impacts. Despite the incremental increase, the impacts in the other retail category are not anticipated to be sufficient to cause existing stores to close. The space equivalent of the estimated $20.0 million in impacts is equivalent to support for about 56,000 square feet of retail space. The nature of the other retail impacts will be dependent upon the type of retailers that locate in all of the cumulative projects. Almost every cumulative project is estimated to have some component of sales in this broad category, which can include sporting goods, office supplies, pet supplies, jewelry, toy stores, pharmacy, and gifts and hobbies, among other retailers. In all likelihood, each project will have a different mix of retailers comprising this category, such that one narrow type of retail will not experience all the estimated cumulative other retail impacts. This will serve to spread and thereby minimize the impacts. Because the increment of space is sizeable, the likely scenario is that existing retailers will lose some increment of sales, but not so much as to induce store closure. Therefore, ALH Economics does not believe the other retail impacts will result in any store closures and will therefore have no potential to contribute to or cause urban decay.

Food Sales Impacts. The incremental $30.3 million in food sales impact attributable to the cumulative projects are likely to be experienced within the market area as well as outside the market area, due to the wide variety of food store shopping opportunities available throughout the region and the nature of the projects generating the incremental cumulative food sales impacts, such as discount food retailer Foods Co. In addition, this level of sales impact may be overstated because the analysis assumed that almost every planned cumulative project would have some component of food sales, consistent with their anticipated neighborhood retail characterization. This may be an overestimate, depending upon the actual profiles of the future cumulative project tenants. Future demand pursuant to household growth will also comprise a factor serving to minimize the cumulative food sales impacts.

The majority of the impacts that remain following these offsetting factors will likely continue to be experienced by the same major stores anticipated to incur impacts from the Rockridge Safeway Project, namely the Trader Joe's on College Avenue, the Safeway at College and Claremont (if the planned expansion is not approved), Piedmont Grocery on Piedmont Avenue, the Safeway on Grand Avenue, Whole Foods on Bay Place, and the Trader Joe's on Lakeshore Avenue. This is because the majority of the cumulative sales continue to be generated by Safeway, such that stores directly competitive with Safeway will likely be the stores most impacted. Because of the strong performance of these market area food retailers, the cumulative project food sales impacts are not anticipated to result in any store closures, and therefore are not anticipated to contribute to or cause urban decay.

As with the Project impacts, some smaller grocery and food stores within the market area and beyond might experience some short-term changes in demand as shoppers explore the expanded shopping opportunities presented by the cumulative projects. However, these shoppers are ultimately anticipated to restore some, if not all of their diverted shopping to these small grocery or food stores after an initial time period, especially if the cumulative projects do not comprise a substantially new food store offering, which is not anticipated. If, however, any existing stores do close as a result of food sales impacts, the extent to which such store closures become problematic for the retail market will also depend upon the market strength, regulatory controls, and actions pursued by property owners.

URBAN DECAY DETERMINATION

Definition of Urban Decay

For the purpose of this analysis, urban decay is defined as, among other characteristics, visible symptoms of physical deterioration that invite vandalism, loitering, and graffiti that is caused by a downward spiral of business closures and long term vacancies. This physical deterioration to properties or structures is so prevalent, substantial, and lasting for a significant period of time that it impairs the proper utilization of the properties and structures, and the health, safety, and welfare of the surrounding community. The manifestations of urban decay include such visible conditions as plywood-boarded doors and windows, parked trucks and long term unauthorized use of the properties and parking lots, extensive gang and other graffiti and offensive words painted on buildings, dumping of refuse on site, overturned dumpsters, broken parking barriers, broken glass littering the site, dead trees and shrubbery together with weeds, lack of building maintenance, homeless encampments, and unsightly and dilapidated fencing.

Retail Market Characteristics

Oakland has generally maintained a relatively healthy retail market sector. As of first quarter 2012, Oakland had an overall retail vacancy rate of 3.9%. This rate falls in the middle of noted rates during the 2006 to 2012 time period, with vacancy as high as 4.9% and as low as 2.7%. Throughout the course of the most recent recession and its aftermath retail vacancy has been low in Oakland, never exceeding 4.9% since the first quarter of 2011. This indicates a strong retail market in the City of Oakland, which has a base of approximately 22.3 million square feet of retail space. In general, retail markets are deemed most healthy when there is some increment of vacancy, at least 5.0%, which allows for market fluidity and growth of existing retailers. Thus, the current Oakland retail vacancy rate of 3.9% is a low vacancy rate, indicative of a very strong and tight retail market.

Despite the low vacancy rate, there are a number of retail vacancies in Oakland. However, relatively few of these vacancies are located in the market area, especially in the market area's major retail nodes. Moreover, many of these vacancies are among older properties located in areas that are not among Oakland's key shopping districts. Regardless of location, retail vacancies in the entire City of Oakland indicate 115 retail leases were executed over the one-year time frame from April 2011 through the end of March 2012, totaling approximately 214,160 square feet of leased space, with an average size of about 1,900 square feet. This volume of lease transactions, during a period of time still effected by the most recent national recession, is an indicator of strong interest in Oakland's commercial retail market. This absorption, and the strong market conditions prevalent in the market area's most established retail nodes, suggest that any vacancies that might occur as a result of Safeway Project impacts would likely be backfilled within a reasonable time and not be characterized by prolonged vacancy.

Urban Decay Conclusion

ALH Economics focused on determining whether or not physical deterioration would likely result from the opening of the Project and other cumulative retail developments in reaching a conclusion about urban decay. The conclusion is based on consideration of current market conditions, findings regarding diverted sales, and regulatory controls. Highlights of these findings are as follows:

> ***Current Market Conditions***: The field research and market research indicated that retail market conditions are strong in the market area. The City of Oakland has a low retail vacancy rate, with few vacancies in the market area's major commercial shopping nodes. This indicates that while there are a few such properties, long-term retail vacancy is not a prevalent issue in the market area. There are limited retail properties in Piedmont and thus no appreciable retail vacancy in Piedmont. Existing retail vacancies generally appear well-maintained and retail vacancies in the market area are typically absorbed quickly, especially in the market area's major retail shopping districts. There are only limited instances of poorly maintained retail vacancies within the market area.
>
> ***Diverted Sales and Additional Retail Leakage***: ALH Economics anticipates that despite the Project's and cumulative projects' sales impacts, especially in the food & beverage category, existing retailers will not close as a result of the new project openings. The most competitive existing stores are high retail sales performers and are anticipated to be able to withstand the enhanced competition. However, if any stores do close, the market area is anticipated to be characterized by continued retail leakage in almost all major retail categories. This remaining leakage provides an opportunity for other retailers to enter the marketplace focused on satisfying unmet retail demand. Given the size of Oakland's retail market, over 200,000 incremental square feet would need to become vacant to increase Oakland's retail vacancy rate by 1.0%. Even with this level of increment, the Oakland retail market would still be operating at a healthy overall vacancy rate.
>
> ***Regulatory Controls:*** City ordinances, such as the City of Oakland Municipal Code of Ordinances Chapter 8.10 on Graffiti, Chapter 8.18.060 on Noxious Weeds, Chapter 8.24 on Property Blight, Chapter 8.38.170 on Dumping Garbage, Chapter 8.54 on Vacant Building Registration, Chapter 12.04 on Sidewalk, Driveway, and Curb Construction and Maintenance, require property owners to maintain their properties so as not to create a nuisance by creating a condition that

reduces property values and promotes blight and neighborhood deterioration. Enforcement of these ordinances can help prevent physical deterioration due to any long-term closures of retail spaces. Code enforcement is managed by the City of Oakland's Building Services Division. They look into the accumulation of trash, debris, graffiti, and other blight on properties. The Building Services Division is responsible for enforcement and is allowed to take actions needed to enforce the ordinances. Also, according to Municipal Code Chapter 15.08.110, the owner in violation, "is liable for any costs, expenses, accruing interest, and disbursements paid for or incurred by the City of Oakland and any of its contractors in correction, abatement, and prosecution of the violation."[2] Citizens can report code violations through a telephone hotline or online form. Once a complaint is issued and determined valid, the owner has 16 days to pay the violation ticket or work with the City to fix the violation.

Similar codes also exist in the City of Piedmont, such as the City of Piedmont Municipal Code of Ordinances Chapter 6 on the Abatement of Nuisances including "Rubbish, refuse, unsightly accumulations of dirt, sand, and gravel, and the like on parkways, sidewalks, streets or private property in the City", "Tangible personal property not intended for outdoor use (including but not limited to broken or discarded furniture, household equipment and furnishings, garbage cans, or shopping carts) which is stored on property so as to be visible from a public street or the vicinity of the property", "Buildings with windows and doors intended to be glazed which contain broken glass or no glass at all. Plywood or other material used to cover such window and door space for more than two weeks, if permitted under this code, shall be painted in a color or colors compatible with the remainder of the building," etc.[3] Chapter 6 also covers the enforcement of these ordinances, all of which can help prevent physical deterioration due to any long-term closures of retail spaces. If properties require nuisance abatement there are controls in place to provide this abatement.

During the fieldwork conducted in October, 2011, with periodic subsequent field visits throughout 2012, there were only a few visible signs of litter, graffiti, weeds, or rubbish associated with existing commercial nodes in the Project's market area, most notably at the periphery of some of the nodes, such as along the southern portion of Temescal/Koreatown. Thus, ALH Economics concludes that existing measures to maintain private commercial property in good condition in the market area are generally effective and will serve to help preclude the potential for urban decay and deterioration in the event any existing retailers in the market area close following the operations of the Project and other cumulative retail projects.

Based upon these findings, ALH Economics concludes that the Rockridge Safeway expansion Project and the identified cumulative projects will not cause or contribute to urban decay.

[2] City of Oakland Municipal Code 15.08.110, "Abatement of Violations," http://library.municode.com/index.aspx?clientid=16308&stateid=5&statename=california (accessed November 18, 2011).
[3] City of Piedmont Municipal Code, "Chapter 6 Abatement of Nuisances," pages 6-2, 6-3, and 6-4 http://www.ci.piedmont.ca.us/html/city_code/pdf/chapter6.pdf (accessed July 5, 2012).

II. INTRODUCTION

STUDY BACKGROUND

Safeway, Inc. is seeking to expand the existing Safeway neighborhood grocery store and shopping center at the intersection of Pleasant Valley Avenue/51st Street and Broadway in Oakland, California. In the process, Safeway plans to relocate the store on the site, reposition the store into a Lifestyle store, and increase the amount of ground floor retail and restaurant space as part of the total development program (the "Project"). This project is part of Safeway's plan nationwide to redevelop existing stores into Lifestyle stores, with 85% of the process complete throughout the chain. A hallmark of Lifestyle stores is the sale of expanded perishable options, the availability of greater health-oriented options, and an earth-toned décor package that includes custom flooring and unique display features.

The current Safeway store is 47,975 square feet. According to Safeway's public reports, the average Safeway store size is 46,700 square feet. Thus, the existing Rockridge store is a bit larger relative to the average Safeway store. With the planned expansion the store will increase to 65,013 square feet. The existing shopping center includes an 87,200-square-foot CVS store and 50,269 square feet of retail and non-retail. The Project includes the demolition of the CVS Store and the addition of new commercial space comprising retail, office, and common space; equating net new commercial and common space of 120,034 square feet.

An Environmental Impact Report (EIR) for the Project is being prepared and coordinated by Lamphier-Gregory, an environmental consulting firm, for the City of Oakland. To support this effort and comply with the California Environmental Quality Act ("CEQA"), ALH Urban & Regional Economics ("ALH Economics") was asked to prepare findings regarding the potential for the Project to cause or contribute to urban decay. The decision by the Fifth District Court of Appeal in *Bakersfield Citizens for Local Control v. The City of Bakersfield* indicated that CEQA requires a lead agency to consider and analyze the potential for the introduction of planned retailers to result in adverse physical impacts on the environment by causing a chain reaction of store closures and long-term vacancies, otherwise referred to as a condition of "urban decay." This analysis is not required for all projects subject to CEQA, but only projects where there is the perceived potential for urban decay to result.

This study addresses the concerns voiced in the Bakersfield decision by considering the potential impact of the Project in conjunction with the introduction of other retail developments in the Project's identified market area. The key indicator from a CEQA perspective is impacts on the existing physical environment, which in the context of an urban decay analysis includes existing stores and commercial real estate conditions, as measured by the current baseline. The Notice of Preparation (NOP) for the EIR was released in 2009. To best reflect more current market conditions and take into account more recent information, the year 2011 comprises the baseline reflected by existing conditions discussed in this report.

STUDY TASKS

ALH Economics engaged in numerous tasks to complete this assignment. These tasks included the following:

- Identified the Project's market area, i.e., the area from which the majority of Project consumers are anticipated to originate;
- Conducted fieldwork to review the Project site and evaluate existing market conditions;
- Estimated the planned Project's sales;
- Estimated market area retail sales;
- Conducted retail sales leakage analyses for the Project's market area;
- Estimated demand generated by households added to the market area by the time the Project is developed;
- Estimated the Project's impacts on existing relevant retailers;
- Identified planned retail projects in the market area and other relevant areas;
- Assessed the cumulative impacts of planned retail projects in the market area and other relevant areas; and
- Assessed the extent to which operations of the Project and the cumulative projects may or may not contribute to urban decay.

The findings pertaining to these tasks are reviewed and summarized in this report, with analytical findings presented in the exhibits in Appendices A and B.

STUDY RESOURCES AND REPORT ORGANIZATION

Study Resources

Many resources were relied upon for this study. This included information provided by Lamphier-Gregory, the Planning and Economic Development Departments in the cities of Oakland, Piedmont, Emeryville, and Berkeley, and individuals engaged in commercial real estate familiar with the area's retail market. Information about planned retail projects was obtained from project developers or select media outlets, such as the San Francisco Business Journal. Detailed Oakland retail market data were generated from Costar, a commercial real estate information company, and provided by CB Richard Ellis.

Additional study resources included customer origin data provided by Safeway, the 2010 U.S. Census, the Association of Bay Area Governments, the California State Board of Equalization, Claritas, a national provider of economic and demographic data, and Neilson Trade Dimensions. Some retail sales data were provided by Retail MAXIM's *Alternative Retail Risk analysis for Alternative Capital, July 2011*. Inflationary adjustments were prepared based upon the U.S. Bureau of Labor Statistics' Consumer Price Index for all urban consumers in the Western U.S. Region. The report "Existing Retail Sector Performance" prepared for the Oakland Community Economic Development Agency in March 2008 by Conley Consulting Group was relied upon for information about Oakland's retail shopping nodes. All sources are cited as relevant in the study exhibits.

Report Organization

This report includes 9 chapters, as follows:

I. Executive Summary
II. Introduction
III. Projected Project Sales
IV. Market Area Definition
V. Retail Sales Base Characterization
VI. Project Sales Impacts
VII. Food Store Impacts
VIII. Cumulative Project Impacts
IX. Urban Decay Determination

This report is subject to the appended Assumptions and General Limiting Conditions.

III. PROJECTED PROJECT SALES

A description of the planned Rockridge Safeway expansion Project and ALH Economics' estimates of the total retail sales generated by the Project are presented below, including sales generated by retail category. This estimate is necessary to facilitate analysis of the Project's urban decay impacts.

PROJECT DESCRIPTION

The Rockridge Safeway expansion Project is located at the intersection of Pleasant Valley Avenue/51st Street and Broadway in Oakland, California. The Project site includes an existing Safeway store and neighborhood shopping center that will be expanded.

The existing Safeway store totals 47,975 square feet. Upon relocation and expansion, the store will include 65,013 square feet, reflecting a net increase of 17,038 square feet. In addition to the Safeway store redevelopment, the Project will include the demolition of an existing 87,220-square-foot CVS store and the development of an additional net new 257,523 square feet of commercial and common space. This 257,523 net new square feet of commercial and common space will comprise restaurant space, additional retail space, and non-retail and common space. In all, there will be approximately 108,000 total square feet of net new commercial space, plus additional net new common space.

The additional tenants, who have not yet been identified, will occupy two-story office above retail space, and new street-facing retail buildings with parking behind and additional roof-top parking as part of the Project. This main entrance will front on Pleasant Valley Avenue, along the edge of the Project site with an additional entrance along Broadway. All existing property structures will be demolished prior to the development of the new store and the phased development of additional commercial spaces. Given planned phasing of the demolition and construction the Safeway store is anticipated to be open and available to customers throughout the construction period.

The Project's existing and proposed distribution of retail square footage is presented in Exhibit 1. This exhibit indicates current developed square footage of 185,464 square feet, including the 47,975-square-foot Safeway store and 137,489 square feet of commercial space. With the planned Safeway store expansion to 65,013 square feet and the 120,034 square feet for restaurant and other retail space the Project's net change in building area is 137,072 square feet.

The existing Safeway store totals 47,975 square feet. Upon relocation and expansion, the store will include 65,013 square feet, reflecting a net increase of 17,038 square feet. In addition to the Safeway store redevelopment, the Project will include the demolition of an existing 87,220-square-foot CVS store and the development of an additional net new 257,523 square feet of commercial and common space. This 257,523 net new square feet of commercial and common space will comprise restaurant space, additional retail space, and non-retail and common space. In all, there will be approximately 108,000 total square feet of net new commercial space, plus additional net new common space.

PROJECTED SAFEWAY AND OTHER PROJECT SALES

Approach

The timeframe of the Safeway expansion is undetermined, depending upon the pace and timing of the environmental and approvals process for the Project. For analytical purposes, this study assumes the Project will be fully operational by 2015, with 2015 comprising the first full year of complete Project operations. To facilitate the study, however, the analysis is conducted assuming sales in year 2011 dollars. Most importantly, selection of 2011 dollars also supports analysis of the Project in comparison to another proposed Safeway expansion project at the College & Claremont store, with the environmental review for this project already underway, including a comparable urban decay analysis. Stabilized sales are not expected to occur the first year of store operations, but rather the second or third year, which is typical of new retail operations. However, for simplicity, this analysis conservatively assumes stabilized sales are achieved during the first full year of operations.

Store sales projections were prepared differently by type of retail tenant. Two methods were employed, one for the Safeway store and one for all other retail tenants.

Safeway Store Sales. A sales projection for the expanded Safeway store was developed by ALH Economics based upon examination of a compilation of grocery store sales performance data prepared by Nielson Trade Dimensions, a vendor that provides individual store weekly sales estimates as well as each store's estimated sales selling area. ALH Economics reviewed the Trade Dimensions data specifically relative to Safeway store performance in the general Oakland area. This examination indicated that Safeway stores in the area typically outperform Safeway and average grocery industry performance.[4] Review of Safeway annual reports indicates that in 2010, the average Safeway store achieved sales totaling $465 per square foot.[5] In 2011, industry average performance is estimated to be about $500.[6] Based upon the Trade Dimensions data findings, and an understanding that Lifestyle stores typically enjoy high sales performance, however, ALH Economics assumes the Safeway expansion space will achieve sales in excess of these average figures. This higher figure is estimated at $800 per square foot. The Safeway store is assumed to achieve incremental sales totaling $13.6 million a year (see Exhibit 2).

For the purpose of this study, ALH Economics obtained information about select grocery store performance in and around the Project's market area. These data were obtained from Nielsen Trade Dimensions, which provides individual store weekly sales estimates as well as each store's estimated sales selling area. From these data, generalized analysis can be conducted to assess the relative sales performance of the stores. Nielsen's Terms of Use for the Trade Dimensions data prevent publishing individual store performance information. However, information about store performance in general and in relation to other stores can be divulged.

All Other Retail Store Sales. In order to estimate the annual sales performance of the 120,034 square feet of additional restaurant and retail space, ALH Economics developed assumptions

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[4] Nielsen's Terms of Use for the Trade Dimensions data prevent publishing individual store performance information. Therefore, the report refers to generalities about relative food store performance.

[5] Calculation derived from information included in Safeway's 2010 Annual report and 2010 10-K prepared for the SEC. Safeway sales in 2010 excluding fuel and other totaled $36,676.2 million. Total retail square footage at year end 2010 was 79.2 million square feet. This equates to a sales equivalent of $463 per square foot.

[6] See Exhibit B-1, which presents industry average figures.

regarding the type of tenant likely to occupy the space and then corresponding sales per square foot figures. Retail tenants for the balance of the retail space have not yet been determined. For the composition of this space, ALH Economics developed working assumptions based upon professional judgment and experience in the retail industry. The assumptions include the following distributions by type of retail space: 15% each in home furnishings & appliances and general merchandise, 20% clothing & clothing accessories, and 50% other retail. The other retail category includes gifts, books, jewelry, and florists, among others. This generalized mix is deemed feasible given the nature of other retailers located along the Pleasant Valley Avenue/51st Street and Broadway corridors and throughout nearby major retail commercial nodes.

The sales per square foot figures are based on information available from Retail MAXIM's "*Alternative Retail Risk Analysis for Alternative Capital*," July, 2011. The Retail MAXIM publication provides average sales per square foot figures for many national retailers and aggregates the data by specific retail categories. ALH Economics has been tracking Retail Maxim's store performance estimates since 2003, with a data trend inclusive of sales performance figures from 2003, 2005, 2007, 2009, and 2010. Averaging these figures and inflation adjusting is believed to provide a reasonable estimate of potential store sales performance for relevant categories (see Exhibit B-1). While specific Project restaurant operations and retailers have not been identified, the retail spaces were matched to categories included in the Retail Maxim retail survey. The resulting sales figures include the following:

- $449 per square foot for the restaurant space, reflective of the Retail Maxim restaurant category;
- $158 per square foot for the CVS store space. CVS nationally performs at approximately $800 per square foot according to Retail Maxim; however, when this store was fully utilized, it served more the function of a general merchandise store like Target than a pharmacy like most CVS or Walgreen stores. Moreover, the store has been contracting its sales area pending its potential demolition. Therefore, the analysis conservatively assumes sales performance of $158 per square foot comparable to an average of $315 per square foot spread across one-half the store area. The $315 per square foot rate is generally comparable to average Target store performance cited in Exhibit B-1;
- $327 per square foot for the portion of the retail space allocated to home furnishings & appliances, reflective of the Retail Maxim estimate for the domestics category;
- $434 per square foot for the portion of the retail space allocated to apparel, reflective of the Retail Maxim estimate for a range of apparel retailers;
- $283 per square foot for the portion of the retail space allocated to general merchandise, reflective of the Retail Maxim estimate for department stores;
- $357 per square foot for the portion of the retail space allocated to other retail, reflective of the Retail Maxim estimate for a range of categories that correspond with other retail; and
- There are no competitive retail sales associated with the non-retail services uses.

All of the sales per square foot assumptions are presented in Exhibit 2, with additional back up data in Exhibit B-1.

Projected Project Sales

Total Projected Store Sales. The estimate of Safeway expansion, restaurant, and other retail store sales is documented in Exhibit 2. The total Project sales in 2011 dollars are estimated at $66.1 million. This equates to $482 in average sales per square foot including the square footage for the non-retail services uses.

Projected Market Area Project Sales. Materials published by major industry organizations support that a retail store's trade area generally supplies 70% to 90% of the store's sales, while the remaining 10% to 30% of sales are attributed to consumers residing outside of the store's market area. In its Shopping Center Development Handbook, Third Edition, the Urban Land Institute (ULI) states the following:

> "A site generally has a primary and a secondary trade area, and it might have a tertiary area. The primary trade area should generally supply 70 to 80 percent of the sales generated by the site. These boundaries are set by geographical and psychological obstacles."[7]

ULI is a nonprofit research and education organization representing the entire spectrum of land use and real estate development disciplines. Among real estate, retail, and economic development professionals, this organization is considered a preeminent educational forum.

Information published by the International Council of Shopping Centers (ICSC), a trade association for the shopping center industry, also provides instructional information about market area definitions. In the recent publication Developing Successful Retail in Secondary & Rural Markets, the ICSC says:

> "A trade area is the geographic market that you will be offering to potential retailers as a consumer market. … Defining a retail trade area is an art and a science. In general, a trade area should reflect the geography from which 75-90 percent of retail sales are generated. Different stores can have different trade areas based on their individual drawing power and the competitive market context."[8]

For the purpose of this study Safeway made available customer sales data for the Rockridge store. These data included point in time sales generated by shoppers on a zip code basis. From these data, it was possible to determine the zip code areas that generate the greatest level of support for the existing Safeway store at Pleasant Valley Avenue/51st Street and Broadway. Analysis of these data indicated that the zip codes generating the greatest store sales collectively contribute to approximately 80% of store sales. Based on this information it is assumed that 20% of the Project's sales will be attributed to consumers residing outside of the Project's market area, including consumers who work near the site but live elsewhere and destination shoppers originating from a widely dispersed area. It is not possible to identify the stores that these shoppers would otherwise frequent and accordingly assess their urban decay impacts.

Pursuant to the 80% market area sales assumption, the estimated Project sales originating from market area residents is $52.9 million (see Exhibit 2), with $10.9 million for the Safeway store and $42.0 million for the other commercial spaces. This is the sales figure that is central to the urban decay analysis, as it comprises Project demand generated by market area residents. These are the sales that have the potential to be diverted away from other retailers in the market area, and possibly beyond, and thus are the sales of interest in determining the risk of potential store closures that could ultimately lead to deterioration and decay.

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[7] Shopping Center Development Handbook, Third Edition, Urban Land Institute, 1999, page 44.

[8] Developing Successful Retail in Secondary & Rural Markets, International Council of Shopping Centers in cooperation with National Association of Counties, 2007, page 7.

Projected Sales by Category

Retail Sales Categories. It is necessary to allocate the Project's sales into appropriate retail categories to determine the potential impact on those specific categories. Subsequent analysis in this report compares Project sales to estimated market area sales in store categories used by governmental data sources, facilitating a comparison between retail supply and demand. Accordingly, the retail categories used to analyze the Project's sales match the categories used to estimate relevant market area sales.

The new sales generated by the Project will be spread across only a few merchandising categories due to the Project's nature and relatively small size. However, other merchandising categories also have relevancy to the study to facilitate characterization of the retail base. This study uses the retail categories as defined by the State of California Board of Equalization ("BOE"), which reports taxable sales by retail category for cities and counties. To maximize the use of these data it is important to use the BOE's defined retail sales categories for analytical purposes. Accordingly, ALH Economics' analysis is benchmarked to these categories and the sales reported by the BOE. These categories, as typically reported for cities, include the following:

Motor Vehicle & Parts Dealers
Home Furnishings & Appliances
Building Materials & Garden Equipment
Food & Beverage Stores
Gasoline Stations
Clothing & Clothing Accessories
General Merchandise Stores
Food Services & Drinking Places (Restaurants)
"Other Retail" Group[9]

Safeway Sales Distribution by Category. The Safeway's sales will be reported by the BOE in the food & beverage stores category. The impact of these sales is most appropriately analyzed relative to all the retail categories that include stores competitive with or complementary to the Safeway.

Additional Retail Space Sales by Category. The additional 120,034 square feet of space includes the area designated for restaurant space and additional retail and non-retail space with undetermined tenants. As cited earlier, the analysis assumes this additional space will be allocated to 14,921 square feet of restaurant space, a decrease of (87,220) square feet of other retail for the CVS store, and the remaining 105,113 square feet will be distinguished as 15% each in home furnishings & appliances and general merchandise, 20% clothing & clothing accessories, and 50% other retail. Based on these assumptions, the market area resident sales generated for this portion of the Project will comprise $5.4 million in restaurant sales, a decrease of ($11.0) million in other retail sales, $6.5 million in home furnishings & appliances, $11.6 million in clothing & clothing accessories sales, $5.7 million in general merchandise sales, and $23.8 million in other retail sales.

Distributed Sales. Table 1 below allocates sales from the Safeway and the other Project retail and sums the total sales of the Project by BOE retail category. This is for the 80% share of sales generated by market area residents, totaling $52.9 million.

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[9] Other retail stores include a wide range of retailers, such as gift shops, pet supplies, office supplies, sporting goods, book stores, florists, and gifts.

Table 1
Estimated Expanded Rockridge Safeway Project Sales by Retail Category (1)
2011 Dollars

Retail Category	Estimated Retail Sales Volume	Percent
Motor Vehicles & Parts	$0	0.0%
Home Furnishings & Appliances	$6,549,015	12.4%
Building Materials & Garden Equip.	$0	0.0%
Food & Beverage Stores	$10,904,320	20.6%
Clothing & Clothing Accessories	$11,589,188	21.9%
General Merchandise	$5,658,156	10.7%
Food Services & Drinking Places	$5,356,823	10.1%
Other Retail Group	$12,846,768	24.3%
Total	$52,904,271	100.0%

(1) Based on California Board of Equalization retail categories.
Sources: Exhibit 2; and ALH Urban & Regional Economics.

As noted above, the Project is estimated to capture $52.9 million in sales generated by market area residents. The sales distribution will include 20.6% in the food & beverage stores category, 24.3% in the other retail group, 21.9% in clothing & clothing accessories group (apparel), 12.4% in the home furnishings & appliances category, 10.7% in general merchandise, and 10.1% in the food services & drinking places (restaurant) group.

IV. MARKET AREA DEFINITION

This report chapter discusses the approach to examining the Project's market area, which is the area from which the majority of shoppers are anticipated to originate. This chapter defines the Project's anticipated market area based on this approach and provides information regarding locations of major retail corridors and nodes within the market area, including the location of other grocery stores.

APPROACH

ALH Economics defined a market area for the Project for the purpose of analyzing the prospective urban decay impacts. The market area definition is based on the principle that most consumers will travel to the shopping destination most convenient to their homes given the type of goods available. A market area is the geographic area from which the majority of a retail shopping center's demand is anticipated to originate. Several tasks were completed to identify the market area, foremost of which included mapping the location of the Project relative to other Safeway stores, especially existing or planned Lifestyle stores, and consideration of consumer origin data provided by Safeway.

MARKET AREA DESCRIPTION AND BOUNDARIES

ALH Economics conducted research to develop an estimate of the market area for the Project, i.e., the area from which the majority of shoppers will originate. Because of the Project's location in the northern area within the City of Oakland, both Oakland and City of Piedmont residents are assumed to comprise a strong consumer base for the Project.

As a starting point for the market area definition ALH Economics reviewed detailed Safeway customer data provided by zip code (zip + four). This included point-in-time data for shoppers by residential location. ALH Economics rolled up all the zip + four areas into just the zip codes to comprise a more manageable database, indicating the percent of store shoppers by zip code. The zip codes that encompassed approximately 80% of the Safeway shoppers were then mapped to observe their geographical locations and distribution. Because zip codes are large and irregularly shaped, ALH Economics superimposed the zip codes over a census tract map to identify the census tracts that would best comprise the market area for the Project. An additional benefit is the greater ability to obtain and analyze data at the census tract level while retaining the potential for replication by interested parties.

Once the zip codes and census tracts were superimposed, ALH Economics refined the edges of the market area based on the location of other Safeway stores, especially existing and planned Lifestyle stores. This refinement is based upon the assumption that consumers will shop at the Safeway store closest to their home, especially other Lifestyle or otherwise updated and expanded stores. Relative to the existing and planned Safeway Lifestyle stores to the north of the Project site, a number of intersections throughout portions of Oakland were identified for research purposes. The market area's northern boundary was defined based on customer proximity and the location of the Safeway store at College & Claremont avenues in Oakland, which is also in the process of a planned expansion, with environmental documents under public review. There is a geographical area north of the Rockridge Safeway store within which residents are largely equidistant from the Rockridge and College & Claremont stores. The Safeway consumer data indicate that residents in this area shop at both stores. Therefore, the area north of the Project site up to the location of the College & Claremont store is considered part of the Project market area. This area generally extends along the border between the cities of Oakland and Berkeley.

The eastern, southern, and western boundaries of the market area were defined largely based on the consumer shopping data provided by Safeway. The eastern edge of the market area corresponds with the census tracts that comprise the western portions from Highway 13 of zip codes 94618 and 94611, which are the zip codes that generate the greatest level of shoppers for the Rockridge Safeway store. For the southern and western boundaries the intersections were tested using mapping software to determine which Safeway store was closest in proximity and involved the shortest travel time. The stores used for this analysis included the Safeway stores located at the intersections of Mountain Boulevard and Moraga Avenue, Grand and Weldon avenues, and Fruitvale Avenue and MacArthur Boulevard in Oakland. The testing results identified the southern and western boundaries of the market area, which generally comprise Park Boulevard on the south and Interstate 580 to Grand Avenue and then along San Pablo Avenue following the border between Oakland and Emeryville on the west. These boundaries can be seen in Exhibit 3. In addition, Exhibit 4 identifies the area that is common to the market area for both the Rockridge Safeway store and the College & Claremont Safeway store. As can be seen, this common area is a thin band of geography in Oakland.

As referenced above, the market area geography was defined based on aggregations of census tracts. The advantage of using census tracts is that the market area definition is easily defined, easily replicable, and key demographic estimates and projections are readily available in this format. The market area's census tracts are listed in Exhibit B-2. The census tracts in the portion of the market area in common with the College & Claremont Safeway store are listed in Exhibit B-3. For data collection purposes it was necessary to use both 2000 and 2010 census tract definitions. In most cases the census tracts are the same but there are some slight variations due to census tract splits or aggregations between the decennial censuses.

KEY MARKET AREA SHOPPING CORRIDORS

Identification and Classification of Shopping Nodes

In 2008 the City of Oakland engaged a consulting team to prepare a Retail Enhancement Strategy.[10] As part of this strategy, over 50 constituent commercial nodes were identified throughout the City of Oakland. These nodes were classified into eight typologies, including the following:

- small neighborhood
- grocery
- grocery + restaurant
- grocery, restaurant + comparison
- entertainment
- box comparison
- homebound intercept
- non-retail

In addition to this typology, each of the more than 50 nodes were assessed on a four-point scale, including functioning well, needing improvement, opportunity for expansion, recommended for repositioning.

[10] See "Existing Retail Sector Performance," a component of the Oakland Retail Enhancement Strategy, prepared for Oakland Community Economic Development Agency, March 2008, Conley Consulting Group.

Of the more than 50 nodes included in the Retail Enhancement Strategy, ALH Economics estimates that approximately 14 are fully or partially included in the Rockridge Safeway market area. These areas were representative of three of the identified commercial classifications. These areas, their consultant classifications, and general geographical definitions, are as follows:

Grocery, Restaurant + Comparison

- 51st/Broadway, located along Broadway between 51st Street and College Avenue, and primarily including the Rockridge Safeway expansion site
- Broadway Auto Row (aka Broadway-Valdez), located on Broadway between Grand Avenue and 42nd Street[11]
- Piedmont Avenue, located between Broadway and Grand Avenue near the Piedmont border
- Rockridge, located along College Avenue extending from Broadway to the City of Berkeley border at Ashby Avenue
- Temescal/Koreatown, located on Telegraph Avenue from W. Macarthur Boulevard to just north of 51st Street
- Lakeshore, located on Lakeshore Avenue and along Macarthur Boulevard up to Grand Avenue

Grocery + Restaurant

- Grand Avenue/Grand Lake, located along Grand Avenue between I-580 and the City of Piedmont
- Northgate/Koreatown, situated along Telegraph Avenue generally between Grand Avenue and West Macarthur Boulevard, and several blocks along Grand Avenue to the east

Small Neighborhood

- Upper Broadway/Oakland Tech, located between approximately 40th Street on Broadway and 51st Street
- Grand Avenue – Adams Point, located along Grand Avenue west of I-580
- North Oakland, located along Telegraph Avenue roughly between 62nd Street and Woolsey
- San Pablo, extending along San Pablo Avenue between West Grand Avenue and West MacArthur Boulevard, just before the Oakland-Emeryville border
- Golden Gate, located on San Pablo Avenue between Stanford Avenue and approximately Alcatraz
- Glenview, located on Park Boulevard between Highway 13 and I-580

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[11] This node was not included in the 2008 consultant study, but is an established commercial node in Oakland. The street definition was obtained from the City's website, http://www.shopoakland.com/districts/broadway-auto.html.

Grocery, Restaurant + Comparison Shopping Areas

Of the 14 areas, the 2008 consultant study determined that several were functioning well, including Piedmont Avenue, Rockridge, and Lakeshore, all of which have a strong mix of retail tenants, including some national tenants along Lakeshore. Notably, each of these areas comprises a pedestrian-oriented shopping district characterized by grocery, restaurant, and comparison shopping opportunities, surrounded by relatively affluent households. Much of the available comparison shopping includes apparel, housewares, and gifts. These areas are among the City of Oakland's most popular shopping districts. Accordingly, all three of these areas have strong demand for retail space, with limited to no vacancies, and rapid absorption when vacancies do occur. All three of these shopping districts have major grocery store tenants, such as Safeway, Trader Joe's, and Piedmont Grocery, as well as other smaller niche food store tenants. In addition, while not classified as an entertainment district, Piedmont Avenue also includes the Piedmont Movie Theatre.

The three other grocery, restaurant + comparison shopping districts include the Temescal/Koreatown area, the 51st/Broadway area that includes the Rockridge Safeway Project site, and Broadway Auto Row. The Temescal/Koreatown node transitions into the Koreatown district, with the majority of this node more widely known as just Temescal. At the time of the 2008 consultant study this node was deemed an expansion opportunity area. Since the completion of that study, this area has indeed seen expansion, with numerous coffee houses, restaurants, and comparison shopping stores entering the area, such as Baby World (relocated from Rockridge) and Tip Top Bicycle Shop. Recent reinvestment in the area occurred through the rebuilding of the existing McDonald's restaurant in this area. The greatest expansion opportunities in this node, however, are in the southern section, which includes several vacant commercial properties, including one boarded up property with visible fire damage. Notably, while the consultant study classified this area as a grocery area, there are no major grocery stores in this area.

The 51st/Broadway area that includes the Rockridge Safeway site was deemed a "valuable retail enhancement opportunity" for the City of Oakland, as a means of enhancing and protecting the City's overall retail sector.[12] This is a relatively small node, dominated by the Rockridge Shopping Center anchored by the Safeway, which the consultant study said was "well located to serve affluent neighborhoods in Oakland and Piedmont."[13] There is one relatively long-term vacancy in this area, which is the former Poppy Fabric store located across Broadway from the Shopping Center and an adjoining vacant parcel. Redevelopment of the Rockridge Shopping Center could well serve as a catalyst for future redevelopment or retail backfilling of these properties.

Finally, the Broadway Auto Row area has long been an area of transition and study in the City of Oakland. Historically dominated by many of the region's car dealerships and automotive repair shops, the City of Oakland has periodically revisited the repositioning potential of this area, which includes car dealerships, a discount grocery store, religious institutions, and other vacant or underutilized commercial properties. The City is currently preparing a Specific Plan for the area that focuses on revitalizing the area into a mixed use district linking Downtown Oakland with neighborhood centers to the north and east. Subject to environmental review, the plan could provide a prescription for long-term revitalization of this area.

[12] "Existing Retail Sector Performance," Conley Consulting Group, March 2008, Appendix B: Node Profiles, page 57.
[13] Ibid.

Grocery + Restaurant Shopping Areas

The 2008 consultant study classified two market area retail nodes as grocery + restaurant nodes. These are Grand Avenue/Grand Lake and Northgate/Koreatown. The Grand Avenue/Grand Lake area is a strong commercial node, anchored by Safeway and Ace Hardware, but including many other comparison goods retailers and restaurants, including Walden Books, Grand Bakery, and the Grand Lake Theater. This area was deemed an area in need of enhancement, in large part because of its mixed auto and pedestrian orientation, with the auto-oriented anchors located somewhat distant from the more pedestrian and comparison-shopping locations closer to the theater. Regardless, this area exemplifies a strong retail market, with few vacancies, with only one building inclusive of three small storefronts comprising a notable vacancy. Other smaller vacancies occur from time to time, but are typically absorbed within a reasonable period of time.

The Northgate/Koreatown area is a transitional area in Oakland. This area has a range of uses including medical (i.e., the edge of Oakland's Pill Hill), residential, commercial, personal services, and business services, such as a State Farm insurance office, an adult store, hair salon and supplies, and a plating business. The area is home to a very popular ethnic grocery store, Koreana Plaza Market, and numerous other ethnic grocery stores and restaurants. There are also many other Korean-owned and oriented businesses throughout the area. Many of the properties in this area are not well maintained, and the area is characterized by more vacant commercial properties than any of the preceding shopping districts. These vacancies appear moderately well-maintained, but in general the area could benefit from reinvestment. The 2008 consultant study deemed this an area for expansion, with the potential for new residential development to help support retail sales in convenience goods and restaurant establishments.

Small Neighborhood Shopping Areas

The market area has numerous small neighborhood shopping districts that are primarily oriented toward serving the immediate neighborhood. Some of these shopping districts have small food markets, but none have any larger food stores. Depending upon the district there are a wide variety of retail uses, such as fast food restaurants, auto parts, pet food store, gyms, spice shop, window coverings, apparel, and sit-down restaurants. The retail market conditions in these shopping areas are mixed, ranging from strong conditions with well-maintained properties such as in Glenview to poorer conditions with more chronic vacancies, such as the Upper Broadway/Oakland Tech area located near the Rockridge Safeway Project site.

Summary

In summary there is a wide variety of retail offerings within the Rockridge Safeway market area. The major grocery stores and food stores are generally located along corridors with strong real estate market conditions and well-kept commercial properties. The shopping districts with the greatest quantity of vacancies and less well-maintained properties generally do not have any major grocery or food stores, and thus are unlikely to risk exacerbation of existing real estate conditions following completion of the Rockridge Safeway Project. Instead, by bringing more shoppers to the area the Project could serve as a catalyst for improvement of some of the nearby shopping districts, such as the Upper Broadway/Oakland Tech area and the former Poppy Fabrics property within the Project's 51st/Broadway area.

V. RETAIL SALES BASE CHARACTERIZATION

This chapter analyzes the retail sales leakage and attraction profile of the Project's market area. The analysis focuses on the extent to which the market area captures resident household spending as well as sales generated from outside the area. This analysis provides a characterization of the sales performance of the retail sales base, an estimate of the size of the sales base, and an estimate of existing demand for retail. ALH Economics conducts this analysis as a building block towards determining the extent to which the Project may or may not divert sales away from existing market area retailers.

METHODOLOGY

Approach

ALH Economics uses a retail model that estimates retail spending potential for an area based upon household counts, income, and consumer spending patterns. The model then computes the extent to which the area is or is not capturing this spending potential based upon taxable sales data published by the State of California Board of Equalization (BOE) or provided by local government municipal tax consultants. This analysis can be most readily conducted for cities, groupings of cities, or counties, consistent with the geographies reported by the BOE.

For any study area, retail categories in which spending by locals is not fully captured are called "leakage" categories, while retail categories in which more sales are captured than are generated by residents are called "attraction" categories. This type of study is generically called a retail demand, sales attraction, and spending leakage analysis. Generally, attraction categories signal particular strengths of a retail market while leakage categories signal particular weaknesses. ALH Economics' model, as well as variations developed by other urban economic and real estate consultants, compares projected spending to actual sales.

For the purpose of generating a Retail Demand, Sales Attraction, and Spending Leakage Analysis for the Project's market area, ALH Economics obtained taxable retail sales data for mid-2009 through mid-2010 as reported by the BOE and adjusted the taxable sales to reflect total, more current sales. These were the most recent BOE data available at the time the study was conducted. Using the retail sales data, combined with household counts estimated by the U.S. Census for the cities and market area census tracts, household projections prepared by the Association of Bay Area Governments (ABAG), and income estimates provided by Claritas, Inc., ALH Economics conducted a Retail Demand, Sales Attraction, and Spending Leakage Analysis. This analysis compared total estimated household spending to actual retail sales in the market area. Sales estimates for the market area were prepared based on the available citywide BOE data for Oakland and Piedmont, which were then benchmarked to retail sales estimates prepared by Claritas for the portion of the market area not coincident with existing city boundaries.

Demographic Characteristics

ALH Economics' Retail Demand, Sales Attraction, and Spending Leakage Analysis requires household count and average household income inputs for the area of analysis. Demographic data assumptions for the market area are presented in Exhibit 5. The main assumption relative to the Retail Demand, Sales Attraction, and Spending Leakage Analysis is estimated households for 2010. This is the timeframe that best approximates the time period measured by the available BOE retail sales data. Based on the aggregations of census tracts identified in Exhibit B-2, the market area household count in 2010 totaled 53,546. The household count in the portion of the market area that overlaps with the estimated market area of the Rockridge Safeway store is 15,060, or approximately 28% of the customer base. While not reflected on Exhibit 5, the average household income for the market area in 2010 was an estimated $90,660.

To the best of ALH Economics' knowledge, there are no current household growth projections available for Oakland, Piedmont, or portions thereof benchmarked to the 2010 census. As an approximation of future growth projections, however, ALH Economics applied the latest ABAG census tract household growth rates prepared in 2009 to the relevant census tracts to develop potential growth projections for the market area. The ABAG growth rates were applied to the 2010 census data to develop a prospective pattern of future growth. The results indicate the potential for the market area household count to increase from 54,743 in 2012, the current timeframe, to 56,588 in 2015, or growth of 1,845 households (See Exhibit 5, rounded). ALH Economics believes this is a high estimate, but at least indicates a prospective pattern of growth.

MARKET AREA RETAIL SALES BASE

ALH Economics estimated sales for the market area by utilizing city BOE data, with adjustments based on benchmarked retail sales data estimated by Claritas in order to customize the data to the market area. BOE publishes taxable sales figures for counties and major cities; its most recent full-year taxable sales figures at the time this study was conducted were for 2009, with additional quarterly data available through 2nd quarter 2010. As a base for estimating the market area's retail sales base, ALH Economics used BOE's figures for cities located in the market area as published in its publication "*Taxable Sales in California*" for third quarter 2009 through second quarter 2010.

Because BOE presents data corresponding with only taxable sales, ALH Economics included adjustments to gross the estimated sales up to total sales. This involved sales adjustments for non-taxable sales for food, pharmacy, and a portion of general merchandise store sales that include food sales. ALH Economics estimates that 70% of food store sales and 67% of drug store sales are non-taxable based on discussions with the BOE and other industry research, including U.S. Census publications. In addition, sales of grocery items at non-drug store general merchandise stores are non-taxable and are estimated at 20% of sales for this subset of the retail category in Oakland and Piedmont based on analysis of the U.S Economic Census for General Merchandise Stores.[14] Consequently, the BOE taxable sales figures for the general merchandise, food stores, and other retail categories are adjusted upward to reflect non-taxable transactions.

The market area sales estimation process is documented in Exhibits 6 and 7 as well as Exhibits B-4 through B-8. Exhibit 6 identifies the estimation process for the City of Oakland portion of the market area sales base while Exhibit 7 includes estimates for the City of Piedmont, which is fully encompassed within the market area. The entire market area summation is presented in Exhibit 8.

The total estimated market area sales base in 2010 was approximately $860.6 million. The portion of the market area in Oakland comprised $843.3 million of the sales base, or 98.0%. The portion of the

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[14] Per the U.S. Economic Census data, General Merchandise stores encompass a mix of department stores, discount department stores, warehouse clubs and Supercenters, variety stores, and other general miscellaneous stores. The 20% estimate is based on the existing mix of stores in the City of Oakland.

market area in Piedmont comprised $17.3 million, or 2.0% of the sales base. Adjustments to this sales base occur later in the analysis to reflect more current economic conditions.

Exhibit 9 identifies the estimated sales occurring in the portion of the market area in common with the College & Claremont Safeway store. These sales total an estimated $200.6 million, or 23.3% the market area total. This percentage figure is generally consistent with the portion of the Project market area households also shared in common with the College & Claremont Safeway.

RETAIL LEAKAGE AND ATTRACTION FINDINGS

A Retail Demand, Sales Attraction, and Spending Leakage Analyses as prepared for the market area. The analysis was conducted for approximately the 2010 time period. The market area findings were then analytically adjusted to approximate conditions in 2011, the Project baseline period.

Market Area

The Project market area's Retail Demand, Sales Attraction, and Spending Analysis findings are presented in Exhibit 10. The market area, as previously defined, comprises portions of the cities of Oakland and Piedmont.

The findings in Exhibit 10 for the approximate 2010 time period indicate that the market area is characterized by retail leakage in all retail categories except food and beverage stores, which is one of the categories most relevant to the Project. This means that the market area as a whole does not meet the shopping needs of market area residents with the exception of food sales. The leakage is particularly strong on a percent of spending basis in five retail categories: general merchandise stores, building materials & garden equipment, clothing & clothing accessories, the other retail group, and home furnishings & appliances. In all five of these categories the leakage is equivalent to 50% or more of anticipated resident spending. The leakage in these five categories totaled ($573.7) million. Leakage is still high in most other categories, totaling approximately ($141.4) million more.

The food sales attraction is estimated to total $62.9 million in sales, indicating that sales in this category are 19.6% greater than would be expected based upon the market area's resident base. This food sales attraction is most likely attributable to the sales achieved at three of the market area food stores – the Trader Joe's on College Avenue, the Trader Joe's on Lakeshore Avenue, and Whole Foods on Bay Place. All three of these stores likely have a larger market area than the Rockridge Safeway store, drawing from a larger geographic area because of their unique market niches. While each of the above three stores include other stores in their chain in the general region, these other stores are generally more distant from the market area than other Safeway stores are relative to the Rockridge store. Therefore, these three stores are likely drawing from a larger market area than the Rockridge Safeway store, and thus accounting for the noted food sales attraction.

To gain a perspective of the Project market area's Retail Demand, Sales Attraction, and Spending Analysis findings, an analysis was completed for the City of Oakland, presented in Exhibit 11. Similar to the market area, the findings in Exhibit 11 for the City of Oakland for approximately 2010 indicate that the area as a whole is characterized by retail leakage in all retail categories except food & beverage stores and home furnishings & appliances. This means that the City as a whole does not meet the shopping needs of City residents with the exception of food sales and home furnishings & appliances. The leakage is particularly strong in four retail categories on a percent of spending basis: general merchandise stores, clothing & clothing accessories, building materials & garden equipment, and motor vehicles & parts. In all four of these categories the leakage is equivalent to 50% or more of anticipated resident spending. The leakage in these four categories totaled ($1.3) billion. Leakage is still high in the other three leakage categories, totaling approximately ($271.7) million more, and the City as a whole net of attraction displays a total leakage of ($1.55) billion.

Adjusted Market Area Findings

Because the Retail Demand, Sales Attraction, and Spending Analysis findings were based on 2010 sales and demand estimates, Exhibit 12 presents a generalized update to 2011 dollars. This update is based on applying noted increases or decreases in taxable sales in representative market area retail districts within the City of Oakland to the entire market area and the consumer price index to the estimated level of consumer spending. This is a generalized update, which assumes that the percentage changes in the Piedmont portion of the market area sales base paralleled the changes in the City of Oakland. Since the City of Oakland dominates the market area's retail sales base, this assumption is deemed reasonable for analytic purposes.

The result of these adjustments is presented in Exhibit 12, which indicates a market area sales base of approximately $949.0 million and total retail leakage of ($658.2) million. This leakage is less than the noted 2010 leakage from Exhibit 10 of ($692.2) million, mostly because inflation did not exceed the percent increase in some of the retail category sales. Absent the influence of gasoline sales, market area leakage decreased slightly from ($616.2) million in 2010 to ($612.7) million in 2011.

VI. PROJECT SALES IMPACTS

The following analysis examines the extent to which the Project's operations would attract new sales to the market area and/or divert sales from existing market area retailers. If some sales are diverted, the maximum level of impact on existing retailers is identified.

APPROACH

ALH Economics has developed an analytic approach that estimates the impact of the Project's incremental sales on existing retailers. For this analysis, the approach assumes that if the Project is adding sales to a category in an amount greater than any potential recaptured market area leakage in the category, ***then at worst***, the amount of sales in that category in excess of any recaptured leakage will be diverted away from existing market area retailers. This is a conservative assumption given that diverted sales beyond the amount of recaptured leakage could also occur among other retailers beyond the market area boundaries.

RECAPTURED LEAKAGE POTENTIAL

One potential source of demand for new retail space such as the Project is the share of market area residents' shopping that occurs outside of the market area, comprising the estimated retail leakage. In other words, given the identification of retail leakage, market area households clearly spend some proportion of their incomes at non-market area stores, including the concentrations of retail in other parts of Oakland, as well as nearby Berkeley, Emeryville, and beyond. If the addition of the Project makes the market area a more convenient shopping destination, local demand could increase through the recapture of these sales.

Leakage Categories and Amounts

As summarized in Exhibit 12, the market area experiences ($658.2) million in retail sales leakage. Some of this leakage, however, is in categories not relevant to the Rockridge Safeway expansion Project, such as leakage totaling ($56.3) million in motor vehicles sales, ($109.3) million in building materials & garden equipment, and ($45.5) million in gasoline sales. The retail categories in the market area with leakage relevant to the Project include home furnishings & appliances with ($24.6) million in leakage, clothing & clothing accessories with ($57.9) million in leakage, general merchandise with ($247.4) million in leakage, food services & drinking places with ($61.5) million in leakage, and other retail with ($137.0) million in leakage.

Categories Comprising All Recaptured Leakage. The enhanced shopping opportunities provided by the Project will serve to help recapture existing retail leakage. The amount of recaptured leakage will depend upon the nature of the Project's retail opportunities and the complexity of the retail purchase. As demonstrated in Exhibit 13, the analysis assumes all of the Project's clothing & clothing accessories stores, general merchandise, food services & drinking places sales, and other retail will be accounted for through recaptured leakage. Together, these four categories account for $35.5 million in estimated market area Project sales. These sales are anticipated to be generated through recaptured leakage because they comprise a relatively small share of the estimated leakage, such that substantial leakage will still remain in these categories.

Even with these amounts of sales accounted for through recaptured leakage there will still remain approximately ($46.4) million in clothing & clothing accessories leakage generated by market area residents, ($241.7) million in general merchandise, ($56.1) million in food services & drinking places leakage, and ($124.1) million in other retail. Market area residents will continue to need to make purchases for these items outside the market area to meet their consumer shopping needs.

Categories with Partial Recaptured Leakage. There is one other category of Project sales with noted leakage that has the potential for some recapture. This category is the Project's $6.5 million sales in the home furnishings & appliances category. While the market area's leakage in the category totals approximately ($24.6) million, ALH Economics does not assume that all Project sales from market area residents in this category will represent recaptured leakage. It is unlikely that all these sales will comprise purchases the market area residents would not otherwise make in the market area. Accordingly, the analysis assumes that one-half the Project's home furnishings & appliances sales will constitute recaptured leakage, but that another one-half will not. In other words, market area consumers will continue to make home furnishings & appliances purchases outside the market area to meet a wide variety of needs, such that some portion of Project sales in this category may constitute sales diverted from existing market area retailers. Hence the analysis assumes that $3.3 million in Project home furnishings & appliances sales will comprise recaptured leakage and another $3.3 million will comprise sales diverted from existing market area retailers.

Total Project Recaptured Leakage. In total, Exhibit 13 indicates that an estimated $38.7 million in Project sales will be achieved through recaptured sales leakage in the home furnishings & appliances, clothing & clothing accessories, general merchandise, food services & drinking places, and other retail categories. While this recaptured sales leakage amount translates into new market area sales, the constituent recaptured sales will still occur to the detriment of other existing retailers.

Because these are recaptured sales, the existing retailers that will experience the corresponding sales losses will be located outside the market area. These outside market area retailers will be spread over a wide geographic area, depending on the nature of the good, such as other Oakland and Piedmont locations, Berkeley, Emeryville, and even San Francisco. This is such a widely dispersed area with a large number of stores that the sales impacts will be diffused among numerous outlets, such that it is unlikely that any particular store outside the market area would lose sufficient sales directly attributable to the Project resulting in store closure. In turn, these sales impacts would not lead to urban decay in this more generalized area.

Remaining Market Area Leakage. Following the Project's estimated recapture of market area leakage, there will still remain extremely high amounts of retail leakage from the market area, estimated to total ($700.7) million. Every major retail category will exhibit leakage except food & beverage sales. Leakage will be highest in general merchandise stores, followed by other retail, building materials & garden equipment, motor vehicles & parts dealers, food services & drinking places, clothing & clothing accessories, gasoline stations, and home furnishings & appliances. Therefore, even with development of the Project, the market area as a whole will continue to exhibit retail sales leakage in numerous retail categories. Therefore, if any retail vacancies occur due to negative sales impacts of the Project, there would be strong potential for backfilling by new stores positioned to satisfy unmet retail shopping needs.

ESTIMATED MARKET AREA SALES IMPACTS

Absent the share of Project sales anticipated to be generated by consumers outside the market area and the above-referenced recaptured leakage, Exhibit 13 indicates the potential for $14.2 million in sales to be diverted from market area retailers. This sales volume includes all of the Project's anticipated $10.9 million in food sales generated by market area residents as well as $3.3 million in home furnishings & appliances sales.

The market area is characterized by food sales attraction. Consequently, the analysis conservatively assumes that any Project food sales generated by market area residents will occur to the detriment of existing food & beverage retailers in the market area. This results in estimated diversion of 3.1% of the existing food & beverage sales base. This is a conservative assumption, in that food sales captured by the new and expanded Rockridge Safeway store could also be attracted away from other grocery and food stores located outside the market area. In similar fashion, the portion of home furnishings & appliances sales generated by market area residents not accounted for through recaptured leakage is also conservatively assumed to be diverted away from existing other market area retailers. Given the volume of the estimated food sales impact and the large quantity of grocery and food stores in and near the Project's market area, this topic is probed in the following chapter.

The $3.3 million in home furnishings & appliances sales impacts comprises a substantial percentage of the market area sales base in home furnishings & appliances, i.e., 15.3% of the sales base. However, in absolute terms this is a low sales impact figure, and the space equivalent of this amount of sales is about 10,000 square feet, assuming average store sales of $327 (see Exhibit B-1). Therefore, it is very unlikely that any one retailer in the home furnishings & appliances category in the market area will incur all these sales impacts, such that any existing stores will close. Accordingly, these impacts are anticipated to be minor and unsubstantial relative to the existing market area retail base.

VII. GROCERY AND FOOD STORE IMPACTS

This chapter provides information and analysis about the grocery and food stores in and around the market area most germane to the Rockridge Safeway expansion Project. Stores are identified and discussed relative to their potential competitiveness with the Project. In addition to their relevance to the Rockridge Safeway store, many of the stores are included because they are also relevant on a cumulative basis, meaning when additional food sales impacts occur after the addition of other planned retail projects such as the Rockridge Safeway redevelopment and expansion. The cumulative impacts are discussed in a later report chapter, but this chapter discusses the extent and nature of potential market area food sales impacts, as well as possible existing grocery and food stores that may experience negative sales impacts following completion of the Project. There are numerous grocery stores and food stores in and around the market area. This chapter references and discusses the most relevant stores plus a sampling of other potentially affected food stores.

COMPETITIVE GROCERY AND FOOD STORES IDENTIFICATION AND PERFORMANCE

Identification of Competitive Grocery and Food Stores

The market area has an abundant and diverse supply of grocery and food stores located in a variety of settings, including shopping centers and major commercial nodes. Also relevant, especially from a cumulative perspective, are grocery and food stores located outside the market area. ALH Economics visited many of these stores, viewing product mixes, customer volume, level of service, unique attributes, and commercial real estate settings. The food and grocery stores are diverse in their target consumer. Some are high-end, upscale stores that focus on providing extensive or exclusive product selection often in a stylized setting, others offer a conventional supermarket setting, a few are discount-oriented stores, and many are smaller niche markets that serve a very localized clientele or narrow produce niche, such as mostly fresh fruits and vegetables. There are also many ethnic markets located throughout the market area, serving specialized international markets, such as Middle Eastern and Korean. Most stores fit in one of the referenced market orientations; Safeway, however, has a mix of conventional and upscale stores.

ALH Economics visited select portions of the Oakland, Piedmont, Berkeley, and Emeryville area retail markets in October 2011 and throughout 2012 to visually assess food and grocery store market performance, to determine market niches, to qualitatively assess the degree to which stores might incur lost sales due to the Rockridge Safeway store expansion, and to assess overall retail market conditions. The competitive food store locations are mapped on Exhibit 3. This includes many of the smaller food stores and all of the large grocery stores in the Rockridge Safeway market area. These stores are also listed beginning on the next page in Table 2, which additionally identifies each store's distance from the Project. While these materials do not include all stores selling food items in and around the market area they include the stores deemed most competitive with or relevant to analysis of the Rockridge Safeway store expansion.

Given the market orientation and locational distribution of the food stores relative to Safeway, ALH Economics believes it is most meaningful to classify the competitive food stores by orientation and location. Accordingly, the following individualized store discussions and analyses are presented in this manner. While not located in the market area, some of the identified stores could experience negative sales impacts from the Rockridge Safeway expansion. However, these additional stores are most relevant to the later discussion on cumulative project impacts.

Table 2
Rockridge Safeway Store Market Area Select Grocery Stores

Food Store, Address, City	Market Orientation	Miles from Safeway
Within the Market Area		
Temescal Produce Market, 4001 Broadway, Oakland	Niche	0.6
Market Hall, 5655 College Avenue, Oakland	Upscale	0.6
Trader Joe's, 5727 College Avenue, Oakland	Niche	0.7
Temescal Produce Market, 5121 Telegraph Avenue, Oakland	Niche	0.7
Village Market, 5885 Broadway Terrace, Oakland	Upscale	1.0
Piedmont Grocery, 4038 Piedmont Avenue, Oakland	Upscale	1.0
Monte Vista Food Center, 4000 Piedmont Avenue, Oakland	Niche	1.0
Safeway, College & Claremont Avenues, Oakland	Conventional	1.1
Yasai Produce Market, 6301 College Avenue, Oakland	Niche	1.1
Ver Brugge Meat-Fish Poultry, 6321 College Avenue, Oakland	Niche	1.1
Grocery Outlet, 2900 Broadway, Oakland	Discount	1.6
Safeway, 3747 Grand Avenue, Oakland	Conventional	1.6
Mulberry's Market, 335 Highland Avenue, Piedmont	Niche	1.8
Koreana Plaza Market, 2370 Telegraph Avenue, Oakland	Ethnic	1.8
Oasis Food Market, 3045 Telegraph Avenue, Oakland	Ethnic	2.1
Whole Foods, 230 Bay Place, Oakland	Upscale	2.1
Lakeshore Natural Foods, 3321 Lakeshore Avenue, Oakland	Niche	2.1
Lakeshore Produce & Health Foods, 3260 Lakeshore Avenue, Oakland	Niche	2.1
Trader Joe's, 3250 Lakeshore Avenue, Oakland	Niche	2.3
Savemore Market, 4219 Park Boulevard, Oakland	Niche	2.5
Gateway Supermarket, 5908 San Pablo Avenue, Oakland	Niche	2.7
Near the Market Area		
Star Grocery, 3068 Claremont Avenue, Berkeley	Niche	1.4
Ashby Marketplace, 2642 Ashby Avenue, Berkeley	Niche	1.6
Whole Foods, 3000 Telegraph Avenue, Berkeley	Upscale	1.9
Pak 'n Save, 3889 San Pablo Avenue, Emeryville	Discount	2.0
Andronico's, 2655 Telegraph Avenue, Berkeley (closed mid-12/11)	Conventional	2.2
Berkeley Bowl, 2020 Oregon Street, Berkeley	Upscale	2.4
Lucky, 1963 Mountain Boulevard, Oakland	Conventional	3.0
Safeway, 2096 Mountain Boulevard, Oakland	Conventional	3.0
Rocky's Market, 1440 Leimert Boulevard, Oakland	Niche	3.0
Lucky, 247 E. 18th Street, Oakland	Conventional	3.1
Trader Joe's, 1885 University Avenue, Berkeley	Niche	3.7
Berkeley Bowl West, 920 Heinz Avenue, Berkeley	Upscale	3.7
Andronico's, 1414 University Avenue, Berkeley (closed 11/11)	Conventional	3.7
Trader Joe's, 5700 Christie Avenue, Emeryville	Niche	4.1
Andronico's, 1550 Shattuck Avenue, Berkeley	Conventional	4.2
Farmer Joe's Marketplace, 3426 Fruitvale Avenue, Oakland	Niche	4.2
Safeway, 3550 Fruitvale Avenue, Oakland	Conventional	4.3
Safeway, 1444 Shattuck Avenue, Berkeley	Conventional	4.3

Table 2, continued
Rockridge Safeway Store Market Area Select Grocery Stores

Food Store, Address, City	Market Orientation	Miles from Safeway
Monterey Market, 1550 Hopkins Street, Berkeley	Niche	4.7
Andronico's, 1850 Solano Avenue, Berkeley	Conventional	5.1
Berkeley Natural Grocery, 1336 Gilman Street	Niche	5.1
Farmer Joe's Marketplace, 3501 MacArthur Boulevard, Oakland	Niche	5.2
Lucky, 4055 MacArthur Boulevard, Oakland	Conventional	5.5
Grocery Outlet, 2001 4th Street, Berkeley	Discount	5.7
Safeway, 4100 Redwood Boulevard, Oakland	Conventional	5.8

Source: ALH Urban & Regional Economics; and Maps.Google.com.

Grocery Store Sales Performance Information

For the purpose of this study, ALH Economics obtained information about select grocery store performance in and around the Project's market area. These data were obtained from Nielsen Trade Dimensions, which provides individual store weekly sales estimates as well as each store's estimated sales selling area. From these data, generalized analysis can be conducted to assess the relative sales performance of the stores. Nielsen's Terms of Use for the Trade Dimensions data prevent publishing individual store performance information. However, information about store performance in general and in relation to other stores can be divulged.

Based on the Nielsen Trade Dimensions data acquired by ALH Economics, it appears that most of the market area and many of the outside market area stores are performing at or above general grocery industry standards sales per square foot or the average sales per square foot figures for the relevant chains, such as Trader Joe's and Whole Foods. According to Retail Maxim, the Trader Joe's chain nationally in 2011 achieved $1,790 sales per square foot, while the equivalent figure for Whole Foods was $854.[15] The high sales of these stores locally is a strong indicator of store success despite the continuing poor economic conditions following the most recent national recession. The greatest relevancy of this information is its use as an indicator of the potential for some existing stores to withstand potential sales declines while still retaining above industry or chain sales performance.

INDIVIDUALIZED STORE ANALYSIS WITHIN THE MARKET AREA

Following are discussions of the Exhibit 3 and Table 2 grocery and food stores located in the market area. The Oakland commercial node is referenced for the stores located in Oakland. All discussions of negative sales impacts pertain exclusively to impacts associated with the Rockridge Safeway expansion. These discussions are based on ALH Economics experience with and field visits to the identified stores.

[15] Retail Maxim, "Alternative Retail Risk Analysis for Alternative Capital," July 2012.

Conventional Grocery and Food Stores within the Market Area

Conventional stores are full-service grocery stores that offer most or all of the following: a fresh bakery; fresh meat and seafood; frozen foods including frozen meat; fresh produce; a deli counter; and prepared foods. Other specialties sometimes include organic foods, a flower selection, a pharmacy, or a photo center.

Safeway, College & Claremont Avenues – 1.1 miles. This is a smaller Safeway store located at the intersection of College and Claremont avenues in Oakland, just south of the border with the City of Berkeley in Oakland's Rockridge area. This 24,260-square-foot store is located in the midst of a very vibrant commercial shopping district, including other small specialty food retailers. This 24-hour store is seeking public approvals to support expansion of the store to 50,860 square feet plus the development of an additional 10,657 square feet of ground level retail, of which 9,537 square feet will comprise net additional space. This store includes a deli counter, packaged meat and seafood, prepared foods, a florist, and some organic/health foods. The store and parking lot are in moderately good condition, and the store has high customer volume. If this store succeeds in its expansion efforts then the expansion would offset any sales impacts attributable to the expansion of the Rockridge Safeway. However, if this store does not expand as planned, then it is possible that expansion of the Rockridge Safeway could impact sales at this store, as shoppers choose to frequent the Rockridge store to take advantage of the wider range of products that will be available following expansion.

Safeway, 3747 Grand Avenue, Oakland – 1.6 miles. This is a smaller grocery store located along one end of Oakland's Grand Avenue/Grand Lake commercial node, with the parking lot located on the side of the store. This Safeway store has a deli counter, packaged meat and seafood, prepared foods, a florist, and some organic/health foods. Both the store and parking lots are well maintained and in excellent condition. The hours of operation are 6:00AM – Midnight, Monday-Sunday. While visiting the store ALH Economics observed this Safeway to have high shopper volume. Given its size, orientation, and distance from the Rockridge Safeway (1.6 miles) this store is expected to compete with the Rockridge Safeway expansion and will likely experience some negative sales impacts.

Upscale Grocery and Food Stores within the Market Area

Upscale stores focus on providing extensive or exclusive product selection often in a stylized setting. There is usually an emphasis on fresh foods, gourmet products, and organic foods at upscale stores. These stores have wider aisles and nicer decors, such as wood flooring in the produce section.

Market Hall, 5655 College Avenue, Oakland – 0.6 miles. Market Hall is a collection of eight specialty shops under one roof near the Rockridge BART station, in Oakland's Rockridge area. The shops sell a variety of food products, and include Highwire Coffee Roasters, Market Hall Produce, Marin Sun Farms Butcher Shop, Hapuku Fish Market, the Pasta Shop, Bloomies Flowers, and Paul Marcus Wines. These shops sell a variety of fresh and specialty food products, including produce, meat, fish, pasta, baked goods, and wine, and appear to achieve high shopper volume. The hours of operation for most of the shops are 9:00AM – 8:00PM, Monday – Friday, 9:00AM – 7:00PM Saturday, and 10:00AM – 7:00PM Sunday. The shops at Market Hall are very specialized and unique, with a strong local following, and thus are not anticipated to experience any sales impact upon expansion of the Rockridge Safeway store, despite their location 0.6 miles from the Safeway store.

Village Market, 5885 Broadway Terrace, Oakland – 1.0 miles. Village Market is a local, upscale grocery store. This store is located in the Montclair Village neighborhood in Oakland adjacent to a coffee and gift store, nursery, and auto repair shop. This store offers a deli counter, cheese deli, prepared foods, packaged meat and seafood, organic/health goods, and floral section. The quality of the store and parking are excellent and well kept. While visiting the store ALH Economics observed the parking lot to be very busy and the store to have high shopper volume. The hours of operation are 7:00AM – 9:00PM, Monday-Saturday and 8:00AM-8:00PM, Sunday. Given its size and upscale and local market orientation, this store would not be considered competitive; however, after expansion the Safeway store will have greater produce and fruit options, including organic, and thus will be more competitive with Village Market. Accordingly, Village Market might incur some negative sales impacts as a result, but because this market is specialized, well-established, and has a loyal following, ALH Economics anticipates that the sales impacts will be low.

Piedmont Grocery, 4000 Piedmont Avenue, Oakland – 1.0 miles. Piedmont Grocery is a local, upscale grocery store with strong neighborhood loyalty. This store is located in the Piedmont Avenue shopping area of Oakland with the parking lot located in the rear. This store offers a fresh bakery, deli counter, prepared foods, fresh and packaged meat and seafood, organic/health goods, and a section with candles and gift-type items. The quality of the store and parking area are in good condition and well kept. While visiting the store ALH Economics observed the parking lot to be busy and the store to have high shopper volume. The hours of operation are 9:00AM – 8:00PM, Monday-Saturday and 9:00AM-7:00PM, Sunday. While this store has a local market orientation, given its upscale nature and distance from the Rockridge Safeway (1.0 miles) this store may experience some negative sales impacts.

Whole Foods, 230 Bay Place, Oakland – 2.1 miles. Whole Foods is a natural and organic food store with locations in North America and the United Kingdom. This Whole Foods location is a very large store, situated in a former auto dealership near the Grand Avenue-Adams Point area of Oakland. This store offers a fresh bakery, extensive deli counter, gourmet cheese options, an olive bar, an extensive prepared foods section, fresh and packaged meat and seafood, a large bulk foods section, ethnic foods, fresh coffee, organic/health goods, a florist, a gelato stand, and a Café Gratitude. The quality of the store and parking area are excellent. While visiting the store ALH Economics observed extremely high shopper volume. The hours of operation are Monday-Sunday, 8:00AM – 10:00PM. Given its upscale orientation and distance from the Rockridge Safeway (2.1 miles), plus Safeway's plans to have greater produce and fruit options upon expansion, including organic, this store may experience some negative sales impacts.

Niche-Market Grocery and Food Stores within the Market Area

Niche-market stores are usually smaller stores that are distinguished from other stores by offering a certain type of grocery selection that is different than conventional stores. This may be the store's own, local, or imported brands of items.

Temescal Produce Market, 4001 Broadway, Oakland – 0.6 miles. This is a very small market located at the northwest corner of 40th Street and Broadway, approximately 0.6 miles south of the Rockridge Safeway Project site in the Upper Broadway/Oakland Tech area of Oakland. The store features a limited amount of fresh produce, a small dairy section, ice cream, cookies, bulk items such as nuts and pasta, a small selection of specialty food items like black olive tapenade and organic tomato sauce, gluten-free products, organic products including organic cleaning products, and personal care products. The hours of operation are 9:00AM – 9:00PM, daily. The store is in good condition with street and off-street parking available. Customer volume appears light. Despite its close proximity to the Rockridge Safeway (0.6 miles), this store is not anticipated to experience negative sales impacts from the Safeway expansion due to its small size and limited, specialized product selection.

Trader Joe's, 5727 College Avenue, Oakland – 0.7 miles. This is a smaller niche-market type grocery store. This Trader Joe's is in a small center in Oakland's Rockridge area that also has a Pharmaca pharmacy. This store is larger than most Trader Joe's; it has wider aisles and a larger selection. The store is very well-maintained. While visiting the store ALH Economics observed the parking lot to be extremely busy and shopper volume was very high. The hours of operation are 8:00AM – 10:00PM, Monday-Sunday. Given its distance from the Rockridge Safeway (0.7 miles), and focus on some of the higher end packaged goods that are sold at Safeway Lifestyle stores, this store may potentially experience some negative sales impacts from the expansion.

Temescal Produce Market, 5121 Telegraph Avenue, Oakland – 0.7 miles. This is a small sister market to the Temescal Produce Market on Broadway, located at the northwest corner of 51st Street and Telegraph Avenue, at the north end of Oakland's Temescal/Koreatown area. Like the store on Broadway, this store features fresh produce, a small dairy section, ice cream, cookies, bulk items such as nuts and pasta, a small selection of specialty food items like black olive tapenade and organic tomato sauce, gluten-free products, and organic products including organic cleaning products. The hours of operation are 8:00AM – 9:00PM, daily. The store is in good condition with street parking available. Customer volume appears light. Despite its close proximity to the Rockridge Safeway (0.7 miles), this store is not anticipated to experience negative sales impacts from the expansion due to its small size and limited, specialized product selection.

Monte Vista Food Center, 4000 Piedmont Avenue - 1.0 miles. Monte Vista Food Center is a small neighborhood market. It is located just a few doors down from Piedmont Grocery on Piedmont Avenue. This store offers a small fresh produce section with a variety of organic fruits and vegetables. The store also includes packaged meats and other convenience food items. While visiting the store, ALH Urban & Regional Economics observed extremely low shopper volume. The hours of operation are 8:00AM – 7:00PM, Monday-Saturday, and 9:30AM – 7:00PM Sunday. Given this store's local market orientation, small size, and convenience orientation, it is not anticipated to be competitive with the Rockridge Safeway though it may experience some sales impacts due to the close distance. Most importantly, this store is located very close to the Piedmont Grocery (see above) and benefits from cross shopping from Piedmont Grocery shoppers. Therefore, if shoppers are diverted from the Piedmont Grocery due to enhanced shopping opportunities at the Rockridge Safeway then sales could accordingly be impacted at Monte Vista Food Center.

Yasai Produce Market, 6301 College Avenue – 1.1 miles. Yasai Produce Market is a very small produce market located directly across College Avenue from the Claremont & College Safeway store in Rockridge. This market is located in a strip of retail that also includes Ver Brugge Meat-Fish Poultry (see below), La Farine bakery, several fine dining restaurants, a candy shop, a clothing store, and a relatively new Peet's coffee shop. Yasai specializes in well-priced fresh, local produce, has a small Asian-themed section, and bread and dairy sections. The store has a strong local following and is open daily, with hours of operation including 9:00AM – 7:00PM Monday through Saturday, and 9:00AM – 6:00PM on Sundays. This store has no dedicated parking. This store has a local market orientation, is small, and has specialized product selection with a well-established and loyal customer base. Because this store is located adjacent to the College & Claremont Safeway, it is anticipated to experience some negative sales impacts if that store succeeds in its expansion plans. If that occurs, then ALH Economics does not anticipate that the Rockridge Safeway expansion will result in additional negative sales impacts for this market. However, if the College & Claremont Safeway store does not expand as planned, then it is possible that Yasai Produce Market might incur some negative sales impacts following completion of the Rockridge Safeway Project.

Ver Brugge Meat-Fish Poultry, 6321 College Avenue – 1.1 miles. Ver Brugge Meat-Fish Poultry is located a few storefronts to the north of Yasai Produce Market in Rockridge, also with no dedicated parking. Ver Brugge specializes in meat and seafood, including homemade sausages and poultry, and also features a good selection of cheeses. Like Yasai Produce Market, Ver Brugge is a very well-established local food business, with a strong customer base. Store hours are 10:00AM – 6:00 PM Monday – Friday, 9:00AM – 6:00PM Saturday, and 10:00AM – 5:00PM Sunday. Similar to Yasai Produce Market, this food store has a local market orientation, is small, has specialized product selection, and benefits from a well-established and loyal customer base. The sales impact findings for Ver Brugge Meat-Fish Poultry are similar to the findings for Yasai Produce Market, in that sales are not anticipated to be negatively impacted by the Rockridge Safeway Project unless plans do not proceed for expansion of the College & Claremont Safeway store.

Mulberry's Market, 335 Highland Avenue, Piedmont – 1.8 miles. Mulberry's Market is a very small local neighborhood market in Piedmont located 1.8 miles from the Rockridge Safeway site. This niche store is very upscale and offers a fresh bakery, deli counter with an espresso and coffee area, prepared foods, fresh and packaged meat and seafood, and organic/health goods. The quality of the store and small parking area are excellent. While visiting the store ALH Economics observed extremely high shopper volume. The store is located in the small downtown area of Piedmont. The hours of operation are Monday-Friday, 7:00AM – 8:00PM, Saturday, 8:00AM – 8:00PM, and Sunday, 8:00AM – 7:00PM. Given this store's local market- upscale orientation and small size, ALH Economics anticipates that this store will not be competitive with the Rockridge Safeway.

Lakeshore Natural Foods, 3321 Lakeshore Avenue, Oakland – 2.1 miles. This is a very small natural foods store located in Oakland's Lakeshore area, 2.1 miles from the Rockridge Safeway, but with no produce and limited fresh products. The store includes natural baby food, frozen food items, supplements, sugar replacements, gluten free options, crackers, beans, aromatherapy items, lotions and soaps, and beauty supplies. The hours of operation are Monday-Friday, 9:30AM – 7:00PM, Saturday, 9:30AM – 6:00PM, and Sunday, 10:00AM – 5:00PM. Shopper volume appeared light when visited by ALH Economics. Given the highly specialized nature of the products available at this store it is not anticipated to be competitive with the Rockridge Safeway.

Lakeshore Produce & Health Foods, 3260 Lakeshore Avenue, Oakland – 2.1 miles. This is also a very small store in Oakland's Lakeshore area located 2.1 miles from the Rockridge Safeway but with a heavy emphasis on fresh foods and produce. Store products include a wide variety of produce, including organic, bulk grains and beans, canned foods, a dairy section, ice cream, and healthy snacks. The hours of operation are Monday-Saturday, 9:00AM – 7:00PM and Sunday, 10:00AM – 6:00PM. Shopper volume appeared high when visited by ALH Economics and the store is in good condition. Given its proximity to Trader Joe's, a major food stores in the Lakeshore Business District that is anticipated to experience some sales impacts attributable to the Rockridge Safeway expansion (see following store), this store is also anticipated to incur some sales impacts following completion of the Rockridge Safeway Project.

Trader Joe's, 3250 Lakeshore Avenue, Oakland – 2.3 miles. This is a smaller, niche-market type grocery store located 2.3 miles from the Rockridge Safeway site. This Trader Joe's store is located in Oakland's Lakeshore area. Adjacent or nearby uses include CVS, Peet's Coffee, and other local retail stores. This is a standard-sized Trader Joe's store in excellent condition and is well-maintained, located in space formerly occupied by Lucky. While visiting the store ALH Economics observed the parking lot to be very busy and shopper volume was high. The hours of operation are 8:00AM – 10:00PM, Monday-Sunday. Given its focus on some of the higher end packaged goods that are sold at Safeway Lifestyle stores, this store may potentially experience some sales impacts from the expansion, but these impacts are anticipated to be less than impacts that might occur at the College Avenue Trader Joe's given the difference in store proximity to the Rockridge Safeway site.

Savemore Market, 4219 Park Boulevard, Oakland – 2.5 miles. This is a small neighborhood-oriented market located in Oakland's Glenview area, at the periphery of the Rockridge Safeway market area. This store is focused on serving the immediate neighborhood, and features many convenience items, a large selection of soups, canned fruit, liquor, extensive wine selection, some organic products, a very small produce section, and a strong ice cream section. This store has only metered street parking available. Daily hours of operation are 7:30AM – 11:00PM. Given its neighborhood focus, and 2.5-mile distance from the Rockridge Safeway store, this store is not anticipated to experience any sales impacts attributable to the Safeway expansion.

Gateway Supermarket, 5908 San Pablo Avenue, Oakland – 2.7 miles. This small market, located in Oakland's Golden Gate area, is very neighborhood-oriented. The space is not very well maintained and does not appear to be fully utilized, but it achieves high customer volume. The store sells a small amount of basic grocery store items, and includes a small fresh produce area. Where this market distinguishes itself is with its meat counter, which includes a wide variety of pork, beef, and poultry. Given the mix of products available the store has an emphasis on southern cooking. The meat counter extends most of the length of the store and appears to be the store's primary draw. Store hours are 9:00AM – 6:00PM Monday –Saturday and 10:00AM – 3:00 PM on Sundays. Given its neighborhood orientation, extensive meat counter, and 2.7-mile distance from the Rockridge Safeway store, the Gateway Market is not anticipated to experience any negative sales impacts upon the opening of the Rockridge Safeway store.

Discount Grocery and Food Stores within the Market Area

Discount stores are characterized by lower-than-average price points. Sometimes these are manifested by bulk sales, which allow the customer to get more for their dollar relative to most other grocery stores.

Grocery Outlet, 2900 Broadway, Oakland – 1.6 miles. Grocery Outlet is a national discount grocery store chain. This is an older, larger store located in Oakland's Broadway Auto Row/Broadway-Valdez area that is showing various signs of wear and tear, and did not appear to be very well-maintained when visited during fieldwork. While visiting the store ALH Economics observed moderate shopper volume. This store is located approximately 1.6 miles from the Rockridge Safeway store. Given this store's discount orientation it is not anticipated to be competitive with the Rockridge Safeway.

Ethnic Grocery and Food Stores within the Market Area

Ethnic food stores are stores that are distinguished from other stores by offering food products unique to a specific international culture or cuisine. These stores are often but not always smaller than conventional food stores. There are a number of small ethnic markets in the market area, but two of the more substantial stores are listed below.

Koreana Plaza Market, 2370 Telegraph Avenue, Oakland – 1.8 miles. This medium-sized ethnic grocery store caters to Korean customers and features a wide selection of produce, seafood, meat, and other products specific to Korean culture. Only a few packaged products are sold that overlap with conventional grocery stores, such as A-1 sauce and ketchup. This store is located in Oakland's Northgate/Koreatown area, and is exceedingly busy. Numerous unique products are available at the store, such as gallon jugs of Kimchee and live catfish, bass, and Korean halibut. This is a very unique store, located 1.8 miles from the Rockridge Safeway. Store hours are 7:00AM – 10:00PM daily. There is also a small, separate housewares store located adjacent to the grocery store. Because of its ethnic orientation and strong customer base, this store is not anticipated to incur any negative sales impacts associated with the Rockridge Safeway expansion.

Oasis Food Market, 3045 Telegraph Avenue, Oakland – 2.1 miles. This is a small-to-medium sized ethnic food store in Oakland's Northgate/Koreatown area focusing on Middle Eastern food products and cuisine. The store has a very limited produce section but features a meat counter and sells an extensive array of packaged and bulk products. The store includes a bakery and restaurant, also focused on Middle Eastern foods, such as a wide selection of baklava and prepared foods such as shawarma. Daily store hours are 9:30AM – 9:30 PM. Shopper volume appears moderate and the store is 2.1 miles from the Rockridge Safeway site. Because of its ethnic orientation and location, this store is not anticipated to incur any negative sales impacts associated with the Rockridge Safeway expansion.

OTHER FOOD STORES NEAR THE MARKET AREA

There are many other grocery stores located outside, but near the market area that were evaluated by ALH Economics. These stores were examined because, given their proximity to the Rockridge Safeway market area boundary, it is likely that they draw some of their shoppers from within the Rockridge Safeway market area, and may be vulnerable to negative sales impacts if some of these shoppers shift their grocery shopping to the expanded Safeway store. These stores are also relevant to the later discussion regarding cumulative impacts.

Conventional Grocery and Food Stores Near or Outside the Market Area

Andronico's (closed), 2655 Telegraph Avenue, Berkeley – 2.2 miles. Andronico's is a regional chain, conventional-style grocery store. This Andronico's store was a stand-alone store, the closure of which was announced on November 30, 2011 and completed by mid-December, 2011. The Andronico's ownership filed for bankruptcy during summer 2011. Shortly thereafter the chain was purchased, with the first underperforming store in Berkeley closed in October 2011.[16] Media reports indicated that this Telegraph Avenue store was perceived as the next weakest store in the chain, which ultimately led to its closure. Prior to bankruptcy of the Andronico's ownership, this Telegraph Avenue store underwent product and internal store layout changes, in an effort to freshen the store and enhance its customer appeal. However, these actions appeared insufficient to give the store a lift, and its closure leaves a gap in the conventional food market in the immediately surrounding neighborhood.

[16] "Breaking: Andronico's to Shutter University Avenue store," October 16, 2011, Berkeleyside.com.

***Lucky, 1963 Mountain Boulevard, Oakland – 3.0 miles*.** This Lucky store is located in the Montclair Village area of Oakland and is adjacent to a Rite-Aid and a Bank of America office building. This conventional grocery store has two-level parking with an automatic walkway between floors that allows grocery carts. Inside the store there is a fresh bakery, deli counter, fresh and packaged meat and seafood, organic/health goods, and a florist. There is also a bank and video rental kiosk inside the store. The quality of the store and parking area are good and appear to be on the newer side. While visiting the store ALH Economics observed high shopper volume. The hours of operation are 6:00AM – Midnight, Monday-Sunday. Even though this store is 3.0 miles from the Rockridge Safeway, it is anticipated to be competitive with the Rockridge Safeway expansion because of its proximity to Piedmont shoppers and other market area shoppers. Therefore, this store may experience some impacts following completion of the Rockridge Safeway Project.

***Safeway, 2096 Mountain Boulevard, Oakland 3.0 miles*.** This is a smaller, stand-alone grocery store located in Montclair Village 3.0 miles from the Rockridge Safeway. This Safeway store has a deli counter, fresh and packaged meat and seafood, a florist, and some organic/health foods. This Safeway also has a cafe, a Blockbuster Express, and a digital photo center located inside. The store offers parking in front and on top of the store. There is also an outdoor eating area on the rooftop. Both the store and parking lots are well maintained and appear to be on the newer side. The hours of operation are 6:00AM – Midnight, Monday-Sunday. While visiting the store ALH Economics observed high shopper volume. Similar to the Grand Avenue Safeway, this store is expected to compete with the Rockridge Safeway expansion and will likely experience some negative sales impacts, as shoppers seek out the expanded range of products that will be available at the Rockridge Safeway upon completion.

***Lucky, 247 E. 18th Street, Oakland – 3.1 miles*.** This large Lucky store is located in the Merritt commercial area of Oakland and is adjacent to the Merritt Restaurant and Bakery. This store offers a fresh bakery, deli counter, and fresh and packaged meat and seafood. There is also a pharmacy, bank, and video rental kiosk inside the store. The quality of the store and parking area are good, although the outside of the store needs some upkeep. While visiting the store ALH Economics observed moderate to high shopper volume. The hours of operation are 6:00AM – Midnight, Monday-Sunday. The pharmacy hours are 9:00AM – 7:00PM, Monday-Friday, 9:00AM – 5:00PM, Saturday, and closed on Sunday. Given its orientation, distance from the Rockridge Safeway (3.1 miles), and location within Oakland, this store is not likely to compete with the Rockridge Safeway expansion or experience negative impacts due to the expansion.

***Andronico's (closed), 1414 University Avenue, Berkeley – 3.7 miles*.** This former Andronico's was shuttered in October 2011. Andronico's declared Chapter 11 bankruptcy in August 2011 and was purchased by Renwood Opportunities Fund in October 2011.[17] The University Avenue Andronico's store was closed because it had the weakest sales of the chain.

***Andronico's, 1550 Shattuck Avenue, Berkeley – 4.2 miles*.** Andronico's is a regional chain of conventional-style grocery stores. This Andronico's store is a stand-alone store with a parking lot in the front and is located in the Gourmet Ghetto district of Berkeley. This store offers a fresh bakery, extensive deli counter, gourmet cheese options, an olive bar, a sushi bar, prepared foods, fresh and packaged meat and seafood, a large bulk foods sections, organic/health goods, an ATM, and a small floral selection. The quality of the store and parking area is a little worn, but well kept. While visiting the store ALH Economics observed moderate to high shopper volume. The hours of operation are

[17] Mercury News, "Andronico's sale to Renovo nears even as grocer decides to close a Berkeley store," October 26, 2011 (accessed November 9, 2011).

8:00AM – 10:00PM, Monday-Sunday. Given its conventional orientation and distance from the Rockridge Safeway (4.2 miles) this store is not anticipated to experience negative sales impacts from the Rockridge Safeway store expansion.

Safeway, 3550 Fruitvale Avenue, Oakland – 4.3 miles. This Safeway is located in a shopping center in Oakland's Dimond area that includes an Oakland Police Department substation. This store has a deli counter, fresh and packaged meat and seafood, and a floral section. This Safeway also has a Starbucks, a pharmacy, and a Blockbuster Express inside the store. The store's parking lot is in front. Both the store and parking lots are well maintained. The hours of operation are 6:00AM – Midnight, Monday-Sunday, the pharmacy hours are 9:00AM-8:00PM Monday – Friday and 9:00AM-5:30PM Saturday and Sunday. While visiting the store ALH Economics observed high shopper volume. Given the distance from the Rockridge Safeway (4.3 miles), this store is not expected to compete with the expansion and will likely not experience sales impacts.

Safeway, 1444 Shattuck Avenue, Berkeley – 4.3 miles. This stand-alone grocery store was recently expanded and renovated, with completion in October 2012. The expanded store offers a deli counter, fresh bakery, fresh and packaged meat and seafood, fresh coffee, a Signature Café, a florist, and some organic/health foods. Prior to closing this Safeway also had a video rental kiosk and a digital photo center located inside. The expanded store offers parking on two levels as well as expanded bicycle parking. There is an indoor eating area within the store. Store hours are 6:00AM – Midnight, Monday-Sunday. Given the similarity in store brand and products, as well as distance from the Rockridge Safeway store (4.3 miles), this store is not anticipated to experience sales impacts from the Rockridge Safeway expansion.

Andronico's, 1850 Solano Avenue, Berkeley – 5.1 miles. Andronico's is a local chain of conventional-style grocery stores. This Andronico's store is a stand-alone store with a parking lot in the rear and is located in along a major commercial node in North Berkeley. This store offers a fresh bakery, extensive deli counter with an olive bar, prepared foods, fresh and packaged meat and seafood, bulk foods, organic/health goods, an ATM, and a floral section. The quality of the store and parking area is excellent and well maintained. While visiting the store ALH Economics observed moderate to high shopper volume. The hours of operation are 9:00AM – 9:00PM, Monday-Sunday. Given its distance from the Rockridge Safeway (5.1 miles) this store is not likely to compete with the Safeway expansion or experience any negative sales impacts.

Lucky, 4055 MacArthur Boulevard Oakland – 5.5 miles. This smaller Lucky store is located in Oakland's Laurel commercial node. This store offers packaged meat and seafood, bulk foods, an ATM, and a Money Gram stand. The quality of the store and parking area are poor and in need of updating, the outside of the store also requires some upkeep. While visiting the store ALH Economics observed moderate to high shopper volume. The hours of operation are 6:00AM – 11:00PM, Monday-Sunday. Given its distance from the Rockridge Safeway (5.5 miles) this store is not likely to compete with expansion and will not experience negative sales impacts.

Safeway, 4100 Redwood Boulevard, Oakland – 5.8 miles. This Safeway is located in the Lincoln Square shopping center in Oakland's Lincoln Square commercial node. This Safeway is a small store that offers packaged meat and seafood, and a small floral selection. This is an older store that needs updating. The hours of operation are from 6:00AM – Midnight, Monday- Sunday. While visiting the store ALH Economics observed moderate shopper volume. Given its size and distance from the Rockridge Safeway (5.8 miles), this store is not expected to compete with the Safeway expansion or experience any sales impacts.

Upscale Grocery and Food Stores Near or Outside the Market Area

Whole Foods, 3000 Telegraph Avenue, Berkeley – 1.9 miles. Whole Foods is a natural and organic food store with locations in North America and the United Kingdom. This location is a large store with Ashby Flowers occupying a pad space. This store offers a fresh bakery, extensive deli counter, gourmet cheese options, an olive bar, prepared foods, fresh and packaged meat and seafood, a large bulk foods sections, ethnic foods, fresh coffee, organic/health goods, a florist, and Allegro Coffee. The quality of the store and parking area is excellent. While visiting the store ALH Economics observed that the store and parking lot had extremely high volume. The daily hours of operation are 8:00AM –10:00PM. Given its size, upscale orientation, and distance from the Rockridge Safeway (1.9 mile) this store might compete with the Rockridge Safeway expansion and may experience some negative impacts.

Berkeley Bowl, 2020 Oregon Street, Berkeley – 2.4 miles. Berkeley Bowl is an independent supermarket chain with two locations in Berkeley. This location, the main store, is a large stand-alone store, but is located across the street from a Walgreens pharmacy. This store is located in a former Safeway grocery store space, closed in the late 1990s/early 2000s timeframe. This store offers a fresh bakery, extensive deli counter, gourmet cheese options, an olive bar, prepared foods, fresh and packaged meat and seafood, a large bulk foods sections, ethnic foods, fresh coffee, organic/health goods, and a florist. The store appearance is modest, without high qualify fixtures. The quality of the store and parking area is excellent. While visiting the store ALH Economics observed that the store and parking lot had extremely high volume. The hours of operation are Monday-Saturday, 9:00AM – 8:00PM, and Sunday, 10:00AM – 6:00PM. Given the store's independent nature and somewhat upscale orientation (the store is hard to classify, and is thus considered a hybrid upscale/conventional store) and distance from the Rockridge Safeway (2.4 miles) this store might compete with the Rockridge Safeway expansion and may experience some negative impacts.

Berkeley Bowl West, 920 Heinz Avenue, Berkeley – 3.7 miles. Berkeley Bowl is an independent, local supermarket. This is a large, relatively new, stand-alone store. This store offers a fresh bakery, extensive deli counter with gourmet cheese options, an olive bar, sushi bar, taquería, prepared foods, fresh and packaged meat and seafood, a large bulk foods sections, ethnic foods, fresh coffee, organic/health goods, a florist, and a cafe. The quality of the store and parking area are excellent. While visiting the store ALH Economics observed the store and parking lot to have extremely high shopper volume. The hours of operation are Monday-Saturday, 9:00AM – 8:00PM, and Sunday, 10:00AM – 6:00PM. Given its upscale and independent orientation and distance from the Rockridge Safeway (3.7 miles) this store is not expected to compete with the Safeway expansion and is not likely to experience negative impacts.

Niche Grocery and Food Stores Near or Outside the Market Area

Star Grocery, 3068 Claremont Avenue, Berkeley - 1.4 miles. Star Grocery is a small neighborhood market. Founded in 1922, this market has a long history of serving the community. This market has a limited selection of fresh meat, seafood, and produce. The store also features a bulk foods section and many specialty food items, including a strong selection of cheeses, crackers, chocolates, vinegars, and beer. The store sells many household items and provides friendly customer service. Store hours are 8:00AM – 7:00PM Monday – Saturday and 10:00AM – 5:00PM on Sunday. This store, located 1.4 miles from the Rockridge Safeway, is not anticipated to incur any sales impacts from expansion of the Rockridge Safeway because of its strong neighborhood convenience function.

Ashby Marketplace, 2642 Ashby Avenue, Berkeley – 1.6 miles. Ashby Marketplace is a small neighborhood market focused primarily on non-perishable foodstuffs. The store has a very small fresh produce section and no fresh meat or seafood but offers many unique features, including a large gluten-free products section, a large spice section, grains, some bulk products, and an extensive and growing selection of teas and chocolates. Many products are organic or natural, including cleaning supplies. The store also features fresh sandwiches prepared daily. Store hours are Monday – Saturday, 10:00AM – 9:00PM and Sunday 11:00 AM – 8:00 PM. The store is staffed by the charismatic owner who is very focused on serving the neighborhood clientele. This store, located 1.6 miles from the Rockridge Safeway, is not anticipated to experience any sales impact upon expansion of the Rockridge Safeway store.

Rocky's Market, 1440 Leimert Boulevard, Oakland – 3.0 miles. This is a small neighborhood-oriented market, focusing on convenience items. Located near but not in the Glenview commercial node, the store sells many of the same kind of products one would expect to find in a 7-11 convenience store, plus a very small produce section. The space inside the store is underutilized, and many coolers are not fully stocked. Store hours are 8:00AM – 9:00PM, and shopper volume appears low. Given its 3.0-mile distance from the Rockridge Safeway, and neighborhood orientation, this store is not anticipated to experience any sales impact upon expansion of the Rockridge Safeway store.

Trader Joe's, 1885 University Avenue, Berkeley – 3.7 miles. This is a smaller, niche-market type grocery store. This Trader Joe's store is located in a mixed-use structure with condos above, on a major thoroughfare in a more urban area of the City of Berkeley. The parking lot is located in a garage which is accessed behind the store. The store is relatively new and is very well maintained. While visiting the store ALH Economics observed the parking lot to be extremely busy and shopper volume was very high. The hours of operation are 8:00AM – 10:00PM, Monday-Sunday. Given its orientation and distance from the Rockridge Safeway (3.7 miles), this store is not likely to experience sales impacts from the Rockridge Safeway expansion.

Trader Joe's, 5700 Christie Avenue, Emeryville – 4.1 miles. This is a smaller, niche-market type grocery store. This Trader Joe's store is a located in the Powell Street Plaza shopping center in Emeryville. Adjacent uses in the center include Ross, Marshall's, PetsMart, BevMo!, DB Shoes, Lane Bryant, Men's Warehouse, Sleeptrain, Starbucks, Burger King, Jamba Juice, and other local retail stores. This is an older, larger store that is showing some signs of wear-and-tear, though the store is well-maintained. While visiting the store ALH Economics observed moderate shopper volume. The hours of operation are 8:00AM – 10:00PM, Monday-Sunday. Given its niche orientation and distance from the Rockridge Safeway (4.1 miles), this store is not likely to experience negative sales impacts.

Farmer Joe's Marketplace, 3426 Fruitvale Avenue, Oakland – 4.2 miles. Farmer Joe's Marketplace in Oakland's Dimond commercial area is a local, family-run supermarket that specializes in organic and natural foods. This store offers a fresh bakery, extensive deli counter, gourmet cheese options, an olive bar, sushi bar, juice bar, prepared foods, fresh and packaged meat and seafood, bulk foods, organic/health goods, a florist, Joe's Grill, and an on-site massage area. The quality of the store and small parking area are excellent. While visiting the store ALH Economics observed extremely high shopper volume. The store is located adjacent to a CVS. The hours of operation are Monday-Sunday, 8:30AM – 8:30PM. Given its organic orientation and distance from the Rockridge Safeway (4.2 miles) this store is not expected to compete with the Safeway expansion and is not likely to experience negative sales impacts.

Monterey Market, 1550 Hopkins Street, Berkeley – 4.7 miles. Monterey Market is a small produce market that specializes in a wide variety of fresh and organic fruits and vegetables, many locally grown. Well regarded for its favorable pricing, this market also sells a variety of other items including dairy, bread, eggs, flowers, and fresh orange juice. There are bulk food options and many specialty items. Monterey Market also sells non-perishable items, such as a variety of vinegars, but it is most widely regarded for its produce options. Store hours are Monday – Friday, 9:00AM – 7:00PM, Saturday, 8:30AM – 6:00PM and Sunday, 10:00AM – 5:00PM. Monterey Market is a very popular market with high consumer volume. Because of its distance from the Rockridge Safeway store, and strong customer following, Monterey Market is not anticipated to experience any negative sales impacts from the Safeway expansion Project.

While not listed separately, there are other food vendors near the Monterey Market, also on Hopkins Street. These include Magnani's Poultry, Country Cheese and coffee, Monterey Fish Market, and Hopkins Street Bakery. Similar to Monterey Market, and because of their specialized nature, distance, and loyal clientele, these vendors are not anticipated to experience any negative sales impacts attributable to the Rockridge Safeway expansion.

Berkeley Natural Grocery Company, 1336 Gilman Street, Berkeley – 5.1 miles. The Berkeley Natural Grocery store is a small neighborhood-oriented grocery store with many natural, organic, and fair trade foods and personal products, including vitamins, soaps, and homeopathic products. The store features fresh produce and all natural products, including nuts for freshly ground nut butters. Prices can be on the high side at this store. There is a bulk foods section and strong dairy section. Store hours are daily 9:00AM – 8:00PM. Because of its distance from the Rockridge Safeway store and niche orientation, this store is not anticipated to experience any negative sales impacts due to the Rockridge Safeway expansion.

Farmer Joe's Marketplace, 3501 MacArthur Boulevard, Oakland – 5.2 miles. Farmer Joe's Marketplace in Oakland's Laurel commercial area is a local family-run supermarket that specializes in organic and natural foods. This store offers fresh and packaged meat and seafood, bulk foods, organic/health goods, and a small floral section. The quality of the store is decent, but well-kept and the parking area needs to be resurfaced. While visiting the store ALH Economics observed moderate shopper volume. The hours of operation are Monday-Friday, 9:00AM – 8:00PM and 9:00AM – 7:30PM Saturday and Sunday. Given its organic orientation and distance from the Rockridge Safeway (5.2 miles) this store is not expected to compete with Safeway expansion and is not likely to experience negative impacts.

Discount Grocery and Food Stores Near or Outside the Market Area

Pak 'N Save, 3889 San Pablo Avenue, Emeryville – 2.0 miles. Pak 'N Save is a discount-oriented grocery chain owned by Safeway. This store is located in the East Bay Bridge shopping center. Adjacent stores include Subway, Casual Male XL, Baskin Robbins, Little Caesar's, and Mattress Discounters. This large discount store offers a fresh bakery, deli counter, fresh and packaged meat, and packaged seafood. Inside the store is also an ACE Check Cashing stand and video rental kiosk. This store is showing signs of wear-and-tear. The needed renovation of this store has been approved by the City of Emeryville and will include a redesigned northern façade including additional entry, replacement of all signs and two new signs, and minor improvements to the parking lot including new landscaping. While visiting the store ALH Economics observed moderate shopper volume. The hours of operation are 6:00AM – Midnight, Monday – Sunday. Given the discount orientation of this store, it is not considered competitive with the Rockridge Safeway, but because of the distance from the Rockridge Safeway (2.0 miles), it may experience some sales impacts from the expansion project.

Grocery Outlet, 2001 4th Street, Berkeley – 5.7 miles. Grocery Outlet is a national discount grocery store chain. This store is a small, adequately maintained market located approximately 5.7 miles from the Rockridge Safeway store. While visiting the store ALH Economics observed moderate shopper volume. Store hours are 8:00AM – 9:00PM daily. Given this store's discount orientation and distance from Safeway, it is not likely to be competitive with the Rockridge Safeway expansion.

GROCERY AND FOOD STORES MOST SUSCEPTIBLE TO IMPACTS

Summary of Impacts

The Project impacts analysis in Exhibit 13 estimated $10.9 million in food & beverage sales impacts attributable to the Project. Exhibit B-1, which provides historical store sales trend data, suggests an average grocery store benchmark sales performance figure of about $500 per square foot. At this performance level, the estimated $10.9 million in sales impacts is equivalent to support for approximately 21,800 square feet. This amount is equivalent to a moderate-sized grocery store, larger than a Trader Joe's store, but smaller than Whole Foods.

However, many of the market area's larger grocery stores perform above this industry standard level. As cited earlier, the national average for Trader Joe's in 2011 was $1,790 per square foot, while the equivalent figure for Whole Foods was $854. All indications are that Berkeley Bowl also achieves higher than the $500 overall industry average. Therefore, the $10.9 million in sales impacts would translate into much lesser store impacts given consideration of the actual performance of the existing base of grocery stores.

Stores Likely to Experience Sales Impacts

Grocery Stores. ALH Economics believes that grocery stores with conventional and upscale orientations are most susceptible to sales impacts from the expanded Rockridge Safeway store given the store's repositioning as a Lifestyle brand store, which is more upscale than the standard Safeway stores. Among the larger stores referenced above, there are two conventional grocery stores, two upscale grocery stores, two niche grocery stores, and one discount grocery store in the market area, all of which are in the City of Oakland. The closest conventional store is the Safeway located at College & Claremont Avenues, 1.1 miles away, followed by the Safeway on Grand Avenue, approximately 1.6 miles away. The closest upscale store is Piedmont Grocery on Piedmont Avenue located approximately 1.0 mile away and the second upscale store is the Whole Foods on Bay Place, located approximately 2.1 miles away. The closest larger niche store is Trader Joe's on College Avenue, just 0.7 miles from the Rockridge Safeway store location, and the second larger niche store is the Trader Joe's on Lakeshore Avenue, approximately 2.3 miles away. The closest discount grocery store is the Grocery Outlet on Broadway, located 1.6 miles away from the Rockridge Safeway. All these stores with the exception of the Grocery Outlet are anticipated to experience some negative sales impacts following the expansion and repositioning of the Rockridge Safeway store;[18] however, the conventional- and upscale-oriented stores are anticipated to experience more impacts than the other store types.

[18] An exception is the Safeway at College & Claremont Avenues if the proposed expansion for this store is approved and comes to pass.

Several other larger grocery stores outside the market area are also anticipated to incur some sales impacts, mostly due to changed shopping patterns among shoppers who live in portions of the market area that overlap with the market areas for these other stores. As referenced in the individual store write-ups above, these larger stores near the market area include the Whole Foods on Telegraph Avenue located 1.9 miles away in Berkeley, the Pak 'n Save on San Palo Avenue located in Emeryville 2.0 miles away, the Berkeley Bowl located 2.4 miles away in Berkeley, and the Lucky and Safeway on Mountain Boulevard in Oakland's Montclair Village, both 3.0 miles away. It is possible that all of these stores might incur some degree of sales impacts following the redevelopment of the Rockridge Safeway store, as shoppers explore the broader options available at the expanded store while still continuing to shop at these other stores.

Many of the cited grocery stores are outperforming national averages. Because of their strong performance, the relatively low volume of sales impacts, and number and geographical dispersion of the potentially impacted stores, all of the identified large- to mid-sized conventional, upscale, niche, ethnic, and discount grocery stores are anticipated to be able to withstand the competition from the expanded Safeway store. Most of these stores are strong performers with a strong customer base. As experienced retailers, they are anticipated to be able to counterbalance product-based sales losses with new merchandising strategies, and thereby retain loyal customers.

Smaller Food Stores. It is possible that other, smaller food stores in and near the market area may also experience some sales impacts. As identified in the preceding store-by-store analysis, these stores could include the market area's Village Market located 1.0 miles from the Rockridge Safeway, Monte Vista Food Center located 1.0 miles away, Lakeshore Produce & Health Foods located 2.1 miles away, and Yasai Produce Market and Ver Brugge Meat-Fish Poultry, both 1.1 miles away. As opined above, Yasai and Ver Brugge are only anticipated to experience sales impacts if the planned College & Claremont Safeway expansion project is not approved. If this expansion occurs, then these stores are likely to experience some degree of sales impacts attributable to the College & Claremont Safeway. If that transpires, however, then the Rockridge Safeway expansion is not anticipated to result in additional negative sales impacts for these food stores. However, if the College & Claremont Safeway store does not expand as planned, then it is possible that Yasai Produce Market and Ver Brugge Meat-Fish Poultry might incur some negative sales impacts following completion of the Rockridge Safeway Project.

While these and the other small stores may experience sales losses, they are not anticipated to be severe enough to trigger closure. It is notable that these stores have coexisted with Safeway for many years. They therefore already offer products and services valued by customers that are not available at Safeway. Even with the greater volume of goods that will be available at the expanded Safeway these niche stores will continue to provide quality of service and products not available at Safeway. Customers might initially spend their shopping dollars at the expanded Rockridge Safeway while they explore the greater product offerings, but they are anticipated to continue to shop at their more convenient neighborhood shopping locations, which are sure to change their product offerings and service levels if warranted due to enhanced Safeway competition. However, shopping convenience and quality of service and products are anticipated to prevail over the long-run to the benefit of the smaller stores, especially since the larger size of the expanded Safeway will result in a more time intensive shopping trip for Safeway customers than the current store. Ultimately, the neighborhood convenience of these smaller stores will be reasserted and long-term customers will remain loyal to the store.

Overall Summary. Based upon the findings set forth in this study, ALH Economics concludes that no existing stores will experience sales impacts attributable to the Project so severe as to induce store closure. Impacts are anticipated to be spread widely, dispersed among a range of existing food stores. Moreover, the stores anticipated to experience the greatest impacts are the stores achieving among the highest sales performance, with these high sales buffering the potential impacts of any prospective sales losses.

OFFSETTING EFFECTS OF FUTURE GROWTH

The Safeway expansion is estimated to be completed in 2014, with completion of the center anticipated to follow in 2015. The year 2015 will also comprise the first full year of operations for the relocated and expanded Safeway store. There may be potential for new market area growth to generate yet additional demand for food sales in and near the market area by this timeframe.

Demographic projections suggest the potential for 1,845 new households in the market area between 2012 and 2015 (see Exhibit 5). This projection was prepared based on coupling ABAG market area census-tract level household growth projections prepared prior to the 2010 census with the actual 2010 household counts identified in the census. Although the amount of actual growth may prove less than that which is projected, it provides a sense of the potential demand that could be generated pursuant to residential development in the market area.

As Exhibit 14 indicates, the 1,845 new households are estimated to generate $54.8 million in retail demand. The largest component of this demand is $9.1 million for food stores, the great majority of which would likely be captured in the market area given the propensity for consumers to purchase groceries relatively close to home. This level of demand, therefore, if realized, could offset up to 84% of the maximum $10.9 million in food sales impacts. There is demand for yet additional retail categories, which would also help offset the estimated Project impacts in the home furnishings & appliances category and generally boost the market area's retail sales base.

This analysis indicates the potential for some increment of new household growth in the market area to be generated prior to the completion of the Project. This new demand will offset some of the Project's anticipated negative sales impacts on existing market area grocery and food stores.

VIII. CUMULATIVE PROJECT IMPACTS

This analysis seeks to quantify the impact of the Project taking into consideration other planned competitive retail projects within or very near the market area. The cumulative projects assessed for impacts include retail developments that are in various stages of entitlement or planning, or recently completed. Because specific development timelines are not available for many of the projects, the analysis carefully considers each project prior to determining the set of projects most likely to be operational during the Project's approximate timeframe.

IDENTIFIED RETAIL DEVELOPMENT PROJECTS

ALH Economics identified 16 potential cumulative retail development projects in the market area and surrounding areas. Information about these projects was primarily derived from interviews with local government sources, reviews of planning department information, and supplemental news articles. These 16 projects are described in Exhibit 15, which also identifies their distance from the Project site.

Only five of the cumulative projects are within the market area. These projects include the following:

- Civiq, located at 51st Street and Telegraph Avenue in Oakland - a mixed-use development with 19,500 square feet of retail, 100 residential units, and 60,000 square feet of office space, with unknown timing;
- BevMo! on Piedmont Avenue in Oakland – a retail beverage store seeking a conditional use permit to locate in space previously occupied by Blockbuster;
- MacArthur BART Transit Village in Oakland – an affordable housing and redevelopment project adjacent to the BART station comprising 624 residential units, 42,500 square feet of retail/commercial space, and surface parking;
- Valdez & 23rd Street Project in Oakland – a mixed use project with 281 residential units, 500-car parking structure, including 250 public spaces, and potential space for 12,000 square feet of retail; and
- College & Claremont Safeway expansion, located at College and Claremont avenues, 36,787 net new square feet of retail, including expansion and conversion of a Safeway store to a Lifestyle store, 1.1 miles from the Project site, EIR and public review in progress, potential completion date 2015.

These five projects vary in distance from the Project site, ranging from 0.6 miles for the 51st Street and Telegraph Avenue project and 2.0 miles for the Valdez & 23rd Street Project.

The 11 other projects are located in Oakland, Berkeley, and Emeryville, ranging 2.3 to 10.4 miles from the Project site. These projects are included because their market areas may overlap to some extent with the Project's market area, thus providing competition for market area resident retail expenditures.

These 11 additional projects and their net amount of planned retail space are as follows, by city:

City of Oakland

- Kaiser Center in Oakland, approved project with potentially 22,000 square feet of retail space 2.3 miles from the Project site, completion not anticipated for a number of years;

- Jack London Square redevelopment in Oakland, approved with 10,000 square feet of additional retail, 3.2 miles from the Project site;
- Oak to Ninth mixed use project in Oakland, approved, with up to 200,000 square feet of planned commercial space, located 4.1 miles from the Project site, with potential opening by 2015 (this project also includes planned residential development); and
- Foothill Square Redevelopment Project, 85,844 net new square feet of retail, 10.4 miles from the project site, approved with expected completion in 2013.

City of Berkeley

- Berkeley Iceland redevelopment in Berkeley into a Sports Basement store with 71,000 square feet of retail space, EIR in progress, located 2.5 miles from the Project site; and
- Shattuck Safeway expansion, located on Shattuck Avenue near Rose Street in Berkeley, recently completed construction of 17,250 net incremental square feet of retail space, 3.9 miles from the Project site.

City of Emeryville

- Pak 'n Save Foods, on San Pablo Avenue between Peralta Street and Yerba Buena Avenue, 2.2 miles from the Project site, a store update and minor parking lot and landscaping improvements, no increment in retail space, approved and anticipated to be completed in 2012;
- Parkside Project, bounded by Powell, Hollis, and Doyle streets and Stanford Avenue, residential project with 10,222 square feet of retail, 2.5 miles from the Project site, approved with opening anticipated fall 2013;
- Bay Street, Site A, proposed development at the northeast corner of Christie Avenue and Shellmound Street, 3.3 miles from the Project site, totaling 20,400 square feet of retail, development timing unknown;
- Bay Street, Suite B, a proposed 150,000-square-foot Macy's department store 3.3 miles from the Project site, development timing unknown; and
- Gateway@Emeryville, a proposed mixed-use project with 14,100 square feet of retail space along with residential and hotel uses, 3.3 miles from the Project site, development timing unknown.

Because of uncertainties in the entitlement and development process, compounded by the effects of the economy on development plans, ALH Economics does not assume that all these projects have the potential of being developed coincident with the Project's timeframe. Other projects are not considered in the cumulative process because they are not deemed likely to draw from the Project's market area, such as the small amount of retail associated with the Parkside Project in Emeryville.

Of the cited projects, 12 are assumed to comprise cumulative projects for analytical purposes. These projects are identified on Exhibit 18, with the numbering matching the numbering on Exhibit 15. The excluded projects include most of the Emeryville projects, including the Pak 'n Save update, Bay Street Sites A and B, and Gateway@Emeryville, due to lack of market area overlap and anticipated timing, i.e., unknown timing.

CUMULATIVE PROJECT SALES ESTIMATES AND SALES IMPACTS

Sales Estimates

Sales figures for the 12 cumulative projects are estimated in Exhibit 18. The estimates were developed with sensitivity to the size and nature of the prospective retail space, and range from $251 per square foot to $800 per square foot, as general sales estimations. These figures reflect estimates for neighborhood shopping centers, several types of food stores, generalized other retail sales, or other specific retail categories, depending upon the orientation of the cumulative project. For the full amount of planned retail development among the cumulative projects, which totals 522,925 square feet, these estimated sales total $216.1 million.

The cumulative retail projects will compete with the Project's market area only to the extent that their market areas overlap. Exhibit 18 also shows estimates of the share of each cumulative project sales anticipated to be sourced from the same market area as the Project. These estimates are the result of generalized assumptions, based on consideration of the location of the projects, their distance from the Rockridge Safeway expansion site, and the anticipated nature of their retail space and likely consumer. For example, Civiq at 51st and Telegraph Avenue project is located closest in proximity to the site, situated 0.6 miles from the Project. This project is anticipated to have a 100% overlap with the Project's market area because of the proximity to the project. The Macarthur BART transit project is also estimated to have a 100% overlap with the Project's market area. Another project located within the market area, 2.0 miles from the Project, is Valdez and 23rd, which is anticipated to have a 50% overlap with the Project's market area. A greater figure is not used because this is a relatively small project, unlikely to have a significant market draw, and thus is not anticipated to draw customers from the northern portion of the Project's market area. The other cumulative projects are assumed to have 5% to 80% market area overlap with the Project, with the cumulative projects located outside the Project's market area assumed to be at the low end of this range.

Of particular relevance to the cumulative analysis are the plans for the College & Claremont Safeway site. As referenced in Exhibits 16 and 17, an existing 24,260-square foot Safeway store with 1,120 square feet of pad space will be redeveloped featuring an expanded 51,510-square-foot Safeway store, more than doubling the size of the store, and an additional 9,537 square feet of restaurant and retail space. The result will comprise a net increase of 36,787 square feet of commercial space (see Exhibit 16).

As presented in Exhibit 17, this net increment of retail space is estimated to generate $26.1 million in net new retail sales, of which 28% are estimated to be generated by this project's market area residents, or $7.3 million. A retail space distribution for the 10,657 square feet of net new retail space for users other than Safeway includes 2,744 square feet of restaurant space and the remaining 7,913 square feet was developed by ALH Economics, based upon trends at other comparably-sized retail centers, and assumes tenants will comprise 2/3 in the Other Retail category, which includes gifts, books, jewelry, and florists, among others, and 1/3 in the Apparel category.

Only a portion of the market area for the College & Claremont Safeway project will be competitive with and overlap with the Rockridge Safeway expansion Project. In a separate urban decay analysis, completed for the College & Claremont Safeway store, ALH Economics developed an estimate of the market area for College & Claremont Safeway store. This market area includes a smaller portion of the City of Oakland than the Rockridge store and also includes portions of the City of Berkeley. Based on demographic estimates associated with the market are for this store, ALH Economics estimates that 28% of the College & Claremont Safeway store's market area households are in common with the

Rockridge Safeway project. Thus, the competitive stores analysis in Exhibit 17 indicates that $7.3 million of the sales at the College & Claremont Safeway project are anticipated to be generated by the market area for the Rockridge Safeway Project.

Pursuant to the market area overlap assumptions, $56.4 million of cumulative project estimated sales are assumed to be competitive with the Project and generated by residents within the Project's market area (see Exhibit 18). These retail sales are then distributed by retail category in Exhibit 19. The sales distributions are based upon industry averages identified by type of retail shopping center, as presented in Exhibit B-9. The results indicate that the largest portions of cumulative project market area sales will occur in two retail categories: food and beverage stores, with $19.4 million, or 36% the competitive total; and other retail, with $27.1 million, or 50% the competitive total (both percentages rounded). The remaining categories include food service and drinking places with $3.8 million in sales, general merchandise with $4.9 million in sales, clothing & clothing accessories with $0.7 million in sales, and building materials & garden equipment with a scant $0.4 million in sales.

Impact Analysis

In an analysis parallel to the Project impact analysis, the cumulative project impact analysis is documented in Exhibit 20. This exhibit takes into consideration the anticipated sales by retail category from the Rockridge Safeway expansion and the cumulative projects, focusing on the sales anticipated to originate from each project's market area. As with the Project's sales impact analysis, the cumulative projects analysis includes recapture of a portion of the estimated market area leakage for retail categories where leakage was identified. The assumptions underlying the share of sales recaptured for the cumulative projects are similar to the assumptions described for the Project's impact analysis.

The results in Exhibit 20 indicate maximum cumulative project impacts on market area retailers totaling $59.7 million. This compares to the Project's impact analysis of $14.2 million. Table 3 highlights the comparative sales impact findings for just the Project as well as the Project in combination with the competitive portion of the cumulative retail projects.

The figures in Table 3 indicate that three categories will experience incremental sales impacts on top of the sales impacts from the Project alone that are more than negligible, especially relative to the existing sales base. These include an incremental $19.4 million in food & beverage store impacts, an incremental $6.1 million in clothing & clothing accessories, and an incremental $20.0 in other retail impacts. The home furnishings & accessories category will experience sales impacts from the Project alone.

As with the Project impacts, extensive market area retail leakage will still remain following development of the cumulative projects. This remaining leakage provides an opportunity for other retailers to enter the marketplace focused on satisfying unmet retail demand.

Table 3
Comparative Sales Impacts
Rockridge Safeway Project and Cumulative Projects

Retail Category	Project	Cumulative Projects
Motor Vehicles & Parts	$0	$0
Home Furnishings	$3,274,508	$3,274,508
Bldg Mat'ls/Garden	$0	$0
Food & Beverage Stores	$10,904,320	$30,342,685
Gasoline Stations	$0	$0
Clothing & Accessories	$0	$6,131,920
General Merchandise	$0	$0
Food Services/Drinking	$0	$0
Other Retail	$0	$19,981,042
Total	$14,178,828	$59,730,154

Note: Figures may not total due to rounding.

Sources: Exhibits 13 and 20.

Clothing & Clothing Accessories Impacts. The incremental impact in this category is moderate, totaling $6.1 million in clothing & clothing accessories. As a share of market area sales for this sales category, this volume of sales impact is equal to 38.1% of the market area sales base. This high percentage of market area sales impact is primarily an indicator of the market area's low sales base in these categories, and not an indicator of strong market impacts. For this category, market area leakage is estimated to persist, even after absorption of the cumulative project sales. The analysis, however, conservatively assumed that not all the sales would be absorbed through leakage, and that some market area impacts could occur. However, the square footage equivalent of these impacts is fairly small, comprising 14,000 square feet of space (assuming $434 per square foot).[19] This increment of space is small, so the more likely scenario is that existing retailers will lose some increment of sales, but not so much as to induce store closure. Therefore, ALH Economics does not believe the clothing/clothing accessories impacts will result in any store closures and will therefore have no potential to contribute to or cause urban decay.

Other Retail Impacts. The nature of the other retail impacts will be dependent upon the type of retailers that locate in all of the cumulative projects. Almost every cumulative project is estimated to have some component of sales in this broad category, which can include sporting goods, office supplies, pet supplies, jewelry, toy stores, pharmacy, and gifts and hobbies, among other retailers. In all likelihood, each project will have a different mix of retailers comprising this category, such that one narrow type of retail will not experience all the estimated cumulative other retail impacts. This will serve to spread and thereby minimize the impacts. Moreover, the estimated $20.0 million in other retail impacts is equivalent to support for about 56,000 square feet of retail space based on the

[19] Ibid.

estimated $357 per square foot sales performance figure for the other retail category.[20] Because this increment of space is sizeable, the likely scenario is that some existing retailers will lose some increment of sales, but not so much as to induce store closure. Therefore, ALH Economics does not believe the other retail impacts will result in any store closures and will therefore have no potential to contribute to or cause urban decay.

Food Store Impacts. The cumulative food sales impact is estimated at $30.3 million, including the $19.4 million incremental impacts attributable to the cumulative projects. While Exhibit 20 represents these sales impacts as a share of the market area's food & beverage store retail sales base, these impacts are likely to be experienced in a more dispersed geography. This wider dispersion is attributable to the wide variety of food store shopping opportunities available throughout the region and the nature of the projects generating the incremental cumulative food sales impacts. For example, approximately $1.7 million of the estimated cumulative food sales is attributable to the planned Foods Co. discount grocery store at Foothill Square outside the market area (see Exhibit 19). Given its discount orientation this store will be most likely to divert sales from other discount food operators. The existing discount food retailer in the market area is Grocery Outlet and there is a Pak 'N Save nearby. These two stores and other discount shopping locations such as Smart & Final might be more likely to experience sales impacts attributable to the Foods Co. than the market area's predominantly upscale and niche groceries and food stores.

Another component of the estimated cumulative food sales impacts is the result of ALH Economics assumptions regarding cumulative project composition. For several of the projects, food sales were assumed because of the likely neighborhood orientation of their planned retail space, such as the 19,600 square feet planned at Civiq, located at 51st Street and Telegraph Avenue. While tenants have not yet been identified for this project, the analysis assumed 40% of the sales would be in the food & beverage category because this is generally consistent with the tenant composition of neighborhood shopping centers (See Exhibit B-9). Similar food & beverage tenant assumptions were made for other cumulative projects in the absence of identified tenant strategies. Thus, there is the potential that the cumulative food sales are overstated, contributing to overestimation of the potential food sales impacts. Future demand pursuant to household growth will also comprise a factor serving to minimize the cumulative food sales impacts.

As with the Project impacts, some smaller grocery and food stores within the market area and beyond might experience some short-term changes in demand as shoppers explore the expanded shopping opportunities presented by the cumulative projects. However, these shoppers are ultimately anticipated to restore some, if not all of their diverted shopping to these small grocery or food stores after an initial time period, especially if the cumulative projects do not comprise a substantially new food store offering, which is not anticipated. If, however, any existing stores do close as a result of food sales impacts, the extent to which such store closures become problematic for the retail market will also depend upon the market strength, regulatory controls, and actions pursued by property owners. These market area characteristics and the resulting likelihood of potential vacancies causing urban decay are discussed in the following chapter.

[20] See Exhibit B-1 for the sales per square foot estimate.

IX. URBAN DECAY DETERMINATION

The purpose of this chapter is to assess the degree to which development of the Rockridge Safeway expansion Project in Oakland will or will not contribute to or cause urban decay. This includes impacts associated with the Project combined with other cumulative planned retail development. This chapter discusses the definition of urban decay, the study's approach to determining urban decay potential, and ALH Economics' urban decay determination.

STUDY DEFINITION OF URBAN DECAY

For the purpose of this analysis, urban decay is defined as, among other characteristics, visible symptoms of physical deterioration that invite vandalism, loitering, and graffiti that is caused by a downward spiral of business closures and long term vacancies. The outward manifestations of urban decay include, but are not limited to, plywood-boarded doors and windows, parked trucks and long term unauthorized use of the properties and parking lots, extensive gang and other graffiti and offensive words painted on buildings, dumping of refuse on site, overturned dumpsters, broken parking barriers, broken glass littering the site, dead trees and shrubbery together with weeds, lack of building maintenance, homeless encampments, and unsightly and/or dilapidated fencing. A project's economic impacts on a community are only considered significant if they lead to adverse physical changes in the environment.

APPROACH TO DETERMINING URBAN DECAY POTENTIAL

ALH Economics engaged in several tasks to assess the probability of urban decay ensuing from Project development and the identified cumulative projects. These tasks revolved around assessing the potential for closed retail store spaces, if any, to either (a) remain vacant for a prolonged period of time such that they contribute to the multitude of causes that could eventually lead to urban decay, or (b) be leased to other retailers within a reasonable marketing period.

The purpose of this research was to determine if sufficient retailer demand exists to absorb vacated space in the event existing retailers close due to any negative economic impacts of the Project and the development of other planned retail. ALH Economics conducted field research and contacted real estate brokers and third party resources to determine the commercial health of the market area.

THE CURRENT ENVIRONMENT

ALH Economics conducted fieldwork throughout the Oakland portion of the market area and the City of Piedmont, which is fully encompassed within the market area. The purpose of this fieldwork was to perform reconnaissance of the Project site, identify and visit select competitive retailers, examine the physical condition of major shopping centers and commercial shopping corridors, and identify existing retail vacancies and assess their condition and appearance. Much of the findings from this field reconnaissance were presented earlier during the review of the market area's retail corridors and the individual grocery and food store descriptions. These personal observations are complemented by historical and current retail market performance data, demonstrating the underlying strength or weakness of the local commercial retail market.

Retail Market Statistics

Historically, the City of Oakland has generally maintained a relatively healthy retail market sector. Historical trend data in Exhibit 21 presents general vacancy, absorption, and new construction trends in Oakland by quarter beginning in 2006. Such trend data are not available exclusively for the Oakland portion of the market area. However, citywide trends in general are informative, and the fieldwork conducted in the Oakland portion of the market area suggested that the market area's market conditions area are likely as strong as the City's as a whole.

Exhibit 21 indicates that as of first quarter 2012, Oakland had an overall retail vacancy rate of 3.9%. This rate falls in the middle of noted rates during the 2006 to 2012 time period, with vacancy as high as 4.9% and as low as 2.7%. Throughout the course of the most recent recession and its aftermath retail vacancy has been low in Oakland, never exceeding 4.9% since the first quarter of 2011. This indicates a strong retail market in the City of Oakland, which has a base of approximately 22.3 million square feet of retail space. In general, retail markets are deemed most healthy when there is some increment of vacancy, at least 5.0%, which allows for market fluidity and growth of existing retailers. Thus, the first quarter 2012 Oakland retail vacancy rate of 3.9% is a low vacancy rate, indicative of a very strong and tight retail market.

In all likelihood the retail inventory tracked in Exhibit 21 does not comprise a full census of Oakland's commercial retail space. The data provide a strong indicator of overall market conditions, and thus is considered representative of Oakland's retail market performance.

Retail Lease Transactions

Exhibit 21 demonstrates that retail vacancies in Oakland are finding new tenants. This exhibit identified 115 retail leases executed over a one-year period, from April 2011 through the end of March 2012, totaling 214,158 square feet of leased space, with an average size of about 1,900 square feet. This volume of lease transactions, during a period of time still effected by the most recent national recession, is an indicator of strong interest in Oakland's commercial retail market.

Retail Vacancies

Exhibit 22 presents listings of retail vacancies as of June 2012 for Oakland. The list is extensive, and includes properties throughout the City, not just within the Project's market area. The list should therefore not be interpreted as a list of only market area vacancies, nor is the list a complete inventory of vacancies. However, it is an indicator of existing vacancies, and serves to demonstrate that the market area's vacancies are only a small portion of the City's retail vacancies. In reviewing this list of vacancies it is important to remember that despite the quantity of vacancies, Oakland's retail vacancy rate was measured at 3.9% during the timeframe represented.

Within the market area portion of the City of Oakland, the existing vacancies included in Exhibit 22 for which development plans are not in progress (excluding vacancies at Rockridge Plaza) total approximately 150,000 square feet, or 17% of the City's retail vacancies. There are about 22 such vacancies noted in the market area, located along major retail nodes and shopping districts, including Broadway, Lakeshore Avenue, Grand Avenue, Harrison Street, Piedmont Avenue, Telegraph Avenue, and San Pablo Avenue. Other retail vacancies exist in the market area, but the greatest majority appears to be referenced in Exhibit 22. The average market area vacancy noted is approximately 6,800 square feet, with several larger vacancies mostly comprising former auto dealerships, which can provide problematical reuse scenarios. The largest vacancy, totaling 17,000 square feet, is contiguous space located on Telegraph Avenue in Oakland's Northgate/Koreatown area. There are other market area vacancies in the Northgate/Koreatown area as well as numerous vacancies along the portion of Broadway to the south of the Rockridge Safeway site. These are the two market area commercial districts that are the most run down and are not characterized by cohesive commercial uses, with the existing commercial properties interspersed with a range of other uses such as medical- and auto-related. The southern portion of Temescal/Koreatown, which is a transitional commercial area, also appears to have a greater propensity for vacant commercial spaces than most other portions of the market area. In contrast, the market area's strongest shopping districts, such as a Piedmont Avenue, Rockridge, Lakeshore Avenue, and Grand Avenue/Grand Lake, typically have none or very few vacancies, with vacancies filling quickly when they become available. In general, most of the market area vacancies are well to reasonably well maintained, with only a few properties exhibiting select indicators of deterioration, such as boarded up windows or doors, including some appearing to be pursuant to fire damage.

The most notable market area vacancy is very near the Project site, comprising the former Poppy Fabrics store on Broadway just north of 51st Street. This long-term vacant property shows current evidence of graffiti, although in the past examples of graffiti were abated. Redevelopment of the Rockridge Safeway could prove beneficial to this property, enhancing the overall commercial draw and appeal of the immediate environs. Overall, the market area retail vacancies are well-maintained and the commercial real estate market appears relatively healthy.

POTENTIAL FOR URBAN DECAY RESULTING FROM THE PROJECT

Contributing Causes to Urban Decay

Before considering how the Project and cumulative projects might affect the market and environs, it is useful to focus on what constitutes the *environmental* impact known as urban decay. The leading court case on the subject, *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1204, described the phenomenon as "a chain reaction of store closures and long-term vacancies, ultimately destroying existing neighborhoods and leaving decaying shells in their wake." The court also discussed prior case law that addressed the potential for large retail projects to cause "physical deterioration of [a] downtown area" or "a general deterioration of [a] downtown area." (Id. at pp. 1206, 1207). When looking at the phenomenon of urban decay, it is also helpful to note economic impacts that do not constitute urban decay. For example, a vacant building is not urban decay, even if the building were to be vacant over a relatively long time. Similarly, even a number of empty storefronts will not constitute urban decay. Based on the preceding descriptions regarding urban decay, therefore, ALH Economics' analysis examined whether there was sufficient market demand to support the Project without affecting existing retailers so severely such as to lead to a downward spiral toward decay.

There are existing retail vacancies in the market area. Most of the vacant retail spaces observed during field reconnaissance of the market area are in good condition, with limited signs of deterioration or decay. These vacancies are occurring independent of Project or cumulative project development. The condition of the vacancies indicates that property owners are, in the most part, engaging in property maintenance efforts and providing upkeep even in the absence of tenants. The few exceptions to this observation are very limited.

The findings presented earlier regarding the Project's sales impacts indicate the potential for $14.2 million in market area sales diversions, in the categories of food & beverage stores and home furnishings & appliances. When the broader range of cumulative projects is considered, sales impacts were additionally identified in clothing & clothing accessories and other retail categories, with the cumulative total of all sales impacts increasing to $59.7 million. These are impacts remaining after sales leakage is captured by the Project as well as the cumulative projects. A portion of these impacts are anticipated to be absorbed through new growth, recaptured sales from the closed Andronico's on Telegraph Avenue, and some retailer repositioning. The level of impacts that may remain even after new demand and retailer repositioning are accounted for can lead to any one or more of the following consequences:

1. sales diversion from existing market area retailers;
2. slower than anticipated completion and opening of space at the Project and the cumulative retail developments;
3. lower initial sales volumes at the Project and the cumulative retail developments; and
4. a longer than estimated period of time to reach stabilized sales among the new retail developments.

In other words, the estimated sales impacts are likely to affect two types of businesses/retailers: existing retailers (#1 above); and the developers and future tenants of the other retail centers proposed for the market (#2-#4 above). With regard to the impact on existing retailers, some existing stores in the impact categories could sustain a short-term reduction in sales while others may sustain more long-term reductions. It is when stores close that concerns about urban decay come to the forefront. However, ALH Economics does not anticipate store closures relative to development of the Project and cumulative projects, thereby limiting the potential for urban decay to ensue as a result of Project development.

Urban Decay Conclusion

In developing a conclusion regarding the potential for urban decay, ALH Economics relied on the definition presented earlier in this chapter, which focused on determining whether or not physical deterioration would likely result from the opening of the Project and other cumulative retail developments. ALH Economics' conclusion is based on consideration of current market conditions, findings regarding diverted sales, and regulatory controls, as summarized below:

> ***Current Market Conditions***: The field research and market research indicated that retail market conditions are strong in the market area. The City of Oakland has a low retail vacancy rate, with few vacancies in the market area's major commercial shopping nodes. This indicates that while there are a few such properties, long-term retail vacancy is not a prevalent issue in the market area. There are limited retail properties in Piedmont and thus no appreciable retail vacancy in Piedmont. Existing retail vacancies generally appear well-maintained and retail vacancies in the market area are typically absorbed quickly, especially in the market area's major retail shopping districts. There are only limited instances of poorly maintained retail vacancies within the market area.
>
> ***Diverted Sales and Additional Retail Leakage***: ALH Economics anticipates that despite the Project's and cumulative projects' sales impacts, especially in the food & beverage category, existing retailers will not close as a result of the new project openings. The most competitive existing stores are high retail sales performers and are anticipated to be able to withstand the enhanced competition. However, if any stores do close, the market area is anticipated to be characterized by continued retail

leakage in almost all major retail categories. This remaining leakage provides an opportunity for other retailers to enter the marketplace focused on satisfying unmet retail demand. Given the size of Oakland's retail market, over 200,000 incremental square feet would need to become vacant to increase Oakland's retail vacancy rate by 1.0%. Even with this level of increment, the Oakland retail market would still be operating at a healthy overall vacancy rate.

Regulatory Controls: City ordinances, such as the City of Oakland Municipal Code of Ordinances Chapter 8.10 on Graffiti, Chapter 8.18.060 on Noxious Weeds, Chapter 8.24 on Property Blight, Chapter 8.38.170 on Dumping Garbage, Chapter 8.54 on Vacant Building Registration, Chapter 12.04 on Sidewalk, Driveway, and Curb Construction and Maintenance, require property owners to maintain their properties so as not to create a nuisance by creating a condition that reduces property values and promotes blight and neighborhood deterioration. Enforcement of these ordinances can help prevent physical deterioration due to any long-term closures of retail spaces. Code enforcement is managed by the City of Oakland's Building Services Division. They look into the accumulation of trash, debris, graffiti, and other blight on properties. The Building Services Division is responsible for enforcement and is allowed to take actions needed to enforce the ordinances. Also, according to Municipal Code Chapter 15.08.110, the owner in violation, "is liable for any costs, expenses, accruing interest, and disbursements paid for or incurred by the City of Oakland and any of its contractors in correction, abatement, and prosecution of the violation."[21] Citizens can report code violations through a telephone hotline or online form. Once a complaint is issued and determined valid, the owner has 16 days to pay the violation ticket or work with the City to fix the violation.

Similar codes also exist in the City of Piedmont, such as the City of Piedmont Municipal Code of Ordinances Chapter 6 on the Abatement of Nuisances including "Weeds, as defined in Government Code Section 39561.5 or successor statutes, growing in or on streets, sidewalks and private property in the City," "Rubbish, refuse, unsightly accumulations of dirt, sand, and gravel, and the like on parkways, sidewalks, streets or private property in the City", "Tangible personal property not intended for outdoor use (including but not limited to broken or discarded furniture, household equipment and furnishings, garbage cans, or shopping carts) which is stored on property so as to be visible from a public street or the vicinity of the property", "Overgrown vegetation visible from a public street and likely to harbor rats, vermin or other nuisances or which obstructs the view of drivers on public streets or private driveways and creates a safety hazard, or which impedes, obstructs or denies pedestrian or other lawful travel on sidewalks, walkways, or other public rights-of-way", "Vehicles which are wrecked, inoperable, or in a state of partial repair, whether or not located in a paved or graveled driveway, when visible from a public street or the vicinity of the property", "Buildings which appear to be abandoned, partially destroyed, left in an unreasonable state of partial construction or have been declared substandard or dangerous by the City's building official", "Buildings with windows and doors intended to be glazed which contain broken glass or no glass at all. Plywood or other material used to cover such window and door space for more than two weeks, if

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[21] City of Oakland Municipal Code 15.08.110, "Abatement of Violations," http://library.municode.com/index.aspx?clientid=16308&stateid=5&statename=california (accessed November 18, 2011).

permitted under this code, shall be painted in a color or colors compatible with the remainder of the building". Chapter 6 also covers the enforcement of these ordinances, all of which can help prevent physical deterioration due to any long-term closures of retail spaces. If properties require nuisance abatement there are controls in place to provide this abatement. The property owner will receive a written notice from the City, the owner has 14-18 calendar days to fix the nuisance or 10 calendar days to appeal, if neither of these actions are taken then the owner will be charged for the violation or a lien will be placed on the property.[22]

During the fieldwork conducted in October, 2011, and during periodic supplemental fieldwork in 2012, there have been only a few visible signs of litter, graffiti, weeds, or rubbish associated with existing commercial nodes in the Project's market area, most notably at the periphery of some of the nodes, such as along the southern portion of Temescal/Koreatown. Thus, ALH Economics concludes that existing measures to maintain private commercial property in good condition in the market area are generally effective and will serve to help preclude the potential for urban decay and deterioration in the event any existing retailers in the market area close following the operations of the Project and other cumulative retail projects.

Based upon these findings, ALH Economics concludes that the Rockridge Safeway expansion Project and the identified cumulative projects will not cause or contribute to urban decay.

[22] City of Piedmont Municipal Code, "Chapter 6 Abatement of Nuisances," pages 6-2, 6-3, and 6-4, http://www.ci.piedmont.ca.us/html/city_code/pdf/chapter6.pdf (accessed July 5, 2012).

ASSUMPTIONS AND GENERAL LIMITING CONDITIONS

ALH Urban & Regional Economics has made extensive efforts to confirm the accuracy and timeliness of the information contained in this study. Such information was compiled from a variety of sources, including interviews with government officials, review of City and County documents, and other third parties deemed to be reliable. Although ALH Urban & Regional Economics believes all information in this study is correct, it does not warrant the accuracy of such information and assumes no responsibility for inaccuracies in the information by third parties. We have no responsibility to update this report for events and circumstances occurring after the date of this report. Further, no guarantee is made as to the possible effect on development of present or future federal, state or local legislation, including any regarding environmental or ecological matters.

The accompanying projections and analyses are based on estimates and assumptions developed in connection with the study. In turn, these assumptions, and their relation to the projections, were developed using currently available economic data and other relevant information. It is the nature of forecasting, however, that some assumptions may not materialize, and unanticipated events and circumstances may occur. Therefore, actual results achieved during the projection period will likely vary from the projections, and some of the variations may be material to the conclusions of the analysis.

Contractual obligations do not include access to or ownership transfer of any electronic data processing files, programs or models completed directly for or as by-products of this research effort, unless explicitly so agreed as part of the contract.

Exhibit 1
Rockridge Safeway Store
Project Description

Site Use		Net Change Square Feet		
		Existing	Proposed	Net Change
Safeway		47,975	65,013	17,038
CVS Pharmacy		87,220	0	(87,220)
Restaurant		4,500	19,421	14,921
Retail, Other (1)		24,769	191,538	166,769
	subtotal	*116,489*	*210,959*	*94,470*
Bank/Financial		21,000	8,426	(12,574)
Office, Other		0	8,835	8,835
Common Space		0	29,303	29,303
	subtotal	*21,000*	*46,564*	*25,564*
Total		185,464	322,536	137,072

Sources: Project drawings, July 3, 2012; and ALH Urban & Regional Economics.

Exhibit 2
Rockridge Safeway Store
Rockridge Safeway Shopping Center Distribution of Net Sales Estimates
in 2011 Dollars

Store Characteristic	California Board of Equalization Sales Category	Net New Square Feet (1)	Sales per Square Foot Estimates	Net New Sales: Total	Net New Sales: Generated by Market Area Residents (2)
Retail Use					
Grocery	Food and Beverage Stores (3)	17,038	$800 (4)	$13,630,400	$10,904,320
Restaurant	Food Services and Drinking Places	14,921	$449 (5)	$6,696,028	$5,356,823
Pharmacy	Other Retail (6)	(87,220)	$158 (7)	($13,737,150)	($10,989,720)
Retail (8)	Home Furnishings and Appliances	25,015	$327 (9)	$8,186,269	$6,549,015
	Clothing and Clothing Accessories Stores	33,354	$434 (10)	$14,486,485	$11,589,188
	General Merchandise Stores	25,015	$283 (11)	$7,072,695	$5,658,156
	Other Retail Group	83,385	$357 (12)	$29,795,611	$23,836,488
	subtotal/weighted average (13)	166,769	$357	$59,541,060	$47,632,848
Non-Retail Uses (14)					
Bank/Financial	N/A	(12,574)	$0	N/A	N/A
Office, Other	N/A	8,835	$0	N/A	N/A
Common Space	N/A	29,303	$0	N/A	N/A
	subtotal	25,564	$0	--	--
Total		**137,072**	**$482**	**$66,130,338**	**$52,904,271**

Sources: Nielson, Trade Dimensions; Retail Maxim (see Exhibit B-1); and ALH Urban & Regional Economics.

Continued on next page

Exhibit 2
Rockridge Safeway Store
Rockridge Safeway Shopping Center Distribution of Net Sales Estimates
in 2011 Dollars

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(1) See Exhibit 1.
(2) ALH Urban & Regional Economics estimates that 80% of sales for this project will be attributed to consumers residing inside the market area.
(3) The analysis assumes that all of the incremental space will comprise grocery sales, as there is already a pharmacy located in this store.
(4) The sales per square foot estimates for Safeway were estimated by analyzing sales for representative Safeway stores in and near the market area provided by Nielson, Trade Dimensions.
(5) The sales per square foot estimate for the restaurant space is based on the average sales among major national restaurant chains. See the Retail Maxim summary data in Exhibit B-1, which provides a summary of average store sales among many stores and retail categories across the United States.
(6) CVS sales are categorized in the Other Retail category in the city level data reported by the State of California Board of Equalization. While this store serves the market primarily as a general merchandise store, its sales are retained in the category relevant to the BOE reported sales data.
(7) CVS nationally performs at approximately $800 per square foot according to Retail Maxim. However, when this store was fully utilized, it served more the function of a general merchandise store like Target than a pharmacy like most CVS or Walgreen stores. Moreover, the store has been contracting its sales area pending its potential demolition. Therefore, the analysis conservatively assumes sales performance of $158 per square foot comparable to an average of $315 per square foot spread across one-half the store area. The $315 per square foot rate is generally comparable to average Target store performance cited in Exhibit B-1.
(8) Retail tenants for the balance of the retail space have not yet been determined. ALH Urban & Regional Economics developed working assumptions for this space based upon professional judgment and experience in the retail industry. The assumptions include the following distributions by type of retail space: 15% each in home furnishings and appliances and general merchandise, 20% clothing and clothing accessories, and 50% other retail.
(9) The sales per square foot estimate for the home furnishings and appliances space is based on the domestics catgeory. See the Retail Maxim summary data in Exhibit B-1.
(10) The sales per square foot estimate for the clothing and clothing accessories stores space is based on the average for apparel. See the Retail Maxim summary data in Exhibit B-1.
(11) The sales per square foot estimate for the general merchandise space is based on the department stores catgeory. See the Retail Maxim summary data in Exhibit B-1.
(12) The sales per square foot estimate for the other retail space is based on the average of other retail categoeis. See the Retail Maxim summary data in Exhibit B-1.
(13) Presents total and weighted average sales for the net additional competitive retail space.
(14) There are no competitive retail sales associated with the Non-Retail service uses.

Exhibit 3: Rockridge Safeway Market Area and Competitive Grocery Stores

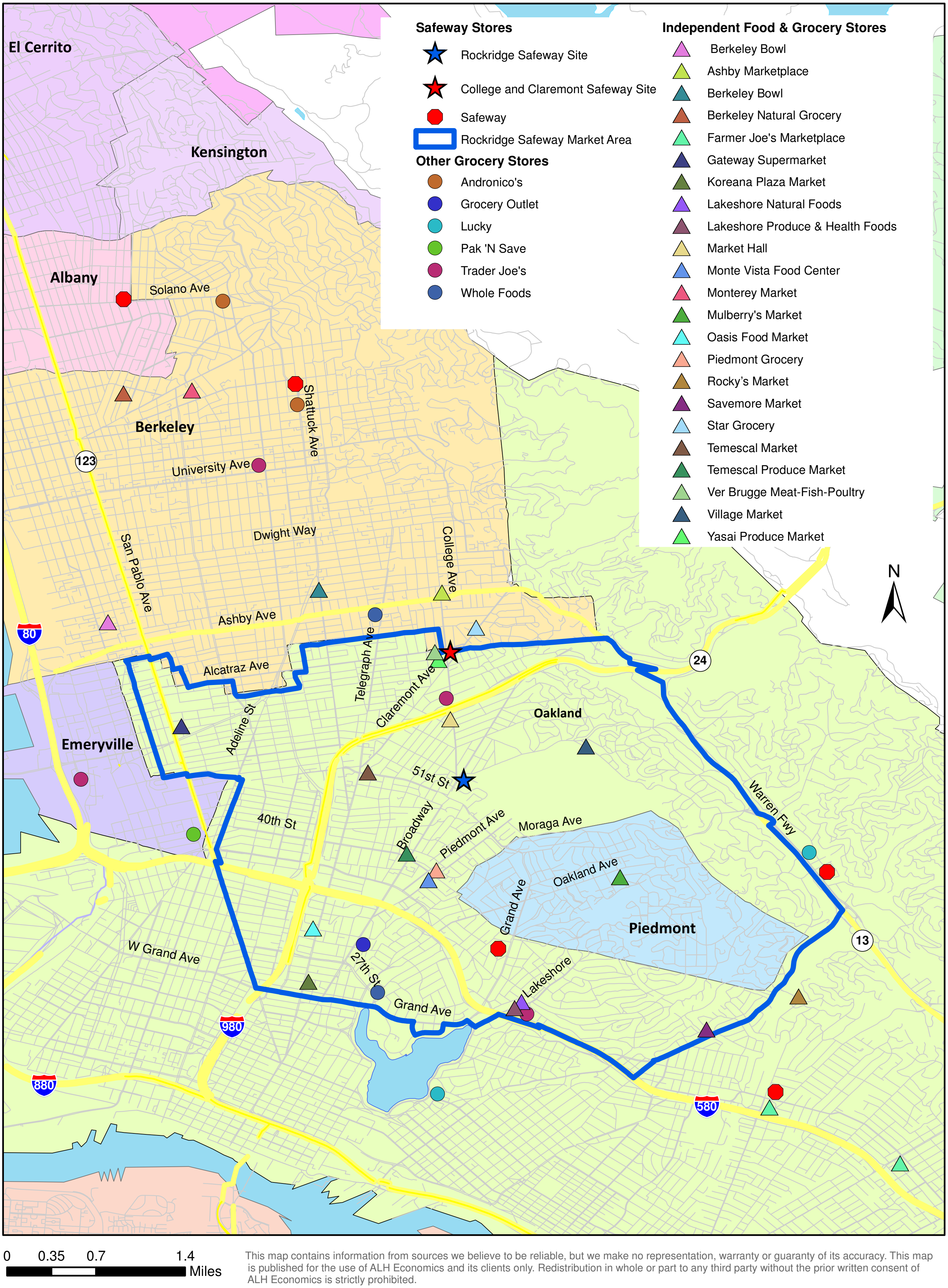
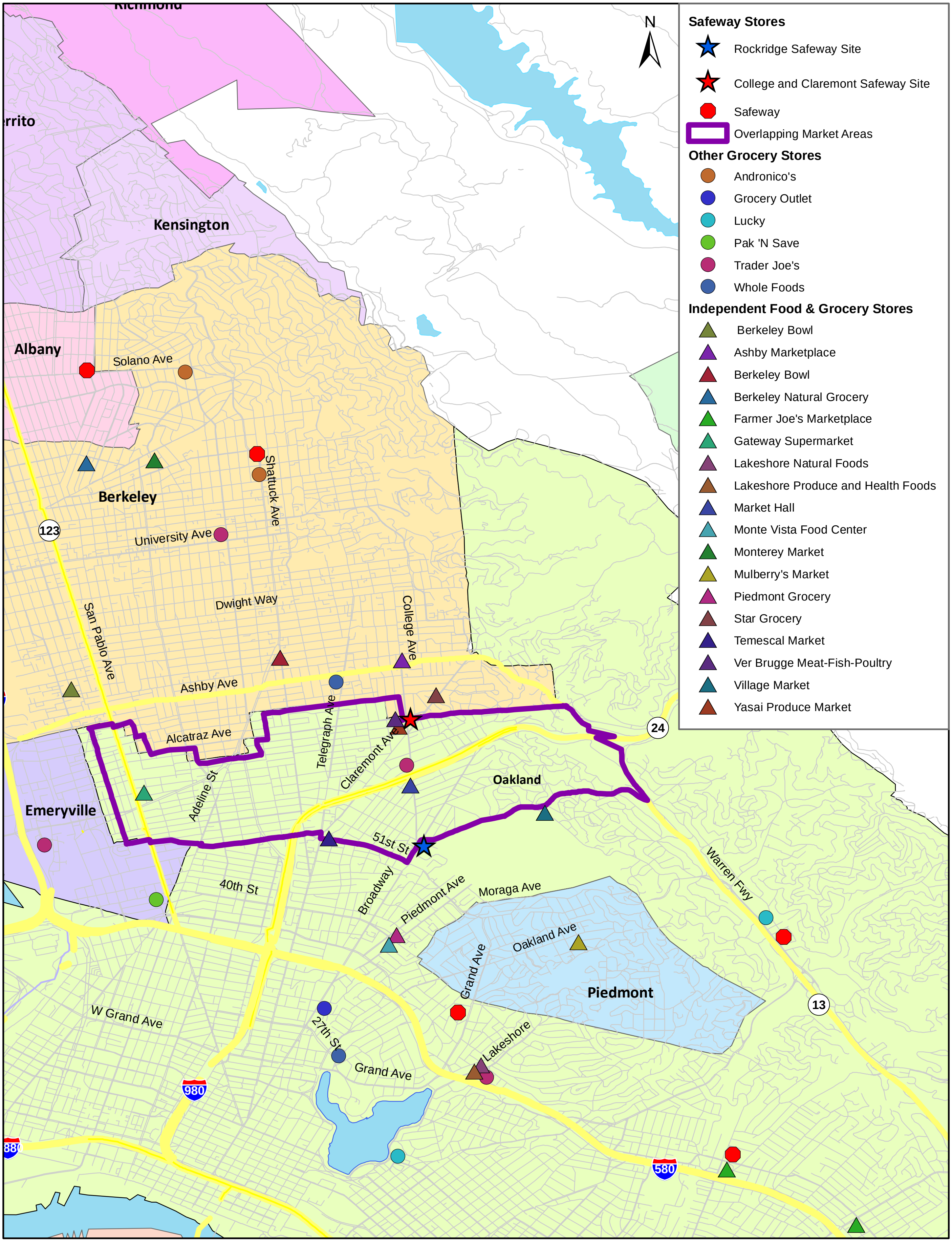


Exhibit 4: Rockridge and College & Claremont Safeways Overlapping Market Areas



0 0.375 0.75 1.5 Miles

This map contains information from sources we believe to be reliable, but we make no representation, warranty or guaranty of its accuracy. This map is published for the use of ALH Economics and its clients only. Redistribution in whole or part to any third party without the prior written consent of ALH Economics is strictly prohibited.

Exhibit 5
Rockridge Safeway Store
Household Estimates and Projections
Project Market Area
2000 - 2015

Geographies	2000 (1)	2010 (2)	2011 (3)	2012 (3)	2013 (3)	2014 (3)	2015 (3)	Compound Annual Average Growth Rates (4) 2010-2015
Households								
Rockridge Store Market Area	48,741	53,546	54,141	54,743	55,351	55,966	56,588	1.11%
Market Area in Common with College & Claremont Store (5)	12,929	15,060	15,139	15,218	15,297	15,377	15,458	0.52%
Population								
Rockridge Store Market Area	102,586	102,436	103,574	104,725	105,889	107,066	108,256	1.11%
Market Area in Common with College & Claremont Store (5)	28,928	28,950	29,101	29,254	29,407	29,560	29,715	0.52%

Sources: Claritas; U.S. Census Bureau, 2010 Census; 'Initial Vision Scenario' Report released by the Association of Bay Area Governments (ABAG) on March 11, 2011; and ALH Urban & Regional Economics.

(1) 2000 Census data provided by Claritas.
(2) 2010 Census data prepared by U.S. Census Bureau.
(3) ABAG provides household estimates and projections in five-year increments. Market area demographic estimates for 2011 to 2015 were prepared by ALH Urban & Regional Economics based on the estimated incremental growth rates between 2010-2015 provided by ABAG.
(4) The population compound annual average growth rate is assumed to be the same as the household growth rate, as only household projections are prepared by ABAG.
(5) Safeway is simultaneously engaged in the process of seeking approvals to expand the College & Claremont Safeway store. A comparable study for this study has also defined a market area, a portion of which overlaps with the Rockridge store. These data identify the demographic characteristics of the overlapping area.

Exhibit 6
Rockridge Safeway Store
City of Oakland Taxable Sales and Share of Market Area Sales in the City of Oakland
in Current Dollars
Second Half 2009 and First Half 2010

Type of Retailer	Taxable Retail Sales: Q3 2009 [A]	Q4 2009 [B]	Q1 2010 [C]	Q2 2010 [D]	Total Taxable Sales in City of Oakland [E = A + B + C + D]		Retail Sales in City of Oakland Adjusted for Total Sales (1) [F]	Ratio of Market Area Portion to City (2) [G]	City of Oakland Portion of Market Area Retail Sales [H = G * F]
Motor Vehicle and Parts Dealers	$91,143,000	$76,792,000	$74,481,000	$82,354,000	$324,770,000		$324,770,000	56.6%	$183,918,151
Home Furnishings and Appliances	$30,645,000	$40,421,000	$29,786,000	$30,865,000	$131,717,000		$131,717,000	14.4%	$18,907,159
Building Materials and Garden Equip.	$44,043,000	$37,381,000	$34,491,000	$39,887,000	$155,802,000		$155,802,000	15.3%	$23,886,017
Food and Beverage Stores	$58,633,000	$64,567,000	$55,561,000	$60,451,000	$239,212,000	(3)	$797,373,333.33	39.1%	$311,958,364
Gasoline Stations	$108,168,000	$105,557,000	$107,270,000	$116,880,000	$437,875,000		$437,875,000	21.8%	$95,289,846
Clothing and Clothing Accessories	$14,817,000	$17,459,000	$14,789,000	$16,408,000	$63,473,000		$63,473,000	23.2%	$14,727,990
General Merchandise Stores	$20,994,000	$25,705,000	$19,446,000	$20,862,000	$87,007,000	(4)	$108,758,750.00	6.7%	$7,318,400
Food Services and Drinking Places	$121,765,000	$120,564,000	$117,142,000	$126,079,000	$485,550,000		$485,550,000	27.5%	$133,556,451
Other Retail Group	$69,410,000	$75,019,000	$66,850,000	$70,606,000	$281,885,000	(5)	$372,940,900	14.4%	$53,709,822
Total	**$559,618,000**	**$563,465,000**	**$519,816,000**	**$564,392,000**	**$2,207,291,000**		**$2,878,259,984**	**28.1%**	**$843,272,201**

Sources: California State Board of Equalization, "Taxable Sales in California" reports, for Third Quarter 2009, Fourth Quarter 2009, First Quarter 2010, and Second Quarter 2010; and ALH Urban & Regional Economics.

(1) See footnotes 3 through 5 regarding taxable sales adjustment.
(2) See Exhibits B-4, B-5, and B-6 for the analytical bridge between Claritas retail sales categories and BOE sales categories. The purpose of this exhibit is to estimate the share of Oakland retail sales occurring in the Oakland portion of the Rockridge store market area.
(3) Sales for Food and Beverage Stores have been adjusted to account for non-taxable sales; only 30.0% of all food store sales are estimated to be taxable.
(4) Sales for General Merchandise Stores have been adjusted to account for non-taxable food sales, since some General Merchandise Store sales include non-taxable food items. ALH Urban & Regional Economics estimates that at least 20% of General Merchandise sales are for grocery items that are also non-taxable. This estimate is based on analysis of the 2007 U.S. Economic Census, which attributes 21% of General Merchandise Stores sales to food.
(5) Sales for Other Retail Group have been adjusted to account for non-taxable drug store sales, since drug store sales are included in the Other Retail Group category. ALH Urban & Regional Economics estimates that 33.0% of drug store sales are taxable, based on discussions with the California BOE and examination of U.S. Census data. In Alameda County, drug store sales in Q3 2009, Q4 2009, Q1 2010 and Q2 2010 represented approximately 15.9% of all Other Retail Group sales. ALH Urban & Regional Economics applied that percentage and then adjusted upward for non-taxable sales.

Exhibit 7
Rockridge Safeway Store
City of Piedmont Taxable Sales Estimate, BOE Sales Adjusted per Claritas Benchmark (1)
in Current Dollars
Second Half 2009 and First Half 2010

		BOE Taxable Sales Estimate (3)					
Type of Retailer	**Claritas Percent of**	**Q3 2009** [A]	**Q4 2009** [B]	**Q1 2010** [C]	**Q2 2010** [D]	**Total Taxable Sales City of Piedmont** [E = A + B + C +D]	**City of Piedmont Taxable Sales Adjusted to Total Retail (4)**
Motor Vehicle and Parts Dealers	0.0%	$0	$0	$0	$0	$0	$0
Home Furnishings and Appliances	3.0%	$82,302	$83,580	$78,590	$81,328	$325,800	$325,800
Building Materials and Garden Equip.	35.8%	$967,406	$982,427	$923,775	$955,962	$3,829,569	$3,829,569
Food and Beverage Stores	26.3%	$711,863	$722,916	$679,757	$703,442	$2,817,977	$9,393,257
Gasoline Stations	4.2%	$113,401	$115,162	$108,286	$112,059	$448,909	$448,909
Clothing and Clothing Accessories	1.7%	$46,654	$47,378	$44,550	$46,102	$184,683	$184,683
General Merchandise Stores	8.7%	$236,581	$240,254	$225,911	$233,782	$936,527	$936,527
Food Services and Drinking Places	5.2%	$141,029	$143,218	$134,668	$139,360	$558,275	$558,275
Other Retail Group	15.0%	$405,765	$412,065	$387,464	$400,965	$1,606,259	$1,606,259
Total	**100.0%**	**$2,705,000**	**$2,747,000**	**$2,583,000**	**$2,673,000**	**$10,708,000**	**$17,283,280**

Sources: California State Board of Equalization (BOE), "Taxable Sales in California" reports, for Third Quarter 2009, Fourth Quarter 2009, First Quarter 2010, and Second Quarter 2010; Claritas; and ALH Urban & Regional Economics.

(1) The BOE does not release category sales data for the City of Piedmont due to concerns about confidentiality. The BOE provides totals for all retail and food services combined. To best allocate the sales by retail category for the purpose of compiling a market area retail sales base estimate the sales distribution is benchmarked to Claritas sales estimates by retail category for the City of Piedmont.
(2) See Exhibit B-7 for a breakdown of the 2010 Claritas Retail Sales estimates into BOE categories for the City of Piedmont.
(3) Total sales are pursuant to reporting by the BOE. The quarterly category sales are estimated based on the category percentages derived from Claritas, such as the 26.3% figure in Food and Beverage Stores.
(4) Sales for Food and Beverage Stores have been adjusted to account for non-taxable sales; only 30.0% of all food store sales are estimated to be taxable. Because of the limited retail offerings in Piedmont, no other retail categories are adjusted for non-taxable sales.

Exhibit 8
Rockridge Safeway Store
Market Area Retail Sales Base
in Current Dollars
Second Half 2009 and First Half 2010

Type of Retailer	Market Area Portion of City of Oakland (1) [A]	Market Area Portion of City of Piedmont (2) [B]	Total Retail Sales in Market Area [C = A + B]
Motor Vehicle and Parts Dealers	$183,918,151	$0	$183,918,151
Home Furnishings and Appliances	$18,907,159	$325,800	$19,232,959
Building Materials and Garden Equip.	$23,886,017	$3,829,569	$27,715,587
Food and Beverage Stores	$311,958,364	$9,393,257	$321,351,622
Gasoline Stations	$95,289,846	$448,909	$95,738,755
Clothing and Clothing Accessories	$14,727,990	$184,683	$14,912,673
General Merchandise Stores	$7,318,400	$936,527	$8,254,928
Food Services and Drinking Places	$133,556,451	$558,275	$134,114,727
Other Retail Group	$53,709,822	$1,606,259	$55,316,081
Total	**$843,272,201**	**$17,283,280**	**$860,555,482**

Source: ALH Urban & Regional Economics.

(1) See Exhibit 6.
(2) See Exhibit 7.

Exhibit 9
Overlapping Market Area of the Two Proposed Safeway Stores (1)
Market Area Retail Sales within City of Oakland
in 2010 Dollars

Type of Retailer	Claritas Retail Sales Estimates: Retail Sales of Common Market Areas within City of Oakland (2) [A]	Claritas Retail Sales Estimates: Total Retail Sales in City of Oakland (3) [B]	Claritas Retail Sales Estimates: Sales Ratio [C = A / B]	Estimated Common Market Area Sales Benchmarked to BOE Sales Data (4) [D = C * Oakland Sales]
Motor Vehicles & Parts	$1,517,044	$504,271,533	0.3%	$977,034
Home Furnishings and Appliances	$13,681,666	$207,079,039	6.6%	$8,702,513
Building Materials and Garden Equip	$5,818,781	$257,353,152	2.3%	$3,522,699
Food and Beverage Stores	$117,727,017	$1,094,670,503	10.8%	$85,754,009
Gasoline Stations	$42,891,157	$392,590,487	10.9%	$47,838,565
Clothing and Clothing Accessories	$6,047,473	$97,331,041	6.2%	$3,943,770
General Merchandise	$10,814,003	$249,816,651	4.3%	$4,707,923
Food Services and Drinking Places	$34,840,313	$509,491,060	6.8%	$33,203,162
Other Retail Group	$27,213,794	$848,833,065	3.2%	$11,956,576
Total	**$260,551,248**	**$4,161,436,531**	**6.3%**	**$200,606,249**

Source: ALH Urban & Regional Economics.

(1) See Exhibit 4 for a map of the overlapping area and Exhibit B-3 for a census tract definition of the overlapping area.
(2) See Exhibit B-8.
(3) See Exhibit B-5.
(4) Claritas common market area sales are benchmarked to the City of Oakland sales estimated in column F in Exhibit 6.

Exhibit 10
Rockridge Safeway Store
Market Area Retail Demand, Sales Attraction, and Spending Analysis (1)
2010
(in $000s)

	Per Household (2) (3)		Market Area	Market Area	Retail Sales Attraction/(Leakage)	
Type of Retailer	**Spending**	**Sales**	**Household Demand (4)**	**Sales (5)**	**Amount**	**Percent**
Motor Vehicles and Parts Dealers	$4,653	$22	$249,146	$183,918	-$65,228	-26.2%
Home Furnishings and Appliance Stores	$829	$174	$44,412	$19,233	-$25,179	-56.7%
Building Materials and Garden Equip. (6)	$2,525	$164	$135,210	$27,716	-$107,495	-79.5%
Food and Beverage Stores (7)	$4,827	$1,672	$258,448	$321,352	$62,903	19.6%
Gasoline Stations	$3,207	$905	$171,710	$95,739	-$75,971	-44.2%
Clothing and Clothing Accessories Stores	$1,336	$79	$71,523	$14,913	-$56,610	-79.1%
General Merchandise Stores (8)	$4,605	$108	$246,574	$8,255	-$238,319	-96.7%
Food Services and Drinking Places	$3,618	$844	$193,742	$134,115	-$59,627	-30.8%
Other Retail Group (9)	$3,399	$337	$181,988	$55,316	-$126,672	-69.6%
Total	**$28,998**	**$4,303**	**$1,552,753**	**$860,555**	**-$692,198**	**-44.6%**

Sources: Claritas; 2010 US. Census; and ALH Urban & Regional Economics.

(1) All figures are expressed in constant 2010 dollars.
(2) The household spending estimates were generated by ALH Urban & Regional Economics Retail Demand, Sales Attraction, and Spending Leakage Analysis.
(3) The household count is estimated at 53,546 per the 2010 U.S. Census. The analysis assumes an average household income in 2010 of $90,660 as estimated by Claritas, Inc.
(4) Represents per household spending multiplied by the market area household count.
(5) See Exhibit 8.
(6) Building Materials and Garden Equipment includes hardware stores, plumbing and electrical supplies, paint and wallpaper products, glass stores, lawn and garden equipment, and lumber.
(7) Sales for Food and Beverage stores have been adjusted to account for non-taxable sales; only 30% of all food store sales are estimated to be taxable.
(8) Sales for General Merchandise stores have been adjusted to account for non-taxable sales.
(9) Other Retail Group includes drugs stores, health and personal care, gifts, art goods and novelties, sporting goods, florists, photographic equipment and supplies, musical instruments, stationary and books, office and school supplies, second-hand merchandise, and miscellaneous other retail stores.

Exhibit 11
Rockridge Safeway Store
City of Oakland Retail Demand, Sales Attraction, and Spending Analysis (1)
2010
(in $000s)

Type of Retailer	Per Household (2) (3) Spending	Per Household (2) (3) Sales	City of Oakland Household Demand (4)	City of Oakland Sales (5)	Retail Sales Attraction/(Leakage) Amount	Retail Sales Attraction/(Leakage) Percent
Motor Vehicles and Parts Dealers	$4,326	$1,914	$734,208	$324,770	-$409,438	-55.8%
Home Furnishings and Appliance Stores	$699	$776	$118,652	$131,717	$13,065	9.9%
Building Materials and Garden Equip. (6)	$2,142	$918	$363,440	$155,802	-$207,638	-57.1%
Food and Beverage Stores (7)	$4,411	$4,698	$748,659	$797,373	$48,714	6.1%
Gasoline Stations	$3,013	$2,580	$511,394	$437,875	-$73,519	-14.4%
Clothing and Clothing Accessories Stores	$1,180	$374	$200,314	$63,473	-$136,841	-68.3%
General Merchandise Stores (8)	$4,098	$615	$695,487	$108,759	-$586,728	-84.4%
Food Services and Drinking Places	$3,173	$2,861	$538,409	$485,550	-$52,859	-9.8%
Other Retail Group (9)	$3,054	$2,462	$518,244	$372,941	-$145,303	-28.0%
Total	**$26,096**	**$17,199**	**$4,428,807**	**$2,878,260**	**-$1,550,547**	**-35.0%**

Sources: Claritas; 2010 U.S. Census; and ALH Urban & Regional Economics.

(1) All figures are expressed in constant 2010 dollars.
(2) The household spending estimates were generated by ALH Urban & Regional Economics Retail Demand, Sales Attraction, and Spending Leakage Analysis.
(3) The household count is estimated at 169,710 per the 2010 U.S. Census. The analysis assumes an average household income in 2010 of $73,662 as estimated by Claritas, Inc.
(4) Represents per household spending multiplied by the market area household count.
(5) See Exhibit 6.
(6) Building Materials and Garden Equipment includes hardware stores, plumbing and electrical supplies, paint and wallpaper products, glass stores, lawn and garden equipment, and lumber.
(7) Sales for Food and Beverage stores have been adjusted to account for non-taxable sales; only 30% of all food store sales are estimated to be taxable.
(8) Sales for General Merchandise stores have been adjusted to account for non-taxable sales.
(9) Other Retail Group includes drugs stores, health and personal care, gifts, art goods and novelties, sporting goods, florists, photographic equipment and supplies, musical instruments, stationary and books, office and school supplies, second-hand merchandise, and miscellaneous other retail stores.

Exhibit 12
Rockridge Safeway Store
Adjusted Market Area Retail Sales Base
2011 Estimate

	Sales Base			Household Demand			Retail Sales Attraction/(Leakage)	
Type of Retailer	2009/2010 (1)	Percent Increase (2)	2010/2011	2009/2010 (1)	Percent Increase (3)	2010/2011	Amount	Percent
Motor Vehicle and Parts Dealers	$183,918,151	9.6%	$201,574,294	$249,146,225	3.5%	$257,882,729	-$56,308,435	-21.8%
Home Furnishings and Appliances	$19,232,959	11.3%	$21,406,283	$44,412,208	3.5%	$45,969,556	-$24,563,273	-53.4%
Building Materials and Garden Equip.	$27,715,587	10.7%	$30,681,155	$135,210,412	3.5%	$139,951,669	-$109,270,514	-78.1%
Food and Beverage Stores	$321,351,622	8.5%	$348,666,510	$258,448,429	3.5%	$267,511,122	$81,155,388	23.3%
Gasoline Stations	$95,738,755	38.1%	$132,215,220	$171,709,546	3.5%	$177,730,673	-$45,515,453	-25.6%
Clothing and Clothing Accessories	$14,912,673	7.9%	$16,090,774	$71,522,817	3.5%	$74,030,820	-$57,940,046	-78.3%
General Merchandise Stores	$8,254,928	-5.2%	$7,825,672	$246,573,578	3.5%	$255,219,870	-$247,394,198	-96.9%
Food Services and Drinking Places	$134,114,727	3.7%	$139,076,972	$193,741,796	3.5%	$200,535,500	-$61,458,529	-30.6%
Other Retail Group	$55,316,081	-7.0%	$51,443,955	$181,988,317	3.5%	$188,369,877	-$136,925,922	-72.7%
Total	**$860,555,482**	**10.3%**	**$948,980,834**	**$1,552,753,329**	**3.5%**	**$1,607,201,817**	**-$658,220,983**	**-41.0%**

Sources: U.S. Bureau of Labor Statistics; Hinderliter de Llamas via the City of Oakland; and ALH Urban & Regional Economics.

(1) See Exhibit 10.
(2) The sales base is adjusted pursuant to 2010 to 2011 taxable retail sales trends in the City of Oakland retail districts that are included in the market area. Quarterly sales tax data for the areaswere provided by category through 3rd quarter 2011. Since the City of Oakland dominates the market area sales base, the analysis applies similar increases to the entire sales base,
(3) Percent increase based upon CPI index from September 2010 to September 2011.

Exhibit 13
Rockridge Safeway Store
Potential Sales Impacts
in 2011 Dollars

Retail Category	Market Area Sales for the Rockridge Safeway Store (1)	Market Area Sales Base (2)	Market Area: Leakage (3)	Market Area: Potential Project Recapture (4)	Sales Impacts: Amount	Sales Impacts: % of Market Area Sales Base
	[A]	[B]	[C]	[D]	[E = A - D]	[F = E / B]
Motor Vehicles and Parts Dealers	$0	$201,574,294	-$56,308,435	$0	$0	0.0%
Home Furnishings and Appliance Stores	$6,549,015	$21,406,283	-$24,563,273	-$3,274,508	$3,274,508	15.3%
Building Materials and Garden Equip	$0	$30,681,155	-$109,270,514	$0	$0	0.0%
Food and Beverage Stores	$10,904,320	$348,666,510	$0	$0	$10,904,320	3.1%
Gasoline Stations	$0	$132,215,220	-$45,515,453	$0	$0	0.0%
Clothing and Clothing Accessories Stores	$11,589,188	$16,090,774	-$57,940,046	-$11,589,188	$0	0.0%
General Merchandise Stores	$5,658,156	$7,825,672	-$247,394,198	-$5,658,156	$0	0.0%
Food Services and Drinking Places	$5,356,823	$139,076,972	-$61,458,529	-$5,356,823	$0	0.0%
Other Retail Group	$12,846,768	$51,443,955	-$136,925,922	-$12,846,768	$0	0.0%
Total	**$52,904,271**	**$948,980,834**	**-$739,376,371**	**-$38,725,443**	**$14,178,828**	**1.5%**

Source: ALH Urban & Regional Economics.

(1) See Exhibit 2.

(2) See Exhibit 12.

(3) See Exhibit 12. If there is no leakage, then the figure reported in this column is $0.

(4) Potential Project leakage recapture figures are based upon assumptions prepared by ALH Urban & Regional Economics. The assumptions vary by category, depending upon the nature of the prospective Project tenant, the type of existing Market Area retailers, and the likelihood that retailers outside the Market Area will continue to attract sales from the Market Area retailers due to their brand, national orientation, or regional prevalence.

Exhibit 14
Rockridge Safeway Store
New Demand Generated by Household Growth in the Market Area
2012-2015
in 2011 Dollars

Retail Category	Per Household Demand in 2011 Dollars (1)	Demand From New Households 2012-2015
	[A]	[B = A x 1,845] (2)
Motor Vehicles and Parts Dealers	$4,763	$8,789,991
Home Furnishings and Appliance Stores	$849	$1,566,883
Building Materials and Garden Equip	$2,585	$4,770,284
Food and Beverage Stores	$4,941	$9,118,177
Gasoline Stations	$3,283	$6,057,990
Clothing and Clothing Accessories Stores	$1,367	$2,523,357
General Merchandise Stores	$4,714	$8,699,227
Food Services and Drinking Places	$3,704	$6,835,298
Other Retail Group	$3,479	$6,420,630
Total	**$29,685**	**$54,781,839**

Source: ALH Urban & Regional Economics.

(1) Household demand is equal to the demand per category presented in Exhibit 10, adjusted upward to 2011 dollars based on the 3.5% inflation rate presented in Exhibit 11, and multiplied by the estimated new household growth.
(2) See Exhibit 5 for projections of 1,845 new market area households between 2012 and 2015.

Exhibit 15
Rockridge Safeway Store
Cumulative Major Retail Developments (10,000+ Square Feet)
Within and Near the Market Area (1)
June/July 2012

Project	City	Description	Estimated Net New Retail Square Footage	Status	Location	Distance From Safeway	Expected Opening/ Completion
Market Area							
1. Civiq -51st and Telegraph (2)	Oakland	This project will retain the previously approved entitlements or increase ground floor retail to19,600 square feet, 100 residential units, and 60,000 square feet of office space.	19,600	Approved	5110 Telegraph Avenue at 51st Street	0.6	N/A
2. Bev Mo!	Oakland	This project has submitted a CUP application to the City of Oakland to locate in space formerly occupied by Blockbuster Video.	5,622	Proposed	3868 Piedmont Avenue	1.0	2,013
3. Macarthur BART Transit Village (2)	Oakland	This is an affordable housing and redevelopment project located on 6.84 acres adjacent to the BART station. The project comprises 624 residential units, 42,500 square feet of retail/commercial space, and surface parking.	42,500	Under Construction, Phased	W. MacArthur Boulevard, Telegraph Avenue, 40th Street, and Highway 24	1.3	2020
4. Valdez & 23rd Street Project	Oakland	This project includes 281 residential units, 500-car parking structure, including 250 public spaces, and potential space for 12,000 square feet of retail.	12,000	Extension granted January 2009	Valdez and 23rd Streets	2.0	N/A
5. College & Claremont Safeway	Oakland	Redevelopment of existing shopping center with new 62,167-square-foot shopping center. This center will replace an existing 25,380 square foot center, resulting in a 36,787 net square feet of retail developed (see Exhibit 15).	36,787	Proposed	6310 College Avenue	1.1	2014
Outside the Market Area							
6. Kaiser Center	Oakland	This project includes demolition of 280,000 square feet, construction of 2 new towers: one 42-stories with 780,000 square feet of office space and one 34-stories with 565,000 square feet of office space, and potentially 22,000 square feet of retail.	22,000	Approved	300 Lakeside Drive	2.1	N/A
7. Pak 'N Save Foods	Emeryville	Store update, featuring redesigned northern façade including additional entry, replacement of all signs and two new signs, minor improvements to parking lot including new landscaping. The building permit application was received in September 2011.	0	Approved	3889 San Pablo Avenue	2.2	2012
8. Berkeley Iceland	Berkeley	This project entails redevelopment of the Berkeley Iceland facility. Sports Basement is planning to redevelop the property with 61,100 square feet of retail, 1,325 square feet of office, and 476 square feet of storage.	61,100	EIR in progress	2727 Milvia Street; southeast corner of Milvia and Derby	2.5	2013
9. Parkside Project	Emeryville	Construction of a new rental project with 168 residential units, 5 live-work units, 3 flex space units, 10,222 square feet of retail space including space for one restaurant, and 299 parking spaces. Project includes new park along Stanford Avenue to replace City parking lot.	10,222	Approved	Block bounded by Powell, Hollis, and Doyle streets and Stanford Avenue	2.5	2013
10. Jack London Square Redevelopment (2)	Oakland	Master Plan of 1.2 million square feet of mixed-use retail, commercial, and office. The remaining phase of the project includes a 140,000-square-foot office building, 250-room hotel, an eight-story, 155,000-square-foot office building, and 10,000 square feet of retail.	10,000	Approved Site	Alice, 2nd, and Harrison streets, and Embarcadero	3.2	N/A
11. Bay Street – Site A	Emeryville	Completion of development of South Bayfront Retail/Mixed Use Project PUD with a hotel and retail north of Christie Avenue. The preliminary site plan offers three retail spaces of 4,400, 6,000, and 10,000 square feet. Tenant types are unknown.	20,400	Proposed	NE of Christie Avenue and Shellmound Street	3.3	N/A

Exhibit 15
Rockridge Safeway Store
Cumulative Major Retail Developments (10,000+ Square Feet)
Within and Near the Market Area (1)
June/July 2012

Project	City	Description	Estimated Net New Retail Square Footage	Status	Location	Distance From Safeway	Expected Opening/ Completion
12. Bay Street – Site B	Emeryville	This project comprises a 150,000-square-foot Macy's department store and public parking garage.	150,000	Proposed	Shellmound and Powell streets	3.3	N/A
13. Gateway @ Emeryville	Emeryville	This is a mixed use project that includes 265 residential rental units, 14,100 square feet of retail space, and a 142- room hotel.	14,100	Proposed	5801 - 5861 Christie Avenue	3.3	N/A
14. Shattuck Safeway	Berkeley	Remodel an existing 28,250-square-foot Safeway grocery store, construct 17,250 square feet of new floor area, and extend the hours of operation for the store.	17,250	Under Construction	1425 Shattuck Avenue	3.9	2012
15. Oak to Ninth Mixed Use	Oakland	The project is part of a new planned waterfront zoning district comprising 64.2 acres and has the potential for 3,100 residential units, 200,000 square feet of commercial space (which would include neighborhood serving retail), 3,950 structured parking spaces, 29.9 acres public open space, 2 renovated marinas, 170 boat slips, and a wetlands restoration area. In January 2012 the Port Commission extended the deadline for the close of escrow until January 31, 2013. This project is estimated to break ground in 2013.	200,000 (3)	Approved	Waterfront site bounded by Fallon Street, Embarcadero Road, 10th Ave., and the Oakland Estuary	4.1	2015
16. Foothill Square Redevelopment Project	Oakland	Redevelopment and expansion of a 157,642 square-foot commercial shopping center to 200,916 square feet. Tenants include a new 71,950-square foot Foods Co., a decrease of the Ross store to 24,000 square feet, and many of the smaller existing tenants will remain. The existing 29,380-square-foot grocery space has been vacant for approximately six years. The total net new space is 43,274 square feet. They are schedule to break ground in 2012.	85,844 (4)	Approved	10700 MacArthur Boulevard	10.4	2013

Sources: Planning Departments in the cities of Oakland, Berkeley, and Emeryville; BevMo!'; Jayphares-Corporation, "Foothill Square Redevelopment Project Description"; San Francisco Business Journal, "Pulse Quickens on Oakland Waterfront," July 2011 and "Oakland's MacArthur Transit Village Breaks Ground," May 2011; The Temescal Merchants Association," CIVIQ," http://www.temescalmerchants.com/civiq.htm"; and ALH Urban & Regional Economics.

(1) Projects listed based on distance from the Project site.
(2) The project planner is not responding to queries. Information observed from other sources and may not be current.
(3) According to the project planner, the 200,000 square feet of commercial space would not likely consist of all retail; however, to be conservative, ALH Urban & Regional Economics is allocating all of the space to retail.
(4) Although the total net new square footage for Foothill Square is 43,724 square feet, ALH Urban & Regional Economics is including the entire Foods Co. in net new sales since the existing grocery space has been vacant for approximately six years.

Exhibit 16
College & Claremont Safeway Store
Project Description

Site Use		Net Change Square Feet Existing	Proposed	Net Change
Grocery		24,260	50,860	26,600
In-store Pharmacy (1)		0	650	650
	subtotal	**24,260**	**51,510**	**27,250**
Restaurant		0	2,744	2,744
Retail		1,120 (2)	7,913	6,793
	subtotal	**1,120**	**10,657**	**9,537**
Total		**25,380**	**62,167**	**36,787**

Sources: City of Oakland, "Safeway Shopping Center – College and Claremont Avenues Draft Environmental Impact Report," July 1, 2011; and ALH Urban & Regional Economics.

(1) The Safeway store upon completion will include a pharmacy. In July 2011, Safeway purchased the Chimes Pharmacy across College Avenue from the Safeway site. This site is now functioning as a Safeway facility, and the operation will be moved into the expanded Safeway upon completion.
(2) The existing space comprises shop space associated with the former 76 gasoline station and auto repair garage on the site. While this space will be replaced, the existing space is not currently generating any sales. Therefore, all of the proposed other retail space will comprise net new operational space.

Exhibit 17
College & Claremont Safeway Store
Distribution of Sales and Net Sales Estimates
in 2011 Dollars

				Net New Sales	
Store Characteristic	**California Board of Equalization Sales Category**	**Net New Square Feet (1)**	**Sales per Square Foot Estimates**	**Total**	**Generated by Shared Market Area Residents (2)**
Grocery	Food and Beverage Stores	26,600	$800 (3)	$21,280,000	$5,958,400
In-store Pharmacy	Other Retail	650	$800 (3)	$520,000	$145,600 (4)
subtotal		27,250		$21,800,000	$6,104,000
Restaurant	Food Services and Drinking Places	2,744	$449 (5)	$1,231,412	$344,795
Retail (6)	Other Retail	5,302	$357 (7)	$1,892,710	$529,959
	Apparel	2,611	$434 (8)	$1,133,300	$317,324
subtotal		7,913 (9)		$3,026,010	$847,283
Total/Weighted Average		**37,907**	**$687**	**$26,057,422.53**	**$7,296,078**

Source: ALH Urban & Regional Economics.

(1) See Exhibit 15.
(2) ALH Urban & Regional Economics estimates that 38 percent of the market area sales at the expanded College & Claremont Safeway will be attributed to consumers residing in the portion of this store's market area shared with the Rockridge Safeway. This is based on demographic data estimated by ALH Urban & Regional Economics and presented in a parallel urban decay analysis conducted for the College & Claremont Safeway Store, dated December 30, 2011.
(3) The sales per square foot estimates for Safeway were estimated by analyzing sales for representative Safeway stores in and near the market area provided by Nielson, Trade Dimensions.
(4) The pharmacy sales will not all be net new sales. To be conservative, however, the analysis treats these sales as net new to avoid underestimating the potential increment in new sales once the pharmacy operation is incorporated into the Safeway store space.
(5) The sales per square foot estimate for the restaurant space is based on the restaurant category, see Exhibit B-1.
(6) Tenants for this additional space have not yet been identified. Reflective of the general mix in the Project area, the analysis assumes tenants will comprise 2/3 in the Other Retail category, which includes gifts, books, jewelry, and florists, among others, and 1/3 in the Apparel category.
(7) The sales per square foot estimate for the Other Retail space is based on the average for Other Retail, see Exhibit B-1.
(8) The sales per square foot estimate for the Apparel space is based on the average for apparel, see Exhibit B-1.
(9) While only 6,793 square feet are net new per Exhibit 1, the existing space being replaced is currently vacant. Thus, all of the planned Other Retail space will generate net new sales.

Exhibit 18
Rockridge Safeway Store
Sales Estimates for Cumulative Projects (1)
in 2011 Dollars

Project Name	Miles From Safeway	Estimated Sq. Ft. (2)	Sales per Sq. Ft.	Total Sales	Estimated Sales Generated by Market Area Residents
		[A]	[B]	[C = A x B]	[D = A x % MA Sales]
Market Area					
1. Civiq, 51st and Telegraph	0.6	19,600	$411 (3)	$8,064,783	$8,064,783 (4)
2. BevMo!	1.0	5,622	$500 (5)	$2,811,000	$2,248,800 (6)
3. Macarthur BART Transit	1.3	42,500	$411 (3)	$17,487,412	$17,487,412 (4)
4. Valdez & 23rd Street Project	2.0	12,000	$411 (3)	$4,937,622	$2,468,811 (7)
5. College & Claremont Safeway	1.1	36,787	$687 (8)	$26,057,423	$7,296,078 (9)
Outside the Market Area					
6. Kaiser Center	2.1	22,000	$411 (3)	$9,052,308	$905,231 (10)
8. Berkeley Iceland/Sports Basement	2.5	61,100	$251 (11)	$15,336,100	$5,060,913 (10)
9. Parkside Project	2.5	10,222	$411 (3)	$4,206,031	$420,603 (10)
10. Jack London Square Redevelopment	3.2	10,000	$357 (14)	$3,573,279	$535,992 (10)
14. Shattuck Safeway	3.9	17,250	$800 (12)	$13,800,000	$2,760,000 (13)
15. Oak to Ninth Mixed Use	4.1	200,000	$357 (14)	$71,465,586	$7,146,559 (10)
16. Foothill Square Redevelopment Project	10.4				
Foods Co.		71,950	$467 (15)	$33,616,298	$1,680,815 (16)
Neighborhood Retail		13,894	$411 (3)	$5,716,944	$285,847 (16)
subtotal		85,844		$39,333,242	$1,966,662
Total		**522,925**		**$216,124,786**	**$56,361,844**

Sources: The Kroger Co., "Form 10-K Report for the Fiscal Year ending January 29, 2011"; and ALH Urban & Regional Economics.

(1) Projects with an undetermined timeline are too speculative to include their sales in this analysis, as well as projects that are too far from the Rockridge store site and too small to be considered competitive. Project numbers match the numbers on Exhibit 15.

(2) See Exhibit 15.
(3) Average sales per square foot for the neighborhood center category. See Exhibit B-1.
(4) ALH Urban & Regional Economics estimates that 100% of sales for this project will be attributed to consumers residing inside the market area.
(5) Average sales per square foot estimate for the BevMo! chain, across all store sizes based on generalized data research.
(6) ALH Urban & Regional Economics estimates that 80% of sales for this project will be attributed to consumers residing inside the market Area.
(7) ALH Urban & Regional Economics estimates that 50% of sales for this project will be attributed to consumers residing inside the market Area.
(8) See Exhibit 17 for derivation of average sales per square foot.
(9) ALH Urban & Regional Economics estimates that 38% of sales for this project will be attributed to consumers residing in the market area based on market area demographic overlap, see Exhibit 17.
(10) ALH Urban & Regional Economics estimates that 10% of sales for this project will be attributed to consumers residing from inside the market area.
(11) Average sales per square foot for the average of the sporting goods category, see Exhibit B-1.
(12) See Exhibit 2 for estimated area Safeway stores sale per square foot.
(13) ALH Urban & Regional Economics estimates that 20% of sales for this project will be attributed to consumers residing from inside the market area.
(14) Average sales per square foot for the average of the other retail categories, see Exhibit B-1.
(15) Average sales per square foot for the Foods Co. was calculated based on the annual 10-K report from The Kroger Co.. The reported total supermarket sales without fuel was $67.882 million, the total supermarket square footage was 149,000,000. The 2010 sales per square foot figure was then inflated to 2011 dollars based on the CPI for 2010 to 2011 of 2.6%.

(16) ALH Urban & Regional Economics estimates that 5% of sales for this project will be attributed to consumers residing from inside the market area.

Exhibit 19
Rockridge Safeway Store
Estimate of Cumulative Project Sales By BOE Category (1)
in 2011 Dollars

Planned Store Type (2)	Estimated Market Area Sales (3)	Building Materials and Garden Equip	Food and Beverage Stores	Clothing and Clothing Accessories Stores	General Merchandise Stores	Food Services and Drinking Places	Other Retail Group
Market Area							
1. Civiq, 51st and Telegraph	$8,064,783	$0	$3,225,913	$0	$1,612,957	$1,612,957	$1,612,957
2. Macarthur BART Transit	$17,487,412	$0	$0	$0	$0	$0	$17,487,412
3. Valdez & 23rd Street Project	$2,468,811	$0	$987,524	$0	$493,762	$493,762	$493,762
4. BevMo!	$2,248,800	$0	$2,248,800	$0	$0	$0	$0
Outside the Market Area							
5. College & Claremont Safeway (4)	$7,296,078	$0	$6,104,000	$317,324	$0	$344,795	$529,959
6. Kaiser Center	$905,231	$0	$362,092	$0	$181,046	$181,046	$181,046
8. Berkeley Iceland/Sports Basement	$5,060,913	$0	$0	$0	$0	$0	$5,060,913
9. Parkside Project	$420,603	$0	$168,241	$0	$84,121	$84,121	$84,121
10. Jack London Square	$535,992	$0	$0	$0	$0	$0	$535,992
14. Shattuck Safeway	$2,760,000	$0	$2,760,000	$0	$0	$0	$0
15. Oak to Ninth Mixed Use	$7,146,559	$357,328	$1,786,640	$357,328	$2,501,295	$1,071,984	$1,071,984
16. Foothill Square Redevelopment							
Foods Co.	$1,680,815	$0	$1,680,815	$0	$0	$0	$0
Neighborhood Retail	$285,847	$0	$114,339	$0	$57,169	$57,169	$57,169
	$1,966,662						
Total (5)	$54,113,044	$357,328	$19,438,365	$674,652	$4,930,351	$3,845,834	$27,115,315

Source: ALH Urban & Regional Economics.

(1) Retail categories to which no sales are allocated are not shown in this exhibit. Project numbers match the numbers on Exhibit 15.
(2) Retail allocations estimated by ALH Urban & Regional Economics, see Exhibit B-9.
(3) See Exhibit 18.
(4) All figures are 38% of estimated project sales, given the estimated share of demographic overlap between the College & Claremont Safeway Project's market area and the Rockridge Safeway Store market area. See footnote 2 in Exhibit 17.
(5) Figures may not total due to rounding.

Exhibit 20
Rockridge Safeway Store
Potential Sales Impacts from Cumulative Projects
in 2011 Dollars

Retail Category	Sales Generated by Market Area Residents: Rockridge Safeway (1) [A]	Sales Generated by Market Area Residents: Cumulative Projects (2) [B]	Sales Generated by Market Area Residents: Total	Market Area Sales Base (3) [C]	Market Area Leakage: Leakage (3) [D]	Market Area Leakage: Potential Cumulative Projects Recapture (4) [E]	Sales Impacts (5): Amount [F = A + B + D]	Sales Impacts (5): Percent of Market Area Sales Base [F = E / C]
Motor Vehicles and Parts Dealers	$0	$0	$0	$201,574,294	-$56,308,435	$0	$0	0.0%
Home Furnishings and Appliance Stores	$6,549,015	$0	$6,549,015	$21,406,283	-$24,563,273	-$3,274,508	$3,274,508	15.3%
Building Materials and Garden Equip	$0	$357,328	$357,328	$30,681,155	-$109,270,514	-$357,328	$0	0.0%
Food and Beverage Stores	$10,904,320	$19,438,365	$30,342,685	$348,666,510	$0	$0	$30,342,685	8.7%
Gasoline Stations	$0	$0	$0	$132,215,220	-$45,515,453	$0	$0	0.0%
Clothing and Clothing Accessories Stores	$11,589,188	$674,652	$12,263,840	$16,090,774	-$57,940,046	-$6,131,920	$6,131,920	38.1%
General Merchandise Stores	$5,658,156	$4,930,351	$10,588,507	$7,825,672	-$247,394,198	-$10,588,507	$0	0.0%
Food Services and Drinking Places	$5,356,823	$3,845,834	$9,202,657	$139,076,972	-$61,458,529	-$9,202,657	$0	0.0%
Other Retail Group	$12,846,768	$27,115,315	$39,962,083	$51,443,955	-$136,925,922	-$19,981,042	$19,981,042	38.8%
Total	**$52,904,271**	**$56,361,844**	**$109,266,115**	**$948,980,834**	**-$739,376,371**	**-$49,535,961**	**$59,730,154**	**6.3%**

Source: ALH Urban & Regional Economics.

(1) See Exhibit 2.
(2) See Exhibit 19.
(3) See Exhibit 12.
(4) Potential Cumulative Project leakage recapture figures are based upon assumptions prepared by ALH Urban & Regional Economics. The assumptions vary by category, depending upon the nature of the prospective Project tenant, the type of existing market area retailers, and the likelihood that retailers outside the market area will continue to attract sales from the market area retailers due to their brand, national orientation, or regional prevalence.
(5) Includes the proposed Rockridge Safeway store. Calculations of negative dollar values are shown as $0, indicating that no related impacts are anticipated.

Exhibit 21
Rockridge Safeway Store
City of Oakland Vacancy Trends
2006 Through Q1 2012

	Rentable Building Area						Leasing Activity		New Construction			
Period	# Bldgs	Total SF	Vacant SF	Percent Vacant	Occupied SF	Total Net Absorption	Total Deals	Total SF Leased	Number Delivered	RBA Delivered	# Under Const	RBA Under Const
2012 1Q	3,133	22,300,228	864,221	3.9%	21,436,007	389,757	47	67,202	1	345,840	0	0
2011 4Q	3,133	21,922,335	908,138	4.1%	21,014,197	(4,224)	16	53,241	0	0	1	345,840
2011 3Q	3,139	22,383,779	846,307	3.8%	21,537,472	64,702	27	38,275	0	0	1	10,367
2011 2Q	3,151	22,422,195	949,425	4.2%	21,472,770	23,640	25	55,440	0	0	1	10,367
2011 1Q	3,181	22,555,379	1,106,249	4.9%	21,449,130	(169,837)	32	51,283	0	0	0	0
2010 4Q	3,181	22,555,379	936,412	4.2%	21,618,967	11,773	22	48,202	0	0	0	0
2010 3Q	3,181	22,555,379	948,185	4.2%	21,607,194	915	15	28,666	0	0	0	0
2010 2Q	3,181	22,555,379	949,100	4.2%	21,606,279	(10,179)	26	63,451	1	14,740	0	0
2010 1Q	3,181	22,548,515	932,057	4.1%	21,616,458	(3,299)	37	60,699	1	4,974	1	14,740
2009 4Q	3,180	22,543,541	923,784	4.1%	21,619,757	148,311	36	67,643	2	11,720	2	19,714
2009 3Q	3,178	22,531,821	1,060,375	4.7%	21,471,446	(27,784)	31	65,918	2	40,430	4	31,434
2009 2Q	3,177	22,493,555	994,325	4.4%	21,499,230	(82,604)	44	74,386	1	10,000	5	57,124
2009 1Q	3,177	22,498,058	916,224	4.1%	21,581,834	(295,030)	30	62,728	2	6,062	6	67,124
2008 4Q	3,176	22,494,193	617,329	2.7%	21,876,864	195,064	12	41,703	2	193,874	5	56,492
2008 3Q	3,172	22,296,455	614,655	2.8%	21,681,800	69,262	23	51,588	0	0	9	254,230
2008 2Q	3,174	22,357,223	744,685	3.3%	21,612,538	(114,064)	13	27,925	0	0	7	248,168
2008 1Q	3,174	22,357,223	630,621	2.8%	21,726,602	53,352	16	18,794	4	27,781	3	224,304
2007 4Q	3,172	22,333,306	660,056	3.0%	21,673,250	(4,486)	25	80,356	1	2,425	4	63,397
2007 3Q	3,170	22,328,975	651,239	2.9%	21,677,736	113,272	16	36,313	2	26,177	6	67,728
2007 2Q	3,167	22,192,798	628,334	2.8%	21,564,464	140,401	2	24,798	0	0	6	178,082
2007 1Q	3,165	22,186,898	762,835	3.4%	21,424,063	157,817	9	45,472	7	186,388	8	183,982
2006 4Q	3,164	22,308,089	1,041,843	4.7%	21,266,246	(44,526)	10	40,063	0	0	10	228,293
2006 3Q	3,164	22,308,089	997,317	4.5%	21,310,772	(18,194)	2	6,439	1	28,875	5	72,913
2006 2Q	3,161	22,269,620	940,654	4.2%	21,328,966	4,104	5	13,526	0	0	5	98,112
2006 1Q	3,161	22,269,620	944,758	4.2%	21,324,862	251,931	9	16,181	7	250,152	3	38,469

Sources: Costar; and CB Richard Ellis.

Available Oakland Retail Properties

1 255 2nd St - Jack London Square

Oakland, CA 94607

Alameda County

Building Type: **Retail/Parking Garage**
Building Status: **Built Sep 2009**
Building Size: **30,430 SF**
Land Area: **0.92 AC**
Stories: **1**
Parking: **1000 Covered Spaces are available**
For Sale: **Not For Sale**

Space Avail: **30,081 SF**
Max Contig: **30,081 SF**
Smallest Space: **10,000 SF**
Rent/SF/Mo: **Withheld**
% Leased: **1.2%**

Landlord Rep: **Cornish & Carey Commercial Newmark Knight Frank / Erika Elliott 415-445-5124 -- 30,081 SF (10,000-30,081 SF)**

Building Notes:

• Prime Jack London Square neighborhood serving retail space

• Connected to Jack London Market via sky-bridge

• Ground floor of 1000+ stall parking structure

• Easy access to AC Transit, Alameda/San Francisco ferry service, upcoming BART shuttle and Amtrak

• On-site property management

• Brand new construction

• 17' clear height

• Prominent signage available

• Short term street front parking

• Significant Enterprise Zone Tax incentives available

2 410-418 7th St

Oakland, CA 94607

Alameda County

Building Type: **Retail/Supermarket**
Building Status: **Built 1997**
Building Size: **18,367 SF**
Land Area: **0.26 AC**
Stories: **2**
Parking: **40 Covered Spaces are available; Ratio of 6.53/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **3,000 SF**
Max Contig: **3,000 SF**
Smallest Space: **3,000 SF**
Rent/SF/Mo: **$1.00/mg**
% Leased: **83.7%**

Landlord Rep: **Joyce Kung / Joyce Kung 510-708-7785 -- 3,000 SF (3,000 SF)**

Available Oakland Retail Properties

3 421-425 7th St - Eight Orchids

AKA Broadway & 7th St

Oakland, CA 94607

Alameda County

Building Type: **Retail/Storefront Retail/Residential**
Building Status: **Built Sep 2007**
Building Size: **6,318 SF**
Land Area: **0.82 AC**
Stories: **7**
Expenses: **2006 Tax @ $5.54/sf**
Parking: **45 Covered Spaces are available**
For Sale: **This property has 2 condos that are for sale. The size of the for sale condos range from 3,108 SF to 3,210 SF.**

Space Avail: **6,318 SF**
Max Contig: **3,210 SF**
Smallest Space: **3,108 SF**
Rent/SF/Mo: **Withheld**
% Leased: **0%**

Seller Rep (Condo): **Ellwood Commercial Real Estate /Patrick Ellwood 510-238-9111x10 Barbara Kami 510-238-9111x12(3,108-6,318 SF)**

Building Notes:

Prominent high-visibility ground floor retail suites located at the intersection of Broadway & 7th St.
Dramatic space in an architecturally significant luxury high-rise building.
Situated at the gateway to Oakland's Chinatown, Jack London Waterfront, Old Oakland & City Center/Central Business Districts.
Convenient location with easy access to major freeways (580 & 880) and public transportation (AC Transit, BART, Ferry).

4 367 8th St

AKA 735 Webster St

Oakland, CA 94607

Alameda County

Building Type: **Retail/Storefront Retail/Residential**
Building Status: **Existing**
Building Size: **10,960 SF**
Land Area: **0.13 AC**
Stories: **2**
Expenses: **2008 Tax @ $1.74/sf, 2012 Est Tax @ $1.85/sf; 2012 Est Ops @ $3.36/sf**
For Sale: **Not For Sale**

Space Avail: **5,672 SF**
Max Contig: **5,672 SF**
Smallest Space: **5,672 SF**
Rent/SF/Mo: **$4.07/nnn**
% Leased: **100%**

Landlord Rep: Company information unavailable at this time
Sublet Contact: **Charles Dunn, Inc. / Linda P. Lee 818-550-8200x102 -- 5,672 SF (5,672 SF)**

CBRE

Available Oakland Retail Properties

5 401-409 8th St - Phoenix Plaza

AKA 755 Franklin St

Oakland, CA 94607

Alameda County

Building Type: **Retail/Storefront Retail/Residential**
Building Status: **Built 1989**
Building Size: **43,468 SF**
Land Area: **-**
Stories: **4**
Expenses: **2012 Tax @ $0.32/sf; 2012 Est Ops @ $6.84/sf**
Parking: **50 free Covered Spaces are available**
For Sale: **Not For Sale**

Space Avail: **7,446 SF**
Max Contig: **2,615 SF**
Smallest Space: **948 SF**
Rent/SF/Mo: **$1.40 - $4.00/nnn**
% Leased: **82.9%**

Landlord Rep: **LOH Realty & Investment / Jillian Loh 510-339-9825x111 / Ricardo J. da Silva 510-339-9825x103 / Paul M. Loh 510-339-9825x101 -- 7,446 SF (948-2,615 SF)**

Building Notes:

Retail building on 8th St. Storefront space with signage.

Located in the Chinatown sub-market within easy walking distance to City Center and the Jack London Waterfront District.

Convenient access to major freeways (580, 980 & 24)and public transportation (AC Transit, BART)

6 388 9th St - Pacific Renaissance, Pacific Renaissance Plaza

Oakland, CA 94607

Alameda County

Building Type: **Retail/Storefront Retail/Office (Neighborhood Ctr)**
Building Status: **Built 1993**
Building Size: **88,000 SF**
Land Area: **2.24 AC**
Stories: **2**
Parking: **Free Surface Spaces**
For Sale: **Not For Sale**

Space Avail: **24,813 SF**
Max Contig: **6,117 SF**
Smallest Space: **616 SF**
Rent/SF/Mo: **$3.00/nnn**
% Leased: **71.8%**

Seller Rep (Condo): **Company information unavailable at this time**

Building Notes:

Property consists of retail/office portion of the "Pacific Renaissance Plaza", comprising approximately 88,000 SF on the first and second floors of the mixed use development, which has residential components above the subject property.

CBRE

Available Oakland Retail Properties

7 455-466 9th St - Old Oakland, Delger Block

AKA 901-969 Broadway

Oakland, CA 94607

Alameda County

Building Type: **Retail/Storefront Retail/Office (Neighborhood Ctr)**
Building Status: **Built 1900**
Building Size: **46,000 SF**
Land Area: **0.23 AC**
Stories: **2**
Expenses: **2009 Tax @ $1.29/sf**
For Sale: **Not For Sale**

Space Avail: **8,000 SF**
Max Contig: **8,000 SF**
Smallest Space: **8,000 SF**
Rent/SF/Mo: **$2.00/nnn**
% Leased: **82.6%**

Landlord Rep: **Cornish & Carey Commercial Newmark Knight Frank / Erika Elliott 415-445-5124 -- 8,000 SF (8,000 SF)**

Building Notes:

2/5/02: Added to PRS. AJarrett

8 3000-3100 E 9th St - The Fruitvale Station

Oakland, CA 94601

Alameda County

Building Type: **Retail/Freestanding (Neighborhood Ctr)**
Building Status: **Built 1996**
Building Size: **70,000 SF**
Land Area: **13 AC**
Stories: **1**
Expenses: **2008 Tax @ $8.61/sf, 2011 Est Tax @ $4.83/sf; 2011 Est Ops @ $5.28/sf**
Parking: **321 free Surface Spaces are available; Ratio of 4.58/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **14,296 SF**
Max Contig: **10,489 SF**
Smallest Space: **1,830 SF**
Rent/SF/Mo: **Withheld**
% Leased: **100%**

Landlord Rep: **Colliers International / Solomon Ets-Hokin 510-433-5840**
Leasing Company: **Colliers International / Solomon Ets-Hokin 510-433-5840 -- 14,296 SF (1, 830-10,489 SF)**

Building Notes:

Directly fronting the I-880 Freeway (477,000 ADT) and accessible via both Fruitvale Ave and 29th Ave. The site serves a population of over 470,000 in a 5 mile radius and over 270,000 in a 3 mile radius.

9 530 E 12th St

Oakland, CA 94606

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1965**
Building Size: **30,100 SF**
Land Area: **0.29 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.13/sf**
Parking: **10 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **10,000 SF**
Max Contig: **10,000 SF**
Smallest Space: **10,000 SF**
Rent/SF/Mo: **$0.75/mg**
% Leased: **66.8%**

Landlord Rep: **Alvin & Joan Clar / 415-284-5199**
Leasing Company: **The Sutherland Company / Thomas M. Fischer 510-893-0772x305 -- 10,000 SF (10,000 SF)**

CBRE

Available Oakland Retail Properties

10 802-820 E 12th St - Cakebreads Garage

Oakland, CA 94606

Alameda County

Building Type: **Retail/Auto Repair**
Building Status: **Built 1923**
Building Size: **16,500 SF**
Land Area: **0.50 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.69/sf**
Parking: **13 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **10,000 SF**
Max Contig: **10,000 SF**
Smallest Space: **10,000 SF**
Rent/SF/Mo: **Withheld**
% Leased: **39.4%**

Landlord Rep: **LMG LLC / Lisa Lee 510-251-2387 -- 10,000 SF (10,000 SF)**

11 3700 E 12th St

Oakland, CA 94601

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 1964, Renov 2005**
Building Size: **9,400 SF**
Land Area: **0.10 AC**
Stories: **3**
Expenses: **2008 Tax @ $1.73/sf**
For Sale: **Not For Sale**

Space Avail: **9,400 SF**
Max Contig: **9,400 SF**
Smallest Space: **275 SF**
Rent/SF/Mo: **$1.09 - $2.00/nnn**
% Leased: **0%**

Landlord Rep: **Amigo Realty / Robert Hernandez 650-776-3280 -- 9,400 SF (275-1,800 SF)**

Building Notes:

Complete renovation (exterior & interior) in progress including HVAC and electrical. The property offers great visibility/access.

12 272-274 14th St

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 1924**
Building Size: **17,175 SF**
Land Area: **0.11 AC**
Stories: **2**
Expenses: **2008 Tax @ $2.07/sf**
For Sale: **For Sale at $1,800,000 ($104.80/SF) - Active**

Space Avail: **17,175 SF**
Max Contig: **12,600 SF**
Smallest Space: **4,575 SF**
Rent/SF/Mo: **$1.25**
% Leased: **0%**

Sales Company: **TerraCotta Asset Management: Darren Cline (310) 706-4188**
Landlord Rep: **TerraCotta Asset Management / Darren Cline 310-706-4188 -- 17,175 SF (4, 575-12,600 SF)**

Building Notes:

Situated near the 12th Street BART Station, building features high ceilings, open floor plans, skylights, large operable windows & full-height 4,750 sf basement, which can be used for storage or additional leasable area.

Available Oakland Retail Properties

13 600-606 14th St

Oakland, CA 94612

Alameda County

Building Type: **Retail/Convenience Store**
Building Status: **Built 1982**
Building Size: **5,200 SF**
Land Area: **0.12 AC**
Stories: **1**
Expenses: **2008 Tax @ $1.48/sf**
Parking: **5 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **5,150 SF**
Max Contig: **5,150 SF**
Smallest Space: **5,150 SF**
Rent/SF/Mo: **Withheld**
% Leased: **1.0%**

Landlord Rep: **Lockehouse Retail Group / Nick Schmidter 650-692-3400 -- 5,150 SF (5,150 SF)**

14 307-333 20th St

Oakland, CA 94612

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1986**
Building Size: **15,000 SF**
Land Area: **1.44 AC**
Stories: **1**
Expenses: **2009 Tax @ $152.26/sf**
For Sale: **Not For Sale**

Space Avail: **3,150 SF**
Max Contig: **3,150 SF**
Smallest Space: **898 SF**
Rent/SF/Mo: **Withheld**
% Leased: **79.0%**

Landlord Rep: **Colliers International / Reesa Tansey 510-433-5808 -- 3,150 SF (898-2,252 SF)**

Building Notes:

Includes Starbucks, 24-hr Fitness and Togo's. Next to Lake Merritt. Walking distance to other shops and restaurants. Close to Hwy 580.

CBRE

Available Oakland Retail Properties

15 421 24th St

Oakland, CA 94612

Alameda County

Building Type: **Retail/Auto Repair**
Building Status: **Built 1920**
Building Size: **16,648 SF**
Land Area: **0.65 AC**
Stories: **1**

Space Avail: **16,500 SF**
Max Contig: **16,500 SF**
Smallest Space: **5,000 SF**
Rent/SF/Mo: **$0.75 - $1.00/tbd**
% Leased: **0.9%**

Expenses: **2008 Tax @ $0.72/sf**
Parking: **10 free Surface Spaces are available; Ratio of 3.27/1,000 SF**
For Sale: **For Sale at $7,150,000 as part of a portfolio of 3 properties - Active**

Sales Company: **California Commercial Investments: Gary M. Bettencourt (510) 268-8500 x33, Damian Fink (510) 268-8500 x35**

Landlord Rep: **California Commercial Investments / Gary M. Bettencourt 510-268-8500x33 -- 16,500 SF (5,000-10,000 SF)**

16 1419 34th Ave

AKA 3336-3340 E 14th St

Oakland, CA 94601

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 1930**
Building Size: **18,633 SF**
Land Area: **0.47 AC**
Stories: **3**
Expenses: **2008 Tax @ $0.81/sf**
Parking: **39 Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **6,500 SF**
Max Contig: **6,500 SF**
Smallest Space: **300 SF**
Rent/SF/Mo: **Withheld**
% Leased: **65.1%**

Landlord Rep: **Clyde Brewster / Clyde Brewster 925-487-8537 -- 6,500 SF (300-6,500 SF)**

Building Notes:

Broker reported a RBA of 18,633 SF comprised of grade level retail space at 7,000 SF, 2nd story office space at 7,133 SF, and 5,000 SF of unfinished basement space used as storage space.

Available Oakland Retail Properties

17 98 Broadway - Jack London Square, Pavilion 1

Jack London Square

Oakland, CA 94607

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **33,500 SF**
Land Area: **1.38 AC**
Stories: **1**
For Sale: **Not For Sale**

Space Avail: **33,500 SF**
Max Contig: **33,500 SF**
Smallest Space: **33,500 SF**
Rent/SF/Mo: **Withheld**
% Leased: **0%**

Landlord Rep: **Cornish & Carey Commercial Newmark Knight Frank / Erika Elliott 415-445-5124 -- 33,500 SF (33,500 SF)**

Building Notes:

- Prime Jack London Square waterfront retail space
- Excellent restaurant location – outdoor seating available
- Off-street and valet parking available
- Easy access to AC Transit, Alameda/San Francisco ferry service, upcoming BART shuttle and Amtrak
- On-site property management
- Adjacent to newly renovated Waterfront Hotel, managed by Joie de Vivre
- Significant Enterprise Zone Tax incentives available

18 1540-1544 Broadway

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Existing**
Building Size: **16,370 SF**
Land Area: **0.26 AC**
Stories: **2**
Expenses: **2008 Tax @ $1.93/sf**
For Sale: **For Sale at $1,950,000 ($119.12/SF) - Active**

Space Avail: **8,648 SF**
Max Contig: **4,748 SF**
Smallest Space: **668 SF**
Rent/SF/Mo: **$0.65 - $2.00/nnn**
% Leased: **47.2%**

Sales Company: **California Commercial Investments: Gary M. Bettencourt (510) 268-8500 x33, Damian Fink (510) 268-8500 x35**

Landlord Rep: **California Commercial Investments / Gary M. Bettencourt 510-268-8500x33 / Damian Fink 510-268-8500x35 -- 8,648 SF (668-4,748 SF)**

Building Notes:

This building is registered with the U.S. Green Building Council and is seeking LEED certification.

The property has 11,370 SF on the ground floor, 2,500 SF on the 2nd floor and a 2,500 SF basement.

CBRE

Available Oakland Retail Properties

19 1921-1933 Broadway

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1922**
Building Size: **22,700 SF**
Land Area: **0.27 AC**
Stories: **2**
Expenses: **2009 Tax @ $2.55/sf, 2012 Est Tax @ $1.25/sf; 2012 Ops @ $2.64/sf, 2011 Est Ops @ $1.32/sf**
For Sale: **Not For Sale**

Space Avail: **12,400 SF**
Max Contig: **12,400 SF**
Smallest Space: **12,400 SF**
Rent/SF/Mo: **$1.75/nnn**
% Leased: **45.4%**

Landlord Rep: **Mahmoud El-Miari & Mohammad El-Miari / Mark El-miaari 650-291-3316 / Mike El-miari 650-291-3315 -- 12,400 SF (12,400 SF)**

Building Notes:

Property Description: Storefront

20 2315-2323 Broadway

Oakland, CA 94612

Alameda County

Building Type: **Retail/Auto Dealership**
Building Status: **Built 1920**
Building Size: **20,425 SF**
Land Area: **0.49 AC**
Stories: **1**
Expenses: **2008 Tax @ $1.31/sf**
Parking: **50 free Surface Spaces are available; Ratio of 6.08/1,000 SF**
For Sale: **For Sale individually at $2,805,000 - Active; also for sale at $7,150,000 ($132.31/SF) as part of a portfolio of 3 properties - Active**

Space Avail: **10,000 SF**
Max Contig: **10,000 SF**
Smallest Space: **10,000 SF**
Rent/SF/Mo: **$1.25/fs**
% Leased: **51.0%**

Sales Company: **California Commercial Investments: Gary M. Bettencourt (510) 268-8500 x33, Damian Fink (510) 268-8500 x35**
Landlord Rep: **California Commercial Investments / Gary M. Bettencourt 510-268-8500x33 / Damian Fink 510-268-8500x35 -- 10,000 SF (10,000 SF)**

21 2337-2345 Broadway

AKA 2343 Broadway

Oakland, CA 94612

Alameda County

Building Type: **Retail/Auto Dealership**
Building Status: **Built 1918**
Building Size: **16,968 SF**
Land Area: **0.42 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.71/sf**
Parking: **20 Surface Spaces are available**
For Sale: **For Sale at $7,150,000 as part of a portfolio of 3 properties - Active**

Space Avail: **15,032 SF**
Max Contig: **5,700 SF**
Smallest Space: **3,732 SF**
Rent/SF/Mo: **$1.25/mg**
% Leased: **11.4%**

Sales Company: **California Commercial Investments: Gary M. Bettencourt (510) 268-8500 x33, Damian Fink (510) 268-8500 x35**
Landlord Rep: **California Commercial Investments / Damian Fink 510-268-8500x35 / Gary M. Bettencourt 510-268-8500x33 -- 15,032 SF (3,732-5,700 SF)**

CBRE

22 3020 Broadway

Oakland, CA 94611

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1915**
Building Size: **20,000 SF**
Land Area: **0.44 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.29/sf**
Parking: **4 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **7,714 SF**
Max Contig: **7,714 SF**
Smallest Space: **7,714 SF**
Rent/SF/Mo: **$1.25/mg**
% Leased: **61.4%**

Landlord Rep: **The Burrows Company / Bruce Burrows 925-788-5213 -- 7,714 SF (7,714 SF)**

23 4101 Broadway

AKA 310 41st St

Oakland, CA 94611

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Existing**
Building Size: **5,900 SF**
Land Area: **0.14 AC**
Stories: **1**
Expenses: **2009 Tax @ $1.15/sf**
For Sale: **For Sale at $845,000 ($143.22/SF) - Active**

Space Avail: **5,900 SF**
Max Contig: **5,900 SF**
Smallest Space: **5,900 SF**
Rent/SF/Mo: **$1.25/nnn**
% Leased: **0%**

Sales Company: **Cassidy Turley: Brian Collins (510) 267-6036, Gary Fracchia (510) 267-6042**
Landlord Rep: **Cassidy Turley / Brian Collins 510-267-6036 / Gary Fracchia 510-267-6042 -- 5,900 SF (5,900 SF)**

Building Notes:

Building features include open showroom with retail counter, rear warehouse, two GL doors, bonus mezzanine offices, three restrooms, and glass window line with high ceilings.

CBRE

Available Oakland Retail Properties

24 4220 Broadway

Oakland, CA 94611

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1962**
Building Size: **9,000 SF**
Land Area: **0.20 AC**
Stories: **1**
Expenses: **2009 Tax @ $1.09/sf**
Parking: **8 Surface Spaces are available**
For Sale: **For Sale at $3,250,000 ($361.11/SF) - Active**

Space Avail: **4,800 SF**
Max Contig: **4,800 SF**
Smallest Space: **530 SF**
Rent/SF/Mo: **$0.90/mg**
% Leased: **46.7%**

Sales Company: **Choe 2008 Family Trust: Dae Choe (510) 908-0550**
Landlord Rep: **Choe 2008 Family Trust / Dae Choe 510-908-0550 -- 4,800 SF (530-4,270 SF)**

25 4270 Broadway

Oakland, CA 94611

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **5,658 SF**
Land Area: **0.24 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.63/sf**
For Sale: **Not For Sale**

Space Avail: **5,658 SF**
Max Contig: **3,558 SF**
Smallest Space: **2,100 SF**
Rent/SF/Mo: **$1.00 - $1.80/mg**
% Leased: **0%**

Landlord Rep: **Jeremys Department Store / Jeremy Kidson 415-882-4929 -- 5,658 SF (2,100-3,558 SF)**

26 5100 Broadway - Rockridge Shopping Center, Rockridge Shopping Center

AKA 5130 Broadway

Oakland, CA 94611

Alameda County

Building Type: **Retail/(Community Ctr)**
Building Status: **Built 1968, Renov 1991**
Building Size: **152,224 SF**
Land Area: **12.30 AC**
Stories: **1**
Expenses: **2008 Tax @ $1.04/sf**
Parking: **750 free Surface Spaces are available; Ratio of 4.46/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **10,877 SF**
Max Contig: **10,877 SF**
Smallest Space: **10,877 SF**
Rent/SF/Mo: **Withheld**
% Leased: **92.9%**

Landlord Rep: **Cornish & Carey Commercial Newmark Knight Frank / Gwen White 925-974-0244 -- 10,877 SF (10,877 SF)**

Building Notes:

Rockridge Shopping Center is located at the southeast corner of Pleasant Valley Rd. and Broadway in the Rockridge/Piedmont District of Oakland. The Center is a primary "daily needs" shopping center for the affluent Rockridge and Piedmont Districts.

Available Oakland Retail Properties

27 3300 Broadway St

Oakland, CA 94611

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1920**
Building Size: **16,839 SF**
Land Area: **0.39 AC**
Stories: **1**
Expenses: **2009 Tax @ $1.40/sf**
Parking: **5 free Surface Spaces are available**
For Sale: **For Sale at $2,400,000 ($142.53/SF) - Active**

Space Avail: **11,280 SF**
Max Contig: **5,640 SF**
Smallest Space: **5,640 SF**
Rent/SF/Mo: **$1.25**
% Leased: **33.0%**

Sales Company: **California Commercial Investments: Damian Fink (510) 268-8500 x35**
Landlord Rep: **California Commercial Investments / Len Epstein 510-268-8500 / Damian Fink 510-268-8500x35 -- 11,280 SF (5,640 SF)**

Building Notes:

The building is a former Lloyd Wise Oldsmobile dealership and auto shop.

28 3475 Champion St

Oakland, CA 94602

Alameda County

Building Type: **Retail/Auto Repair**
Building Status: **Built 1921**
Building Size: **7,875 SF**
Land Area: **0.19 AC**
Stories: **1**
Expenses: **2009 Tax @ $0.82/sf**
Parking: **5 Surface Spaces are available; Ratio of 0.63/1,000 SF**
For Sale: **For Sale at $999,000 ($126.86/SF) - Active**

Space Avail: **7,875 SF**
Max Contig: **7,875 SF**
Smallest Space: **7,875 SF**
Rent/SF/Mo: **$0.63/fs**
% Leased: **0%**

Sales Company: **Century 21 Mission-Bishop: Ahmad Rismanchi (510) 796-2100**
Landlord Rep: **Century 21 Mission-Bishop / Ahmad Rismanchi 510-796-2100 -- 7,875 SF (7,875 SF)**

29 15 Embarcadero

Oakland, CA 94606

Alameda County

Building Type: **Retail/Restaurant**
Building Status: **Built 1970**
Building Size: **3,750 SF**
Land Area: **-**
Stories: **1**
Parking: **Ratio of 5.10/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **3,750 SF**
Max Contig: **3,750 SF**
Smallest Space: **3,750 SF**
Rent/SF/Mo: **$1.09/mg**
% Leased: **0%**

Landlord Rep: **Embarcadero Cove Enterprises, Inc. / Mark Fritschi 510-532-6684 / Raymond Bouchayer 510-532-6683 -- 3,750 SF (3,750 SF)**

Available Oakland Retail Properties

30 2926 Foothill Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1910**
Building Size: **4,480 SF**
Land Area: **0.10 AC**
Stories: **1**
Expenses: **2009 Tax @ $1.52/sf**
For Sale: **Not For Sale**

Space Avail: **4,480 SF**
Max Contig: **4,480 SF**
Smallest Space: **4,480 SF**
Rent/SF/Mo: **Withheld**
% Leased: **0%**

Landlord Rep: **MannEdge Properties / Simone Thelemaque 510-290-1004 -- 4,480 SF (4,480 SF)**

31 3561 Foothill Blvd - Foothill Pet Hospital

Oakland, CA 94601

Alameda County

Building Type: **Retail/Veterinarian/Kennel**
Building Status: **Built 1924**
Building Size: **3,450 SF**
Land Area: **0.19 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.46/sf**
Parking: **7 free Surface Spaces are available; Ratio of 2.84/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **3,450 SF**
Max Contig: **3,450 SF**
Smallest Space: **3,450 SF**
Rent/SF/Mo: **$1.50/+util**
% Leased: **0%**

Landlord Rep: **DeRose & Appelbaum Inc / Santino DeRose 415-781-7700x10 -- 3,450 SF (3,450 SF)**

Building Notes:

Property Description: VETERINARY HOSPITAL

Property Use Description: Veterinary Hospital/Clinic

32 3744 Foothill Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail**
Building Status: **Built 1930**
Building Size: **3,525 SF**
Land Area: **0.09 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.47/sf**
Parking: **2 free Surface Spaces are available**
For Sale: **For Sale at $288,000 ($81.70/SF) - Active**

Space Avail: **3,525 SF**
Max Contig: **3,525 SF**
Smallest Space: **3,525 SF**
Rent/SF/Mo: **Withheld**
% Leased: **0%**

Sales Company: **BC Realty: Bonnie H. Chui (510) 835-8888**
Landlord Rep: **BC Realty / Bonnie H. Chui 510-835-8888 -- 3,525 SF (3,525 SF)**

33 1616-1618 Franklin St

Oakland, CA 94612

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1940**
Building Size: **11,969 SF**
Land Area: **0.24 AC**
Stories: **2**
Expenses: **2008 Tax @ $0.53/sf**
For Sale: **Not For Sale**

Space Avail: **8,800 SF**
Max Contig: **8,800 SF**
Smallest Space: **3,300 SF**
Rent/SF/Mo: **$0.50/+util**
% Leased: **100%**

Landlord Rep: **Advent Properties, Inc / Benjamin Scott 510-250-7918 / Trimaine Eley 510-967-7896 -- 8,800 SF (3,300-5,500 SF)**

Building Notes:

Ideal for office/retail use. Excellent frontage on Franklin.

34 1714-1720 Franklin St

Between Lake Merritt & 14th

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 1926, Renov 1988**
Building Size: **27,654 SF**
Land Area: **0.29 AC**
Stories: **3**
Expenses: **2008 Tax @ $1.76/sf, 2012 Est Tax @ $1.90/sf; 2012 Est Ops @ $1.27/sf**
Parking: **14 Surface Spaces are available; Ratio of 0.50/1,000 SF**
For Sale: **For Sale at $3,550,000 ($128.37/SF) - Active**

Space Avail: **5,106 SF**
Max Contig: **3,206 SF**
Smallest Space: **1,900 SF**
Rent/SF/Mo: **$1.50**
% Leased: **81.5%**

Sales Company: **Cassidy Turley: John Dolby (510) 267-6027**
Landlord Rep: **Brown Commercial / Kevin Brown 510-844-0070 -- 5,106 SF (1,900-3,206 SF)**

Building Notes:

Well maintained office building with attractive lobby and common areas, central East Bay location with great freeway access; close proximity to City Center, the Kaiser Center, Lake Merritt, and 1-block to the Nineteenth Street BART station. Excellent space for nonprofits, engineers, architects, attorneys or general office. Additional monthly parking is available directly across the street.

This building includes a remodeled lobby, a modernized elevator, on-site storage, air conditioning and limited on-site parking. It includes a 7,242-SF basement.

The property is near BART & AC transit lines.

35 1014 Fruitvale Ave

Oakland, CA 94601

Alameda County

Building Type: **Retail/Auto Repair**
Building Status: **Existing**
Building Size: **2,659 SF**
Land Area: **0.15 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.58/sf**
For Sale: **For Sale at $299,000 ($112.45/SF) - Active**

Space Avail: **2,659 SF**
Max Contig: **2,659 SF**
Smallest Space: **2,659 SF**
Rent/SF/Mo: **$0.65/mg**
% Leased: **0%**

Sales Company: **The Mitchell Group: Jonathan Lien (925) 988-8033 x677**
Landlord Rep: **The Mitchell Group / Jonathan Lien 925-988-8033x677 -- 2,659 SF (2,659 SF)**

36 3166 Fruitvale Ave

Oakland, CA 94602

Alameda County

Building Type: **Retail/Storefront Retail/Residential**
Building Status: **Existing**
Building Size: **5,855 SF**
Land Area: **0.14 AC**
Stories: **2**
Expenses: **2008 Tax @ $0.55/sf**
For Sale: **Not For Sale**

Space Avail: **3,000 SF**
Max Contig: **3,000 SF**
Smallest Space: **3,000 SF**
Rent/SF/Mo: **$1.20/nnn**
% Leased: **48.8%**

Landlord Rep: **John Busk / John Busk 510-535-0355 -- 3,000 SF (3,000 SF)**

Building Notes:

This property is a single-story, general retail building totaling approximately 5,855sf. The building features street-parking only and is able to accomodate multiple tenants. This property features great visibility and high pedestrian traffic.

37 25-41 Grand Ave

AKA 2212-2214 Broadway

22nd Ave

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1920**
Building Size: **26,615 SF**
Land Area: **0.17 AC**
Stories: **1**
Expenses: **2009 Tax @ $0.42/sf**
Parking: **5 Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **7,400 SF**
Max Contig: **4,000 SF**
Smallest Space: **1,000 SF**
Rent/SF/Mo: **$2.20/nnn**
% Leased: **72.2%**

Landlord Rep: **Shahal Davoudi / Shala Davoudi 415-453-2125 -- 7,400 SF (1,000-4,000 SF)**

38 399 Grand Ave

Oakland, CA 94610

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **10,040 SF**
Land Area: **0.17 AC**
Stories: **2**
Expenses: **2012 Tax @ $1.08/sf; 2012 Est Ops @ $4.32/sf**
Parking: **20 free Surface Spaces are available; Ratio of 2.64/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **10,000 SF**
Max Contig: **10,000 SF**
Smallest Space: **3,000 SF**
Rent/SF/Mo: **$1.00/nnn**
% Leased: **0.4%**

Landlord Rep: **Wells & Bennett Realtors / Kelly Klingler 510-552-0452 -- 10,000 SF (3,000-7,000 SF)**

Available Oakland Retail Properties

39 3510-3516 Grand Ave

Oakland, CA 94610

Alameda County

Building Type: **Retail/Storefront Retail/Residential**
Building Status: **Existing**
Building Size: **3,090 SF**
Land Area: **0.12 AC**
Stories: **2**
Expenses: **2008 Tax @ $5.11/sf**
For Sale: **Not For Sale**

Space Avail: **3,090 SF**
Max Contig: **3,090 SF**
Smallest Space: **456 SF**
Rent/SF/Mo: **$17.88/nnn**
% Leased: **100%**

Landlord Rep: **Marketmasters of the Southeast, Inc. / Neil O'Donnell 904-272-0435x264 -- 3,090 SF (456-1,545 SF)**

40 1025 Harrison St

Oakland, CA 94607

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **5,380 SF**
Land Area: **0.06 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.40/sf**
For Sale: **Not For Sale**

Space Avail: **5,380 SF**
Max Contig: **5,380 SF**
Smallest Space: **780 SF**
Rent/SF/Mo: **$0.85/fs**
% Leased: **0%**

Landlord Rep: **Norheim & Yost / John Norheim 510-527-3400x10 -- 5,380 SF (780-4,600 SF)**

41 2344 Harrison St

Oakland, CA 94612

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **5,000 SF**
Land Area: **0.16 AC**
Stories: **1**
Expenses: **2008 Tax @ $1.15/sf**
Parking: **8 free Surface Spaces are available; Ratio of 0.84/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **5,000 SF**
Max Contig: **5,000 SF**
Smallest Space: **5,000 SF**
Rent/SF/Mo: **$3.00/nnn**
% Leased: **0%**

Landlord Rep: **Cushman & Wakefield of California / Grant Guidinger 415-773-3551 / David Scanlon 415-658-3612 -- 5,000 SF (5,000 SF)**

Available Oakland Retail Properties

42 1448-1470 High St - Highland Square, Highland Square

AKA 4330 International Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/(Neighborhood Ctr)**
Building Status: **Built 1960**
Building Size: **29,582 SF**
Land Area: **1.56 AC**
Stories: **1**
Expenses: **2008 Tax @ $1.16/sf**
Parking: **76 free Surface Spaces are available; Ratio of 2.26/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **8,791 SF**
Max Contig: **5,614 SF**
Smallest Space: **1,497 SF**
Rent/SF/Mo: **$1.43 - $2.00**
% Leased: **70.3%**

Landlord Rep: **LCB Associates / Steven Banker 510-763-7090x206 -- 8,791 SF (1,497-5,614 SF)**

43 2920 International Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1940**
Building Size: **13,000 SF**
Land Area: **0.09 AC**
Stories: **3**
Expenses: **2008 Tax @ $0.54/sf, 2011 Est Tax @ $0.58/sf; 2011 Est Ops @ $3.10/sf**
Parking: **24 Surface Spaces are available; Ratio of 2.00/1,000 SF**
For Sale: **For Sale at $949,000 ($73.00/SF) - Active**

Space Avail: **11,400 SF**
Max Contig: **11,400 SF**
Smallest Space: **3,800 SF**
Rent/SF/Mo: **$0.75/nnn**
% Leased: **100%**

Sales Company: **Robert Guitron: Robert Guitron (415) 318-9533**
Landlord Rep: **Vanguard Properties / Alex Kolovyansky 415-321-7000 -- 11,400 SF (3,800 SF)**

Building Notes:

Location Corner: NE

Property Description: Free Standing Retail Building

Available Oakland Retail Properties

44 3204 International Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Existing**
Building Size: **3,000 SF**
Land Area: **0.16 AC**
Stories: **2**
Expenses: **2008 Tax @ $1.25/sf**
Parking: **2 Surface Spaces are available**
For Sale: **For Sale - Active**

Space Avail: **3,000 SF**
Max Contig: **3,000 SF**
Smallest Space: **1,500 SF**
Rent/SF/Mo: **Withheld**
% Leased: **0%**

Sales Company: **Colliers International: Reesa Tansey (510) 433-5808**
Colliers International: Sandra Weck (925) 227-6230
Landlord Rep: **Colliers International / Reesa Tansey 510-433-5808 -- 3,000 SF (1,500 SF)**

45 3501-3507 International Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/Storefront**
Retail/Office
Building Status: **Built 1946**
Building Size: **9,152 SF**
Land Area: **0.12 AC**
Stories: **2**
Expenses: **2009 Tax @ $0.87/sf**
For Sale: **Not For Sale**

Space Avail: **3,200 SF**
Max Contig: **3,200 SF**
Smallest Space: **3,200 SF**
Rent/SF/Mo: **$0.69/mg**
% Leased: **65.0%**

Landlord Rep: **Valva Realty / Paul Valva 510-287-2383 -- 3,200 SF (3,200 SF)**

46 3751-3759 International Blvd - International Plaza

Oakland, CA 94601

Alameda County

Building Type: **Retail/Storefront**
Retail/Residential
Building Status: **Built 1930**
Building Size: **15,000 SF**
Land Area: **0.36 AC**
Stories: **2**
Expenses: **2007 Tax @ $3.15/sf; 2007 Ops @ $1.85/sf**
Parking: **6 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **7,500 SF**
Max Contig: **7,500 SF**
Smallest Space: **7,500 SF**
Rent/SF/Mo: **Withheld**
% Leased: **50.0%**

Landlord Rep: **Realty Professionals / Jane Yoon 510-410-7736 -- 7,500 SF (7,500 SF)**

CBRE

47 4030-4064 International Blvd - Plaza del Sol

Oakland, CA 94601

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1933**
Building Size: **28,000 SF**
Land Area: **0.77 AC**
Stories: **1**
Expenses: **2004 Tax @ $1.91/sf**
Parking: **14 Surface Spaces are available**
For Sale: **For Sale at $3,750,000 ($133.93/SF) - Active**

Space Avail: **27,682 SF**
Max Contig: **16,890 SF**
Smallest Space: **4,549 SF**
Rent/SF/Mo: **$1.19/nnn**
% Leased: **1.1%**

Sales Company: **Community Realty Property Management Inc: Sonia Dominguez (510) 530-1005**
Landlord Rep: **BC Realty / Bonnie H. Chui 510-835-8888 -- 27,682 SF (4,549-16,890 SF)**

Building Notes:

April/2004: Mason Au purchased the building from Achim & Koharig Ehrhardt. B.C. Realty represented both sides of the transaction.

48 4108 International Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built Jun 2010**
Building Size: **14,740 SF**
Land Area: **0.59 AC**
Stories: **2**
Parking: **Free Surface Spaces; Ratio of 3.26/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **8,740 SF**
Max Contig: **4,740 SF**
Smallest Space: **900 SF**
Rent/SF/Mo: **$1.00 - $2.00/mg**
% Leased: **40.7%**

Landlord Rep: **Steven Zheng / Steven Zheng 510-396-9863 -- 8,740 SF (900-4,740 SF)**

49 4240 International Blvd

AKA 4240 International Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1965**
Building Size: **14,168 SF**
Land Area: **1.32 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.78/sf**
Parking: **70 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **6,366 SF**
Max Contig: **6,366 SF**
Smallest Space: **6,366 SF**
Rent/SF/Mo: **$0.76/nnn**
% Leased: **100%**

Landlord Rep: Company information unavailable at this time
Sublet Contact: **NAI Northern California / Dante Guazzo 510-336-4714 -- 6,366 SF (6,366 SF)**

Available Oakland Retail Properties

50 4559 International Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/Storefront**
Retail/Residential
Building Status: **Built 1900**
Building Size: **13,006 SF**
Land Area: **0.32 AC**
Stories: **2**
Expenses: **2008 Tax @ $0.52/sf**
Parking: **3 One-Car Garage Spaces are available; 3 Surface Spaces are available; Ratio of 0.18/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **4,500 SF**
Max Contig: **4,500 SF**
Smallest Space: **4,500 SF**
Rent/SF/Mo: **$0.55/mg**
% Leased: **65.4%**

Landlord Rep: **MannEdge Properties / Simone Thelemaque 510-290-1004 -- 4,500 SF (4,500 SF)**

Building Notes:

Property Description: Storefront Retail/Residential

51 4568 International Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1915**
Building Size: **2,850 SF**
Land Area: **0.07 AC**
Stories: **1**
Expenses: **2008 Tax @ $2.16/sf**
For Sale: **For Sale at $250,000 ($87.72/SF) - Active**

Space Avail: **2,850 SF**
Max Contig: **2,850 SF**
Smallest Space: **2,850 SF**
Rent/SF/Mo: **$0.85/mg**
% Leased: **0%**

Sales Company: **Keller Williams: Aziz Khatri (510) 368-8347**
Landlord Rep: **Keller Williams / Aziz Khatri 510-368-8347 -- 2,850 SF (2,850 SF)**

52 4801 International Blvd

Oakland, CA 94601

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **3,500 SF**
Land Area: **0.09 AC**
Stories: **1**
Expenses: **2009 Tax @ $1.04/sf**
Parking: **4 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **3,500 SF**
Max Contig: **3,500 SF**
Smallest Space: **3,500 SF**
Rent/SF/Mo: **$0.86/nnn**
% Leased: **0%**

Landlord Rep: **Better Homes Mason McDuffie / Bert Benisch 415-921-0113 -- 3,500 SF (3,500 SF)**

CBRE

Available Oakland Retail Properties

53 7514 International Blvd

Oakland, CA 94621

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **4,500 SF**
Land Area: **0.14 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.85/sf**
Parking: **2 Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **4,500 SF**
Max Contig: **4,500 SF**
Smallest Space: **4,500 SF**
Rent/SF/Mo: **$0.67/mg**
% Leased: **0%**

Landlord Rep: **Ulises Jimenez / Tynia Nguyen 925-827-3183 -- 4,500 SF (4,500 SF)**

54 7933 International Blvd

Oakland, CA 94621

Alameda County

Building Type: **Retail/Auto Repair**
Building Status: **Existing**
Building Size: **4,500 SF**
Land Area: **0.23 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.91/sf**
Parking: **8 Surface Spaces are available**
For Sale: **For Sale at $700,000 ($155.56/SF) - Active**

Space Avail: **4,500 SF**
Max Contig: **4,500 SF**
Smallest Space: **4,500 SF**
Rent/SF/Mo: **$1.11/+util**
% Leased: **100%**

Sales Company: **Independent Real Estate Brokers: Archie Azizian (510) 301-0497**
Landlord Rep: **Independent Real Estate Brokers / Archie Azizian 510-301-0497 -- 4,500 SF (4,500 SF)**

55 10423 International Blvd

AKA 14th St

Oakland, CA 94603

Alameda County

Building Type: **Retail**
Building Status: **Built 1946**
Building Size: **4,400 SF**
Land Area: **0.46 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.42/sf**
Parking: **6 Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **4,400 SF**
Max Contig: **4,400 SF**
Smallest Space: **4,400 SF**
Rent/SF/Mo: **$1.25/nnn**
% Leased: **0%**

Landlord Rep: **Canela Property Management / Vanessa Orozco 510-536-7832x12 -- 4,400 SF (4,400 SF)**

Building Notes:

Property Description: RESTAURANT BUILDING

Available Oakland Retail Properties

56 10550 International Blvd - Service Bldg

Oakland, CA 94603

Alameda County

Building Type: **Retail/Auto Repair**
Building Status: **Built 1980**
Building Size: **6,262 SF**
Land Area: **1.78 AC**
Stories: **1**
Expenses: **2010 Tax @ $3.83/sf**
Parking: **27 Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **6,262 SF**
Max Contig: **6,262 SF**
Smallest Space: **6,262 SF**
Rent/SF/Mo: **$0.64/mg**
% Leased: **100%**

Landlord Rep: **Batarse Family Trust / Anthony A. Batarse 510-383-3646 -- 6,262 SF (6,262 SF)**

Building Notes:

Located one block from Durant Square Shopping Center with excellent exposure to traffic.

57 10550 International St - Showroom

AKA 10500 International Blvd

Oakland, CA 94603

Alameda County

Building Type: **Retail/Auto Dealership**
Building Status: **Built 1980**
Building Size: **5,550 SF**
Land Area: **1.78 AC**
Stories: **1**
Expenses: **2008 Tax @ $4.17/sf**
Parking: **30 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **5,550 SF**
Max Contig: **5,550 SF**
Smallest Space: **5,550 SF**
Rent/SF/Mo: **$0.90/mg**
% Leased: **100%**

Landlord Rep: **Batarse Family Trust / Anthony A. Batarse 510-383-3646 -- 5,550 SF (5,550 SF)**

Building Notes:

172 feet frontage with two story glass storefront on International Boulevard, just South of 105th Ave., near the San Leandro border. Located one block from Durant Square Shopping Center with excellent exposure to traffic.

Available Oakland Retail Properties

58 3014 Lakeshore Ave

Oakland, CA 94610

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 1960**
Building Size: **9,700 SF**
Land Area: **0.11 AC**
Stories: **2**
Expenses: **2009 Tax @ $1.53/sf**
For Sale: **Not For Sale**

Space Avail: **8,216 SF**
Max Contig: **8,216 SF**
Smallest Space: **4,108 SF**
Rent/SF/Mo: **$2.00/ig**
% Leased: **100%**

Landlord Rep: **DeRose & Appelbaum Inc / Santino DeRose 415-781-7700x10 -- 8,216 SF (4,108 SF)**

Building Notes:

9,700sf office building located across from Oakland's Lake Merritt.
Walk to the many shops, banks and restaurants of Lakeshore and Grand Lake Shopping districts.
Direct access to Interstate 580 (MacArthur Freeway) via "Laksehore/Grand Avenue" ramps.
19th Street BART Station serviced via AC Transit Line 12 for employees and visitors.
Two-story (plus basement and mezzanine) air-conditioned office building with 400 Amps of power.
Sited on a 4,900sf parcel within C-30 ("District Thoroughfare") zoning and completed in 1960.
Month-to-month and on-street parking nearby.

59 3233 Lakeshore Ave

Oakland, CA 94610

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1946**
Building Size: **4,895 SF**
Land Area: **0.13 AC**
Stories: **1**

Space Avail: **4,895 SF**
Max Contig: **4,895 SF**
Smallest Space: **2,450 SF**
Rent/SF/Mo: **$2.45 - $2.60/nnn**
% Leased: **0%**

Expenses: **2010 Est Tax @ $3.55/sf; 2010 Est Ops @ $3.60/sf**
Parking: **4 Surface Spaces are available**
For Sale: **Not For Sale**

Landlord Rep: **LCB Associates / Steven Banker 510-763-7090x206 / Ryan Dalton 510-763-7016 -- 4,895 SF (2,450-4,895 SF)**

Building Notes:

This is ground floor space located in one of Oakland's premier retail districts. Property is located across the street from a new Trader Joe's and Walgreens. There is metered parking in front of the building and free two-hour parking for patrons in the two-story City of Oakland parking structure.

CBRE

60 3300 Lakeshore Ave

Oakland, CA 94610

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 1943**
Building Size: **9,479 SF**
Land Area: **0.14 AC**
Stories: **2**
Expenses: **2009 Tax @ $3.65/sf**
For Sale: **Not For Sale**

Space Avail: **5,700 SF**
Max Contig: **2,850 SF**
Smallest Space: **2,850 SF**
Rent/SF/Mo: **$1.30 - $2.75/nnn**
% Leased: **100%**

Landlord Rep: **Silver Capital Investments / Jonathan Silverstein 201-248-9615 -- 5,700 SF (2,850 SF)**

61 3303 Lakeshore Ave

Oakland, CA 94610

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Existing**
Building Size: **3,248 SF**
Land Area: **0.10 AC**
Stories: **1**
Expenses: **2008 Tax @ $4.17/sf**
For Sale: **Not For Sale**

Space Avail: **2,836 SF**
Max Contig: **2,836 SF**
Smallest Space: **2,836 SF**
Rent/SF/Mo: **$2.85/nnn**
% Leased: **12.7%**

Landlord Rep: **LCB Associates / Steven Banker 510-763-7090x206 -- 2,836 SF (2,836 SF)**

62 3525-3533 MacArthur Blvd

Oakland, CA 94619

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1945**
Building Size: **15,012 SF**
Land Area: **1.03 AC**
Stories: **1**
Expenses: **2012 Tax @ $2.24/sf; 2012 Ops @ $1.92/sf, 2011 Est Ops @ $2.04/sf**
Parking: **67 free Surface Spaces are available; Ratio of 3.93/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **7,100 SF**
Max Contig: **7,100 SF**
Smallest Space: **3,100 SF**
Rent/SF/Mo: **$2.00/nnn**
% Leased: **52.7%**

Landlord Rep: **Retail Pacific, Inc. / Greg Labarthe 925-743-9888 -- 7,100 SF (3,100-7,100 SF)**

Building Notes:

The property is a general retail building with a great mix of tenants. Generous parking.

63 3835-3841 Macarthur Blvd

Oakland, CA 94619

Alameda County

Building Type: **Retail/Storefront Retail/Residential**
Building Status: **Existing**
Building Size: **8,752 SF**
Land Area: **0.16 AC**
Stories: **2**
Expenses: **2008 Tax @ $0.52/sf**
For Sale: **Not For Sale**

Space Avail: **2,500 SF**
Max Contig: **2,500 SF**
Smallest Space: **2,500 SF**
Rent/SF/Mo: **$1.00/+util**
% Leased: **71.4%**

Landlord Rep: **Selective Cuts / Rell Greffen 510-530-1314 -- 2,500 SF (2,500 SF)**

64 4001-4005 Macarthur Blvd

Oakland, CA 94619

Alameda County

Building Type: **Retail/Convenience Store**
Building Status: **Existing**
Building Size: **3,417 SF**
Land Area: **0.11 AC**
Stories: **1**
Expenses: **2009 Tax @ $2.23/sf**
Parking: **20 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **3,211 SF**
Max Contig: **3,211 SF**
Smallest Space: **3,211 SF**
Rent/SF/Mo: **$0.78/mg**
% Leased: **100%**

Landlord Rep: **Intero Real Estate Services, Inc. / Margaret Lin 510-489-8989 -- 3,211 SF (3,211 SF)**

65 4139 Macarthur Blvd

Oakland, CA 94619

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1927**
Building Size: **2,500 SF**
Land Area: **0.06 AC**
Stories: **1**
Expenses: **2009 Tax @ $2.03/sf**
Parking: **4 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **2,500 SF**
Max Contig: **2,500 SF**
Smallest Space: **2,500 SF**
Rent/SF/Mo: **$1.00/nnn**
% Leased: **0%**

Landlord Rep: **Community Realty Property Management Inc / Mike Marr 510-530-1005 / Elsa Trujillo 510-530-1005 -- 2,500 SF (2,500 SF)**

Available Oakland Retail Properties

66 7954-7956 Macarthur Blvd

AKA 6601 Macarthur Blvd

Oakland, CA 94605

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Existing**
Building Size: **4,202 SF**
Land Area: **0.20 AC**
Stories: **2**
Expenses: **2008 Tax @ $0.48/sf**
Parking: **5 free Surface Spaces are available; Ratio of 1.19/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **4,202 SF**
Max Contig: **4,202 SF**
Smallest Space: **4,202 SF**
Rent/SF/Mo: **$0.60/mg**
% Leased: **0%**

Landlord Rep: **Jay-Phares Corp. / Marcus Tartt 510-562-9500 -- 4,202 SF (4,202 SF)**

Building Notes:

4,202 SF of showroom/shop/storage space. Possible redevelopment site w/corner location, close to Highway 13.

67 10715-10739 Macarthur Blvd

Oakland, CA 94605

Alameda County

Building Type: **Retail**
Building Status: **Built 1994**
Building Size: **21,500 SF**
Land Area: **0.80 AC**
Stories: **1**
Expenses: **2008 Tax @ $1.67/sf**
Parking: **32 free Surface Spaces are available; Ratio of 1.49/1,000 SF**
For Sale: **For Sale at $1,950,000 ($90.70/SF) - Active**

Space Avail: **17,459 SF**
Max Contig: **14,759 SF**
Smallest Space: **2,700 SF**
Rent/SF/Mo: **$0.95/nnn**
% Leased: **18.8%**

Sales Company: **Prudential California Realty: Jerry Morks (650) 871-3654**
Landlord Rep: **Prudential California Realty / Jerry Morks 650-871-3654 -- 17,459 SF (2,700-14,759 SF)**

Building Notes:

The property is a mutitenant storefront retail building with several units. One unit is approved for restaurant use. Excellent exposure and corner location.

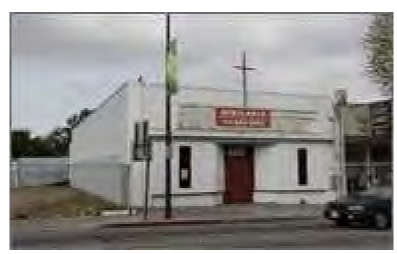
68 4251 Macarthur Fwy

Oakland, CA 94619

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **2,800 SF**
Land Area: **0.08 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.92/sf**
Parking: **4 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **2,800 SF**
Max Contig: **2,800 SF**
Smallest Space: **2,800 SF**
Rent/SF/Mo: **Withheld**
% Leased: **0%**



Landlord Rep: **Marquardt Property Management / Judy Norris 510-530-2050 -- 2,800 SF (2,800 SF)**

CBRE

Available Oakland Retail Properties

69 900 Market St - Jack London Gateway, Jack London Gateway

Oakland, CA 94607

Alameda County

Building Type: **Retail/Freestanding (Neighborhood Ctr)**
Building Status: **Built 1983**
Building Size: **64,400 SF**
Land Area: **7 AC**
Stories: **1**
Expenses: **2009 Est Ops @ $3.60/sf**
Parking: **354 Surface Spaces are available; Ratio of 5.50/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **19,185 SF**
Max Contig: **15,720 SF**
Smallest Space: **1,200 SF**
Rent/SF/Mo: **$1.85 - $2.00/nnn**
% Leased: **70.2%**

Seller Rep (Condo): **Company information unavailable at this time**

70 2110-2126 Market St

AKA 2126 Market St

Oakland, CA 94607

Alameda County

Building Type: **Retail/Auto Repair**
Building Status: **Built 1950**
Building Size: **6,141 SF**
Land Area: **0.45 AC**
Stories: **1**
Expenses: **2009 Tax @ $1.33/sf**
Parking: **10 Surface Spaces are available**
For Sale: **For Sale at $1,650,000 ($268.69/SF) - Active**

Space Avail: **6,141 SF**
Max Contig: **6,141 SF**
Smallest Space: **6,141 SF**
Rent/SF/Mo: **$1.30/mg**
% Leased: **100%**

Sales Company: **New Star Realty Inc: John So (650) 652-2406**
Landlord Rep: **New Star Realty Inc / John So 650-652-2406 -- 6,141 SF (6,141 SF)**

Building Notes:

An approx. 6,141 square foot building w/a 3br house on 19,487 square foot lot. Currewntly an auto body shop.

71 1919 Martin Luther King Jr Way - Sterling Towers

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront Retail/Residential**
Building Status: **Built 1920**
Building Size: **4,600 SF**
Land Area: **0.12 AC**
Stories: **4**
Expenses: **2010 Tax @ $2.00/sf**
For Sale: **Not For Sale**

Space Avail: **3,800 SF**
Max Contig: **3,800 SF**
Smallest Space: **1,800 SF**
Rent/SF/Mo: **$2.75/nnn**
% Leased: **17.4%**

Landlord Rep: **Monica H Hujazi / Monica Hujazi 650-685-8550 -- 3,800 SF (1,800-2,000 SF)**

Building Notes:

4 story apartment complex with ground floor Retail/Office space

CBRE

Available Oakland Retail Properties

72 3521 Maybelle Ave

Oakland, CA 94619

Alameda County

Building Type: **Retail/Storefront Retail/Residential**
Building Status: **Built 1974**
Building Size: **11,155 SF**
Land Area: **0.48 AC**
Stories: **1**
Expenses: **2009 Tax @ $1.44/sf**
Parking: **11 Surface Spaces are available; Ratio of 1.17/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **3,400 SF**
Max Contig: **3,400 SF**
Smallest Space: **3,400 SF**
Rent/SF/Mo: **$0.97/+util**
% Leased: **69.5%**

Landlord Rep: **Yee/Joe Family Trust / Richard Yee 415-564-6001 -- 3,400 SF (3,400 SF)**

Building Notes:

Building is ground floor retail with residential. The subject property consists of a 3,400 SF storefront retail space and 7 residential units behind this.

Available Oakland Retail Properties

73 7201 Oakport St

Oakland, CA 94621

Alameda County

Building Type: **Retail/Auto Dealership**
Building Status: **Built 2005**
Building Size: **21,225 SF**
Land Area: **4.35 AC**
Stories: **1**
Expenses: **2009 Tax @ $7.61/sf**
Parking: **120 free Surface Spaces are available; Ratio of 6.45/1,000 SF**
For Sale: **For Sale - Active**

Space Avail: **21,225 SF**
Max Contig: **21,225 SF**
Smallest Space: **21,225 SF**
Rent/SF/Mo: **Withheld**
% Leased: **0%**

Sales Company: **Jones Lang LaSalle: Sam Swan (510) 465-9401**
Jones Lang LaSalle: Jason Ovadia (925) 944-2168, Kevin R. Ahaesy (925) 944-2140

Landlord Rep: **Jones Lang LaSalle / Sam Swan 510-465-9401 -- 21,225 SF (21,225 SF)**

Building Notes:

Office Area:
• 2,220 s.f. parts storage room with 20'clear height, HVAC and roll up grade level door
• Manager's office
• Kitchen/Lunch room for general staff
• Separate men's and women's bathrooms

Warehouse Area:
• Concrete block construction
• 2005 Construction
• Fully insulated
• 6,600 s.f. auto repair shop with18' clear height
Fully equipped former auto dealership - Can be acquired with or without automotive contents.
• Four (4) grade level roll up doors with drive through access
• Alignment rack and Quick Lift
• Skylights throughout
• Eye-On alarm system with video surveillance
• Sprinkler Density: .20/1,500
• Power: 800 AMPS 3phase 4 wire 480/277 Volts
• 22 inch slab thickness
• Floor drains to sanitary sewer with interceptor for oil and gas
• Exhaust system
• Fully secured, paved and fenced yard with lights
• Covered Wash Bay
• Roof is TPO Construction
• Men's and women's restroom with lockers for the warehouse and separate break room/dining area for warehouse
• Zoning:IO (Industrial Office)

74 3868 Piedmont Ave

Oakland, CA 94611

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **5,622 SF**
Land Area: **0.26 AC**
Stories: **1**
Expenses: **2008 Tax @ $0.82/sf, 2012 Est Tax @ $0.91/sf; 2012 Est Ops @ $0.84/sf**
Parking: **15 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **5,622 SF**
Max Contig: **5,622 SF**
Smallest Space: **5,622 SF**
Rent/SF/Mo: **$2.25/nnn**
% Leased: **0%**

Landlord Rep: **Robinson Real Estate / Scott C. Robinson 510-914-8785 -- 5,622 SF (5,622 SF)**

75 4382 Piedmont Ave

Oakland, CA 94611

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **4,500 SF**
Land Area: **0.15 AC**
Stories: **1**
Expenses: **2008 Tax @ $3.71/sf**
Parking: **5 free Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **4,500 SF**
Max Contig: **4,500 SF**
Smallest Space: **4,500 SF**
Rent/SF/Mo: **$1.60/nnn**
% Leased: **0%**

Landlord Rep: **LCB Associates / Steven Banker 510-763-7090x206 -- 4,500 SF (4,500 SF)**

76 8024 Rudsdale St

Oakland, CA 94621

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 1912**
Building Size: **18,022 SF**
Land Area: **0.40 AC**
Stories: **3**
Expenses: **2009 Tax @ $2.68/sf**
For Sale: **Not For Sale**

Space Avail: **18,022 SF**
Max Contig: **18,022 SF**
Smallest Space: **6,007 SF**
Rent/SF/Mo: **$1.10/nnn**
% Leased: **0%**

Landlord Rep: **California Secured Funding / James Clemons 408-558-0845 -- 18,022 SF (6, 007-6,008 SF)**

77 3420 San Leandro St

Oakland, CA 94601

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Existing**
Building Size: **12,000 SF**
Land Area: **0.21 AC**
Stories: **2**
Expenses: **2009 Tax @ $0.28/sf**
Parking: **30 free Surface Spaces are available; Ratio of 1.43/1,000 SF**
For Sale: **For Sale at $2,000,000 ($166.67/SF) - Active**

Space Avail: **12,000 SF**
Max Contig: **12,000 SF**
Smallest Space: **12,000 SF**
Rent/SF/Mo: **Withheld**
% Leased: **100%**

Sales Company: **Help-U-Sell Action Properties: Therese Herget (510) 652-1480**
Landlord Rep: **Help-U-Sell Action Properties / Therese Herget 510-652-1480 -- 12,000 SF (12,000 SF)**

78 2000 San Pablo Ave

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 2007**
Building Size: **110,000 SF**
Land Area: **1.56 AC**
Stories: **4**
For Sale: **Not For Sale**

Space Avail: **5,000 SF**
Max Contig: **5,000 SF**
Smallest Space: **5,000 SF**
Rent/SF/Mo: **Withheld**
% Leased: **95.5%**

Landlord Rep: **Northridge Group / John Guillory 510-847-6939 -- 5,000 SF (5,000 SF)**

Building Notes:

This is a 242,000 square foot mixed-use develoopment on 1.56 acres of land in downtown Oakland's Redevelopment area.

79 3420 San Pablo Ave

Oakland, CA 94608

Alameda County

Building Type: **Retail/Service Station**
Building Status: **Built 1999**
Building Size: **6,110 SF**
Land Area: **0.47 AC**
Stories: **1**
Parking: **Ratio of 4.09/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **5,610 SF**
Max Contig: **5,610 SF**
Smallest Space: **5,610 SF**
Rent/SF/Mo: **$1.99/mg**
% Leased: **8.2%**

Landlord Rep: **Business Team Monterey / Flora F. Chong 831-809-5892 -- 5,610 SF (5,610 SF)**

Building Notes:

Space suitable for retail, office or as previous used- a classroom training facility. It is located adjacent to 580 freewayin Oakland, bordoring Emeryville. The suite shares the same building as a gas station convenience store. The premises has 2 large classrooms, 2 conference rooms, kitchen, 2 restrooms, 5-6 offices, security system, computer-ready hook-ups, separate meter. Lease could be long term. Tenant is responsible for interior. Landlord is responsible for exterior.

80 1715-1717 Telegraph Ave

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1925**
Building Size: **3,979 SF**
Land Area: **0.12 AC**
Stories: **1**
Expenses: **2009 Tax @ $1.66/sf**
For Sale: **Not For Sale**

Space Avail: **2,500 SF**
Max Contig: **2,500 SF**
Smallest Space: **2,500 SF**
Rent/SF/Mo: **$2.00/nnn**
% Leased: **37.2%**

Landlord Rep: **LCB Associates / Steven Banker 510-763-7090x206 -- 2,500 SF (2,500 SF)**

Building Notes:

Near New Ice Rink

CBRE

Available Oakland Retail Properties

81 1920-1932 Telegraph Ave - J.J. Newberry Co. Bldg

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront**
Retail/Office
Building Status: **Built 1920**
Building Size: **13,000 SF**
Land Area: **0.25 AC**
Stories: **1**
Expenses: **2009 Tax @ $2.03/sf, 2012 Est Tax @ $2.05/sf; 2009 Ops @ $1.92/sf, 2012 Est Ops @ $1.80/sf**
For Sale: **Not For Sale**

Space Avail: **13,000 SF**
Max Contig: **13,000 SF**
Smallest Space: **2,500 SF**
Rent/SF/Mo: **$2.00/nnn**
% Leased: **0%**

Landlord Rep: **Mahmoud El-Miari & Mohammad El-Miari / Mike El-miari 650-291-3315 / Mark El-miaari 650-291-3316 -- 13,000 SF (2,500-13,000 SF)**

82 1951 Telegraph Ave - The Uptown

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront**
Retail/Residential
Building Status: **Built Dec 2008**
Building Size: **9,050 SF**
Land Area: **1.70 AC**
Stories: **1**
For Sale: **Not For Sale**

Space Avail: **9,049 SF**
Max Contig: **4,753 SF**
Smallest Space: **1,800 SF**
Rent/SF/Mo: **$1.85/ig**
% Leased: **0.0%**

Landlord Rep: **California Commercial Investments / Mike McGuire 510-268-8500x15 -- 9,049 SF (1,800-2,830 SF)**

83 2025 Telegraph Ave - Office

Corner of 21st Street

Oakland, CA 94612

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1968**
Building Size: **7,050 SF**
Land Area: **0.34 AC**
Stories: **1**
Expenses: **2011 Tax @ $5.45/sf; 2011 Ops @ $1.01/sf**
Parking: **20 free Surface Spaces are available; Ratio of 3.67/1,000 SF**
For Sale: **For Sale at $3,000,000 ($425.53/SF) - Active**

Space Avail: **7,050 SF**
Max Contig: **7,050 SF**
Smallest Space: **7,050 SF**
Rent/SF/Mo: **$1.15/mg**
% Leased: **0%**

Sales Company: **Ritchie Commercial: Arthur Goldman (925) 935-7050 x110**
Landlord Rep: **Ritchie Commercial / Arthur Goldman 925-935-7050x110 -- 7,050 SF (7,050 SF)**

Building Notes:

Property Description: Auto Repair/Service

CBRE

Available Oakland Retail Properties

84 2525 Telegraph Ave

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1947**
Building Size: **3,600 SF**
Land Area: **0.09 AC**
Stories: **1**
Expenses: **2008 Tax @ $1.26/sf**
For Sale: **Not For Sale**

Space Avail: **3,600 SF**
Max Contig: **3,600 SF**
Smallest Space: **1,800 SF**
Rent/SF/Mo: **$1.81/nnn**
% Leased: **100%**

Landlord Rep: **Ada Rooz / Ada Rooz 650-595-2688 -- 3,600 SF (1,800 SF)**

85 2538 Telegraph Ave

Oakland, CA 94612

Alameda County

Building Type: **Retail/Freestanding**
Building Status: **Built 1954**
Building Size: **17,000 SF**
Land Area: **0.49 AC**
Stories: **2**
Expenses: **2009 Tax @ $1.06/sf**
Parking: **36 free Surface Spaces are available; Ratio of 3.00/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **17,000 SF**
Max Contig: **17,000 SF**
Smallest Space: **8,500 SF**
Rent/SF/Mo: **Withheld**
% Leased: **0%**

Landlord Rep: **Mark Borsuk, Inc. / Mark Borsuk 415-922-4740 -- 17,000 SF (8,500 SF)**

Building Notes:

The building is in the heart of Oakland Koreatown.

Available Oakland Retail Properties

86 2701 Telegraph Ave

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront**
Retail/Office
Building Status: **Built 1956**
Building Size: **5,350 SF**
Land Area: **0.07 AC**
Stories: **2**
Expenses: **2011 Tax @ $1.36/sf; 2011 Ops @ $1.06/sf**
For Sale: **For Sale at $725,000 ($135.51/SF) - Active**

Space Avail: **5,350 SF**
Max Contig: **2,500 SF**
Smallest Space: **2,164 SF**
Rent/SF/Mo: **$0.75**
% Leased: **12.8%**

Sales Company: **California Commercial Investments: Gary M. Bettencourt (510) 268-8500 x33, Damian Fink (510) 268-8500 x35**
California Commercial Investments: Gary M. Bettencourt (510) 268-8500 x33, Damian Fink (510) 268-8500 x35

Landlord Rep: **California Commercial Investments / Damian Fink 510-268-8500x35 / Gary M. Bettencourt 510-268-8500x33 -- 7,164 SF (2,164-2,500 SF)**

Building Notes:

Property Description: Free Standing Retail Building

Property Use Description: Free Standing Retail Building

87 2721 Telegraph Ave

Oakland, CA 94612

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1935**
Building Size: **6,150 SF**
Land Area: **0.14 AC**
Stories: **1**
Expenses: **2009 Tax @ $2.33/sf**
For Sale: **For Sale at $995,000 ($161.79/SF) - Active**

Space Avail: **6,150 SF**
Max Contig: **6,150 SF**
Smallest Space: **6,150 SF**
Rent/SF/Mo: **$1.25/ig**
% Leased: **0%**

Sales Company: **California Commercial Investments: Damian Fink (510) 268-8500 x35**

Landlord Rep: **California Commercial Investments / Damian Fink 510-268-8500x35 -- 6,150 SF (6,150 SF)**

Building Notes:

Location Corner: SW

Property Description: Free Standing Retail Building

Property Use Description: Free Standing Retail Building

Available Oakland Retail Properties

88 2900-2914 Telegraph Ave

Oakland, CA 94609

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 1950**
Building Size: **11,000 SF**
Land Area: **0.22 AC**
Stories: **2**
Expenses: **2008 Tax @ $0.80/sf, 2010 Est Tax @ $1.05/sf; 2010 Est Ops @ $1.05/sf**
Parking: **5 Surface Spaces are available; Ratio of 0.66/1,000 SF**
For Sale: **Not For Sale**

Space Avail: **6,455 SF**
Max Contig: **3,355 SF**
Smallest Space: **1,650 SF**
Rent/SF/Mo: **$1.25 - $1.50/mg**
% Leased: **56.3%**

Landlord Rep: **Peterson Properties / Steve Peterson 510-835-0200 / Ted Peterson 510-835-0200 -- 6,455 SF (1,650-3,100 SF)**

89 4881 Telegraph Ave

Oakland, CA 94609

Alameda County

Building Type: **Retail/Storefront**
Building Status: **Built 1925**
Building Size: **6,436 SF**
Land Area: **0.15 AC**
Stories: **1**
Expenses: **2009 Tax @ $3.30/sf, 2012 Est Tax @ $3.26/sf; 2012 Est Ops @ $3.96/sf**
Parking: **25 Surface Spaces are available**
For Sale: **Not For Sale**

Space Avail: **6,000 SF**
Max Contig: **6,000 SF**
Smallest Space: **6,000 SF**
Rent/SF/Mo: **$2.25/nnn**
% Leased: **6.8%**

Landlord Rep: **Mark Borsuk, Inc. / Mark Borsuk 415-922-4740 -- 6,000 SF (6,000 SF)**

Building Notes:

Location Corner: SE

Property Description: Bank Branch

Property Use Description: Bank Branch

90 1121-1129 Webster St

Oakland, CA 94607

Alameda County

Building Type: **Retail/Storefront Retail/Office**
Building Status: **Built 1900**
Building Size: **18,644 SF**
Land Area: **0.07 AC**
Stories: **2**
Expenses: **2010 Tax @ $1.02/sf**
For Sale: **Not For Sale**

Space Avail: **3,300 SF**
Max Contig: **3,300 SF**
Smallest Space: **350 SF**
Rent/SF/Mo: **Withheld**
% Leased: **100%**

Landlord Rep: **Webster Group, LLC / Timothy Chen 510-836-3138 -- 3,300 SF (350-3,300 SF)**

Exhibit B-1
Calculation of Sales Per Square Foot Estimates (1)
Select Retail Stores and Store Types

	Sales Per Square Foot										
	2003	2005		2007		2009		2010		Average	Average
	In 2003$'s	In 2005$'s	In 2003$'s	In 2007$'s	In 2003$'s	In 2008$'s	In 2003$'s	In 2010$'s	In 2003$'s	In 2003$'s	In 2011$'s
Store or Category (2)	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	= (A+C+E+G+I) / .	[K]
	(CPI = 188.200)	*(CPI = 197.10)*		*(CPI = 210.89)*		*(CPI = 219.02)*		*(CPI = 218.)*			*(CPI = 226.43)*
Apparel											
Apparel - Specialty	$371	$392	$374	$416	$371	$397	$341	$405	$345	$361	$434
Women's' Apparel	$453	$483	$461	$445	$397	$389	$334	$365	$311	$391	$470
Shoe Stores	$266	$317	$303	$335	$299	$367	$315	$371	$316	$300	$361
Ross Dress for Less	$312	$304	$290	$295	$263	$286	$246	$324	$276	$277	$333
Kohl's	$268	$252	$241	$249	$222	$222	$191	$229	$195	$223	$268
Discount Stores	$235	$212	$202	$220	$196	$209	$180	$196	$167	$196	$236
Target	$282	$288	$275	$304	$271	$282	$242	$282	$240	$262	$315
Wal-Mart	$362	$412	$393	$422	$377	$424	$364	$422	$360	$374	$450
Department Stores Category	$239	$234	$223	$304	$271	$266	$229	$252	$215	$235	$283
Domestics Category	$287	$322	$307	$302	$270	$284	$244	$294	$251	$272	$327
Furniture Category	$176	$188	$180	$255	$228	$225	$193	$198	$169	$189	$227
Neighborhood Center Category	$322	$340	$325	$392	$350	$399	$343	$434	$370	$342	$411
Food & Drug Anchors	$441	$479	$457	$569	$508	$586	$504	$629	$536	$489	$588
Non-Food & Drug Retail	$203	$200	$191	$214	$191	$212	$182	$239	$204	$194	$233
Supermarkets	$348	$450	$430	$480	$428	$490	$421	$535	$456	$417	$502
Drug Stores	$534	$507	$484	$657	$586	$683	$587	$724	$622	$548	$634
Rite Aid	$286	$406	$388	$486	$434	$488	$419	$421	$362	$382	$442
CVS	$578	$520	$497	$798	$712	$792	$681	$802	$689	$617	$714
Restaurants Category	$389	$372	$355	$430	$384	$431	$370	$429	$366	$373	$449
Home Improvement	$274	$279	$266	$304	$271	$280	$241	$269	$229	$256	$308
Other Retail Categories											
Accessories	$742	$868	$829	$788	$703	$774	$665	$778	$663	$720	$866
HBA, Home Fragrances	$533	$514	$491	$630	$562	$431	$370	$541	$461	$484	$582
Electronics	$426	$490	$468	$447	$399	$508	$437	$686	$585	$463	$557
Office Supplies	$283	$304	$290	$341	$304	$277	$238	$263	$224	$268	$322
Sports	$209	$243	$232	$246	$220	$226	$194	$226	$193	$209	$251
Pet Supplies	$184	$192	$183	$189	$169	$179	$154	$185	$158	$170	$205
Book Superstores	$244	$237	$226	$242	$216	$242	$208	$180	$153	$210	$253
Video Stores	$106	$106	$101	$117	$104	$58	$50	$89	$76	$87	$105
Toys	$231	$227	$217	$367	$328	$350	$301	$320	$273	$270	$325
Music Superstores	$247	$242	$231	$340	$303	$294	$253	$318	$271	$261	$314
Gifts, Hobbies & Fabrics	$158	$141	$135	$139	$124	$124	$107	$124	$106	$126	$152
Average of Other Retail Categories	$306	$324	$309	$350	$312	$315	$271	$337	$287	$297	$357

Sources: Retail MAXIM, "Alternative Retail Risk Analysis for Alternative Capital" 2004, 2006, 2008, 2010 and 2011; United States Bureau of Labor Statistics Consumer Price Index - All Urban Consumers; and ALH Urban & Regional Economics.

(1) Estimates in columns A, B, D, F, and H were provided by Retail MAXIM. Columns C, E, G, I, and K were calculated using the Consumer Price Index for All Urban Consumers in the United States.
(2) Includes industry-and category-representative stores.

Exhibit B-2

Rockridge Safeway Store Market Area
Constituent Census Tracts and City Match

2010 Census Tract	2000 Census Tract	City
4002	4002	Oakland
4003	4003	Oakland
4004	4004	Oakland
4005	4005	Oakland
4006	4006	Oakland
4007	4007	Oakland
4008	4008	Oakland
4009	4009	Oakland
4010	4010	Oakland
4011	4011	Oakland
4012	4012	Oakland
4013	4013	Oakland
4014	4014	Oakland
4035.01	4035	Oakland
4035.02		Oakland
4036	4036	Oakland
4037.01	4037	Oakland
4037.02		Oakland
4038	4038	Oakland
4039	4039	Oakland
4040	4040	Oakland
4041.01	4041	Oakland
4041.02		Oakland
4042	4042	Oakland
4043	4043	Oakland
4045.01	4045.01	Oakland
4050	4050	Oakland
4051	4051	Oakland
4261	4261	Piedmont
4262	4262	Piedmont

Sources: U.S. Census Bureau; and ALH Urban & Regional Economics.

(1) For data retrieval purposes it is necessary to identify both the 2000 and 2010 census tracts for the market area.

Exhibit B-3
Rockridge and College & Claremont Safeway Stores
Common Market Area Census Tracts (1)
Constituent Census Tracts and City Match

2000 & 2010 Census Tract (2)	City
4002	Oakland
4003	Oakland
4004	Oakland
4005	Oakland
4006	Oakland
4007	Oakland
4008	Oakland
4009	Oakland
4043	Oakland

Sources: U.S. Census Bureau; and ALH Urban & Regional Economics.

(1) Safeway has two Oakland stores under environmental review, the Rockridge store and the College & Claremont store. Urban decay analysis was conducted for both stores. This area identifies the portion of each store's market area estimated in the urban decay analyses to overlap between the two stores.
(2) For data retrieval purposes it is necessary to identify both the 2000 and 2010 census tracts for the market areas.

Exhibit B-4
Rockridge Safeway Store
Translation of Claritas Retail Sales Categories to BOE Categories
Portion of Market Area Within the City of Oakland
In 2010 Dollars (Millions)

Claritas Sales Category	Claritas Retail Sales 2010 2010 $'s	BOE Category
Motor Vehicle & Parts Dealers		
- Automotive Dealers	$276.6	Motor Vehicles & Parts
- Other Motor Vehicle Dealers	$0.7	
- Automotive Parts, Accessories, & Tire Stores	$8.3	
Furniture & Home Furnishings Stores		Home Furnishings & Appliances
- Furniture Stores	$11.6	
- Home Furnishing Stores	$5.7	
Electronics & Appliance Stores		
- Appliance, Television, and Other Electronics	$7.3	
- Household Appliances Stores	$2.4	
- Radio Television and Other Electronics	$5.0	
- Computer and Software Stores	$4.0	
- Camera & Photographic Equipment Stores	$1.1	
Building Material & Garden Equipment & Supply Dealers		
- Building Material & Supply Dealers	$37.4	Building Materials and Garden Equip. & Supplies
- Home Centers	$0.0	
- Paint and Wallpaper Stores	$4.6	
- Hardware Stores	$17.7	
- Other Building Materials Dealers	$15.1	
- Building Materials, Lumberyards	$5.9	
- Lawn and Garden Equipment and Supplies	$2.1	
- Outdoor Power Equipment Stores	$0.0	
- Nursery and Garden Centers	$2.1	
Food & Beverage Stores		
- Grocery Stores	$393.7	Food and Beverage Stores
- Supermarkets and Other Grocery Stores	$386.6	
- Convenience Stores	$7.2	
- Specialty Food Stores	$21.4	
- Beer, Wine, & Liquor Stores	$13.1	
Health & Personal Care Stores		
- Pharmacies and Drug Stores	$45.3	Other Retail Group
- Cosmetics, Beauty Supplies and Perfume Stores	$2.8	
- Optical Goods Stores	$1.1	
- Other Health and Personal Care Stores	$8.9	
Gasoline Stations		
- Gasoline Stations with Convenience Stores	$59.6	Service Stations
- Other Gasoline Stations	$25.9	
Clothing & Clothing Accessories Stores		
- Clothing Stores	$15.1	Clothing & Clothing Accessories
- Men's Clothing Stores	$0.1	
- Women's Clothing Stores	$8.7	
- Children's and Infants' Clothing Stores	$1.2	
- Family Clothing Stores	$3.4	
- Clothing Accessories Stores	$0.8	
- Other Clothing Stores	$0.8	
- Shoe Stores	$3.7	
- Jewelry, Luggage, & Leather Goods Stores	$3.8	
- Jewelry Stores	$3.7	
- Luggage, & Leather Goods Stores	$0.0	
Sporting Goods, Hobby, Book, & Music Stores		
- Sporting Goods, Hobby, & Musical Instruments	$7.9	Other Retail Group
- Sporting Goods Stores	$4.7	
- Hobby, Toys and Games Stores	$1.8	
- Sew, Needlework, Piece Goods Stores	$0.7	
- Musical Instrument and Supplies Stores	$0.6	
- Book, Periodical, & Music Stores	$7.5	
- Book Stores and News Dealers	$3.9	
- Book Stores	$3.9	
- News Dealers and Newsstands	$0.0	
- Prerecorded Tape, Compact Disc, & Records	$3.6	
General Merchandise Stores		General Merchandise Stores
- Department Stores excluding Leased Dept Stores	$8.5	
- Other General Merchandise Stores	$8.3	
Miscellaneous Store Retailers		
- Florists	$3.1	Other Retail Group
- Office Supplies, Stationery, & Gift Stores	$8.4	
- Office Supplies and Stationery Stores	$1.4	
- Gift, Novelty, and Souvenir Stores	$7.0	
- Used Merchandise Stores	$13.5	
- Other Miscellaneous Store Retailers	$6.2	
Non-store Retailers	$17.4	Other Retail Group
Foodservice & Drinking Places		
- Full-Service Restaurants	$67.4	Food Services & Drinking Places
- Limited-service Eating Places	$57.5	
- Special Foodservices	$4.8	
- Drinking Places - Alcoholic Beverages	$10.4	
TOTAL RETAIL STORES	$1,170.2	

Calculations

BOE Category	In Millions
Motor Vehicles & Parts	$285.6
Home Furnishings and Appliances	$29.7
Building Materials and Garden Equip	$39.5
Food and Beverage Stores	$428.3
Gasoline Stations	$85.4
Clothing and Clothing Accessories	$22.6
General Merchandise	$16.8
Food Services and Drinking Places	$140.1
Other Retail Group	$122.2
Retail Total	$1,170.2

Sources: Claritas; State of California Board of Equalization; and ALH Urban & Regional Economics.

Exhibit B-5
Rockridge Safeway Store
Translation of Claritas Retail Sales Categories to BOE Categories
City of Oakland
In 2010 Dollars (Millions)

Claritas Sales Category	Claritas Retail Sales 2010 2010 $'s	BOE Category
Motor Vehicle & Parts Dealers		
- Automotive Dealers	$437.8	**Motor Vehicles & Parts**
- Other Motor Vehicle Dealers	$15.6	
- Automotive Parts, Accessories, & Tire Stores	$50.9	
Furniture & Home Furnishings Stores		**Home Furnishings & Appliances**
- Furniture Stores	$89.0	
- Home Furnishing Stores	$29.8	
Electronics & Appliance Stores		
- Appliance, Television, and Other Electronics	$39.5	
- Household Appliances Stores	$8.4	
- Radio Television and Other Electronics	$31.2	
- Computer and Software Stores	$42.0	
- Camera & Photographic Equipment Stores	$6.8	
Building Material & Garden Equipment & Supply Dealers		
- Building Material & Supply Dealers	$249.8	**Building Materials and Garden Equip. & Supplies**
- Home Centers	$105.6	
- Paint and Wallpaper Stores	$9.3	
- Hardware Stores	$42.4	
- Other Building Materials Dealers	$92.5	
- Building Materials, Lumberyards	$36.2	
- Lawn and Garden Equipment and Supplies	$7.5	
- Outdoor Power Equipment Stores	$0.8	
- Nursery and Garden Centers	$6.7	
Food & Beverage Stores		
- Grocery Stores	$970.6	**Food and Beverage Stores**
- Supermarkets and Other Grocery Stores	$945.1	
- Convenience Stores	$25.5	
- Specialty Food Stores	$58.2	
- Beer, Wine, & Liquor Stores	$65.9	
Health & Personal Care Stores		
- Pharmacies and Drug Stores	$268.7	**Other Retail Group**
- Cosmetics, Beauty Supplies and Perfume Stores	$10.6	
- Optical Goods Stores	$3.1	
- Other Health and Personal Care Stores	$19.4	
Gasoline Stations		
- Gasoline Stations with Convenience Stores	$292.7	**Service Stations**
- Other Gasoline Stations	$99.9	
Clothing & Clothing Accessories Stores		
- Clothing Stores	$61.4	**Clothing & Clothing Accessories**
- Men's Clothing Stores	$8.1	
- Women's Clothing Stores	$21.6	
- Children's and Infants' Clothing Stores	$7.4	
- Family Clothing Stores	$13.6	
- Clothing Accessories Stores	$2.9	
- Other Clothing Stores	$7.7	
- Shoe Stores	$12.0	
- Jewelry, Luggage, & Leather Goods Stores	$24.0	
- Jewelry Stores	$24.0	
- Luggage, & Leather Goods Stores	$0.1	
Sporting Goods, Hobby, Book, & Music Stores		
- Sporting Goods, Hobby, & Musical Instruments	$29.5	**Other Retail Group**
- Sporting Goods Stores	$18.0	
- Hobby, Toys and Games Stores	$6.2	
- Sew, Needlework, Piece Goods Stores	$1.9	
- Musical Instrument and Supplies Stores	$3.4	
- Book, Periodical, & Music Stores	$16.7	
- Book Stores and News Dealers	$8.9	
- Book Stores	$8.5	
- News Dealers and Newsstands	$0.3	
- Prerecorded Tape, Compact Disc, & Records	$7.9	
General Merchandise Stores		**General Merchandise Stores**
- Department Stores excluding Leased Dept Stores	$103.1	
- Other General Merchandise Stores	$146.7	
Miscellaneous Store Retailers		
- Florists	$6.1	**Other Retail Group**
- Office Supplies, Stationery, & Gift Stores	$29.3	
- Office Supplies and Stationery Stores	$12.7	
- Gift, Novelty, and Souvenir Stores	$16.6	
- Used Merchandise Stores	$28.3	
- Other Miscellaneous Store Retailers	$29.2	
Non-store Retailers	$408.0	**Other Retail Group**
Foodservice & Drinking Places		
- Full-Service Restaurants	$227.5	**Food Services & Drinking Places**
- Limited-service Eating Places	$213.7	
- Special Foodservices	$44.5	
- Drinking Places - Alcoholic Beverages	$23.8	
TOTAL RETAIL STORES	**$4,161.4**	

Calculations

BOE Category	In Millions
Motor Vehicles & Parts	$504.3
Home Furnishings and Appliances	$207.1
Building Materials and Garden Equip	$257.4
Food and Beverage Stores	$1,094.7
Gasoline Stations	$392.6
Clothing and Clothing Accessories	$97.3
General Merchandise	$249.8
Food Services and Drinking Places	$509.5
Other Retail Group	$848.8
Retail Total	**$4,161.4**

Sources: Claritas; State of California Board of Equalization; and ALH Urban & Regional Economics.

Exhibit B-6
Rockridge Safeway Store
Project Market Area Retail Sales within City of Oakland
In 2010 Dollars

	Claritas Retail Sales Estimates for 2010 (1)		
Type of Retailer	**Retail Sales Within Oakland Portion of Market Area (2)** [A]	**Total Retail Sales in City of Oakland (3)** [B]	**Sales Ratio** [C = A / B]
Motor Vehicles & Parts	$285,570,367	$504,271,533	56.6%
Home Furnishings and Appliances	$29,724,912	$207,079,039	14.4%
Building Materials and Garden Equip	$39,454,833	$257,353,152	15.3%
Food and Beverage Stores	$428,270,680	$1,094,670,503	39.1%
Gasoline Stations	$85,435,083	$392,590,487	21.8%
Clothing and Clothing Accessories	$22,584,258	$97,331,041	23.2%
General Merchandise	$16,810,218	$249,816,651	6.7%
Food Services and Drinking Places	$140,141,732	$509,491,060	27.5%
Other Retail Group	$122,246,374	$848,833,065	14.4%
Total	**$1,170,238,457**	**$4,161,436,531**	**28.1%**

Sources: Claritas, Inc.; California State Board of Equalization; and ALH Urban & Regional Economics.

(1) Claritas data are in 2010 dollars. See Exhibits B-3 and B-4 for translation of Claritas to BOE categories.
(2) See Exhibit B-3.
(2) See Exhibit B-4.

Exhibit B-7
Rockridge Safeway Store
Translation of Claritas Retail Sales Categories to BOE Categories
City of Piedmont
In 2010 Constant Dollars (Thousands)

Claritas Sales Category	Claritas Retail Sales 2010 2010 $'s	BOE Category
Motor Vehicle & Parts Dealers		
- Automotive Dealers	$0.0	**Motor Vehicles & Parts**
- Other Motor Vehicle Dealers	$0.0	
- Automotive Parts, Accessories, & Tire Stores	$0.0	
Furniture & Home Furnishings Stores		**Home Furnishings & Appliances**
- Furniture Stores	$0.0	
- Home Furnishing Stores	$134.3	
Electronics & Appliance Stores		
- Appliance, Television, and Other Electronics	$0.0	
- Household Appliances Stores	$0.0	
- Radio Television and Other Electronics	$0.0	
- Computer and Software Stores	$186.7	
- Camera & Photographic Equipment Stores	$0.0	
Building Material & Garden Equipment & Supply Dealers		
- Building Material & Supply Dealers	$3,190.0	
- Home Centers	$0.0	**Building Materials and Garden Equip. & Supplies**
- Paint and Wallpaper Stores	$0.0	
- Hardware Stores	$0.0	
- Other Building Materials Dealers	$3,190.0	
- Building Materials, Lumberyards	$1,248.0	
- Lawn and Garden Equipment and Supplies	$582.2	
- Outdoor Power Equipment Stores	$0.0	
- Nursery and Garden Centers	$582.2	
Food & Beverage Stores		
- Grocery Stores	$2,194.4	
- Supermarkets and Other Grocery Stores	$2,194.4	**Food and Beverage Stores**
- Convenience Stores	$0.0	
- Specialty Food Stores	$581.3	
- Beer, Wine, & Liquor Stores	$0.0	
Health & Personal Care Stores		
- Pharmacies and Drug Stores	$0.0	
- Cosmetics, Beauty Supplies and Perfume Stores	$0.0	
- Optical Goods Stores	$0.0	**Other Retail Group**
- Other Health and Personal Care Stores	$505.9	
Gasoline Stations		
- Gasoline Stations with Convenience Stores	$0.0	**Service Stations**
- Other Gasoline Stations	$442.2	
Clothing & Clothing Accessories Stores		
- Clothing Stores	$181.9	
- Men's Clothing Stores	$0.0	
- Women's Clothing Stores	$181.9	**Clothing & Clothing Accessories**
- Children's and Infants' Clothing Stores	$0.0	
- Family Clothing Stores	$0.0	
- Clothing Accessories Stores	$0.0	
- Other Clothing Stores	$0.0	
- Shoe Stores	$0.0	
- Jewelry, Luggage, & Leather Goods Stores	$0.0	
- Jewelry Stores	$0.0	
- Luggage, & Leather Goods Stores	$0.0	
Sporting Goods, Hobby, Book, & Music Stores		
- Sporting Goods, Hobby, & Musical Instruments	$310.3	
- Sporting Goods Stores	$0.0	
- Hobby, Toys and Games Stores	$0.0	
- Sew, Needlework, Piece Goods Stores	$0.0	
- Musical Instrument and Supplies Stores	$310.3	**Other Retail Group**
- Book, Periodical, & Music Stores	$94.7	
- Book Stores and News Dealers	$0.0	
- Book Stores	$0.0	
- News Dealers and Newsstands	$0.0	
- Prerecorded Tape, Compact Disc, & Records	$94.7	
General Merchandise Stores		**General Merchandise Stores**
- Department Stores excluding Leased Dept Stores	$0.0	
- Other General Merchandise Stores	$922.5	
Miscellaneous Store Retailers		
- Florists	$0.0	
- Office Supplies, Stationery, & Gift Stores	$199.5	
- Office Supplies and Stationery Stores	$0.0	**Other Retail Group**
- Gift, Novelty, and Souvenir Stores	$199.5	
- Used Merchandise Stores	$246.2	
- Other Miscellaneous Store Retailers	$225.6	
Non-store Retailers	$0.0	**Other Retail Group**
Foodservice & Drinking Places		
- Full-Service Restaurants	$549.9	**Food Services & Drinking Places**
- Limited-service Eating Places	$0.0	
- Special Foodservices	$0.0	
- Drinking Places - Alcoholic Beverages	$0.0	
TOTAL RETAIL STORES	**$10,547.6**	

Calculations

BOE Category	**In Thousands**
Motor Vehicles & Parts	$0.0
Home Furnishings and Appliances	$320.9
Building Materials and Garden Equip	$3,772.2
Food and Beverage Stores	$2,775.8
Gasoline Stations	$442.2
Clothing and Clothing Accessories	$181.9
General Merchandise	$922.5
Food Services and Drinking Places	$549.9
Other Retail Group	$1,582.2
Retail Total	**$10,547.6**

Sources: Claritas; State of California Board of Equalization; and ALH Urban & Regional Economics.

Exhibit B-8

Portion of Market Area in Common with Rockridge and College & Claremont Safeway Stores

Translation of Claritas Retail Sales Categories to BOE Categories

In 2010 Dollars (Millions)

Claritas Sales Category	Claritas Retail Sales 2010 2010 $'s	BOE Category
Motor Vehicle & Parts Dealers		
- Automotive Dealers	$0.7	Motor Vehicles & Parts
- Other Motor Vehicle Dealers	$0.7	
- Automotive Parts, Accessories, & Tire Stores	$0.1	
Furniture & Home Furnishings Stores		Home Furnishings & Appliances
- Furniture Stores	$7.9	
- Home Furnishing Stores	$3.3	
Electronics & Appliance Stores		
- Appliance, Television, and Other Electronics	$1.9	
- Household Appliances Stores	$0.4	
- Radio Television and Other Electronics	$1.5	
- Computer and Software Stores	$0.6	
- Camera & Photographic Equipment Stores	$0.0	
Building Material & Garden Equipment & Supply Dealers		
- Building Material & Supply Dealers	$5.7	
- Home Centers	$0.0	Building Materials and Garden Equip. & Supplies
- Paint and Wallpaper Stores	$0.0	
- Hardware Stores	$2.5	
- Other Building Materials Dealers	$3.2	
- Building Materials, Lumberyards	$1.2	
- Lawn and Garden Equipment and Supplies	$0.2	
- Outdoor Power Equipment Stores	$0.0	
- Nursery and Garden Centers	$0.2	
Food & Beverage Stores		
- Grocery Stores	$93.6	
- Supermarkets and Other Grocery Stores	$93.6	Food and Beverage Stores
- Convenience Stores	$0.0	
- Specialty Food Stores	$15.9	
- Beer, Wine, & Liquor Stores	$8.2	
Health & Personal Care Stores		
- Pharmacies and Drug Stores	$1.9	
- Cosmetics, Beauty Supplies and Perfume Stores	$1.0	
- Optical Goods Stores	$0.2	Other Retail Group
- Other Health and Personal Care Stores	$2.2	
Gasoline Stations		
- Gasoline Stations with Convenience Stores	$36.3	Service Stations
- Other Gasoline Stations	$6.6	
Clothing & Clothing Accessories Stores		
- Clothing Stores	$3.2	
- Men's Clothing Stores	$0.0	
- Women's Clothing Stores	$2.9	Clothing & Clothing Accessories
- Children's and Infants' Clothing Stores	$0.1	
- Family Clothing Stores	$0.0	
- Clothing Accessories Stores	$0.2	
- Other Clothing Stores	$0.0	
- Shoe Stores	$0.9	
- Jewelry, Luggage, & Leather Goods Stores	$1.9	
- Jewelry Stores	$1.9	
- Luggage, & Leather Goods Stores	$0.0	
Sporting Goods, Hobby, Book, & Music Stores		
- Sporting Goods, Hobby, & Musical Instruments	$2.9	
- Sporting Goods Stores	$2.2	
- Hobby, Toys and Games Stores	$0.3	
- Sew, Needlework, Piece Goods Stores	$0.0	
- Musical Instrument and Supplies Stores	$0.3	Other Retail Group
- Book, Periodical, & Music Stores	$1.9	
- Book Stores and News Dealers	$1.6	
- Book Stores	$1.6	
- News Dealers and Newsstands	$0.0	
- Prerecorded Tape, Compact Disc, & Records	$0.3	
General Merchandise Stores		General Merchandise Stores
- Department Stores excluding Leased Dept Stores	$8.5	
- Other General Merchandise Stores	$2.3	
Miscellaneous Store Retailers		
- Florists	$1.3	
- Office Supplies, Stationery, & Gift Stores	$2.1	
- Office Supplies and Stationery Stores	$0.5	Other Retail Group
- Gift, Novelty, and Souvenir Stores	$1.6	
- Used Merchandise Stores	$6.6	
- Other Miscellaneous Store Retailers	$2.7	
Non-store Retailers	$4.3	Other Retail Group
Foodservice & Drinking Places		
- Full-Service Restaurants	$23.8	Food Services & Drinking Places
- Limited-service Eating Places	$6.1	
- Special Foodservices	$1.0	
- Drinking Places - Alcoholic Beverages	$4.0	
TOTAL RETAIL STORES	$260.6	

Calculations

BOE Category	In Millions
Motor Vehicles & Parts	$1.5
Home Furnishings and Appliances	$13.7
Building Materials and Garden Equip	$5.8
Food and Beverage Stores	$117.7
Gasoline Stations	$42.9
Clothing and Clothing Accessories	$6.0
General Merchandise	$10.8
Food Services and Drinking Places	$34.8
Other Retail Group	$27.2
Retail Total	$260.6

Sources: Claritas; State of California Board of Equalization; and ALH Urban & Regional Economics.

Exhibit B-9

Allocations of Unknown Retail Space into BOE Categories by Shopping Center Format (1)

Format	Motor Vehicles and Parts Dealers	Home Furnishings and Appliance Stores	Building Materials and Garden Equip	Food and Beverage Stores	Gasoline Stations	Clothing and Clothing Accessories Stores	General Merchandise	Food Services and Drinking Places	Other Retail
Neighborhood Centers	0%	0%	0%	40%	0%	0%	20%	20%	20%
Community Centers	0%	0%	5%	25%	0%	5%	35%	15%	15%
Power Centers	0%	5%	10%	15%	0%	10%	45%	5%	10%
Regional Malls	0%	10%	0%	0%	0%	30%	35%	5%	20%
Lifestyle Centers	0%	10%	0%	10%	0%	15%	10%	30%	25%

Sources: International Council of Shopping Centers (ICSC), U.S. Shopping Center Definitions, July 2011 (http://www.icsc.org/srch/lib/SC_TYPES.pdff); and ALH Urban & Regional Economics.

(1) ALH Urban & Regional Economics estimates for typical shopping center formats were developed based on ICSC shopping center classification criteria.

FIRM HISTORY, SELECT QUALIFICATIONS, AND RESUME

FIRM INTRODUCTION

ALH Urban & Regional Economics (ALH Economics) is a recently formed sole proprietorship devoted to providing urban and regional economic consulting services to clients throughout California. Until early summer 2011, Amy L. Herman, Principal of ALH Economics, was a Senior Managing Director with CBRE Consulting in San Francisco, a division of the real estate services firm CB Richard Ellis. CBRE Consulting was the successor name of Sedway Group, a well established urban economic and real estate consulting firm acquired by CB Richard Ellis in the late 1990s. Ms. Herman's tenure with Sedway Group and then CBRE Consulting's land use and economics practice totaled more than 20 years. During that time Ms. Herman established a strong professional network and client base providing a range of services such as economic development and redevelopment, market feasibility analysis, fiscal and economic impact analysis, location analysis, strategic planning, and policy analysis. Ms. Herman's client base includes governmental clients, transportation agencies, corporations, environmental consultants, educational and health institutions, non-profits, and developers.

During spring 2011, CBRE chose to restructure the land use and economics practice area within CBRE Consulting. Ms. Herman took this opportunity to establish her own firm, through which she can continue to serve her existing client base and expand her practice in areas that suit her professional and personal interests. Examples of clients that have already retained the services of ALH Economics include the following: University of California at Berkeley; LSA Associates; Jack Faucett Associates; Hanna Novato, LLC; Terry Margerum & Associates; Raney Planning and Management, Inc.; Sedway Consulting; University of California at Riverside; During Associates; Lamphier-Gregory; Gresham Savage Nolan & Tilden, PC; California Gold Development Corporation; Environmental Science Associates (ESA); Arcadia Development Co.; PCR Services Corporation; Catellus Development Corporation; Sedgwick LLP; Michael Brandman Associates; the City of Concord; Victoria Ward, Limited, Hospital Council of Northern and Central California.

During her tenure with CBRE Consulting Ms. Herman developed a strong practice area involving the conduct of urban decay analyses as part of the environmental review process for projects with major retail components. A description of these services and recent projects follows. Also included are select examples of other economic impact studies conducted by Ms. Herman during her tenure with CBRE Consulting.

EXPERIENCE CONDUCTING RETAIL URBAN DECAY STUDIES

Description of Services

The Principal of ALH Economics, Amy L. Herman, has performed economic impact and urban decay studies for a number of retail development projects in California. These studies have generally been the direct outcome of the 2004 court ruling *Bakersfield Citizens for Local Control ("BCLC") v. City of Bakersfield* (December 2004) 124 Cal.App.4th 1184, requiring environmental impacts analyses to take into consideration the potential for a retail project as well as other cumulative retail projects to contribute to urban decay in the market area served by the project. Prior to the advent of the Bakersfield court decision, Ms. Herman managed these studies for project developers or retailers, typically at the request of the host city, or sometimes for the city itself. Following the Bakersfield decision, the studies have most commonly been directly commissioned by the host cities or environmental planning firms conducting Environmental Impact Reports (EIRs) for the projects. Studies are often conducted as part of the EIR process, but also in response to organized challenges to a city's project approval or to Court decisions ruling that additional analysis is required.

The types of high volume retail projects for which these studies have been conducted include single store developments, typically comprising a Walmart Store, The Home Depot, Lowe's Home Improvement Warehouse, or Target store (including SuperTarget). The studies have also been conducted for large retail shopping centers, typically anchored by one or more of the preceding stores, but also including as much as 300,000 to 400,000 square feet or more of additional retail space with smaller anchor stores and in-line tenants.

The scope of services for these studies includes numerous tasks. The basic tasks common to most studies include the following:

- defining the project and estimating sales for the first full year of operations
- identifying the market area
- identifying and touring existing competitive market area retailers
- evaluating existing retail market conditions at competitive shopping centers and along major commercial corridors in the market area
- conducting retail demand, sales attraction, and spending leakage analyses for the market area and other relevant areas
- forecasting future retail demand in the market area
- researching the retail market's history in backfilling vacated retail spaces
- assessing the extent to which project sales will occur to the detriment of existing retailers (i.e., diverted sales)
- determining the likelihood existing competitive and nearby stores will close due to sales diversions attributable to the project
- researching planned retail projects and assessing cumulative impacts
- identifying the likelihood the project's economic impacts and cumulative project impacts will trigger or cause urban decay.

Many studies include yet additional tasks, such as assessing the project's impact on downtown retailers; determining the extent to which development of the project corresponds with city public policy, redevelopment, and economic development goals; projecting the fiscal benefits relative to the host city's General Plan; forecasting job impacts; analyzing wages relative to the existing retail base; and assessing potential impacts on local social service providers.

Recent Projects, Past 3 Years

High volume retail projects for which Ms. Herman has prepared economic impact and urban decay studies during approximately the past three years are listed below. This includes studies for projects that have successfully navigated the public approvals process or are currently in progress. Projects are listed alphabetically by the California city in which they are located. These projects represent a range of entitlement success, from projects already completed to projects lacking certified EIRs.

- Alameda, Alameda Landing, totaling 285,000 square feet anchored by a Target, project approved
- Apple Valley, Walmart Superstore, 240,000 square feet plus 9,000 square feet of additional retail, replacing existing Walmart Discount Store, EIR certified, engaged in the legal process; superseded by local initiative
- Bakersfield, Bakersfield Commons, totaling 1.2 million square feet of lifestyle retail space and 400,000 square feet of community shopping center space, EIR Certified and project approved
- Bakersfield, Crossroads Shopping Center, totaling 786,370 square feet, anchored by a Target, EIR Certified and project approved
- Bakersfield, Silver Creek Plaza, anchored by a WinCo Foods, totaling 137,609 square feet, EIR Certified and project approved
- Concord, Lowe's Commercial Shopping Center, totaling 334,112 square feet, anchored by a Lowe's Home Improvement Warehouse and a national general merchandise store; EIR Certified December 2008 with no subsequent legal challenge; store opened January 2010
- Eureka, Eureka Balloon Track Development, totaling 327,500 square feet of retail space, anchored by Home Depot, EIR certified, engaged in the legal process
- Fairfield, Green Valley Plaza, totaling 465,000 square feet; EIR certified and project approved, not yet under construction
- Fresno, Fresno 40, totaling 209,650 square feet, project approved and beyond legal challenge, seeking Conditional Use Permit for increased grocery square footage
- Hesperia, Main Street Marketplace, totaling 465,000 square feet, anchored by a Walmart Superstore and a Home Depot, Walmart under construction, expected completion September 2012
- Kern County, Rosedale and Renfro, totaling 228,966 square feet, anchored by a Target, EIR Certified and project approved
- Livingston, Blueberry Crossing, totaling 273,225 square feet, anchored by a large general merchandise store, project environmental process on hold
- Menlo Park, Beverages & More, 8,788-square-foot store opened February 2011
- Milpitas, Walmart Superstore, 17,640-square-foot expansion to existing Walmart; EIR certified by the Planning Commission but not by the City Council; superseded by local initiative
- Novato, Hanna Ranch, Novato, Hanna Ranch, mixed-use project including 44,621 square feet of retail space, 21,190 square feet of office space, and a 116-room hotel; EIR certified and project approved
- Oroville, Walmart Superstore, 213,400 square feet, replacing existing Walmart Discount Store, EIR certified but engaged in the legal process
- Palo Alto, Stanford Shopping Center, 240,000-square-foot expansion; project withdrawn by applicant
- San Francisco, Candlestick Point, 635,000 square feet of regional retail and Hunters Point, with two, 125,000-square-foot neighborhood shopping centers; EIR certified
- San Jose, Almaden Ranch, up to 400,000 square feet; FEIR certified by the Planning Commission, legal appeal in progress
- Sonora, Lowe's Home Improvement Warehouse, 111,196 square feet; store opened December 2010
- Ukiah, Costco, 148,000-square-foot warehouse membership store; DEIR in progress
- Ukiah, Walmart Superstore, 47,621-square-foot expansion to existing Walmart, EIR approved but project denied by the City Council
- Vallejo, WinCo grocery store, 71,393 square feet; FEIR certified by the Planning Commission, legal appeal in progress

There have been yet numerous other comparable studies conducted by Ms. Herman in California locations prior to the past three years. These also include projects located in Adelanto, American Canyon, Carlsbad, Chico, Citrus Heights, Gilroy, Hercules, Madera, Rancho Cordova, Sacramento, San Jose, Victorville, West Sacramento, and Willows.

EXPERIENCE CONDUCTING OTHER ECONOMIC IMPACT STUDIES

Following are description of other economic impact studies managed by Ms. Herman. These studies have been performed under a range of circumstances, including for existing institutions seeking to demonstrate their local and regional impacts to new development projects seeking public approvals. These studies were all initiated during Ms. Herman's tenure with CBRE Consulting; however, Ms. Herman is continuing to provide services to some of these projects through ALH Economics.

- ***University of California at San Diego/Economic Impact Analysis***. Ms. Herman managed a study of the economic impacts of UC San Diego on the City of San Diego, San Diego County, and the State of California. Financial data gathered from the University and companies started by alumni and faculty were used to estimate economic benefits in terms of spending, employment, and personal income. A model was developed to analyze these impacts using IMPLAN input-output multipliers. The model was provided to UC San Diego for their use in analyzing these impacts going forward. Select qualitative economic impacts were also analyzed and include UC San Diego's extensive contribution to the regional workforce, cultural opportunities, and community development efforts. Specifically, the community benefits associated with the medical and health sectors include medical training, significant research spending on health issues, and healthcare for local residents.

- ***Kaiser Permanente/Lancaster Medical District Economic Impact Analysis***. Ms. Herman managed a study of the economic impacts of a planned Kaiser Medical District in Lancaster, California. The facility is planned as part of a larger development area and will serve the growing Antelope Valley. The economic impacts associated with the hospital and medical office buildings include both one-time benefits from construction and on-going operational benefits. The quantifiable benefits include new jobs and income, increased local spending by Kaiser, and spending by new Kaiser employees. The Kaiser Medical District will also likely result in significant economic development impacts such as an increase in the annual community contributions in the region, establishment of local medical training programs and job recruitment, and attraction of adjacent real estate development.

- ***Forest City Enterprises/Economic Impact Analysis***. Ms. Herman conducted an economic impact analysis for a planned mixed-use development project in downtown Fresno. Ms. Herman estimated the project's one-time benefits including the number of direct construction period jobs, indirect jobs associated with the development effort, and construction worker spending in the local community. Similarly, on-going benefits were estimated to include on-site project management jobs, retail sales generated by project residents, and direct and indirect jobs generated by on-site retail spending. These benefits were analyzed on a local and regional level. Some of the qualitative benefits associated with green construction and operation were also analyzed, such as increasing the local knowledge base and the creation of a green cluster.

- ***Lawrence Berkeley National Laboratory/Economic Impact Study.*** Ms. Herman has twice conducted an economic impact analysis demonstrating the benefits of Lawrence Berkeley National Laboratory ("Berkeley Lab") to the City of Berkeley, the Bay Area region, and the State of

California. The study was also intended to be useful to Berkeley Lab in the process of preparing its Long Range Development Plan. The study focused on job generation, wages, and local and regional spending. The analysis culminated in a brief memorandum of findings, as well as an Excel-based economic impact model for Berkeley Lab's future use that was designed to update itself automatically with annual inputs provided by LBL. Recent updates to this study have been used as a springboard to analysis of the Lab's planned second Bay Area campus, for which Ms. Herman participated in public meetings.

- ***Regents of the University of California at Berkeley/Berkeley Art Museum and Pacific Film Archive Economic Impact Analysis***. The Regents of the University of California at Berkeley is are planning to relocate the University's Berkeley Art Museum and Pacific Film Archive (BAM and PFA) to Downtown Berkeley near the gateway to the University campus. The project will be a focal point of Berkeley's evolving Arts District. The plan calls for 118,000 square feet, including 2,500 square feet for retail, an 88-space parking garage, two film screening rooms, 12 galleries, a café, and rooftop gardens. The Exhibition space is 32,760 square feet. Ms. Herman conducted an economic impact analysis of the new facility upon completion. The economic impacts analyzed construction period and on-going impacts on the City of Berkeley, Alameda and Contra Costa counties, and the Bay Area region. The on-going impacts were based upon visitorship projections prepared for the study, forecasted local visitor spending, and anticipated BAM and PFA local spending on payroll as well as goods and services pursuant to analysis of historic spending patterns. They study additionally included qualitative analysis of the spin-off benefits of the new facility, including revitalization of Downtown Berkeley, increasing exposure for local retailers and restaurants, and accelerating growth in residential development.

- ***Transbay Joint Powers Board/Economic Impact of Transbay Development Program.*** Ms. Herman conducted economic impact analysis of select components of the proposed new Transbay Terminal and the associated Transbay Terminal Redevelopment Project Area. This included analysis of the operations of the Terminal and the impacts of the new riders attracted into San Francisco due to expansion of the Terminal's capacity, the downtown extension of Caltrain, and the potential addition of High-Speed Rail service. In anticipation of this major redevelopment effort, the City of San Francisco Redevelopment Agency created a Transbay Redevelopment Project Area calling for an extensive commercial and residential development program. The analysis therefore also projected the economic impacts associated with the construction and operations of this program, which included 3,378 residential units, 765,000 square feet of office space, 40,516 square feet of retail space, and a 1,000-room hotel. The analysis was conducted for a static time period, representing estimated stabilization of the various operations, in the year 2020.

- ***University of California at Riverside/Economic Impact Analysis.*** Ms. Herman conducted an economic impact analysis of the UC Riverside campus and its research centers. The purpose of the study was for the University to demonstrate its impacts on the local Riverside community, the surrounding region, and beyond, as well demonstrate as its leadership role. These impacts include tangible benefits such as job generation, wages, and local and regional spending, as well as intangible benefits such as cultural opportunities, intellectual stimulation, and volunteer work. The study was especially relevant to the University's anticipated Long Range Development Plan (LRDP), both in terms of the University's economic benefits and potential negative impacts. The geographies reflected in the study included the City of Riverside, Riverside County, the Inland Empire, the State of California, and the nation. The study also included baseline analysis of a new Palm Desert campus, with the Heckman Center for Entrepreneurial Management, home of the University's MPB program. A model update to this analysis in process includes expansion of the University's impacts to the national level.

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ALH Urban & Regional Economics

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- Port of San Francisco
- The Presidio Trust
- Pulte Homes
- Santa Clara Valley Transportation Authority
- City of Santa Rosa
- Shea Properties
- Sheppard Mullin Richter & Hampton LLP
- Simon Property Group
- The Sobrato Organization
- Southbay Development
- City of Sunnyvale
- Sunset Development Co.
- Transbay Joint Powers Authority
- University of Phoenix
- Westfield Corporation

Amy L. Herman, Principal of ALH Urban & Regional Economics, has provided urban and regional consulting services for almost 30 years. During this time she has been responsible for directing assignments for corporate, institutional, non-profit, and governmental clients in key service areas, including fiscal and economic impact analysis, economic development and redevelopment, feasibility analysis, location analysis, strategic planning, policy analysis, and transit-oriented development. Her award-winning economic development work has been recognized by the American Planning Association, the California Redevelopment Association, and the League of California Cities.

Prior to forming ALH Urban & Regional Economics in mid-2011, Ms. Herman's professional tenure included 20 years with Sedway Group, inclusive of its acquisition by CB Richard Ellis and subsequent name change to CBRE Consulting. Her prior professional work experience includes 5 years in the Real Estate Consulting Group of the now defunct accounting firm Laventhol & Horwath (L&H), preceded by several years with the land use consulting firm Land Economics Group, which was acquired by L&H.

Following are descriptions of select consulting assignments managed by Ms. Herman during the course of her career.

ECONOMIC DEVELOPMENT AND REDEVELOPMENT

City of Morgan Hill. Reviewed the City's economic development practices and compared them with "best practices" to other competitive Bay Area cities.
Solano County Cities. Managed a regional labor market study for Solano County cities designed to enhance the recognition of Solano County's competitiveness as a business location to prospective businesses and corporate site selectors.
City of San Jose Redevelopment Agency. Prepared a study analyzing the costs and benefits associated with creating a bioscience incentive zone in the Edenvale industrial redevelopment area.
City of Lake Forest. Prepared a commercial revitalization plan for the El Toro Corridor, including strategies to attract retail tenants, improve design standards, and create a community focal point. Led a series of community workshops and assessed the existing retail market.
City of Palo Alto. Conducted a retail study targeting six of Palo Alto's retail business districts for revitalization, including the identification of barriers to revitalization and recommended strategies tailored to the priorities established for each of the individual target commercial areas.
East Bay Municipal Water District. Managed economic, demographic, and real estate data analysis in support of developing market-sensitive adjustments to long-term water demand forecasts.
Redwood City Redevelopment Agency. Conducted a business attraction, retention and expansion study designed to preserve and strengthen Redwood City's industrial and retail bases. Outlined a program of economic development incentives, formulated implementation strategies, and recommended an organizational structure for a new economic development department.

ECONOMIC IMPACT ANALYSIS

Hospital Council of Northern and Central California. Currently conducting a study to identify the economic impact of hospitals and long-term care facilities located in Santa Clara County.
University of California. Conducted economic impact studies for five University of California campuses: Berkeley, Davis, Riverside, San Francisco, and San Diego. Prepared models suitable for annual updates by campus personnel.
Various EIR Firms. Managed numerous assignments analyzing the potential for urban decay to result from development of major big box and other shopping center retailers. The analysis comprises a required Environmental Impact Report component pursuant to CEQA.
Bay Area Rapid Transit District. Conducted an economic impact study demonstrating BART's regional economic benefits, focusing on quality of life, regional competitiveness, smart growth, and development impacts.
Kaiser Permanente. Managed economic impact analysis for planned Kaiser facilities in Modesto (hospital) and Lancaster, California (medical office campus). The analyses included multiplier impacts for local and regional employment, wages, and vendor expenditures.

AMY L. HERMAN, AICP
Principal

FISCAL IMPACT ANALYSIS

Stanford Management Company and Stanford Hospitals. Managed numerous assignments involving fiscal impact analysis for planned facilities developed by Stanford Management Company or Stanford Hospitals, including a satellite medical campus in Redwood City, a hotel and office complex in Menlo Park, and expansion of the hospital complex and the Stanford School of Medicine in Palo Alto.

Google. As a subconsultant to an architectural firm, prepared a fiscal impact analysis of the master planning effort for Google's expanded headquarters presence in the City of Mountain View.

City of Concord. Structured and managed fiscal impact analysis designed to test the net fiscal impact of multiple land use alternatives pertaining to the reuse of the 5,170-acre former Concord Naval Weapons Station, leading to possible annexation into the City of Concord, California. Currently completing an update to this analysis.

General Electric Company. Conducted industrial market, retail demand, and comparative fiscal impact analysis to support changing 55.1 acres of heavy industrial land to commercial use in San Jose, California. The resulting regional shopping center met with strong market acceptance.

Exxon Mobil Corporation. Prepared a fiscal and economic impact report demonstrating the role of general industry, including Exxon Mobil, on the quality of life in Benicia, California. This was performed relative to the City's General Plan Update.

Catellus (now ProLogis). Demonstrated the fiscal and economic benefits of San Francisco's 303-acre planned multi-use Mission Bay development over the 30-year projected build-out period as a precondition of City/County and Redevelopment Agency plan approval.

CORPORATE LOCATION ANALYSIS

Toyota Motor Corporation. Conducted a location analysis study for a distribution facility in the San Francisco Bay Area, designed to minimize travel time distance to the majority of area dealerships.

Cisco Systems. Managed multiple corporate location studies for Cisco Systems, headquartered in San Jose, California. These studies focused on the formulation of both a regional and a North American location strategy.

Starbucks Coffee Company. Directed analysis examining alternative locations for a new coffee roasting plant in the Western United States. A variety of economic, business, and labor market data were collected. The roasting plant was successfully sited in Sparks, Nevada.

Sacramento Regional Transportation District (RTD). Managed a consultant team assisting the RTD in planning for its immediate and long-term administrative office space needs, and in developing a strategy for maximizing the value of the existing RTD complex.

Hines. Managed comparative analysis highlighting business and employee costs associated with business locations in three competitive Bay Area locations.

DEVELOPMENT FEASIBILITY

Catellus Development Corporation. Preparing a retail leasing strategy for Alameda Landing, a planned a 285,000-square-foot shopping center, identifying tenants suitable for the purpose of recapturing identified sales leakage.

ChevronTexaco. Conducted a regional market analysis of an 8,400-acre oil field retired from active oil production in the New Orleans, Louisiana metropolitan area.

City of San Jose. Managed alternative City Hall location analysis, focused on recommending a long-term occupation strategy for the City. Following relocation of City Hall conducted a study examining the feasibility of redeveloping the City's former City Hall location and nearby parking facilities for residential, retail, and civic land uses.

Ford Motor Land Corporation. Managed the market analysis component pertinent to the redevelopment of Ford's 157-acre Ford auto assembly plant site in Milpitas. Ford ultimately disposed of the property for the purpose of retail development through adaptive reuse.

General Motors Corporation. Managed reuse studies for closed manufacturing facilities in Indiana (250 acres, 14 sites) and New Jersey (80 acres). Studies focused on the long term reuse and redevelopment potential of the closed manufacturing sites.

AMY L. HERMAN, AICP
Principal

PROFESSIONAL AFFILIATIONS

- American Planning Association (APA) and its Economic Development Division
- American Institute of Certified Planners (AICP)
- California Association for Local Economic Development (CALED), former Board Member
- State of California, Real Estate Salesperson License, License #01821384

EDUCATION

- Ms. Herman holds a Bachelor of Arts degree in urban studies, magna cum laude, from Syracuse University. She also holds a Master of Community Planning degree from the University of Cincinnati. She has also pursued advanced graduate studies in City and Regional Planning at the University of California at Berkeley.

VOLUNTEER ACTIVITIES

- Vice President, Rebuilding Together (formerly Christmas in April), East Bay North
- Neighborhood Captain for Earthquake Preparedness, Berkeley, California
- President, Diablo Pacific Short Line, 501 (c)(3) Portable Modular Train Organization
- Volunteer, Swanton Pacific Railroad, Santa Cruz County, California
- Volunteer, Redwood Valley Railway, Tilden Regional Park, California

Appendix 4.2A:

Technical Air Quality and Greenhouse Gas Appendices –

Greenhouse Gas Emissions Inventory

ENVIRON, Inc.



Greenhouse Gas Emission Inventory Analysis

Safeway Rockridge Center Shopping Project
Oakland, California

Prepared for:
Property Development Centers
Pleasanton, California

Prepared by:
ENVIRON International Corporation
San Francisco, California

Date:
December 21, 2012

Project Number:
03-24266F

Contents

1 Introduction

This report evaluates the greenhouse gas (GHG) emissions associated with the proposed Safeway Rockridge Center Shopping Project located at the intersection of 51st Street and Broadway in Oakland, California. The redevelopment includes the demolition of an existing shopping center (including an existing Safeway store) and the construction of a new Safeway store plus additional retail, restaurant, and office space at the same location. The GHG emissions are provided for both the baseline conditions existing at the time of the Notice of Preparation (NOP) as well as the conditions of the Project at build out.

This analysis includes the GHG emission inventories that are used to determine climate change impacts. The City of Oakland's California Environmental Quality Act (CEQA) Thresholds of Significance are based on the Bay Area Air Quality Management District's (BAAQMD's) CEQA thresholds updated in June 2010. On March 5, 2012 the Alameda County Superior Court issued a judgment, in California Building Industry Association v. Bay Area Air Quality Management District, finding that the BAAQMD had failed to comply with CEQA when it adopted its 2010 significance thresholds. The Court ruled that the adoption of the new significance thresholds (including new significance thresholds for GHGs) is considered a "project" under CEQA, and, thus, the BAAQMD should have prepared the required CEQA review and documentation. The court issued a writ of mandate ordering the BAAQMD to set aside the 2010 significance thresholds until the BAAQMD has complied with CEQA. However, the City of Oakland's CEQA thresholds are still in effect and are relied upon in this report. This report documents the methodologies used by ENVIRON in developing the GHG emission inventory and comparing them to the City's CEQA thresholds. The methodologies used in this analysis are consistent with the BAAQMD's May 2012 CEQA Guidelines which were not set aside by the Court and remain in effect.

1.1 Project Description

The project site is located at 51st Street and Broadway in Oakland, California and is currently occupied by an approximately 185,500-square-foot shopping center and surface parking lot. The project is proposed to consist of the following:

- Demolition of all 185,500 square feet of existing commercial buildings.
- Construction of approximately 323,000 square feet of new commercial buildings, including a Safeway grocery store (65,000 square feet), retail, office, and restaurant spaces.
- Construction of surface parking, rooftop parking, and a three-level above-ground parking garage totaling 967 parking spaces.

Because the new store would be a larger full service grocery store than the existing one, more local residents including those who currently shop groceries at other stores are expected to shop at the new store. Minor road construction will occur to reconfigure the medians on Pleasant Valley Avenue and Broadway.

1.2 GHG Emission Inventory

GHG emissions are estimated for the baseline operations and future operations. Project net GHG emissions are calculated as the difference between the two. The net emissions increase will be compared to the BAAQMD 'bright line' threshold.[1] The GHG emissions source categories include building energy use, water use, traffic, solid waste disposal, and refrigerant leaks. Emissions of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and high global warming potential gas refrigerants from each of these sources were calculated and converted, using global warming potentials (GWP), to CO_2e for comparison to the BAAQMD threshold.

The emissions associated with solid waste disposal and refrigeration leaks are presented since BAAQMD's CEQA Guidelines indicate that these should be quantified, however inclusion of these categories is inconsistent with BAAQMD's justification for deriving the 1,100-metric ton (MT) threshold of significance and therefore the emission inventory is conservative by including these.[2] The reduction in refrigerant emission resulting from Safeway's efficiency programs is included as a net reduction in emissions. ENVIRON uses the solid waste methods utilized by the California Emission Estimator Model (CalEEMod) which is a comprehensive state-wide model used for estimation of GHG and air quality emissions for land use development projects, and which is further described below.

The one-time GHG emissions associated with demolition and building construction are also presented here using default construction assumptions contained in CalEEMod. These emissions are presented alone and then amortized to combine them with the annual operational emissions.

2 Methods

This section describes the methodology that was used to develop the GHG emissions inventories associated with the Baseline and Project. These inventories consider five categories of GHG emissions: energy use associated with non-residential buildings, mobile sources, solid waste, water and wastewater, and refrigeration leaks. Electrical power will be supplied to the Project Site by Pacific Gas & Electric Company (PG&E). Accordingly, indirect GHG emissions from electricity usage are calculated using the PG&E's carbon-intensity factors in CalEEMod based on the 2008 Power/Utility Reporting Protocol. Legislation and rules regarding climate change, as well as the scientific understanding of the extent to which different

[1] If a proposed project involves the removal of existing emission sources, BAAQMD recommends subtracting the existing emissions levels from the emissions levels estimated for the new proposed land use. This approach is consistent with the definition of baseline conditions pursuant to CEQA. See BAAQMD. 2011. California Environmental Quality Act Air Quality Guidelines. May. Page 4-5.

[2] The development and justification of the BAAQMD's 1,100 metric ton CO2e/year threshold is based on the California Air Resources Board's (ARB's) statewide GHG inventory of "land use-driven" sectors. While the sectors include transportation, electric power, commercial and residential fuel use, and wastewater treatment, it does not include emissions associated with solid waste disposal or with refrigeration leaks. Adding emissions associated with solid waste disposal and refrigeration would be conservative for a new project since these additional emissions would only increase the total emissions associated with the project, making it more likely that the threshold would be triggered. Since this new project replaces an existing commercial development, we subtract (or take the net difference) between the new project and the existing project. For consistency, we also include emissions associated with waste and refrigerants.

activities emit GHGs, continue to evolve; as such, the inventories in this report are a reflection of the guidance and knowledge currently available.

ENVIRON primarily utilized the CalEEMod version 2011.1.1[3] to assist in quantifying the GHG emissions in the inventories presented in this report for the Baseline and the Project. CalEEMod is a statewide program designed to calculate both criteria and GHG emissions from development projects in California. This model was developed under the auspices of the South Coast Air Quality Management District (SCAQMD) and received input from other California air districts including BAAQMD, and is currently supported by several lead agencies for use in quantifying the emissions associated with development projects undergoing environmental review. CalEEMod utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the United States Environmental Protection Agency (USEPA) AP-42 emission factors,[4] CARB's on-road and off-road equipment emission models such as the EMission FACtor model (EMFAC) and the Offroad Emissions Inventory Program model (OFFROAD), and studies commissioned by California agencies such as the California Energy Commission (CEC) and CalRecycle. ENVIRON used Alameda County CalEEMod defaults in the model runs unless otherwise noted in the methodology descriptions below. Details regarding the specific methodologies used by CalEEMod can be found in the CalEEMod User's Guide and associated appendices.[5] The CalEEMod output files are provided for reference in Appendix A to this report.

2.1 Site-Specific Data

Safeway provided utility consumption data for electricity, natural gas, and water usage and also refrigerant leakage rates at the existing Safeway store.[6] Safeway also predicted electricity and natural gas data for the new Safeway based on the utility consumption of newer Safeway stores that were built with similar project design features as the Project.[7] Safeway provided the average trip length for existing store customers estimated based on the Safeway Club Card data.[8] The subsections below describe the methodology used in developing the GHG emission inventories.

2.2 Building Energy Use

Safeway provided the utility consumption data for both the existing and new stores. The CalEEMod default utility consumption data were used for other commercial buildings in the

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3 Available at: http://www.caleemod.com/. Accessed August 22, 2012.

4 The USEPA maintains a compilation of Air Pollutant Emission Factors and process information for several air pollution source categories. The data is based on source test data, material balance studies, and engineering estimates. More information is available at http://www.epa.gov/ttnchie1/ap42/

5 Available at: http://www.caleemod.com. Accessed August 22, 2012.

6 Email Communication from Todd R. Paradis of Safeway on September 19, 2011. #669 Energy Comparison (Santa Cruz Usage).xls and #669 Refrigerant Analysis.xls

7 Email Communication from Todd R. Paradis of Safeway on September 19, 2011. #669 Energy Comparison (Santa Cruz Usage).xls

8 Email Communication from Todd R. Paradis of Safeway on September 19, 2011. #669 Avg HH Distance by Zip4.xls

shopping center. This category also includes natural gas combustion from the emergency generator. Emission factors were used to convert the consumption data in kilowatt-hours (kWh) and therms, for electricity and natural gas, respectively, to GHG emissions in MT CO_2e. As noted earlier, ENVIRON used carbon intensity emission factors for electricity collected from the Pacific Gas and Electric (PG&E) Power/Utility Reporting Protocol.[9,10] Natural gas emission factors used were from the California Climate Action Registry's General Reporting Protocol.[11]

Project operations result in a net annual increase of 225 and 40 MT CO_2e emissions related to electricity and natural gas usage, respectively, when compared to the baseline case. Table 1 presents the GHG emissions associated with electricity and natural gas usage for the baseline and Project with further details available in Appendix A.

2.3 Water and Wastewater

Emission factors were also used to convert from consumption data in millions of gallons (MG) water use, to equivalent electricity use, and then to GHG emissions in MT CO_2e. Water use was converted to equivalent electricity consumption using the default CalEEMod energy intensity values for Northern California water use which includes the supply, conveyance, treatment, and distribution. The electricity associated with transportation, treatment and disposal of wastewater was evaluated based on CEC's 2006 report. Electricity consumption was converted to CO_2e using the method described earlier. Consistent with BAAQMD draft guidance, ENVIRON only calculated GHG emissions from electricity associated with wastewater treatment, and ENVIRON did not calculate the direct biogenic GHG process emissions associated with wastewater treatment.

Water usage for the existing store was provided by Safeway and that for the proposed store was estimated using the water use intensity of the newer Safeway stores that were built with similar project design features as the Project. Water usage for non-Safeway commercial buildings in the existing and new shopping center was estimated using CalEEMod default parameters. The 29,000 square feet of "auxiliary space"[12] is not expected to generate demand for water so GHG emissions associated with water usage were not calculated for this land use.

Project operations result in a net annual increase of 22 MT CO_2e emissions related to water and wastewater when compared to the baseline case. Table 1 shows the baseline and Project GHG emissions associated with water and wastewater with further details by land use available in Appendix A.

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[9] CO_2 Emission factor for electricity provided by PG&E for the year 2008.
California Climate Action Registry Database. 2009. Pacific Gas and Electric 2008 PUP Report. Available at: http://www.climateregistry.org/tools/carrot/carrot-public-reports.html. Accessed August 22, 2012.

[10] CH_4 and N_2O emission factors for electricity from Table G.6 California Grid Average Electricity Emission Factors (1990-2004) of CARB 2008 Local Government Operations Protocol Version 1.0.

[11] Emission factors for natural gas obtained from California Climate Action Registry. 2009. General Reporting Protocol 3.1, Tables C7 and C9.

[12] "Auxiliary space" is area that is not leasable floor space that includes stairs, aisle ways, corridors, plazas, and loading areas.

2.4 Mobile Sources

Greenhouse gas emissions from mobile sources were calculated using the predicted number of vehicle trips and trip lengths that are associated with the Project and baseline operations.

Consistent with the transportation study, for the Safeway store and other commercial buildings in the existing and new shopping center, the number of vehicle trips was estimated using Institute of Transportation Engineers (ITE) regression equations.[13] The same pass-by trip rate used in the transportation study was applied in the CalEEMod model.[14] The baseline trip rate for the existing CVS Pharmacy was also estimated using the ITE regression equations, but scaled by the ratio of peak trip counts from a Fehr & Peers study at the site to the peak trip counts derived from the ITE regression equations.[15] The total vehicle miles traveled (VMT) associated with Safeway store customers was calculated using the trip length provided by Safeway from Club Card data. VMT associated with all other trips was derived from CalEEMod default trip lengths. The “auxiliary space” is not expected to generate additional vehicle trips not already accounted for from the leasable area so GHG emissions associated with transportation were not calculated for this land use.

As discussed earlier, because the new store is much larger in terms of store size and grocery service, the current store customers are expected to continue shopping at the same location. The total VMT for these customers were calculated using the ITE regression equations, the size of the existing store, and average trip length estimated by Safeway based on the current store Club Card data. ENVIRON calculated the net VMT using the same methodology as for existing customers. The VMT for the employees and visitors other than customers were also calculated using the same methodology as that used for the existing store.

The CO_2 emissions from mobile sources were calculated with the vehicle miles traveled and emission factors from EMFAC2007 as provided in CalEEMod. Emission factors from 2014 were used with the baseline estimate.

Project operations result in a net annual increase of 1,650 MT CO_2e emissions related to mobile trips when compared to the baseline case. Table 1 shows the baseline and Project GHG emissions associated with mobile trips with further details available in Appendix A of this report.

2.5 Solid Waste Disposal

Greenhouse gas emissions from solid waste disposal were calculated using the predicted amount of waste disposed and sent to a landfill with landfill gas capture flaring. Defaults from CalEEMod were used in all instances, which is based on data from CalRecycle, the California Air Resources Board (ARB) Local Government Operations Protocol for degradation of solid waste material. The equations used have been modified from the Local Government Operations Protocol to capture all of the future GHG emissions resulting from the waste

[13] ITE. 2008. Trip Generation. 8th Edition. An ITE Informational Report.

[14] Email Communication from Sam Tabibnia of Fehr & Peers to S. Libicki of ENVIRON on August 16, 2012. Rockridge Trip Gen.pdf. Average weekday pass-by rate from ITE (2008) for a shopping center is 34%.

[15] Ibid. Table 4.3-12. The weekday PM peak hour trip counts from the Fehr & Peers study was 55% lower than that derived from the ITE regression equations.

degradation in the landfill and attribute it to the year it was placed into the landfill. This is more fully described in CalEEMod User's Guide Appendix A. The "auxiliary space" is not expected to generate additional waste not already accounted for from leasable space so GHG emissions associated with waste were not calculated for this land use.

Project operations result in a net annual increase of 9 MT CO_2e emissions related to solid waste when compared to the baseline case. Table 1 shows the baseline and Project GHG emissions associated with solid waste disposal with further details by land use available in Appendix A of this report.

2.6 Offsetting Reductions in Emissions - Refrigerant Leaks

The reduction in refrigerant emissions associated with Safeway's sustainability programs can be used as a source of offsetting emissions. The use of refrigerated systems results in leakage of some of the charged refrigerant. Refrigerants are usually classified as high global warming potential gases. Safeway provided records indicating the typical leakage rates of refrigerant from the refrigerated systems at the existing store. These data along with the amount and type of refrigerant used at the store was used to estimate the total amount of refrigerant leaks from the existing store. Safeway estimated the amount and leak rate for the new store based on information from similar newer stores. For each refrigerant type, the global warming potential (GWP) was calculated based on the values utilized in BAAQMD Guidelines and associated recommended models for specific refrigerants identified. The global warming potential indicates, on a pound for pound basis, the potency of the chemical compared to carbon dioxide. Multiplying the pounds of refrigerant by the GWP results in the GHG emissions from refrigeration leaks in terms of CO_2e. For new, non-Safeway commercial buildings in the shopping center, it is speculative as to whether there would be refrigeration; therefore, the GHG emissions for these buildings were not calculated.

Project operations result in a net annual decrease of 2,096 MT CO_2e emissions related to refrigeration leaks when compared to the baseline case. Table 2 illustrates the calculations for the net emissions associated with the net refrigeration leaks from the existing and new store. Table 1 summarizes this information.

2.7 Construction GHG Emissions

Greenhouse gas emissions from construction of the Project were calculated using default assumptions regarding the number of off-road construction equipment, worker commute trips, and vendor trips. ENVIRON calculated emissions from construction equipment using the CalEEMod defaults based on the 15-acre Project site,[16] and the amount of building demolition to be 185,500 square feet. Tables 3 through 5 detail the construction schedule, equipment list and construction related vehicle trips.[17]

[16] Construction emissions were quantified for two phases of construction separately. CalEEMod defaults for equipment and phase durations were based on a 5-acre Phase I construction site and a 10-acre Phase II construction site. Splitting the project site results in a higher conservative estimate of emissions.

[17] Roadway construction emissions were negligible compared to project site emissions (approximately 1%) and therefore detailed tables on construction schedule, equipment list, and construction related vehicle trips are not

CalEEMod is based upon ARB-approved Off-Road and On-Road Mobile-Source Emission Factor models (OFFROAD and EMFAC, respectively),[18] and is designed to estimate construction emissions for land use development projects and allows for the input of project-specific information. OFFROAD is an emissions factor model used to calculate emission rates from off-road mobile sources (e.g., construction equipment, agricultural equipment). EMFAC is an emissions factor model used to calculate emissions rates from on-road vehicles (e.g., passenger vehicles, haul trucks). Where project-specific data were not available (e.g. equipment horsepower and load factors), default assumptions from CalEEMod were used to estimate construction emissions.[19] The off-road diesel emission factors used by CalEEMod are based on the Air Resources Board (ARB) OFFROAD2007 program. As such an adjustment to the load factors will be used. This will be based on a 33% reduction from the final mass emissions reported by CalEEMod as justified by Appendix B.

Table 6 shows total one-time GHG emissions for construction, including off-road equipment, worker commuting, vendor trips, and hauling for the Project. The GHG emissions from construction are 1,786 MT CO_2e for the Project. The construction emissions, annualized over a time period of 40 years, are 45 MT CO_2e.

2.8 Total Operational GHG Emissions

Table 1 shows the total GHG emissions from all source categories included in the baseline, Project and net emission inventory. The baseline GHG emissions are an average of 11,447 MT CO_2e per year. The Project GHG emissions are 11,298 MT CO_2e per year. Because GHGs are being reduced from the baseline, there is no impact from GHG emission as a result of this project, consistent with City thresholds.

ENVIRON annualized the construction emissions over 40 years pursuant to the City's thresholds. The annualized construction emissions using this method are 45 MT. This results in total net annualized emissions reductions for both construction and operational GHG emissions of 104 MT.

3 Summary

Table 1 shows the total operational GHG emissions from all sources included in the baseline, Project and net emission inventory. The baseline GHG emissions inventory is an average of 11,447 MT CO_2e per year. The Project GHG emissions are 11,298 MT CO_2e per year. This results in net GHG emissions reduction of 149 MT CO_2e per year. Table 6 shows the total construction GHG emissions for the Project of 1,786 MT which when amortized over 40 years is 45 MT. This results in net annualized GHG emissions reduction for the Project of 104 MT. Therefore, because this Project results in net GHG emissions reduction, it has a less than significant impact on climate change.

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included in this report. Emissions modeling outputs can be found in the attachments to the Local Risk and Hazard Analysis technical memorandum.

[18] OFFROAD and EMFAC are also the basis for construction emission factors and estimation in the URBEMIS emissions estimation program; hence, the results will be similar using either software.

[19] CalEEMod model output files are provided as Appendix A.

Table 1
GHG Emission Inventory
Safeway
51st Street, Oakland, California

Scenario	Electricity [1]		Natural Gas [1]		Water[2]		Traffic[3]	Waste		Refrigeration Leaks	Total
	Consumption (kWh/yr)	(MT CO_2e / yr)[4]	Consumption (Therms/yr)	(MT CO_2e / yr)[5]	Consumption (MG/yr)	(MT CO_2e / yr)[6]	(MT CO_2e / yr)[7]	(tons/yr)	(MT CO_2e / yr)[7]	(MT CO_2e / yr)[8]	(MT CO_2e / yr)
Sum of Baseline	4,055,893	1,187	29,726	160	12	37	7,472	586	266	2,325	11,447
Sum of Project	4,826,190	1,413	37,189	200	19	59	9,123	606	276	228	11,298
Net	**770,297**	**225**	**7,463**	**40**	**7**	**22**	**1,650**	**21**	**9**	**-2,096**	**-149**
								Ammortized Construction (MT CO2e/year)			45
								Net including ammortized construction			**-104**

Notes:
1. Electricity and Natural Gas use is provided by Safeway. Natural gas emergency generator emissions (4.9 MT CO2e/year, corresponding to 918 therms per year) included in project emissions.
2. Water and wastewater consumption for the existing store is provided by Safeway, and that for the proposed store is estimated using the water use intensity (gal/sqft) of a newer Safeway store with similar feature.
3. The average trip length for the Safeway customers is estimated based on the Safeway Club Card data, and those for the store employees and people other than customers and workers are the CalEEMod defaults. The trip rates are the CalEEMod default.
4. Electricity emission factors are based on the CalEEMod default values for PG&E.
5. Natural gas emission factors obtained from California Climate Action Registry Reporting Protocol, Table C6 and C9.
6. Energy intensity value for Northern California, the default in CalEEMod was used which includes the supply, conveyance, treatment, and distribution. Emission factor for electricity provided by Pacific Gas and Electric (PG&E). Wastewater was assumed to be an aerobic process.
7. Used 2014 vehicle emission factors for Alameda County.
8. Refrigeration leaks is provided by Safeway. This has then been converted to CO_2e based on global warming potentials for the different refrigerants.

Abbreviations:
CalEEMod: California Emission Estimator Model
CO_2e: Carbon dioxide equivalent
CH_4: Methane
gal: gallon
GHG: Greenhouse gas
kWh: kilowatt hour
lbs: pounds
MG: million gallons
MT: Metric Tons
N_2O: Nitrous oxide
PG&E: Pacific Gas and Electricity
sqft: square foot
yr: year

Sources:

California Air Resources Board (ARB). 2008. Local Government Operations Protocol, For the quantification and reporting of greenhouse gas emissions inventories, Version 1.0. September 25.
California Climate Action Registry. 2009. General Reporting Protocol, Version 3.1. January. Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf
California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
EBMUD. Energy: Generating Renewable Power. Available at: http://www.ebmud.com/sites/default/files/pdfs/2010_EBMUD_Energy.pdf
Gleick, P.H.; Haasz, D.; Henges-Jeck, C.; Srinivasan, V.; Cushing, K.K.; Mann, A. 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California. Published by the Pacific Institute

Table 2
GHG Emissions from Refrigerant Leaks
Safeway
51st Street, Oakland, California

	Leakage[1]	GWP[2]	GHG Emissions [3]
	(lbs/year)	--	(MT CO_2e/yr)
Existing Safeway Store #669	1,553	3,300	2,325
New Safeway Store	330	1,526	228
Change	-1,223		-2,096

Notes:

1. The amount of refrigerant leaks per year for the new and existing Safeway stores were provided by Safeway.

2. The refrigerant global warming potential (GWP) for existing Safeway store was provided by Safeway and represents a weighted average. The GWP for the new Safeway store represents refrigerant R407a.

3. The pounds of refrigerant leaks is multiplied by the global warming potential (GWP) for each refrigerant and converted to metric tonnes.

Abbreviations:

CO_{2e}: Carbon dioxide equivalent
GHG: Greenhouse Gas
GWP: Global Warming Potential
lbs: pounds
MT: Metric Tons
yr: Year

Sources:

Safeway Refrigerant Data

Table 3
Construction Phase Schedule
Safeway
51st Street, Oakland, California

Phase[1]	Sub-Phase	Start Date[2]	End Date[3]	Workdays in Phase
I	Demolition	2013/07/01	2013/07/26	20
	Site Preparation	2013/07/27	2013/08/10	10
	Grading	2013/08/11	2013/09/06	20
	Building Construction	2013/09/07	2014/07/26	230
	Paving	2014/07/27	2014/08/23	20
	Architectural Coating	2014/08/24	2014/09/21	20
II	Demolition	2014/05/01	2014/05/28	20
	Site Preparation	2014/05/29	2014/06/11	10
	Grading	2014/06/12	2014/07/23	30
	Building Construction	2014/07/24	2015/09/16	300
	Paving	2015/09/17	2015/10/14	20
	Architectural Coating	2015/10/15	2015/11/11	20

Notes:

1. The Project will be constructed in two phases. In Phase I, the existing CVS Pharmacy building and the adjacent retail building would be demolished and replaced by a new Safeway store. In Phase II, the existing Safeway and all of the other existing buildings on the site would be demolished and replaced with new 2- to 4-story buildings containing retail and restaurant uses on the ground floor and office and retail uses on the second floor.
2. The start date for each phase matches the start date given in the EIR Project Description.
3. CalEEMod defaults were used for the duration of each phase and sub-phase. These durations do not match information provided in the EIR Project Description. This does not affect the estimate of construction GHG emissions.

Table 4
Construction Equipment List
Safeway
51st Street, Oakland, California

Phase[1]	Sub-Phase	Off-Road Equipment Type	Equipment Amount	Usage Hours	Horse Power	Load Factor[2]
I	Demolition	Concrete/Industrial Saws	1	8	81	0.73
		Excavators	3	8	157	0.57
		Rubber Tired Dozers	2	8	358	0.59
	Site Preparation	Rubber Tired Dozers	3	8	358	0.59
		Tractors/Loaders/Backhoes	4	8	75	0.55
	Grading	Excavators	1	8	157	0.57
		Graders	1	8	162	0.61
		Rubber Tired Dozers	1	8	358	0.59
		Tractors/Loaders/Backhoes	3	8	75	0.55
	Building Construction	Cranes	1	7	208	0.43
		Forklifts	3	8	149	0.30
		Generator Sets	1	8	84	0.74
		Tractors/Loaders/Backhoes	3	7	75	0.55
		Welders	1	8	46	0.45
	Paving	Pavers	2	8	89	0.62
		Paving Equipment	2	8	82	0.53
		Rollers	2	8	84	0.56
	Architectural Coating	Air Compressors	1	6	78	0.48
II	Demolition	Concrete/Industrial Saws	1	8	81	0.73
		Excavators	3	8	157	0.57
		Rubber Tired Dozers	2	8	358	0.59
	Site Preparation	Rubber Tired Dozers	3	8	358	0.59
		Tractors/Loaders/Backhoes	4	8	75	0.55
	Grading	Excavators	2	8	157	0.57
		Graders	1	8	162	0.61
		Rubber Tired Dozers	1	8	358	0.59
		Scrapers	2	8	356	0.72
		Tractors/Loaders/Backhoes	2	8	75	0.55
	Building Construction	Cranes	1	7	208	0.43
		Forklifts	3	8	149	0.30
		Generator Sets	1	8	84	0.74
		Tractors/Loaders/Backhoes	3	7	75	0.55
		Welders	1	8	46	0.45
	Paving	Pavers	2	8	89	0.62
		Paving Equipment	2	8	82	0.53
		Rollers	2	8	84	0.56
	Architectural Coating	Air Compressors	1	6	78	0.48

Notes:
1. The Project will be constructed in two phases.
2. These are the load factors used in CalEEMod. These factors, from OFFROAD, are 33% too high, according to the ARB (9/3/2010). This is corrected for by reducing the emissions by 33%.

Table 5
Construction On-Road Vehicle Trips and Trip Lengths
Safeway
51st Street, Oakland, California

Phase[1]	Sub-Phase	Worker Trips per Day (#)	Vendor Trips Per Day(#)	Total Hauling Trips (#)	Worker Trip Length (miles)	Vendor Trip Length (miles)	Hauling Trip Length (miles)
I	Demolition	15	0	664	12.4	7.3	20
	Site Preparation	18	0	0	12.4	7.3	20
	Grading	15	0	0	12.4	7.3	20
	Building Construction	87	38	0	12.4	7.3	20
	Paving	15	0	0	12.4	7.3	20
	Architectural Coating	17	0	0	12.4	7.3	20
II	Demolition	15	0	180	12.4	7.3	20
	Site Preparation	18	0	0	12.4	7.3	20
	Grading	20	0	0	12.4	7.3	20
	Building Construction	184	76	0	12.4	7.3	20
	Paving	15	0	0	12.4	7.3	20
	Architectural Coating	37	0	0	12.4	7.3	20

Notes:
1. The Project will be constructed in two phases.

Table 6
Total Construction Greenhouse Gas Emissions
Safeway
51st Street, Oakland, California

Phase[1]	Source	Construction Phase Emissions (MT CO2e)						Total Construction (MT CO2e)
		Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	
I	Off-Road[2]	46	24	32	283	18	2	405
	On-Road	26	1	2	207	1	2	239
II	Off-Road[2]	46	24	99	369	18	2	558
	On-Road	8	1	3	567	1	4	584
	Total	**126**	**50**	**135**	**1,426**	**38**	**9**	**1,786**

Notes:

1. The Project will be constructed in two phases.

2. Emissions have been reduced by 33% from CalEEMod output. This adjustment corrects for the load factors used in CalEEMod, which are 33% too high, according to the ARB (9/3/2010).

Appendix A

CalEEMod Runs

Baseline Operational

Safeway Oakland 51st - Operational (Baseline)

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Pharmacy/Drugstore w/o Drive Thru	87.2	1000sqft
Regional Shopping Center	50.3	1000sqft
Supermarket	48	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Climate Zone 5

Wind Speed (m/s) 2.2

Precipitation Freq (Days) 63

Utility Company Pacific Gas & Electric Company

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction emissions in this model (only operational)

Vehicle Trips - Data provided by client

Energy Use - Data provided by client

Water And Wastewater - Data provided by client

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.94	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.02	0.15	0.12	0.00		0.00	0.01		0.00	0.01	0.00	1,338.54	1,338.54	0.06	0.02	1,346.90
Mobile	8.01	19.04	68.87	0.08	7.06	0.55	7.61	0.31	0.55	0.86	0.00	7,465.01	7,465.01	0.36	0.00	7,472.48
Waste						0.00	0.00		0.00	0.00	118.90	0.00	118.90	7.03	0.00	266.46
Water						0.00	0.00		0.00	0.00	0.00	25.62	25.62	0.38	0.01	36.53
Total	**8.97**	**19.19**	**68.99**	**0.08**	**7.06**	**0.55**	**7.62**	**0.31**	**0.55**	**0.87**	**118.90**	**8,829.17**	**8,948.07**	**7.83**	**0.03**	**9,122.37**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.94	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.02	0.15	0.12	0.00		0.00	0.01		0.00	0.01	0.00	1,338.54	1,338.54	0.06	0.02	1,346.90
Mobile	8.01	19.04	68.87	0.08	7.06	0.55	7.61	0.31	0.55	0.86	0.00	7,465.01	7,465.01	0.36	0.00	7,472.48
Waste						0.00	0.00		0.00	0.00	118.90	0.00	118.90	7.03	0.00	266.46
Water						0.00	0.00		0.00	0.00	0.00	25.62	25.62	0.38	0.01	36.53
Total	**8.97**	**19.19**	**68.99**	**0.08**	**7.06**	**0.55**	**7.62**	**0.31**	**0.55**	**0.87**	**118.90**	**8,829.17**	**8,948.07**	**7.83**	**0.03**	**9,122.37**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.01	19.04	68.87	0.08	7.06	0.55	7.61	0.31	0.55	0.86	0.00	7,465.01	7,465.01	0.36	0.00	7,472.48
Unmitigated	8.01	19.04	68.87	0.08	7.06	0.55	7.61	0.31	0.55	0.86	0.00	7,465.01	7,465.01	0.36	0.00	7,472.48
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Pharmacy/Drugstore w/o Drive Thru	3,453.12	3,453.12	3453.12	5,811,595	5,811,595
Regional Shopping Center	4,345.92	5,990.73	4999.82	5,237,556	5,237,556
Supermarket	4,603.20	8,524.80	7987.20	3,594,073	3,594,073
Total	12,402.24	17,968.65	16,440.14	14,643,224	14,643,224

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Pharmacy/Drugstore w/o Drive Thru	9.50	7.30	7.30	7.40	73.60	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	2.60	7.30	6.50	74.50	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	1,179.91	1,179.91	0.05	0.02	1,187.30
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	1,179.91	1,179.91	0.05	0.02	1,187.30
NaturalGas Mitigated	0.02	0.15	0.12	0.00		0.00	0.01		0.00	0.01	0.00	158.63	158.63	0.00	0.00	159.60
NaturalGas Unmitigated	0.02	0.15	0.12	0.00		0.00	0.01		0.00	0.01	0.00	158.63	158.63	0.00	0.00	159.60
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Pharmacy/Drugstore w/o Drive Thru	418560	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	22.34	22.34	0.00	0.00	22.47
Regional Shopping Center	241440	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	12.88	12.88	0.00	0.00	12.96
Supermarket	2.31264e+006	0.01	0.11	0.10	0.00		0.00	0.01		0.00	0.01	0.00	123.41	123.41	0.00	0.00	124.16
Total		**0.01**	**0.14**	**0.13**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**	**0.00**	**158.63**	**158.63**	**0.00**	**0.00**	**159.59**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Pharmacy/Drugstore w/o Drive Thru	418560	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	22.34	22.34	0.00	0.00	22.47
Regional Shopping Center	241440	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	12.88	12.88	0.00	0.00	12.96
Supermarket	2.31264e+006	0.01	0.11	0.10	0.00		0.00	0.01		0.00	0.01	0.00	123.41	123.41	0.00	0.00	124.16
Total		**0.01**	**0.14**	**0.13**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**	**0.00**	**158.63**	**158.63**	**0.00**	**0.00**	**159.59**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Pharmacy/Drugstore w/o Drive Thru	1.01239e+006					294.52	0.01	0.01	296.36
Regional Shopping Center	583983					169.89	0.01	0.00	170.95
Supermarket	2.45952e+006					715.50	0.03	0.01	719.99
Total						**1,179.91**	**0.05**	**0.02**	**1,187.30**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Pharmacy/Drugstore w/o Drive Thru	1.01239e+006					294.52	0.01	0.01	296.36
Regional Shopping Center	583983					169.89	0.01	0.00	170.95
Supermarket	2.45952e+006					715.50	0.03	0.01	719.99
Total						**1,179.91**	**0.05**	**0.02**	**1,187.30**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.94	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.94	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.21					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.72					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.93**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.21					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.72					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.93**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					25.62	0.38	0.01	36.53
Unmitigated					25.62	0.38	0.01	36.53
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Pharmacy/Drugstore w/o Drive Thru	6.14302 / 3.76508					13.57	0.19	0.00	19.04
Regional Shopping Center	3.72585 / 2.28358					8.23	0.11	0.00	11.55
Supermarket	2.40856 / 0					3.82	0.07	0.00	5.95
Total						**25.62**	**0.37**	**0.00**	**36.54**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Pharmacy/Drugstore w/o Drive Thru	6.14302 / 3.76508					13.57	0.19	0.00	19.04
Regional Shopping Center	3.72585 / 2.28358					8.23	0.11	0.00	11.55
Supermarket	2.40856 / 0					3.82	0.07	0.00	5.95
Total						**25.62**	**0.37**	**0.00**	**36.54**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					118.90	7.03	0.00	266.46
Unmitigated					118.90	7.03	0.00	266.46
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Pharmacy/Drugstore w/o Drive Thru	262.21					53.23	3.15	0.00	119.28
Regional Shopping Center	52.81					10.72	0.63	0.00	24.02
Supermarket	270.72					54.95	3.25	0.00	123.15
Total						**118.90**	**7.03**	**0.00**	**266.45**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Pharmacy/Drugstore w/o Drive Thru	262.21					53.23	3.15	0.00	119.28
Regional Shopping Center	52.81					10.72	0.63	0.00	24.02
Supermarket	270.72					54.95	3.25	0.00	123.15
Total						**118.90**	**7.03**	**0.00**	**266.45**

Project Operational

Safeway Oakland 51st - Operational (Project)

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Regional Shopping Center	228.22	1000sqft
Supermarket	65.01	1000sqft
User Defined Retail	29	User Defined Unit

1.2 Other Project Characteristics

Urbanization Urban

Climate Zone 5

Wind Speed (m/s) 2.2

Precipitation Freq (Days) 63

Utility Company Pacific Gas & Electric Company

1.3 User Entered Comments

Off-road Equipment -

Vehicle Trips - Data Provided by client. No trips generated for Auxiliary Area.

Project Characteristics -

Energy Use - Energy use data provided by client. Assume auxiliary area has similar energy requirements as Regional Shopping Center

Water And Wastewater - Data provided by client

Land Use - Square footage of supermarket.

Construction Phase - No construction emissions calculated here.

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01	0.00	1,597.55	1,597.55	0.07	0.03	1,607.53
Mobile	10.40	24.18	88.47	0.10	8.52	0.68	9.20	0.37	0.68	1.05	0.00	9,112.77	9,112.77	0.45	0.00	9,122.17
Waste						0.00	0.00		0.00	0.00	123.07	0.00	123.07	7.27	0.00	275.81
Water						0.00	0.00		0.00	0.00	0.00	41.42	41.42	0.60	0.02	58.74
Total	**12.05**	**24.36**	**88.62**	**0.10**	**8.52**	**0.68**	**9.21**	**0.37**	**0.68**	**1.06**	**123.07**	**10,751.74**	**10,874.81**	**8.39**	**0.05**	**11,064.25**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01	0.00	1,597.55	1,597.55	0.07	0.03	1,607.53
Mobile	10.40	24.18	88.47	0.10	8.52	0.68	9.20	0.37	0.68	1.05	0.00	9,112.77	9,112.77	0.45	0.00	9,122.17
Waste						0.00	0.00		0.00	0.00	123.07	0.00	123.07	7.27	0.00	275.81
Water						0.00	0.00		0.00	0.00	0.00	41.42	41.42	0.60	0.02	58.74
Total	**12.05**	**24.36**	**88.62**	**0.10**	**8.52**	**0.68**	**9.21**	**0.37**	**0.68**	**1.06**	**123.07**	**10,751.74**	**10,874.81**	**8.39**	**0.05**	**11,064.25**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	10.40	24.18	88.47	0.10	8.52	0.68	9.20	0.37	0.68	1.05	0.00	9,112.77	9,112.77	0.45	0.00	9,122.17
Unmitigated	10.40	24.18	88.47	0.10	8.52	0.68	9.20	0.37	0.68	1.05	0.00	9,112.77	9,112.77	0.45	0.00	9,122.17
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	11,616.40	15,541.78	7782.30	13,030,773	13,030,773
Supermarket	5,746.88	11,545.78	10817.66	4,646,059	4,646,059
User Defined Retail	0.00	0.00	0.00		
Total	17,363.28	27,087.56	18,599.97	17,676,832	17,676,832

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	2.60	7.30	6.50	74.50	19.00
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	1,403.99	1,403.99	0.06	0.02	1,412.79
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	1,403.99	1,403.99	0.06	0.02	1,412.79
NaturalGas Mitigated	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01	0.00	193.56	193.56	0.00	0.00	194.74
NaturalGas Unmitigated	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01	0.00	193.56	193.56	0.00	0.00	194.74
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Regional Shopping Center	1.09546e+006	0.01	0.05	0.05	0.00		0.00	0.00		0.00	0.00	0.00	58.46	58.46	0.00	0.00	58.81
Supermarket	2.39248e+006	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	127.67	127.67	0.00	0.00	128.45
User Defined Retail	139200	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	7.43	7.43	0.00	0.00	7.47
Total		**0.02**	**0.18**	**0.16**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**	**0.00**	**193.56**	**193.56**	**0.00**	**0.00**	**194.73**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Regional Shopping Center	1.09546e+006	0.01	0.05	0.05	0.00		0.00	0.00		0.00	0.00	0.00	58.46	58.46	0.00	0.00	58.81
Supermarket	2.39248e+006	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	127.67	127.67	0.00	0.00	128.45
User Defined Retail	139200	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	7.43	7.43	0.00	0.00	7.47
Total		**0.02**	**0.18**	**0.16**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**	**0.00**	**193.56**	**193.56**	**0.00**	**0.00**	**194.73**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Regional Shopping Center	2.64963e+006					770.81	0.03	0.01	775.64
Supermarket	1.83987e+006					535.24	0.02	0.01	538.59
User Defined Retail	336690					97.95	0.00	0.00	98.56
Total						**1,404.00**	**0.05**	**0.02**	**1,412.79**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Regional Shopping Center	2.64963e+006					770.81	0.03	0.01	775.64
Supermarket	1.83987e+006					535.24	0.02	0.01	538.59
User Defined Retail	336690					97.95	0.00	0.00	98.56
Total						**1,404.00**	**0.05**	**0.02**	**1,412.79**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	1.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.37					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	1.26					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**1.63**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	0.37					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	1.26					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**1.63**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					41.42	0.60	0.02	58.74
Unmitigated					41.42	0.60	0.02	58.74
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Regional Shopping Center	16.9048 / 10.361					37.35	0.52	0.01	52.39
Supermarket	2.5703 / 0					4.07	0.08	0.00	6.35
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**41.42**	**0.60**	**0.01**	**58.74**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Regional Shopping Center	16.9048 / 10.361					37.35	0.52	0.01	52.39
Supermarket	2.5703 / 0					4.07	0.08	0.00	6.35
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**41.42**	**0.60**	**0.01**	**58.74**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					123.07	7.27	0.00	275.81
Unmitigated					123.07	7.27	0.00	275.81
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Regional Shopping Center	239.63					48.64	2.87	0.00	109.01
Supermarket	366.66					74.43	4.40	0.00	166.80
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**123.07**	**7.27**	**0.00**	**275.81**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			

Regional Shopping Center	239.63					48.64	2.87	0.00	109.01
Supermarket	366.66					74.43	4.40	0.00	166.80
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**123.07**	**7.27**	**0.00**	**275.81**

9.0 Vegetation

Construction Phase I

These model runs are only used to estimate construction emissions.
Operational emissions are calculated separately and should be ignored in these files

Safeway 51st - Construction "Phase I"

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	334	Space
Regional Shopping Center	32.7	1000sqft
Supermarket	65.01	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Demolition -

Vehicle Trips - Disregard operational emissions from this model (they were quantified in a separate model)

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.48	3.48	2.45	0.00	0.41	0.19	0.60	0.10	0.19	0.29	0.00	405.10	405.10	0.04	0.00	405.90
2014	3.17	3.19	2.66	0.01	0.10	0.20	0.30	0.01	0.20	0.20	0.00	435.86	435.86	0.04	0.00	436.68
Total	**3.65**	**6.67**	**5.11**	**0.01**	**0.51**	**0.39**	**0.90**	**0.11**	**0.39**	**0.49**	**0.00**	**840.96**	**840.96**	**0.08**	**0.00**	**842.58**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.48	3.48	2.45	0.00	0.23	0.19	0.42	0.10	0.19	0.29	0.00	405.10	405.10	0.04	0.00	405.90
2014	3.17	3.19	2.66	0.01	0.01	0.20	0.20	0.01	0.20	0.20	0.00	435.86	435.86	0.04	0.00	436.68
Total	**3.65**	**6.67**	**5.11**	**0.01**	**0.24**	**0.39**	**0.62**	**0.11**	**0.39**	**0.49**	**0.00**	**840.96**	**840.96**	**0.08**	**0.00**	**842.58**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.17	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01	0.00	987.57	987.57	0.04	0.02	993.73
Mobile	5.79	14.08	50.33	0.06	5.50	0.42	5.92	0.24	0.42	0.66	0.00	5,752.99	5,752.99	0.27	0.00	5,758.58
Waste						0.00	0.00		0.00	0.00	81.40	0.00	81.40	4.81	0.00	182.42
Water						0.00	0.00		0.00	0.00	0.00	18.31	18.31	0.32	0.01	27.56
Total	**6.97**	**14.21**	**50.44**	**0.06**	**5.50**	**0.42**	**5.93**	**0.24**	**0.42**	**0.67**	**81.40**	**6,758.87**	**6,840.27**	**5.44**	**0.03**	**6,962.29**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.17	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01	0.00	987.57	987.57	0.04	0.02	993.73
Mobile	5.79	14.08	50.33	0.06	5.50	0.42	5.92	0.24	0.42	0.66	0.00	5,752.99	5,752.99	0.27	0.00	5,758.58
Waste						0.00	0.00		0.00	0.00	81.40	0.00	81.40	4.81	0.00	182.42
Water						0.00	0.00		0.00	0.00	0.00	18.31	18.31	0.32	0.01	27.56
Total	**6.97**	**14.21**	**50.44**	**0.06**	**5.50**	**0.42**	**5.93**	**0.24**	**0.42**	**0.67**	**81.40**	**6,758.87**	**6,840.27**	**5.44**	**0.03**	**6,962.29**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.07	0.00	0.07	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.09	0.71	0.43	0.00		0.04	0.04		0.04	0.04	0.00	68.12	68.12	0.01	0.00	68.27
Total	**0.09**	**0.71**	**0.43**	**0.00**	**0.07**	**0.04**	**0.11**	**0.01**	**0.04**	**0.05**	**0.00**	**68.12**	**68.12**	**0.01**	**0.00**	**68.27**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.18	0.08	0.00	0.12	0.01	0.13	0.00	0.01	0.01	0.00	24.90	24.90	0.00	0.00	24.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	0.00	0.00	1.50
Total	**0.02**	**0.18**	**0.09**	**0.00**	**0.12**	**0.01**	**0.13**	**0.00**	**0.01**	**0.01**	**0.00**	**26.40**	**26.40**	**0.00**	**0.00**	**26.42**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.07	0.00	0.07	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.09	0.71	0.43	0.00		0.04	0.04		0.04	0.04	0.00	68.12	68.12	0.01	0.00	68.27
Total	**0.09**	**0.71**	**0.43**	**0.00**	**0.07**	**0.04**	**0.11**	**0.01**	**0.04**	**0.05**	**0.00**	**68.12**	**68.12**	**0.01**	**0.00**	**68.27**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.18	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	24.90	24.90	0.00	0.00	24.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	0.00	0.00	1.50
Total	**0.02**	**0.18**	**0.09**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**26.40**	**26.40**	**0.00**	**0.00**	**26.42**

3.3 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.40	0.23	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.40**	**0.23**	**0.00**	**0.09**	**0.02**	**0.11**	**0.05**	**0.02**	**0.07**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.90	0.00	0.00	0.90
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.90**	**0.90**	**0.00**	**0.00**	**0.90**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.40	0.23	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.40**	**0.23**	**0.00**	**0.09**	**0.02**	**0.11**	**0.05**	**0.02**	**0.07**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.90	0.00	0.00	0.90
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.90**	**0.90**	**0.00**	**0.00**	**0.90**

3.4 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.07	0.00	0.07	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.06	0.49	0.31	0.00		0.03	0.03		0.03	0.03	0.00	47.52	47.52	0.01	0.00	47.63
Total	**0.06**	**0.49**	**0.31**	**0.00**	**0.07**	**0.03**	**0.10**	**0.03**	**0.03**	**0.06**	**0.00**	**47.52**	**47.52**	**0.01**	**0.00**	**47.63**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	0.00	0.00	1.50
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.50**	**1.50**	**0.00**	**0.00**	**1.50**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.07	0.00	0.07	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.06	0.49	0.31	0.00		0.03	0.03		0.03	0.03	0.00	47.52	47.52	0.01	0.00	47.63
Total	**0.06**	**0.49**	**0.31**	**0.00**	**0.07**	**0.03**	**0.10**	**0.03**	**0.03**	**0.06**	**0.00**	**47.52**	**47.52**	**0.01**	**0.00**	**47.63**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	0.00	0.00	1.50
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.50**	**1.50**	**0.00**	**0.00**	**1.50**

3.5 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.21	1.42	0.96	0.00		0.09	0.09		0.09	0.09	0.00	150.25	150.25	0.02	0.00	150.61
Total	**0.21**	**1.42**	**0.96**	**0.00**		**0.09**	**0.09**		**0.09**	**0.09**	**0.00**	**150.25**	**150.25**	**0.02**	**0.00**	**150.61**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.25	0.15	0.00	0.01	0.01	0.02	0.00	0.01	0.01	0.00	38.54	38.54	0.00	0.00	38.56
Worker	0.03	0.03	0.27	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	35.61	35.61	0.00	0.00	35.66
Total	**0.05**	**0.28**	**0.42**	**0.00**	**0.05**	**0.01**	**0.06**	**0.00**	**0.01**	**0.01**	**0.00**	**74.15**	**74.15**	**0.00**	**0.00**	**74.22**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.21	1.42	0.96	0.00		0.09	0.09		0.09	0.09	0.00	150.25	150.25	0.02	0.00	150.61
Total	**0.21**	**1.42**	**0.96**	**0.00**		**0.09**	**0.09**		**0.09**	**0.09**	**0.00**	**150.25**	**150.25**	**0.02**	**0.00**	**150.61**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.25	0.15	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	38.54	38.54	0.00	0.00	38.56
Worker	0.03	0.03	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.61	35.61	0.00	0.00	35.66
Total	**0.05**	**0.28**	**0.42**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**74.15**	**74.15**	**0.00**	**0.00**	**74.22**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	2.37	1.72	0.00		0.15	0.15		0.15	0.15	0.00	271.18	271.18	0.03	0.00	271.78
Total	**0.35**	**2.37**	**1.72**	**0.00**		**0.15**	**0.15**		**0.15**	**0.15**	**0.00**	**271.18**	**271.18**	**0.03**	**0.00**	**271.78**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.42	0.25	0.00	0.02	0.01	0.03	0.00	0.01	0.01	0.00	69.62	69.62	0.00	0.00	69.66
Worker	0.04	0.05	0.44	0.00	0.08	0.00	0.08	0.00	0.00	0.01	0.00	62.92	62.92	0.00	0.00	63.00
Total	**0.08**	**0.47**	**0.69**	**0.00**	**0.10**	**0.01**	**0.11**	**0.00**	**0.01**	**0.02**	**0.00**	**132.54**	**132.54**	**0.00**	**0.00**	**132.66**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	2.37	1.72	0.00		0.15	0.15		0.15	0.15	0.00	271.18	271.18	0.03	0.00	271.78
Total	**0.35**	**2.37**	**1.72**	**0.00**		**0.15**	**0.15**		**0.15**	**0.15**	**0.00**	**271.18**	**271.18**	**0.03**	**0.00**	**271.78**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.42	0.25	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	69.62	69.62	0.00	0.00	69.66
Worker	0.04	0.05	0.44	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	62.92	62.92	0.00	0.00	63.00
Total	**0.08**	**0.47**	**0.69**	**0.00**	**0.00**	**0.01**	**0.02**	**0.00**	**0.01**	**0.02**	**0.00**	**132.54**	**132.54**	**0.00**	**0.00**	**132.66**

3.6 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.32	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.55
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.05**	**0.32**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.55**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	1.47	0.00	0.00	1.47
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.47**	**1.47**	**0.00**	**0.00**	**1.47**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.32	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.55
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.05**	**0.32**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.55**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	1.47	0.00	0.00	1.47
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.47**	**1.47**	**0.00**	**0.00**	**1.47**

3.7 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.68					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**2.68**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	1.66	0.00	0.00	1.66
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.66**	**1.66**	**0.00**	**0.00**	**1.66**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.68					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**2.68**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	1.66	0.00	0.00	1.66
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.66**	**1.66**	**0.00**	**0.00**	**1.66**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.79	14.08	50.33	0.06	5.50	0.42	5.92	0.24	0.42	0.66	0.00	5,752.99	5,752.99	0.27	0.00	5,758.58
Unmitigated	5.79	14.08	50.33	0.06	5.50	0.42	5.92	0.24	0.42	0.66	0.00	5,752.99	5,752.99	0.27	0.00	5,758.58
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,404.14	1,634.02	825.35	2,374,490	2,374,490
Supermarket	6,646.62	11,545.13	10820.26	9,034,308	9,034,308
Total	8,050.76	13,179.14	11,645.61	11,408,798	11,408,798

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	7.30	7.30	6.50	74.50	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	845.59	845.59	0.04	0.01	850.89
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	845.59	845.59	0.04	0.01	850.89
NaturalGas Mitigated	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01	0.00	141.98	141.98	0.00	0.00	142.84
NaturalGas Unmitigated	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01	0.00	141.98	141.98	0.00	0.00	142.84
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Shopping Center	156955	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	8.38	8.38	0.00	0.00	8.43
Supermarket	2.50365e+006	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	133.60	133.60	0.00	0.00	134.42
Total		**0.01**	**0.13**	**0.11**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**	**0.00**	**141.98**	**141.98**	**0.00**	**0.00**	**142.85**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Shopping Center	156955	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	8.38	8.38	0.00	0.00	8.43
Supermarket	2.50365e+006	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	133.60	133.60	0.00	0.00	134.42
Total		**0.01**	**0.13**	**0.11**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**	**0.00**	**141.98**	**141.98**	**0.00**	**0.00**	**142.85**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	379635					110.44	0.00	0.00	111.13
Supermarket	2.52706e+006					735.15	0.03	0.01	739.76
Total						**845.59**	**0.03**	**0.01**	**850.89**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	379635					110.44	0.00	0.00	111.13
Supermarket	2.52706e+006					735.15	0.03	0.01	739.76
Total						**845.59**	**0.03**	**0.01**	**850.89**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.17	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	1.17	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.27					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.90					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**1.17**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.27					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.90					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**1.17**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					18.31	0.32	0.01	27.56
Unmitigated					18.31	0.32	0.01	27.56
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	2.42217 / 1.48456					5.35	0.07	0.00	7.51
Supermarket	8.01367 / 0.247845					12.96	0.25	0.01	20.05
Total						**18.31**	**0.32**	**0.01**	**27.56**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	2.42217 / 1.48456					5.35	0.07	0.00	7.51
Supermarket	8.01367 / 0.247845					12.96	0.25	0.01	20.05
Total						**18.31**	**0.32**	**0.01**	**27.56**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					81.40	4.81	0.00	182.42
Unmitigated					81.40	4.81	0.00	182.42
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	34.34					6.97	0.41	0.00	15.62
Supermarket	366.66					74.43	4.40	0.00	166.80
Total						**81.40**	**4.81**	**0.00**	**182.42**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	34.34					6.97	0.41	0.00	15.62
Supermarket	366.66					74.43	4.40	0.00	166.80
Total						**81.40**	**4.81**	**0.00**	**182.42**

9.0 Vegetation

Construction Phase II

These model runs are only used to estimate construction emissions.
Operational emissions are calculated separately and should be ignored in these files

Safeway 51st - Construction "Phase II"

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	667	Space
Regional Shopping Center	195.52	1000sqft
Supermarket	0	1000sqft
User Defined Retail	29	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics -

Land Use - User defined retail represents auxiliary space.

Demolition -

Vehicle Trips - Disregard operational emissions from this model (they were quantified in a separate model)

Construction Phase -

2.0 Emissions Summary

2.1 Overall Construction

<u>Unmitigated Construction</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.71	5.06	3.92	0.01	0.44	0.26	0.70	0.12	0.26	0.37	0.00	693.55	693.55	0.06	0.00	694.73
2015	6.35	4.17	4.07	0.01	0.27	0.23	0.50	0.02	0.23	0.25	0.00	721.20	721.20	0.05	0.00	722.27
Total	**7.06**	**9.23**	**7.99**	**0.02**	**0.71**	**0.49**	**1.20**	**0.14**	**0.49**	**0.62**	**0.00**	**1,414.75**	**1,414.75**	**0.11**	**0.00**	**1,417.00**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.71	5.06	3.92	0.01	0.25	0.26	0.51	0.12	0.26	0.37	0.00	693.55	693.55	0.06	0.00	694.73
2015	6.35	4.17	4.07	0.01	0.02	0.23	0.25	0.02	0.23	0.25	0.00	721.20	721.20	0.05	0.00	722.27
Total	**7.06**	**9.23**	**7.99**	**0.02**	**0.27**	**0.49**	**0.76**	**0.14**	**0.49**	**0.62**	**0.00**	**1,414.75**	**1,414.75**	**0.11**	**0.00**	**1,417.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.49	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	710.45	710.45	0.03	0.01	714.89
Mobile	5.74	14.51	50.11	0.07	6.85	0.47	7.32	0.30	0.47	0.77	0.00	6,811.26	6,811.26	0.29	0.00	6,817.36
Waste						0.00	0.00		0.00	0.00	41.67	0.00	41.67	2.46	0.00	93.39
Water						0.00	0.00		0.00	0.00	0.00	32.00	32.00	0.44	0.01	44.88
Total	**8.24**	**14.56**	**50.15**	**0.07**	**6.85**	**0.47**	**7.32**	**0.30**	**0.47**	**0.77**	**41.67**	**7,553.71**	**7,595.38**	**3.22**	**0.02**	**7,670.52**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.49	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	710.45	710.45	0.03	0.01	714.89
Mobile	5.74	14.51	50.11	0.07	6.85	0.47	7.32	0.30	0.47	0.77	0.00	6,811.26	6,811.26	0.29	0.00	6,817.36
Waste						0.00	0.00		0.00	0.00	41.67	0.00	41.67	2.46	0.00	93.39
Water						0.00	0.00		0.00	0.00	0.00	32.00	32.00	0.44	0.01	44.88
Total	**8.24**	**14.56**	**50.15**	**0.07**	**6.85**	**0.47**	**7.32**	**0.30**	**0.47**	**0.77**	**41.67**	**7,553.71**	**7,595.38**	**3.22**	**0.02**	**7,670.52**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.08	0.66	0.41	0.00		0.03	0.03		0.03	0.03	0.00	68.12	68.12	0.01	0.00	68.26
Total	**0.08**	**0.66**	**0.41**	**0.00**	**0.02**	**0.03**	**0.05**	**0.00**	**0.03**	**0.03**	**0.00**	**68.12**	**68.12**	**0.01**	**0.00**	**68.26**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.04	0.02	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	6.76	6.76	0.00	0.00	6.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	1.47	0.00	0.00	1.47
Total	**0.00**	**0.04**	**0.03**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**8.23**	**8.23**	**0.00**	**0.00**	**8.24**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.08	0.66	0.41	0.00		0.03	0.03		0.03	0.03	0.00	68.12	68.12	0.01	0.00	68.26
Total	**0.08**	**0.66**	**0.41**	**0.00**	**0.02**	**0.03**	**0.05**	**0.00**	**0.03**	**0.03**	**0.00**	**68.12**	**68.12**	**0.01**	**0.00**	**68.26**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.76	6.76	0.00	0.00	6.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	1.47	0.00	0.00	1.47
Total	**0.00**	**0.04**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**8.23**	**8.23**	**0.00**	**0.00**	**8.24**

3.3 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.37	0.22	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.37**	**0.22**	**0.00**	**0.09**	**0.02**	**0.11**	**0.05**	**0.02**	**0.07**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.88	0.00	0.00	0.88
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.88**	**0.88**	**0.00**	**0.00**	**0.88**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.37	0.22	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.37**	**0.22**	**0.00**	**0.09**	**0.02**	**0.11**	**0.05**	**0.02**	**0.07**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.88	0.00	0.00	0.88
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.88**	**0.88**	**0.00**	**0.00**	**0.88**

3.4 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.13	0.00	0.13	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.17	1.36	0.76	0.00		0.06	0.06		0.06	0.06	0.00	147.69	147.69	0.01	0.00	147.98
Total	**0.17**	**1.36**	**0.76**	**0.00**	**0.13**	**0.06**	**0.19**	**0.05**	**0.06**	**0.11**	**0.00**	**147.69**	**147.69**	**0.01**	**0.00**	**147.98**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.93	2.93	0.00	0.00	2.94
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.93**	**2.93**	**0.00**	**0.00**	**2.94**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.13	0.00	0.13	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.17	1.36	0.76	0.00		0.06	0.06		0.06	0.06	0.00	147.69	147.69	0.01	0.00	147.98
Total	**0.17**	**1.36**	**0.76**	**0.00**	**0.13**	**0.06**	**0.19**	**0.05**	**0.06**	**0.11**	**0.00**	**147.69**	**147.69**	**0.01**	**0.00**	**147.98**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.93	2.93	0.00	0.00	2.94
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.93**	**2.93**	**0.00**	**0.00**	**2.94**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.27	1.84	1.33	0.00		0.12	0.12		0.12	0.12	0.00	210.71	210.71	0.02	0.00	211.18
Total	**0.27**	**1.84**	**1.33**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**	**0.00**	**210.71**	**210.71**	**0.02**	**0.00**	**211.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.06	0.70	0.42	0.00	0.03	0.02	0.06	0.00	0.02	0.02	0.00	115.32	115.32	0.00	0.00	115.37
Worker	0.07	0.07	0.73	0.00	0.13	0.00	0.13	0.01	0.00	0.01	0.00	103.40	103.40	0.01	0.00	103.54
Total	**0.13**	**0.77**	**1.15**	**0.00**	**0.16**	**0.02**	**0.19**	**0.01**	**0.02**	**0.03**	**0.00**	**218.72**	**218.72**	**0.01**	**0.00**	**218.91**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.27	1.84	1.33	0.00		0.12	0.12		0.12	0.12	0.00	210.71	210.71	0.02	0.00	211.18
Total	**0.27**	**1.84**	**1.33**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**	**0.00**	**210.71**	**210.71**	**0.02**	**0.00**	**211.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.06	0.70	0.42	0.00	0.00	0.02	0.02	0.00	0.02	0.02	0.00	115.32	115.32	0.00	0.00	115.37
Worker	0.07	0.07	0.73	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.00	103.40	103.40	0.01	0.00	103.54
Total	**0.13**	**0.77**	**1.15**	**0.00**	**0.01**	**0.02**	**0.03**	**0.01**	**0.02**	**0.03**	**0.00**	**218.72**	**218.72**	**0.01**	**0.00**	**218.91**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.40	2.70	2.13	0.00		0.17	0.17		0.17	0.17	0.00	338.97	338.97	0.03	0.00	339.66
Total	**0.40**	**2.70**	**2.13**	**0.00**		**0.17**	**0.17**		**0.17**	**0.17**	**0.00**	**338.97**	**338.97**	**0.03**	**0.00**	**339.66**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.03	0.63	0.00	0.06	0.03	0.09	0.01	0.03	0.04	0.00	185.64	185.64	0.00	0.00	185.72
Worker	0.11	0.11	1.06	0.00	0.20	0.01	0.21	0.01	0.01	0.02	0.00	162.61	162.61	0.01	0.00	162.81
Total	**0.20**	**1.14**	**1.69**	**0.00**	**0.26**	**0.04**	**0.30**	**0.02**	**0.04**	**0.06**	**0.00**	**348.25**	**348.25**	**0.01**	**0.00**	**348.53**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.40	2.70	2.13	0.00		0.17	0.17		0.17	0.17	0.00	338.97	338.97	0.03	0.00	339.66
Total	**0.40**	**2.70**	**2.13**	**0.00**		**0.17**	**0.17**		**0.17**	**0.17**	**0.00**	**338.97**	**338.97**	**0.03**	**0.00**	**339.66**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.03	0.63	0.00	0.01	0.03	0.04	0.01	0.03	0.04	0.00	185.64	185.64	0.00	0.00	185.72
Worker	0.11	0.11	1.06	0.00	0.01	0.01	0.02	0.01	0.01	0.02	0.00	162.61	162.61	0.01	0.00	162.81
Total	**0.20**	**1.14**	**1.69**	**0.00**	**0.02**	**0.04**	**0.06**	**0.02**	**0.04**	**0.06**	**0.00**	**348.25**	**348.25**	**0.01**	**0.00**	**348.53**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.30	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.54
Paving	0.01					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.06**	**0.30**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.54**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	1.43	0.00	0.00	1.43
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.43**	**1.43**	**0.00**	**0.00**	**1.43**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.30	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.54
Paving	0.01					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.06**	**0.30**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.54**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	1.43	0.00	0.00	1.43
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.43**	**1.43**	**0.00**	**0.00**	**1.43**

3.7 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.69					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**5.69**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.54	3.54	0.00	0.00	3.54
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.54**	**3.54**	**0.00**	**0.00**	**3.54**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.69					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**5.69**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.54	3.54	0.00	0.00	3.54
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.54**	**3.54**	**0.00**	**0.00**	**3.54**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.74	14.51	50.11	0.07	6.85	0.47	7.32	0.30	0.47	0.77	0.00	6,811.26	6,811.26	0.29	0.00	6,817.36
Unmitigated	5.74	14.51	50.11	0.07	6.85	0.47	7.32	0.30	0.47	0.77	0.00	6,811.26	6,811.26	0.29	0.00	6,817.36
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	8,395.63	9,770.13	4934.92	14,197,562	14,197,562
Supermarket	0.00	0.00	0.00		
User Defined Retail	0.00	0.00	0.00		
Total	8,395.63	9,770.13	4,934.92	14,197,562	14,197,562

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	7.30	7.30	6.50	74.50	19.00
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	660.37	660.37	0.03	0.01	664.51
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	660.37	660.37	0.03	0.01	664.51
NaturalGas Mitigated	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.08	50.08	0.00	0.00	50.39
NaturalGas Unmitigated	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.08	50.08	0.00	0.00	50.39
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Shopping Center	938501	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.08	50.08	0.00	0.00	50.39
Supermarket	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.01**	**0.05**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**50.08**	**50.08**	**0.00**	**0.00**	**50.39**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Shopping Center	938501	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.08	50.08	0.00	0.00	50.39
Supermarket	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.01**	**0.05**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**50.08**	**50.08**	**0.00**	**0.00**	**50.39**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	2.27e+006					660.37	0.03	0.01	664.51
Supermarket	0					0.00	0.00	0.00	0.00
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**660.37**	**0.03**	**0.01**	**664.51**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	2.27e+006					660.37	0.03	0.01	664.51
Supermarket	0					0.00	0.00	0.00	0.00
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**660.37**	**0.03**	**0.01**	**664.51**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.49	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	2.49	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.57					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	1.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**2.49**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.57					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	1.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**2.49**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					32.00	0.44	0.01	44.88
Unmitigated					32.00	0.44	0.01	44.88
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	14.4827 / 8.87647					32.00	0.44	0.01	44.88
Supermarket	0 / 0					0.00	0.00	0.00	0.00
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**32.00**	**0.44**	**0.01**	**44.88**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	14.4827 / 8.87647					32.00	0.44	0.01	44.88
Supermarket	0 / 0					0.00	0.00	0.00	0.00
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**32.00**	**0.44**	**0.01**	**44.88**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					41.67	2.46	0.00	93.39
Unmitigated					41.67	2.46	0.00	93.39
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	205.3					41.67	2.46	0.00	93.39
Supermarket	0					0.00	0.00	0.00	0.00
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**41.67**	**2.46**	**0.00**	**93.39**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Land Use	tons	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	205.3					41.67	2.46	0.00	93.39
Supermarket	0					0.00	0.00	0.00	0.00
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**41.67**	**2.46**	**0.00**	**93.39**

9.0 Vegetation

Appendix B

Justification for OFFROAD Equipment Reductions

From: Dolney, Nicole@ARB
To: Kai Zhao;
cc: Sax, Todd@ARB;
Subject: RE: Workshop Follow Up Questions
Date: Wednesday, September 08, 2010 4:52:41 PM

Hello Kai,

I wanted to follow up on a workshop question regarding the off-road inventory. As Todd indicated you can directly apply a 33% reduction for the LF correction. With regards to the CO2 correction you won't be able to ratio the BSFCs. OFFROAD uses CO2 emission factors and then backcalculates fuel. For the updated inventory we're going to use the new BSFC values to calculate fuel. Also, at the workshop we said that we are using USEPA values for BSFC – this means that for the 50 HP bin the BSFC is 0.408 and for every other HP bin the BSFC is 0.367 lb/hr-hr.

Call or email if you have additional questions.

Nicole Dolney
Manager, Off-Road Diesel Analysis Section
Planning and Technical Support Division
California Air Resources Board
916-322-1695
ndolney@arb.ca.gov

From: Kai Zhao [mailto:kaizhao@Environcorp.com]
Sent: Wednesday, September 08, 2010 4:03 PM
To: Sax, Todd@ARB
Subject: Workshop Follow Up Questions

Hi Todd,

It was good meeting to you today at the workshop in Oakland. Thank you and the other ARB/Cal EPA staff members for putting together this spirited discussion. I was hoping you could help me with one follow-up issue. As we discussed at the workshop, some of the updates regarding the offroad construction equipment presented during the workshop are important to our analysis and I would like to confirm the following to make sure I implement the changes properly.

I understand that ARB staff concluded that the load factor should be reduced by 33% for the updated inventory based on the collected engine load data from ARB testing programs and manufacturer provided data. I want to confirm that we can apply 33% reduction to the current default construction equipment load factors used by OFFROAD 2007 during our construction emissions calculation (i.e., updated emissions = 0.67 * emissions calculated using the current OFFROAD default equipment parameters).

In addition, for the CO2 emissions, we can further reduce the emissions multiplying the following fuel consumption ratio:

0.367lb/hp-hr (USEPA's NonROAD Model fuel consumption rate)

0.401 lb/hp-hr (OFFROAD fuel consumption rate)

Please let me know if the approaches above are correct. Lastly, are there any restrictions on applying these emissions reductions (e.g., specific equipment types, sizes)?

Thanks for your help with this matter.

Best,

-Kai

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Appendix 4.2B:

Technical Air Quality and Greenhouse Gas Appendices –

Health Risk Assessment

ENVIRON, Inc.

December 21, 2012

Via Electronic Mail

TR (Rick) Henderson
Property Development Centers
5858 Stoneridge Mall Road
Pleasanton, California 94588
rick.henderson@pdcenters.com

Re: Local Risk and Hazard Analysis for the Safeway Rockridge Center Shopping Project

Dear Mr. Henderson:

At the request of Property Development Centers (PDC), ENVIRON International Corporation (ENVIRON) conducted a health risk assessment (HRA) for the Draft Environmental Impact Report (DEIR) for the proposed Safeway Rockridge Center Shopping Project (herein referred to as the "Project"). The commercial development is located at the intersection of 51st Street and Broadway in Oakland, California. The Project location is depicted in Figure 1. The Project construction entails the commercial building construction (herein referred to as the "Site") as well as the roadway construction to the south and west of the Site. The Site construction is scheduled to occur for 20 months spanning two construction phases from July 2013 to March 2015[1] and is proposed to consist of the following:

- Demolition of all 185,500 square feet of existing commercial buildings.
- Construction of approximately 323,000 square feet of new commercial buildings, including a Safeway grocery store, retail, office, and restaurant spaces.
- Construction of surface parking, rooftop parking, and a three-level above-ground parking garage totaling 967 parking spaces.

The roadway construction to the south of the Site is expected to occur for 5 months from June 2014 to October 2014 and the roadway construction to the west of the Site is expected to occur for 3 months from June 2014 to August 2014. Roadway construction is proposed to consist of the following:

- Construction of a portion of the roadways to the south and west of the Site, which entails demolition, installing new traffic signals, paving and landscaping.

In addition, we understand that there will be one 60-kilowatt (kW) natural gas-fired emergency generator to serve Safeway in the event of a power outage.

This HRA evaluates local community risks and hazards associated with the emissions of toxic air contaminants (TACs) and fine particulate matter ($PM_{2.5}$) [2] from the construction and operation

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[1] Conducting the construction in two phases will enable the shopping center to remain operational throughout construction to meet both current and expected future retail market demands. Phase I construction is scheduled to last for 10 months from July 2013 to April 2014 and Phase II is scheduled to last for 10 months from May 2014 to March 2015.

[2] PM_{10} and $PM_{2.5}$ refer to particulate matter with aerodynamic resistance diameters not exceeding 10 micrometers and 2.5 micrometers, respectively.

of the project. Health risk and $PM_{2.5}$ concentrations are evaluated at offsite receptors, which can include residences, schools and school yards, parks and playgrounds, daycare centers, nursing homes, and medical facilities. Specific impacts are estimated for cancer risk, chronic hazard index (long term health effects), acute hazard index (short term health effects), and $PM_{2.5}$ concentrations. A screening analysis indicates that due to the size of the proposed project and the proximity of nearby receptors, a refined HRA for construction-related emissions is required.[3] In this report, we evaluate the need to perform a refined health risk analysis for operational-related emissions from the emergency generator.

The City of Oakland's California Environmental Quality Act (CEQA) Thresholds of Significance are based on the Bay Area Air Quality Management District's (BAAQMD's) CEQA thresholds updated in June 2010. On March 5, 2012 the Alameda County Superior Court issued a judgment, in California Building Industry Association v. Bay Area Air Quality Management District, finding that the BAAQMD had failed to comply with CEQA when it adopted its 2010 significance thresholds. The Court ruled that the adoption of the new significance thresholds (including new significance thresholds for TACs and fine particulate matter or $PM_{2.5}$) is considered a "project" under CEQA, and, thus, the BAAQMD should have prepared the required CEQA review and documentation. The court issued a writ of mandate ordering the BAAQMD to set aside the 2010 significance thresholds until the BAAQMD has complied with CEQA. However, the City of Oakland's CEQA thresholds are still in effect and are relied upon in this report.

The City of Oakland's thresholds for risks and hazards for an individual project are:

- An increase in excess lifetime cancer risk level of more than 10 in one million;
- An increase in noncancer (both chronic or acute) HI greater than 1.0; and
- An incremental increase in the annual average concentration of $PM_{2.5}$ of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$)

In addition to individual project thresholds, there are cumulative thresholds that must account for all identified stationary and roadway sources within 1,000 feet of the Project. The City of Oakland's cumulative thresholds are:

- An excess lifetime cancer risk level of more than 100 in one million;
- A chronic noncancer HI greater than 10.0; and
- Annual average concentration of $PM_{2.5}$ of greater than 0.8 $\mu g/m^3$

ENVIRON followed updated May 2012 BAAQMD CEQA Guidelines[4] to calculate air pollution emissions and estimate health impacts of TACs.

Summary of Results

The Project's construction-related emissions were used in a risk analysis for the 20-month duration of construction and compared to a project threshold of a 10-in-one-million increase in cancer risk. Incremental cancer risk at the maximally exposed individual sensitive receptor

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[3] BAAQMD. 2010. Screening Tables for Air Toxics Evaluation During Construction. May 2010.

For commercial projects between 300,000 – 500,000 square feet, the screening level offset distance required is 225 meters. The nearest receptors to the project are closer than this distance.

[4] BAAQMD. 2012. California Environmental Quality Act Air Quality Guidelines. May. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en. Accessed September 21, 2012.

(MEISR) was calculated at 6-in-a-million which is below the individual project threshold of 10-in-one-million. Tables 1 and 2 provide a summary of the construction-related TAC emissions and local community risk and hazard impacts including $PM_{2.5}$ concentrations.

Risks and hazards were also considered for operational-related TAC emissions from the natural gas-fired emergency generator. Cancer risk and non-cancer health indices are not expected to exceed individual project thresholds based on a comparison of TAC emissions to the BAAQMD TAC trigger levels.[5] A conservative analysis also shows that concentrations of $PM_{2.5}$ are not expected to exceed the individual project concentration threshold.

A cumulative analysis was performed considering existing stationary sources and roadways within 1,000 feet of the Project. The cumulative analyses for construction-related emissions and operational-related emissions did not lead to cumulative risk at existing receptors of above 100-in-one million or chronic hazard indices above 1. The cumulative $PM_{2.5}$ concentration evaluated at the receptors was below the threshold of 0.8 $\mu g/m^3$. Tables 3a and 3b provide a summary of the cumulative local community risk and hazard impacts.

ENVIRON's health-protective analyses indicate that the Project does not exceed the thresholds of significance for construction and operational impacts on off-site receptors.

Discussion of Results

The following sections present the details and results for the:

- TAC and $PM_{2.5}$ emissions,
- Local Community Risks and Hazard Impacts, and
- Cumulative Impacts from Sources on Off-site receptors

Additional information about the methods used in this analysis, as well as detailed tables summarizing the analysis, can be found in Attachments A and B.

1. TAC and $PM_{2.5}$ Emissions

Construction-Related Emissions

Project construction-related TAC emissions are due to fuel-combusting construction equipment and mobile sources. Construction-related emissions of reactive organic gases (ROG), and particulate matter (PM_{10} and $PM_{2.5}$) from construction equipment and mobile sources were calculated from CalEEMod™ model results. Emissions of diesel particulate matter (DPM) are assumed to be equal to PM_{10} emissions.[6]

To estimate construction-related total particulate matter (PM_{10} and $PM_{2.5}$) emissions and maximum daily total organic gas (TOG) emissions, CalEEMod™ incorporated the Project's equipment list and usage information[7,8] and calendar year-specific emission factors for 2013-

[5] BAAQMD Regulation 2-5, Table 2-5-1.

[6] CARB and OEHHA. 1998. For the "Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant". April 22, 1998. Available at: http://oehha.ca.gov/air/toxic_contaminants/html/Diesel%20Exhaust.htm (Accessed November 7, 2012). The document states that "Almost all of the diesel exhaust particle mass is in the fine particle range of 10 microns or less in diameter. Approximately 98 percent of the mass of these particles are less than 10 microns in diameter."

[7] CalEEMod provided default phase duration, equipment list and activity was used to estimate emissions for Site construction. For roadway construction, Project sponsor provided phase duration, equipment list and activity was used to estimate emissions.

2015 from OFFROAD2007. Equipment load factors in CalEEMod™ are obtained from OFFROAD2007. Exhaust PM_{10} emissions from off-road equipment from Site and roadway construction were used to estimate annual average DPM concentrations. Exhaust and fugitive $PM_{2.5}$ emissions from Site construction and exhaust $PM_{2.5}$ emissions from roadway construction were used to estimate annual average $PM_{2.5}$ concentrations. CalEEMod™ daily maximum output of ROGs were converted to TOGs based on guidance from USEPA.[9] Emissions calculated by CalEEMod were reduced by 33% to account for errors in the load factors in the OFFROAD2007 database included in CalEEMod™, consistent with guidance from ARB.[10] PM_{10} and $PM_{2.5}$ emissions were reduced by 45% as per Oakland Standard Conditions of Approval (SCA)[11]. PM_{10} and $PM_{2.5}$ emissions were further reduced by 45% as per BAAQMD CEQA Guidelines to account for the 2-minute idling restriction in the Oakland SCA.[12,13] TAC emissions from construction are shown in Table 1. Detailed calculations and assumptions along with the CalEEMod™ outputs are provided in Attachment A.

Operational-Related Emissions

The one source of operational-related TAC and $PM_{2.5}$ emissions considered in this assessment is the 60-kW natural gas-fired emergency generator.[14] This emergency generator will support the Safeway supermarket in the unlikely event of a power outage. Emission factors from the California Air Toxics Emission Factors (CATEF)[15] and the USEPA's AP-42[16] were used to estimate TAC and $PM_{2.5}$ emissions for the natural gas internal combustion engine, in

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[8] CalEEMod GHG and criteria pollutant construction emissions include on-site and off-site vehicle activity as well as non-mobile emissions such as those from architectural coatings.

[9] USEPA. 2010. Conversion Factors for Hydrocarbon Emission Components. July. Available online at: http://www.epa.gov/oms/models/nonrdmdl/nonrdmdl2010/420r10015.pdf. Accessed October 11, 2012

[10] In September 2010, the ARB announced that its methods used to estimate the load factor for off-road equipment were incorrect and led to an overestimate of emissions by a factor of at least 33%. ARB is currently revising their emissions model, OFFROAD, which has not yet been released. In the meantime, we have received direction from ARB to reduce the load factors by 33% to take into account this error. The slides from the ARB workshop discussing this change are available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/emissions_inventory_presentation_full_10_09_03.pdf Accessed October 11, 2012

[11] Oakland Standard Conditions of Approval. 2012. Online at: http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak035062.pdf Accessed October 11, 2012

[12] BAAQMD. 2012. California Environmental Quality Act Air Quality Guidelines. May. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en. Accessed September 21, 2012. See Page B-11.

[13] Two separate requirements from the Oakland Standard Conditions of Approval (SCA) are for the i) limitation of idling time of diesel-powered equipment to two minutes, and ii) a fleetwide average reduction of PM emissions by 45%. The BAAQMD CEQA Guidelines recommend applying a 45-percent reduction for PM_{10} and $PM_{2.5}$ to account for the 2-minute idling limit (BAAQMD 2012). In addition, the Oakland SCA also requires a fleetwide average reduction of PM emissions by 45%. Therefore the PM emissions are further reduced by 45%. Implementing both measures requires accounting for both reductions.

[14] The increased number of cars and trucks associated with the project is not expected to exceed an average of 10,000 and 1,000 per day, respectively. According to BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards (May 2012), roads that do not exceed this number of vehicles and trucks are considered minor, low-impact sources and can be excluded from the CEQA process.

[15] Available at: http://www.arb.ca.gov/ei/catef/catef.htm Accessed 11/14/2012.

[16] Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources. Chapter 3.2 Natural Gas-fired Reciprocating Engines. Available at: http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf (Accessed 11/14/2012).

accordance with BAAQMD permit evaluation guidance.[17] For emissions estimation purposes, it was assumed that the emergency generator would be permitted for 100 hours. Detailed emissions calculations can be shown in Attachment C. It can be seen that annual average emissions and maximum hourly emissions of TACs do not exceed any BAAQMD TAC Trigger Levels, the emission threshold levels below which the resulting health risks are not expected to cause, or contribute significantly to, adverse health effects.

2. Local Community Risk and Hazard Impacts

Construction-Related Risks

ENVIRON analyzed Project construction-related risks by estimating ambient air concentrations of DPM, $PM_{2.5}$, and TOG. To estimate air concentrations, ENVIRON used AERMOD, a Gaussian air dispersion model. Additional details on the air dispersion modeling are presented in Attachment B. AERMOD incorporates emission factors, source parameters and 5 years of meteorological data to estimate air concentrations of inert pollutants. As discussed above, emission rates were developed using data from CalEEMod. A 20-meter-by-20-meter array of volume sources was used to represent construction activity at the Site.[18] Roadway construction activity was represented by an array of 10-meter-by-10-meter volume sources as can be seen in Figure 2. As per information provided by the Project Sponsor, construction activities are assumed to occur only in the daytime between 7 a.m. and 5 p.m. Hence emissions were modeled for the hours of 7 a.m. to 5 p.m. only. The model was run with 5 years of upper air and surface data from year 2007 to 2011 obtained from the meteorological station at the Oakland Airport, the most representative station in the vicinity of the Project. The meteorological data meets BAAQMD's 90% completeness by quarter requirement since it has less than 10% of the hours missing when evaluated on a quarterly basis.

For modeling purposes, annual average emissions of PM_{10} and $PM_{2.5}$ (expressed in grams per second), were derived by taking the total emissions and dividing by the construction duration (days), number of working hours per day,[19] and 3,600 to convert from hours to seconds. Maximum hourly emissions of TOGs (expressed in grams per second) were derived by the maximum daily TOG emissions from Site and from roadway construction divided by the number of working hours per day, and 3,600 to convert from hours to seconds. We conservatively assume that the maximum daily emissions from Site construction occur concurrently with the maximum daily emissions from the roadway construction. Modeled construction-related emission rates for TOG, PM_{10} and $PM_{2.5}$ in grams per second are shown in Attachment B1b.

The calculation of concentrations for use in an HRA requires the selection of appropriate concentration averaging times. The annual average DPM and $PM_{2.5}$ dispersion factors were modeled for use in calculating the cancer risks and chronic non-cancer hazards associated with DPM emissions and annual average $PM_{2.5}$ concentration associated with $PM_{2.5}$ emissions. The maximum hourly dispersion factor was modeled to determine acute hazards associated with speciated emissions of TOG. The urban setting was used to reflect the characteristics of the surrounding area. An array of receptors with 10-meter spacing extending out to 1,000 feet from the Project boundary was used over all land uses as seen in Figure 1. Receptors were placed on four vertical levels to account for multi-story residences; at 1.8 meters to simulate adult

[17] BAAQMD Permit Handbook. Section 5.2.3.2. Stationary Natural Gas Engines. Available at: http://hank.baaqmd.gov/pmt/handbook/rev02/PH_00_05_02_03_02.pdf (Accessed 11/14/2012)

[18] There is no BAAQMD guidance on source selection for construction modeling. This source configuration is consistent with methodology used to develop the South Coast Air Quality Management District Localized Significance Thresholds. Available online at: http://www.aqmd.gov/ceqa/handbook/lst/Method_final.pdf). Accessed October 11, 2012.

[19] Construction was expected to take place between 7a.m. to 5p.m.based on information from the Project Sponsor.

breathing height on ground floor, in accordance with BAAQMD Guidance, and at 4.8, 7.8 and 10.8 meters to simulate a second, third and fourth story, respectively.

Cancer risk, chronic HI, and acute HI were calculated from ambient annual and hourly concentrations using intake factors, cancer potency factors, and chronic and acute reference exposure levels calculated consistent with Office of Environmental Health Hazard Assessment (OEHHA)[20] and BAAQMD[21] guidance. As shown in Table 2, the chronic HI, acute HI, and annual $PM_{2.5}$ concentration are substantially below the BAAQMD 2011 thresholds. Construction-related cancer risk is estimated to be 6-in-a-million at the off-site maximally exposed individual sensitive receptor (MEISR); this is less than the 10-in-a-million threshold. The location of the MEISR is shown in Figure 3. All receptor locations, including the MEISR, were conservatively evaluated with resident child exposure parameters since it would result in higher risks than any other sensitive population. Exposure parameters can be found in Attachment B2a. The MEISR is located at the California College of the Arts which is not a residential location, resulting in a conservative cancer risk. Since this is the highest offsite cancer risk, all other locations would necessarily have lower risks and fall under BAAQMD thresholds.

<u>Operational-Related Risks</u>

As discussed in the previous section, operational-related emissions of TACs were all below BAAQMD Trigger Levels. Therefore, TAC emissions from this source are not expected to lead to adverse health effects and an HRA is not required.

ENVIRON estimated concentrations of $PM_{2.5}$ from the natural gas emergency generator for evaluation against the operational-related $PM_{2.5}$ concentration threshold. Concentrations were estimated using the USEPA SCREEN3 model using worst-case meteorological conditions. The calculation of emissions using the SCREEN3 model with worst-case meteorological conditions is very conservative because it typically provides higher than expected concentrations. The model was conducted taking into account building downwash and both simple and complex terrain algorithms to account for elevated terrain immediately north of the Safeway building. Since the location of the emergency generator has not yet been identified, this analysis conservatively assumes that the highest concentration estimated by the SCREEN3 model to potentially occur at any receptor. The highest annual-average concentration of $PM_{2.5}$ estimated by SCREEN3 is 0.02 $\mu g/m^3$. This value is substantially lower than the individual project threshold of 0.3 $\mu g/m^3$. An operational-related MEIR for $PM_{2.5}$ was not identified.

3. Cumulative Impacts from Sources on Off-Site Receptors

BAAQMD CEQA Guidelines require an evaluation of cumulative risks from all offsite sources within 1,000 feet from the Project boundary as well as from onsite sources to evaluate the cumulative impact on off-site receptors.

<u>Off-site Stationary Sources</u>

BAAQMD has developed a Stationary Source and Risk Analysis Tool (“BAAQMD Risk Analysis Tool”)[22] for permitted sources to identify off-site stationary sources of TACs. ENVIRON utilized

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[20] Cal/EPA. 2003. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Office of Environmental Health Hazard Assessment. August.

[21] BAAQMD. 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January. Available online at: http://baaqmd.gov/~/media/Files/Engineering/Air%20Toxics%20Programs/hrsa_guidelines.ashx. Accessed October 11, 2012

[22] BAAQMD. 2012. Stationary Source Risk and Hazard Analysis Tool. Available online at: http://www.baaqmd.gov/Home/Divisions/Planning%20and%20Research/CEQA%20GUIDELINES/Tools%20and%20Methodology.aspx. Accessed October 11, 2012.

the BAAQMD Risk Analysis Tool for Alameda County to compile a list of potential stationary sources to be evaluated within 1,000 feet of the Project boundary.

Four stationary sources, which included one diesel generator, one cogeneration plant and three gas dispensing facilities (GDF), were identified within 1,000 feet of the Project as seen in Figure 4.[23] The impacts of these sources were estimated using distance-based multipliers for diesel engines and GDFs.[24,25] For the Claremont Country Club GDF (BAAQMD ID G8633), where screening values were not available and the Claremont House cogeneration plant (BAAQMD ID 20198), which is comprised of a diesel engine and gas fired cogeneration unit, impacts were estimated using BAAQMD-provided emissions data[26] and the screening level risk calculator.[27] Table 4 shows the maximum estimated cancer risk, chronic HI, and $PM_{2.5}$ concentration from the stationary sources at the off-site construction MEIR.

Roadways

The impacts of these roadways were analyzed consistent with the BAAQMD CEQA Guidelines. As a supplement to the guidelines, BAAQMD provides screening tools to assess the impact of roadways on nearby receptors. The estimated cancer risk from the roadways obtained using the screening tool for surface streets depends on the distance between the receptor and the nearest travel lane of the roadway, the average number of vehicles that travel on the roadway in a day, and the orientation of the roadway. The distance between the receptor and the roadway was determined using geographical information software and the average daily traffic (ADT) was obtained from data reported by the California Environmental Health Tracking Program.[28] When the roadway ADT or distance between a receptor and a roadway is between two values in the screening tables, linear interpolation was performed to obtain the cancer risk at the reported distance and ADT, as per BAAQMD Guidelines.

ENVIRON identified four roadways within the 1,000-foot zone of influence with daily traffic greater than 10,000 vehicles as seen in Figure 4. Table 5 shows the cancer risk and annual $PM_{2.5}$ concentration from these four roadways at the off-site construction MEIR.

Cumulative Impacts on Off-Site Receptors (Construction)

The cumulative impacts evaluation was completed for the off-site construction MEIR by summing the impacts from Project construction, off-site stationary sources, and nearby roadways. There are no other projects planned for concurrent construction within 1,000 feet.[29] As shown in Table 3a, the sum of cancer risks is less than the CEQA threshold of 100 in a million. Similarly, the estimated chronic HI and the annual average $PM_{2.5}$ concentrations fall below the corresponding significance thresholds for cumulative impacts.

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[23] Emil Villa's Hickery Pit Restaurant was not included in this analysis even though it was identified in the BAAQMD Stationary Source Screening Analysis Tool for Alameda County because it is no longer in operation.

[24] BAAQMD 2012. Diesel Internal Combustion (IC) Engine Distance Multiplier Tool. June. Available online at: http://baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Multiplier%20Tools%20May%202012/Diesel%20IC%20Engine%20Multiplier%20Tool.ashx?la=en. Accessed October 11, 2012

[25] BAAQMD 2012. Gasoline Dispensing Facility (GDF) Distance Multiplier Tool. June. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Multiplier%20Tools%20May%202012/Diesel%20IC%20Engine%20Multiplier%20Tool.ashx?la=en. Accessed October 11, 2012

[26] Based on a data request sent to BAAQMD as seen in Attachment B5a.

[27] Screening level risk calculator as provided by BAAQMD shown in Attachment B5b and B5c.

[28] California Environmental Health Tracking Program traffic spatial linkage web service. Available online at: http://www.ehib.org/traffic_tool.jsp. Accessed October 11, 2012

[29] Oakland's list of active major development projects: http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak025453.pdf (Accessed November 11, 2012)

<u>Cumulative Impacts on Off-Site Receptors (Operational)</u>

As discussed above, TAC emissions from the natural gas-fired emergency generator are not expected to lead to adverse health effects. Therefore cumulative cancer and noncancer impacts resulting from this operational source do not need to be evaluated. However, there is some incremental contribution to $PM_{2.5}$ concentrations as a result of the operation of the emergency generator. As an MEIR for $PM_{2.5}$ from operational-related emissions has not been identified, we take a very conservative approach as follows: The highest contribution to $PM_{2.5}$ concentration from offsite sources would be due to roadways, as shown in Tables 4 and 5. Specifically, a location near the proximity of College Avenue, Broadway Avenue, and Broadway Terrace would likely have the highest contribution to $PM_{2.5}$ concentration from offsite sources (Table 6). If we were to assume a hypothetical MEIR for $PM_{2.5}$ from project operational-related emissions at this location (i.e., the highest concentration of $PM_{2.5}$ from the emergency generator would hypothetically be at this location), the cumulative $PM_{2.5}$ concentration would be 0.69 µg/m^3 (Table 7). This concentration would not exceed the cumulative threshold of 0.8 µg/m^3. This approach is very conservative in that the actual operational $PM_{2.5}$ MEIR from the natural gas-fired emergency generator would likely be much closer to the location of the Safeway store, and therefore would have dramatically lower impacts from the roadways.

Closing

The conservative analysis described herein indicates that the proposed Project's construction-related and operational-related emissions do not result in the estimated cancer risk, chronic HI, acute HI and annual average $PM_{2.5}$ concentration to exceed the individual source and cumulative source significance thresholds.

If you have any questions about these analyses, please feel free to contact David at 415.796.1940 or dkim@environcorp.com. Thank you for the opportunity to assist you with this matter.

Sincerely,

David Kim, PhD
Senior Manager

Shari Libicki, PhD
Principal

Attachments:

Table 1	TAC Emissions from Construction
Table 2	Construction Impact Analysis for Off-Site MEISR
Table 3	Cumulative Community Risks and Hazards during Construction – Offsite Construction MEISR
Table 4	Stationary Source Screening Analysis for Construction MEISR
Table 5	Roadway Screening Analysis for Construction MEISR
Table 6	Roadway Screening Analysis for Hypothetical Operational MEISR
Table 7	Cumulative Community Risks and Hazards during Operation – Offsite Hypothetical Operational MEISR
Figure 1	Site and Modeled Receptor Location
Figure 2	Modeled Construction Sources
Figure 3	Construction MEISR
Figure 4	Cumulative Sources
Attachment A:	Emission Estimates Supporting Information
Attachment B:	Air Dispersion and Health Risk Modeling Supporting Information
Attachment C:	Operational Emission Estimates Supporting Information
Attachment D:	Operational Air Dispersion Modeling Supporting Information
Attachment E:	Emergency Generator Specification Supporting Information

Tables

Table 1
TAC Emissions from Construction[1,2,3]
51st and Broadway
Oakland, CA

Construction Phase	Construction Timeline	DPM[4,6]	$PM_{2.5}$ [4,5,6]	TOG[7,8]
		[tons]	[tons]	[max lbs/day]
Site	Jul 2013 - Mar 2015	0.16	0.35	10
Roadway - South	Jun 2014 - Oct 2014	0.0041	0.0041	1.6
Roadway - West	Jun 2014 - Aug 2014	0.0041	0.0041	0.83

Notes:
1. Emissions were calculated by California Emissions Estimator Model (CalEEModTM). Refer to Appendix A for CalEEMod™ runs.
2. Default construction schedule and offroad equipment information from CalEEMod was used for the Site construction. For roadway construction, the construction schedule and offroad equipment information was obtained from the Project Sponsor.
3. Default emissions from CalEEMod for diesel equipment were adjusted by the 33% load factor reduction recommended by the California Air Resources Board (ARB 2010) since this was not incorporated in CalEEMod™ which utilizes OFFROAD2007.
4. Two separate requirements from the Oakland Standard Conditions of Approval (SCA) are for the i) limitation of idling time of diesel-powered equipment to two minutes, and ii) a fleetwide average reduction of PM emissions by 45%. The BAAQMD CEQA Guidelines recommend applying a 45-percent reduction for PM10 and PM2.5 to account for the 2-minute idling limit (BAAQMD 2012). In addition, the Oakland SCA also requires a fleetwide average reduction of PM emissions by 45%. Therefore the PM emissions are further reduced by 45%. Implementing both measures requires accounting for both reductions.
5. To be conservative, $PM_{2.5}$ emissions from Site construction account for exhaust and fugitive emissions. whereas only exhaust $PM_{2.5}$ emissions from roadway construction were considered .
6. Exhaust $PM_{2.5}$ and PM_{10} emissions from roadway construction were too small to be displayed by CalEEMod™ (only displays two decimal digits), so these values were assumed to by 0.005.
7. CalEEMod™ output of reactive organic gases (ROG) were multiplied by a factor of 1.07/1.053 to convert to total organic gases (TOG) (USEPA 2010).
8. TOG emissions from the Site construction based on a default CalEEMod schedule occurs over a time frame of 25 months. Since the actual construction is expected to take 20 months only, daily TOG emissions are increased by a factor of 25/20 to account for the additional emissions that will take place in the shorter construction duration.

Abbreviations:
ARB: California Air Resources Board
BAAQMD: Bay Area Air Quality Management District
CalEEMod™: California Emissions Estimator Model
DPM: Diesel Particulate Matter
lbs: pounds
OFFROAD2007: offroad emissions estimator model
$PM_{2.5}$: particles in the atmosphere with a diameter of 2.5 micrometers or less
ROG: Reactive Organic Gases
SCA: Standard Conditions of Approval
TAC: Toxic Air Contaminants
TOG: Total Organic Gases
tons: short tons
USEPA: United States Environmental Protection Agency
yr: year

Sources:
1. CalEEMod™. Available at: http://www.caleemod.com/
2. ARB. 2010. Workshops on Information Regarding the Off-Road, Truck and Bus and Drayage Truck Regulations. September. Available at: http://www.arb.ca.gov/msprog/ordiesel/documents/emissions_inventory_presentation_full_10_09_03.pdf Accessed October 11, 2012
3. USEPA. 2010. Conversion Factors for Hydrocarbon Emission Components. July. Available online at: http://www.epa.gov/oms/models/nonrdmdl/nonrdmdl2010/420r10015.pdf Accessed October 11, 2012
4. BAAQMD. 2012. CEQA Air Quality Guidelines. May. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en. Accessed October 11, 2012.
5. Oakland Standard Conditions of Approval. 2012. Online at: http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak035062.pdf. Accessed October 11, 2012

Table 2
Construction Impact Analysis for Off-site MEISR[1]
51st and Broadway
Oakland, CA

Analysis	MEISR Location[2]			Calculated Value	Individual Source Threshold	Unit	Exceeds Threshold?
	UTMx [m]	UTMy [m]	Height [m]				
Cancer Risk	565,909	4,187,816	1.8	**6**	**10**	# in one million	**NO**
Chronic HI	565,909	4,187,816	1.8	**0.008**	**1**	[-]	**NO**
Acute HI[3]	565,899	4,187,626	4.8	**0.13**	**1**	[-]	**NO**
$PM_{2.5}$ Concentration	565,909	4,187,816	1.8	**0.09**	**0.3**	μg/m^3	**NO**

Notes:
1. Resident child was assumed to be exposed to the construction emissions for the duration of the construction period between the ages of the third trimester of pregnancy to two years of age.
2. Location of the MEISR is shown in Figure 3.
3. Acute HI is based on conservatively assuming that the maximum daily TOG emissions from site and roadway construction occur concurrently.

Abbreviations:
μg/m^3: micrograms per cubic meter
BAAQMD: Bay Area Air Quality Management District
HI: Hazard Index
MEISR: Maximum Exposed Individual Sensitive Receptor
OEHHA: Office of Environmental Health Hazard Assessment
$PM_{2.5}$: particles in the atmosphere with a diameter of 2.5 micrometers or less μg/m^3: micrograms per cubic meter

Sources:
BAAQMD. 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.
OEHHA. 2009. Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures. May.

Table 3
Cumulative Community Risks and Hazards during Construction - Off-site Construction MEISR[1]
Safeway Rockridge Center Shopping Project
Oakland, CA

Plant # or Gas Dispensary #	Facility Name	Street Address	Methodology[2]	Cancer Risk	Chronic HI	$PM_{2.5}$ Concentration
				[# in one million]	[-]	[µg/m^3]
N/A	Project Construction	51st and Broadway Street	Modeling[3]	6.0	0.008	0.09
G8633	Claremont Country Club	5295 Broadway Ter	Screening[4]	0.04	0.00001	NA
G6254	Unocal SS# 251028	5300 Broadway Avenue	Screening[4]	0.28	0.00040	NA
20198	Claremont House	4500 Gilbert Street	Screening[4]	0.93	0.0049	0.008
G784	Betts Sud Machine	4400 Piedmont Avenue	Screening[4]	0.1	0.00015	NA
N/A	Roadway Traffic	Pleasant Valley Ave/51st Street	Screening[5]	1.6	< 0.03	0.1
N/A		Broadway Ave	Screening[5]	4.3	< 0.03	0.18
N/A		Broadway Terrace	Screening[5]	0.9	< 0.03	0.03
N/A		College Ave	Screening[5]	2.4	< 0.03	0.10
			Total	**17**	**0.13**	**0.47**
			Cumulative Threshold	**100**	**10**	**0.8**
			Exceeds Cumulative Threshold?	**NO**	**NO**	**NO**

Notes:
1. Onsite MEISR was identified to be the resident at UTM coordinate: 565909 meters East, 4187816 meters North as seen in Table 2
2. Refer to Report discussion on the methodology used to assess impacts from the construction, roadway and stationary sources.
3. Impacts from Project Construction at MEISR is described in Table 2.
4. Impacts from Stationary Sources is described in Table 4.
5. Impacts from Roadway Traffic is described in Table 5.

Abbreviations:
µg/m^3: micrograms per cubic meter
BAAQMD: Bay Area Air Quality Management District
HI: hazard index
MEISR: Maximum Exposed Individual Sensitive Receptor
NA: Not Applicable

Table 4
Stationary Source Screening Analysis for Construction MEISR
Safeway Rockridge Center Shopping Project
Oakland, CA

Plant Number	Facility Name[1]	Street Address	Approximate Distance to MEISR[2]	Source of Data	Multiplier Applied?[3]	Distance-Adjusted Lifetime Excess Cancer Risk	Distance-Adjusted Chronic Hazard Index	$PM_{2.5}$ Concentration
			[ft]			[in a million]		[$\mu g/m^3$]
G8633	Claremont Country Club[4]	5295 Broadway Ter	1,137	BAAQMD Inquiry	Yes	0.042	0.00001	NA
G6254	Unocal SS# 251028	5300 Broadway Avenue	744	BAAQMD Tool	Yes	0.28	0.0004	NA
20198	Claremont House[5]	4500 Gilbert Street	775	BAAQMD Inquiry	Yes	0.93	0.0049	0.008
G784	Betts Sud Machine	4400 Piedmont Avenue	1,669	BAAQMD Tool	Yes	0.1	0.0002	NA

Notes:
1. Stationary source information was obtained from the BAAQMD Stationary Source Screening Analysis Tool for the Alameda County. (BAAQMD 2012)
2. All facilities within 1,000 feet of the MEISR as per the BAAQMD Stationary Source Screening Analysis Tool are included, consistent with BAAQMD Guidelines. The shortest distance between MEISR and the stationary source is reported. The distances were measured using Google Earth.
3. BAAQMD provides a *Cancer Risk and Chronic Hazard Index Distance Adjustment Multiplier for Diesel IC Engines* and a *Cancer Risk and Chronic Hazard Index Distance Adjustment Multiplier for Gasoline Dispensing Facilities* to be used on long term health effects from diesel generators and gasoline dispensing facilities. If the source is known to be a diesel engine or a gas station, the multiplier is applied to cancer risk and chronic HI reported in the BAAQMD Tool.
4. Screening levels for Claremont Country Club were estimated using emission data and screening-level risk calculator provided by BAAQMD. See Appendix B5.
5. Screening levels for Claremont House were estimated using emission data and screening-level risk calculator provided by BAAQMD. The source has a cogen engine and a diesel generator. The diesel generator distance multiplier was applied to the long term health effects from the diesel generator while the long term health effects from the cogen engine were not adjusted. See Appendix B5.

Abbreviations:
$\mu g/m^3$: microgram per cubic meter
BAAQMD: Bay Area Air Quality Management District
CEQA: California Environmental Quality Act
ft: feet HI: hazard index
IC: internal combustion
MEISR: maximally exposed individual sensitive receptor
NA: not available
PM: particulate matter

Sources:
BAAQMD. 2012. CEQA Air Quality Guidelines. May. Available online at:
http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en. Accessed October 11, 2012.
BAAQMD. 2012. Stationary Source Screening Analysis Tool. Available online at:
http://baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. Accessed October 11, 2012

Table 5
Roadway Screening Analysis
51st and Broadway
Oakland, CA

Roadway	Approximate Distance from Roadway to MEISR[1]	Reported Average Daily Traffic (ADT) (vehicles/day)[2]	Direction	Interpolated Lifetime Excess Cancer Risk[3,4]	Chronic Hazard Index[5]	Acute Hazard Index[5]	Interpolated $PM_{2.5}$ Concentration[3,4]
	[ft]			[in a million]	[--]	[--]	[$\mu g/m^3$]
Pleasant Valley Ave/51st Street	485	29,900	Either	1.62	< 0.03	< 0.03	0.067
Broadway Ave	180	30,200	Either	4.28	< 0.03	< 0.03	0.182
Broadway Terrace	639	13,900	East-West	0.88	< 0.03	< 0.03	0.026
College Ave	320	23,900	North-South	2.43	< 0.03	< 0.03	0.100

Notes:
1. The shortest distances between MEISR and the nearest travel lane of the surface streets are reported. The distances were measured using Google Earth.
2. Average daily traffic data of the surface streets is obtained from California Environmental Health Tracking Program (CEHTP) traffic spatial linkage web service.
3. Screening values for the surface streets are obtained from BAAQMD Roadway Screening Analysis Tables (BAAQMD 2011b)
4. Distance and ADT-interpolated estimate completed according to BAAQMD guidance.
5. Maximum, unadjusted Chronic and Acute Hazard Index values are obtained from BAAQMD Roadway Screening Analysis Tables. These values are reported without any adjustments since BAAQMD does not provide a distance multiplier for chronic and acute hazard index. (BAAQMD 2011b)

Abbreviations:
$\mu g/m^3$: microgram per cubic meter
ADT: Average Daily Traffic
BAAQMD: Bay Area Air Quality Management District
CEQA: California Environmental Quality Act
ft: feet
MEISR: maximally exposed individual sensitive receptor
PM: particulate matter

Sources:

BAAQMD. 2011a. CEQA Air Quality Guidelines. May. Available online at:
http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx?la=en.
BAAQMD. 2011b. Roadway Screening Analysis Tables. Available online at:
http://baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/County%20Surface%20Street%20Screening%20Tables%20Dec%202011.ashx?la=en. California Environmental Health Tracking Program (CEHTP) traffic spatial linkage web service. Available online at : http://www.ehib.org/traffic_tool.jsp.

Table 6
Roadway Screening Analysis for Hypothetical Operational MEISR
Safeway Rockridge Center Shopping Project
Oakland, CA

Roadway	Approximate Distance from Roadway to Hypothetical Operational MEISR[1]	Reported Average Daily Traffic (ADT) (vehicles/day)[2]	Direction	Interpolated $PM_{2.5}$ Concentration[3,4]
	[ft]			[$\mu g/m^3$]
Pleasant Valley Ave/51st Street	981	29,900	Either	0.028
Broadway Ave	33	30,200	Either	0.275
Broadway Terrace	33	13,900	East-West	0.142
College Ave	60	23,900	North-South	0.217

Notes:
1. The shortest distances between the hypothetical operational MEISR and the nearest travel lane of the surface streets are reported. The distances were measured using Google Earth.
2. Average daily traffic data of the surface streets is obtained from California Environmental Health Tracking Program (CEHTP) traffic spatial linkage web service.
3. Screening values for the surface streets are obtained from BAAQMD Roadway Screening Analysis Tables (BAAQMD 2011b)
4. Distance and ADT-interpolated estimate completed according to BAAQMD guidance.

Abbreviations:
$\mu g/m^3$: microgram per cubic meter
ADT: Average Daily Traffic
BAAQMD: Bay Area Air Quality Management District
CEQA: California Environmental Quality Act
ft: feet
MEISR: maximally exposed individual sensitive receptor
PM: particulate matter

Sources:

BAAQMD. 2011a. CEQA Air Quality Guidelines. May. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx?la=en.
BAAQMD. 2011b. Roadway Screening Analysis Tables. Available online at: http://baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/County%20Surface%20Street%20Screening%20Tables%20Dec%202011.ashx?la=en. California Environmental Health Tracking Program (CEHTP) traffic spatial linkage web service. Available online at : http://www.ehib.org/traffic_tool.jsp.

Table 7

Cumulative Community Risks and Hazards during Operation - Off-site Hypothetical Operational MEISR[1]

Safeway Rockridge Center Shopping Project

Oakland, CA

Plant # or Gas Dispensary #	Facility Name	Street Address	Methodology[2]	$PM_{2.5}$ Concentration
				[μg/m³]
N/A	Project Operation - Emergency Generator	51st and Broadway Street	Modeling[3]	0.02
G8633	Claremont Country Club	5295 Broadway Ter	Screening[4]	NA
G6254	Unocal SS# 251028	5300 Broadway Avenue	Screening[4]	NA
20198	Claremont House	4500 Gilbert Street	Screening[4]	0.008
G784	Betts Sud Machine	4400 Piedmont Avenue	Screening[4]	NA
N/A	Roadway Traffic	Pleasant Valley Ave/51st Street	Screening[5]	0.03
N/A		Broadway Ave	Screening[5]	0.27
N/A		Broadway Terrace	Screening[5]	0.14
N/A		College Ave	Screening[5]	0.22
			Total	**0.69**
			Cumulative Threshold	**0.8**
			Exceeds Cumulative Threshold?	**NO**

Notes:

1. Hypothetical offsite operational MEISR was assumed to be located near the proximity of College Avenue, Broadway Avenue and Broadway Terrace.
2. Refer to Report discussion on the methodology used to assess $PM_{2.5}$ concentration from the operational, roadway and stationary sources.
3. Worst-case impacts from Project Operation are reported here. Detailed calculations are shown in Attachments C and D.
4. PM2.5 concentration from Stationary Sources are obtained from the BAAQMD Stationary Source Screening Analysis Tool for Alameda County. (BAAQMD 2012) . They are the same as shown in Table 4.
5. $PM_{2.5}$ concentration from Roadway Traffic is described in Table 6.

Abbreviations:

μg/m³: micrograms per cubic meter
BAAQMD: Bay Area Air Quality Management District
HI: hazard index
MEISR: Maximum Exposed Individual Sensitive Receptor
NA: Not Applicable
$PM_{2.5}$: particles in the atmosphere with a diameter of 2.5 micrometers or less

Sources:

BAAQMD. 2012. Stationary Source Screening Analysis Tool. Available online at:
http://baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. Accessed October 11, 2012

Figures

Site and Modeled Receptor Location
51st & Broadway Project
Oakland, California

ENVIRON

Legend

- Modeled Receptors
- Roadway Construction
- Property Boundary
- 1000 foot Buffer

0 250 500 1,000
FEET

0 50 100 200 300
METER

N

Figure
1

Path: U:\Safeway\Oakland 51st\GIS\Figure Basemaps\Figure1 - Site Location and Modeled Receptors.mxd

Modeled Construction Sources
51st & Broadway Project
Oakland, California

ENVIRON

Legend

- Site Source
- Roadway Source - South
- Roadway Source - West
- Property Boundary
- Roadway - South
- Roadway - West

0 50 100 200 300
FEET

0 25 50 100
METER

N

Figure 2

Path: U:\Safeway\Oakland 51st\GIS\Figure Basemaps\Figure 2 - Modeled Construction Sources.mxd

Maximally Exposed Individual Sensitive Receptor
51st & Broadway Project
Oakland, California

ENVIRON

Legend

MEISR-Acute

MEISR - Cancer, Chronic, PM2.5

Property Boundary

Roadway Construction

0 50 100 200 300
FEET

0 50 100
METER

N

Figure 3

Path: U:\Safeway\Oakland 51st\GIS\Figure Basemaps\Figure 3 - Construction MEISR.mxd

Cumulative Sources
51st & Broadway Project
Oakland, California

ENVIRON

Legend

BAAQMD Stationary Source
Roadway
Roadway Construction
Property Boundary
1000 foot Buffer

0 250 500 1,000 FEET
0 50 100 200 300 METER

N

Figure
4

Path: U:\Safeway\Oakland 51st\GIS\Figure Basemaps\Figure 4 - Cumulative Sources v2 - 20121211.mxd

Attachment A

Emission Estimates
Supporting Information

Attachment A: Emission Estimates Supporting Information

Table A1: Roadway Construction Equipment List

Table A2: Summary of Non-Default Construction Emission Assumptions

Section A3: CalEEMod Outputs

Table A3a: CalEEMod Annual Emissions Output

Table A3b: CalEEMod Summer Emissions Output

Table A3c: CalEEMod Winter Emissions Output

Section A4: Emissions Evaluation

Table A4a: Site Construction Emissions Phase 1

Table A4b: Site Construction Emissions Phase 2

Table A4c: Summary of Site Construction Emissions

Table A4d: Summary of Roadway Construction – South Emissions

Table A4e: Summary of Roadway Construction – West Emissions

Table A4f: Summary of Roadway Construction Emissions

Table A1
Roadway Construction Equipment List
51st and Broadway
Oakland, CA

Phase[1]	Equipment Type[2]	Quantity[2]	Modeled Days of Operation[3]	Modeled Daily Usage [hours][4]	HorsePower[5]	Load Factor[6]
Roadway Construction - South						
Demolition	Concrete/Industrial Saws	2	8	4	81	0.73
	Tractors/Loaders/Backhoes	2		12	75	0.55
New Traffic Signals	Concrete/Industrial Saws	1	8	4	81	0.73
	Tractors/Loaders/Backhoes	1		2	75	0.55
New Concrete and Paving	Concrete/Industrial Saws	1	8	3	81	0.73
	Paving Equipment	2		5	82	0.53
	Tractors/Loaders/Backhoes	1		5	75	0.55
Landscaping	Tractors/Loaders/Backhoes	1	8	15	75	0.55
Roadway Construction - West						
Demolition	Concrete/Industrial Saws	1	8	4	81	0.73
	Tractors/Loaders/Backhoes	1		10	75	0.55
New Traffic Signals	Concrete/Industrial Saws	1	8	4	81	0.73
	Tractors/Loaders/Backhoes	1		2	75	0.55
New Concrete and Paving	Concrete/Industrial Saws	1	8	4	81	0.73
	Paving Equipment	1		5	82	0.53
	Tractors/Loaders/Backhoes	1		5	75	0.55
Landscaping	Tractors/Loaders/Backhoes	1	8	10	75	0.55

Notes:
1. Phase information for Roadway Construction - South and West is based on data provided by the Project Sponsor.
2. Equipment list and quantity is based on information provided by the from Project Sponsor.
3. Total days of operation for each construction phase were kept the same across all equipment type used within the particular phase.
4. Daily hours of operation were adjusted to conserve the total number of hours of operation and be consistent with Project Sponsor provided data.
5. Horsepower is based on CalEEMod™ defaults and has been approved by the client.
6. Default load factor from OFFROAD2007 are used.

Abbreviations:
ARB - California Air Resources Board
CalEEMod™ - CALifornia Emissions Estimator MODel
OFFROAD2007 - ARB Offroad Emissions Estimator Model

Table A2
Summary of Non-Default Construction Emission Assumptions
51st and Broadway
Oakland, CA

Construction Type	Reduction	Reasoning
Site and Roadway	33%	Reduction in load factor from OFFROAD applied to all off-road exhaust. Default emissions from CalEEMod for diesel equipment were adjusted by the 33% load factor reduction recommended by the California Air Resources Board (ARB 2010) since this was not incorporated in CalEEModTM which utilizes OFFROAD2007.
	45%	Reduction in PM10 and PM2.5 from off-road equipment from Oakland SCM
	45%	Reduction in PM10 and PM2.5 from 2-minute idling restriction in Oakland SCM. Percent reduction from BAAQMD CEQA Guidelines

Source:

1. ARB. 2010. Workshops on Information Regarding the Off-Road, Truck and Bus and Drayage Truck Regulations. September. Available at: http://www.arb.ca.gov/msprog/ordiesel/documents/emissions_inventory_presentation_full_10_09_03.pdf Accessed October 11, 2012
2. Oakland Standard Conditions of Approval. 2012. Online at: http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak035062.pdf. Accessed October 11, 2012
3. BAAQMD. 2012. CEQA Air Quality Guidelines. May. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en. Accessed October 11, 2012.

Safeway 51st - Construction "Phase I"

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	334	Space
Regional Shopping Center	32.7	1000sqft
Supermarket	65.01	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Demolition -

Vehicle Trips - Disregard operational emissions from this model (they were quantified in a separate model)

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.48	3.48	2.45	0.00	0.41	0.19	0.60	0.10	0.19	0.29	0.00	405.10	405.10	0.04	0.00	405.90
2014	3.17	3.19	2.66	0.01	0.10	0.20	0.30	0.01	0.20	0.20	0.00	435.86	435.86	0.04	0.00	436.68
Total	**3.65**	**6.67**	**5.11**	**0.01**	**0.51**	**0.39**	**0.90**	**0.11**	**0.39**	**0.49**	**0.00**	**840.96**	**840.96**	**0.08**	**0.00**	**842.58**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2013	0.48	3.48	2.45	0.00	0.23	0.19	0.42	0.10	0.19	0.29	0.00	405.10	405.10	0.04	0.00	405.90
2014	3.17	3.19	2.66	0.01	0.01	0.20	0.20	0.01	0.20	0.20	0.00	435.86	435.86	0.04	0.00	436.68
Total	**3.65**	**6.67**	**5.11**	**0.01**	**0.24**	**0.39**	**0.62**	**0.11**	**0.39**	**0.49**	**0.00**	**840.96**	**840.96**	**0.08**	**0.00**	**842.58**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.17	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01	0.00	987.57	987.57	0.04	0.02	993.73
Mobile	5.79	14.08	50.33	0.06	5.50	0.42	5.92	0.24	0.42	0.66	0.00	5,752.99	5,752.99	0.27	0.00	5,758.58
Waste						0.00	0.00		0.00	0.00	81.40	0.00	81.40	4.81	0.00	182.42
Water						0.00	0.00		0.00	0.00	0.00	18.31	18.31	0.32	0.01	27.56
Total	**6.97**	**14.21**	**50.44**	**0.06**	**5.50**	**0.42**	**5.93**	**0.24**	**0.42**	**0.67**	**81.40**	**6,758.87**	**6,840.27**	**5.44**	**0.03**	**6,962.29**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.17	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01	0.00	987.57	987.57	0.04	0.02	993.73
Mobile	5.79	14.08	50.33	0.06	5.50	0.42	5.92	0.24	0.42	0.66	0.00	5,752.99	5,752.99	0.27	0.00	5,758.58
Waste						0.00	0.00		0.00	0.00	81.40	0.00	81.40	4.81	0.00	182.42
Water						0.00	0.00		0.00	0.00	0.00	18.31	18.31	0.32	0.01	27.56
Total	**6.97**	**14.21**	**50.44**	**0.06**	**5.50**	**0.42**	**5.93**	**0.24**	**0.42**	**0.67**	**81.40**	**6,758.87**	**6,840.27**	**5.44**	**0.03**	**6,962.29**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.07	0.00	0.07	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.09	0.71	0.43	0.00		0.04	0.04		0.04	0.04	0.00	68.12	68.12	0.01	0.00	68.27
Total	**0.09**	**0.71**	**0.43**	**0.00**	**0.07**	**0.04**	**0.11**	**0.01**	**0.04**	**0.05**	**0.00**	**68.12**	**68.12**	**0.01**	**0.00**	**68.27**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.18	0.08	0.00	0.12	0.01	0.13	0.00	0.01	0.01	0.00	24.90	24.90	0.00	0.00	24.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	0.00	0.00	1.50
Total	**0.02**	**0.18**	**0.09**	**0.00**	**0.12**	**0.01**	**0.13**	**0.00**	**0.01**	**0.01**	**0.00**	**26.40**	**26.40**	**0.00**	**0.00**	**26.42**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.07	0.00	0.07	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.09	0.71	0.43	0.00		0.04	0.04		0.04	0.04	0.00	68.12	68.12	0.01	0.00	68.27
Total	**0.09**	**0.71**	**0.43**	**0.00**	**0.07**	**0.04**	**0.11**	**0.01**	**0.04**	**0.05**	**0.00**	**68.12**	**68.12**	**0.01**	**0.00**	**68.27**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.18	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	24.90	24.90	0.00	0.00	24.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	0.00	0.00	1.50
Total	**0.02**	**0.18**	**0.09**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**26.40**	**26.40**	**0.00**	**0.00**	**26.42**

3.3 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.40	0.23	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.40**	**0.23**	**0.00**	**0.09**	**0.02**	**0.11**	**0.05**	**0.02**	**0.07**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.90	0.00	0.00	0.90
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.90**	**0.90**	**0.00**	**0.00**	**0.90**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.40	0.23	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.40**	**0.23**	**0.00**	**0.09**	**0.02**	**0.11**	**0.05**	**0.02**	**0.07**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.90	0.00	0.00	0.90
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.90**	**0.90**	**0.00**	**0.00**	**0.90**

3.4 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.07	0.00	0.07	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.06	0.49	0.31	0.00		0.03	0.03		0.03	0.03	0.00	47.52	47.52	0.01	0.00	47.63
Total	**0.06**	**0.49**	**0.31**	**0.00**	**0.07**	**0.03**	**0.10**	**0.03**	**0.03**	**0.06**	**0.00**	**47.52**	**47.52**	**0.01**	**0.00**	**47.63**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	0.00	0.00	1.50
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.50**	**1.50**	**0.00**	**0.00**	**1.50**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.07	0.00	0.07	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.06	0.49	0.31	0.00		0.03	0.03		0.03	0.03	0.00	47.52	47.52	0.01	0.00	47.63
Total	**0.06**	**0.49**	**0.31**	**0.00**	**0.07**	**0.03**	**0.10**	**0.03**	**0.03**	**0.06**	**0.00**	**47.52**	**47.52**	**0.01**	**0.00**	**47.63**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	0.00	0.00	1.50
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.50**	**1.50**	**0.00**	**0.00**	**1.50**

3.5 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.21	1.42	0.96	0.00		0.09	0.09		0.09	0.09	0.00	150.25	150.25	0.02	0.00	150.61
Total	**0.21**	**1.42**	**0.96**	**0.00**		**0.09**	**0.09**		**0.09**	**0.09**	**0.00**	**150.25**	**150.25**	**0.02**	**0.00**	**150.61**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.25	0.15	0.00	0.01	0.01	0.02	0.00	0.01	0.01	0.00	38.54	38.54	0.00	0.00	38.56
Worker	0.03	0.03	0.27	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	35.61	35.61	0.00	0.00	35.66
Total	**0.05**	**0.28**	**0.42**	**0.00**	**0.05**	**0.01**	**0.06**	**0.00**	**0.01**	**0.01**	**0.00**	**74.15**	**74.15**	**0.00**	**0.00**	**74.22**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.21	1.42	0.96	0.00		0.09	0.09		0.09	0.09	0.00	150.25	150.25	0.02	0.00	150.61
Total	**0.21**	**1.42**	**0.96**	**0.00**		**0.09**	**0.09**		**0.09**	**0.09**	**0.00**	**150.25**	**150.25**	**0.02**	**0.00**	**150.61**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.25	0.15	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	38.54	38.54	0.00	0.00	38.56
Worker	0.03	0.03	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.61	35.61	0.00	0.00	35.66
Total	**0.05**	**0.28**	**0.42**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**74.15**	**74.15**	**0.00**	**0.00**	**74.22**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	2.37	1.72	0.00		0.15	0.15		0.15	0.15	0.00	271.18	271.18	0.03	0.00	271.78
Total	**0.35**	**2.37**	**1.72**	**0.00**		**0.15**	**0.15**		**0.15**	**0.15**	**0.00**	**271.18**	**271.18**	**0.03**	**0.00**	**271.78**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.42	0.25	0.00	0.02	0.01	0.03	0.00	0.01	0.01	0.00	69.62	69.62	0.00	0.00	69.66
Worker	0.04	0.05	0.44	0.00	0.08	0.00	0.08	0.00	0.00	0.01	0.00	62.92	62.92	0.00	0.00	63.00
Total	**0.08**	**0.47**	**0.69**	**0.00**	**0.10**	**0.01**	**0.11**	**0.00**	**0.01**	**0.02**	**0.00**	**132.54**	**132.54**	**0.00**	**0.00**	**132.66**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	2.37	1.72	0.00		0.15	0.15		0.15	0.15	0.00	271.18	271.18	0.03	0.00	271.78
Total	**0.35**	**2.37**	**1.72**	**0.00**		**0.15**	**0.15**		**0.15**	**0.15**	**0.00**	**271.18**	**271.18**	**0.03**	**0.00**	**271.78**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.42	0.25	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	69.62	69.62	0.00	0.00	69.66
Worker	0.04	0.05	0.44	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	62.92	62.92	0.00	0.00	63.00
Total	**0.08**	**0.47**	**0.69**	**0.00**	**0.00**	**0.01**	**0.02**	**0.00**	**0.01**	**0.02**	**0.00**	**132.54**	**132.54**	**0.00**	**0.00**	**132.66**

3.6 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.32	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.55
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.05**	**0.32**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.55**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	1.47	0.00	0.00	1.47
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.47**	**1.47**	**0.00**	**0.00**	**1.47**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.32	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.55
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.05**	**0.32**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.55**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	1.47	0.00	0.00	1.47
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.47**	**1.47**	**0.00**	**0.00**	**1.47**

3.7 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.68					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**2.68**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	1.66	0.00	0.00	1.66
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.66**	**1.66**	**0.00**	**0.00**	**1.66**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.68					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**2.68**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	1.66	0.00	0.00	1.66
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.66**	**1.66**	**0.00**	**0.00**	**1.66**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.79	14.08	50.33	0.06	5.50	0.42	5.92	0.24	0.42	0.66	0.00	5,752.99	5,752.99	0.27	0.00	5,758.58
Unmitigated	5.79	14.08	50.33	0.06	5.50	0.42	5.92	0.24	0.42	0.66	0.00	5,752.99	5,752.99	0.27	0.00	5,758.58
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,404.14	1,634.02	825.35	2,374,490	2,374,490
Supermarket	6,646.62	11,545.13	10820.26	9,034,308	9,034,308
Total	8,050.76	13,179.14	11,645.61	11,408,798	11,408,798

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	7.30	7.30	6.50	74.50	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	845.59	845.59	0.04	0.01	850.89
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	845.59	845.59	0.04	0.01	850.89
NaturalGas Mitigated	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01	0.00	141.98	141.98	0.00	0.00	142.84
NaturalGas Unmitigated	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01	0.00	141.98	141.98	0.00	0.00	142.84
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Shopping Center	156955	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	8.38	8.38	0.00	0.00	8.43
Supermarket	2.50365e+006	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	133.60	133.60	0.00	0.00	134.42
Total		**0.01**	**0.13**	**0.11**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**	**0.00**	**141.98**	**141.98**	**0.00**	**0.00**	**142.85**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Shopping Center	156955	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	8.38	8.38	0.00	0.00	8.43
Supermarket	2.50365e+006	0.01	0.12	0.10	0.00		0.00	0.01		0.00	0.01	0.00	133.60	133.60	0.00	0.00	134.42
Total		**0.01**	**0.13**	**0.11**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**	**0.00**	**141.98**	**141.98**	**0.00**	**0.00**	**142.85**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	379635					110.44	0.00	0.00	111.13
Supermarket	2.52706e+006					735.15	0.03	0.01	739.76
Total						**845.59**	**0.03**	**0.01**	**850.89**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	379635					110.44	0.00	0.00	111.13
Supermarket	2.52706e+006					735.15	0.03	0.01	739.76
Total						**845.59**	**0.03**	**0.01**	**850.89**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.17	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	1.17	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.27					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.90					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**1.17**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.27					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.90					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**1.17**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					18.31	0.32	0.01	27.56
Unmitigated					18.31	0.32	0.01	27.56
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	2.42217 / 1.48456					5.35	0.07	0.00	7.51
Supermarket	8.01367 / 0.247845					12.96	0.25	0.01	20.05
Total						**18.31**	**0.32**	**0.01**	**27.56**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	2.42217 / 1.48456					5.35	0.07	0.00	7.51
Supermarket	8.01367 / 0.247845					12.96	0.25	0.01	20.05
Total						**18.31**	**0.32**	**0.01**	**27.56**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					81.40	4.81	0.00	182.42
Unmitigated					81.40	4.81	0.00	182.42
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	34.34					6.97	0.41	0.00	15.62
Supermarket	366.66					74.43	4.40	0.00	166.80
Total						**81.40**	**4.81**	**0.00**	**182.42**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	34.34					6.97	0.41	0.00	15.62
Supermarket	366.66					74.43	4.40	0.00	166.80
Total						**81.40**	**4.81**	**0.00**	**182.42**

9.0 Vegetation

Safeway 51st - Construction "Phase II"

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	667	Space
Regional Shopping Center	195.52	1000sqft
Supermarket	0	1000sqft
User Defined Retail	29	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics -

Land Use - User defined retail represents auxiliary space.

Demolition -

Vehicle Trips - Disregard operational emissions from this model (they were quantified in a separate model)

Construction Phase -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.71	5.06	3.92	0.01	0.44	0.26	0.70	0.12	0.26	0.37	0.00	693.55	693.55	0.06	0.00	694.73
2015	6.35	4.17	4.07	0.01	0.27	0.23	0.50	0.02	0.23	0.25	0.00	721.20	721.20	0.05	0.00	722.27
Total	**7.06**	**9.23**	**7.99**	**0.02**	**0.71**	**0.49**	**1.20**	**0.14**	**0.49**	**0.62**	**0.00**	**1,414.75**	**1,414.75**	**0.11**	**0.00**	**1,417.00**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.71	5.06	3.92	0.01	0.25	0.26	0.51	0.12	0.26	0.37	0.00	693.55	693.55	0.06	0.00	694.73
2015	6.35	4.17	4.07	0.01	0.02	0.23	0.25	0.02	0.23	0.25	0.00	721.20	721.20	0.05	0.00	722.27
Total	**7.06**	**9.23**	**7.99**	**0.02**	**0.27**	**0.49**	**0.76**	**0.14**	**0.49**	**0.62**	**0.00**	**1,414.75**	**1,414.75**	**0.11**	**0.00**	**1,417.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.49	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	710.45	710.45	0.03	0.01	714.89
Mobile	5.74	14.51	50.11	0.07	6.85	0.47	7.32	0.30	0.47	0.77	0.00	6,811.26	6,811.26	0.29	0.00	6,817.36
Waste						0.00	0.00		0.00	0.00	41.67	0.00	41.67	2.46	0.00	93.39
Water						0.00	0.00		0.00	0.00	0.00	32.00	32.00	0.44	0.01	44.88
Total	**8.24**	**14.56**	**50.15**	**0.07**	**6.85**	**0.47**	**7.32**	**0.30**	**0.47**	**0.77**	**41.67**	**7,553.71**	**7,595.38**	**3.22**	**0.02**	**7,670.52**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.49	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	710.45	710.45	0.03	0.01	714.89
Mobile	5.74	14.51	50.11	0.07	6.85	0.47	7.32	0.30	0.47	0.77	0.00	6,811.26	6,811.26	0.29	0.00	6,817.36
Waste						0.00	0.00		0.00	0.00	41.67	0.00	41.67	2.46	0.00	93.39
Water						0.00	0.00		0.00	0.00	0.00	32.00	32.00	0.44	0.01	44.88
Total	**8.24**	**14.56**	**50.15**	**0.07**	**6.85**	**0.47**	**7.32**	**0.30**	**0.47**	**0.77**	**41.67**	**7,553.71**	**7,595.38**	**3.22**	**0.02**	**7,670.52**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.08	0.66	0.41	0.00		0.03	0.03		0.03	0.03	0.00	68.12	68.12	0.01	0.00	68.26
Total	**0.08**	**0.66**	**0.41**	**0.00**	**0.02**	**0.03**	**0.05**	**0.00**	**0.03**	**0.03**	**0.00**	**68.12**	**68.12**	**0.01**	**0.00**	**68.26**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.04	0.02	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	6.76	6.76	0.00	0.00	6.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	1.47	0.00	0.00	1.47
Total	**0.00**	**0.04**	**0.03**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**8.23**	**8.23**	**0.00**	**0.00**	**8.24**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.08	0.66	0.41	0.00		0.03	0.03		0.03	0.03	0.00	68.12	68.12	0.01	0.00	68.26
Total	**0.08**	**0.66**	**0.41**	**0.00**	**0.02**	**0.03**	**0.05**	**0.00**	**0.03**	**0.03**	**0.00**	**68.12**	**68.12**	**0.01**	**0.00**	**68.26**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.76	6.76	0.00	0.00	6.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	1.47	0.00	0.00	1.47
Total	**0.00**	**0.04**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**8.23**	**8.23**	**0.00**	**0.00**	**8.24**

3.3 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.37	0.22	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.37**	**0.22**	**0.00**	**0.09**	**0.02**	**0.11**	**0.05**	**0.02**	**0.07**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.88	0.00	0.00	0.88
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.88**	**0.88**	**0.00**	**0.00**	**0.88**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.37	0.22	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.37**	**0.22**	**0.00**	**0.09**	**0.02**	**0.11**	**0.05**	**0.02**	**0.07**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.88	0.00	0.00	0.88
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.88**	**0.88**	**0.00**	**0.00**	**0.88**

3.4 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.13	0.00	0.13	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.17	1.36	0.76	0.00		0.06	0.06		0.06	0.06	0.00	147.69	147.69	0.01	0.00	147.98
Total	**0.17**	**1.36**	**0.76**	**0.00**	**0.13**	**0.06**	**0.19**	**0.05**	**0.06**	**0.11**	**0.00**	**147.69**	**147.69**	**0.01**	**0.00**	**147.98**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.93	2.93	0.00	0.00	2.94
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.93**	**2.93**	**0.00**	**0.00**	**2.94**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.13	0.00	0.13	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.17	1.36	0.76	0.00		0.06	0.06		0.06	0.06	0.00	147.69	147.69	0.01	0.00	147.98
Total	**0.17**	**1.36**	**0.76**	**0.00**	**0.13**	**0.06**	**0.19**	**0.05**	**0.06**	**0.11**	**0.00**	**147.69**	**147.69**	**0.01**	**0.00**	**147.98**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.93	2.93	0.00	0.00	2.94
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.93**	**2.93**	**0.00**	**0.00**	**2.94**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.27	1.84	1.33	0.00		0.12	0.12		0.12	0.12	0.00	210.71	210.71	0.02	0.00	211.18
Total	**0.27**	**1.84**	**1.33**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**	**0.00**	**210.71**	**210.71**	**0.02**	**0.00**	**211.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.06	0.70	0.42	0.00	0.03	0.02	0.06	0.00	0.02	0.02	0.00	115.32	115.32	0.00	0.00	115.37
Worker	0.07	0.07	0.73	0.00	0.13	0.00	0.13	0.01	0.00	0.01	0.00	103.40	103.40	0.01	0.00	103.54
Total	**0.13**	**0.77**	**1.15**	**0.00**	**0.16**	**0.02**	**0.19**	**0.01**	**0.02**	**0.03**	**0.00**	**218.72**	**218.72**	**0.01**	**0.00**	**218.91**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.27	1.84	1.33	0.00		0.12	0.12		0.12	0.12	0.00	210.71	210.71	0.02	0.00	211.18
Total	**0.27**	**1.84**	**1.33**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**	**0.00**	**210.71**	**210.71**	**0.02**	**0.00**	**211.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.06	0.70	0.42	0.00	0.00	0.02	0.02	0.00	0.02	0.02	0.00	115.32	115.32	0.00	0.00	115.37
Worker	0.07	0.07	0.73	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.00	103.40	103.40	0.01	0.00	103.54
Total	**0.13**	**0.77**	**1.15**	**0.00**	**0.01**	**0.02**	**0.03**	**0.01**	**0.02**	**0.03**	**0.00**	**218.72**	**218.72**	**0.01**	**0.00**	**218.91**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.40	2.70	2.13	0.00		0.17	0.17		0.17	0.17	0.00	338.97	338.97	0.03	0.00	339.66
Total	**0.40**	**2.70**	**2.13**	**0.00**		**0.17**	**0.17**		**0.17**	**0.17**	**0.00**	**338.97**	**338.97**	**0.03**	**0.00**	**339.66**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.03	0.63	0.00	0.06	0.03	0.09	0.01	0.03	0.04	0.00	185.64	185.64	0.00	0.00	185.72
Worker	0.11	0.11	1.06	0.00	0.20	0.01	0.21	0.01	0.01	0.02	0.00	162.61	162.61	0.01	0.00	162.81
Total	**0.20**	**1.14**	**1.69**	**0.00**	**0.26**	**0.04**	**0.30**	**0.02**	**0.04**	**0.06**	**0.00**	**348.25**	**348.25**	**0.01**	**0.00**	**348.53**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.40	2.70	2.13	0.00		0.17	0.17		0.17	0.17	0.00	338.97	338.97	0.03	0.00	339.66
Total	**0.40**	**2.70**	**2.13**	**0.00**		**0.17**	**0.17**		**0.17**	**0.17**	**0.00**	**338.97**	**338.97**	**0.03**	**0.00**	**339.66**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.03	0.63	0.00	0.01	0.03	0.04	0.01	0.03	0.04	0.00	185.64	185.64	0.00	0.00	185.72
Worker	0.11	0.11	1.06	0.00	0.01	0.01	0.02	0.01	0.01	0.02	0.00	162.61	162.61	0.01	0.00	162.81
Total	**0.20**	**1.14**	**1.69**	**0.00**	**0.02**	**0.04**	**0.06**	**0.02**	**0.04**	**0.06**	**0.00**	**348.25**	**348.25**	**0.01**	**0.00**	**348.53**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.30	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.54
Paving	0.01					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.06**	**0.30**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.54**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	1.43	0.00	0.00	1.43
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.43**	**1.43**	**0.00**	**0.00**	**1.43**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.30	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.54
Paving	0.01					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.06**	**0.30**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.54**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	1.43	0.00	0.00	1.43
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.43**	**1.43**	**0.00**	**0.00**	**1.43**

3.7 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.69					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**5.69**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.54	3.54	0.00	0.00	3.54
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.54**	**3.54**	**0.00**	**0.00**	**3.54**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	5.69					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**5.69**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.54	3.54	0.00	0.00	3.54
Total	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.54**	**3.54**	**0.00**	**0.00**	**3.54**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.74	14.51	50.11	0.07	6.85	0.47	7.32	0.30	0.47	0.77	0.00	6,811.26	6,811.26	0.29	0.00	6,817.36
Unmitigated	5.74	14.51	50.11	0.07	6.85	0.47	7.32	0.30	0.47	0.77	0.00	6,811.26	6,811.26	0.29	0.00	6,817.36
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	8,395.63	9,770.13	4934.92	14,197,562	14,197,562
Supermarket	0.00	0.00	0.00		
User Defined Retail	0.00	0.00	0.00		
Total	8,395.63	9,770.13	4,934.92	14,197,562	14,197,562

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	7.30	7.30	6.50	74.50	19.00
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	660.37	660.37	0.03	0.01	664.51
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	660.37	660.37	0.03	0.01	664.51
NaturalGas Mitigated	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.08	50.08	0.00	0.00	50.39
NaturalGas Unmitigated	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.08	50.08	0.00	0.00	50.39
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Shopping Center	938501	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.08	50.08	0.00	0.00	50.39
Supermarket	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.01**	**0.05**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**50.08**	**50.08**	**0.00**	**0.00**	**50.39**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Shopping Center	938501	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	50.08	50.08	0.00	0.00	50.39
Supermarket	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.01**	**0.05**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**50.08**	**50.08**	**0.00**	**0.00**	**50.39**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	2.27e+006					660.37	0.03	0.01	664.51
Supermarket	0					0.00	0.00	0.00	0.00
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**660.37**	**0.03**	**0.01**	**664.51**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	2.27e+006					660.37	0.03	0.01	664.51
Supermarket	0					0.00	0.00	0.00	0.00
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**660.37**	**0.03**	**0.01**	**664.51**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.49	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	2.49	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.57					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	1.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**2.49**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.57					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	1.92					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**2.49**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					32.00	0.44	0.01	44.88
Unmitigated					32.00	0.44	0.01	44.88
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	14.4827 / 8.87647					32.00	0.44	0.01	44.88
Supermarket	0 / 0					0.00	0.00	0.00	0.00
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**32.00**	**0.44**	**0.01**	**44.88**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Parking Lot	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	14.4827 / 8.87647					32.00	0.44	0.01	44.88
Supermarket	0 / 0					0.00	0.00	0.00	0.00
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**32.00**	**0.44**	**0.01**	**44.88**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					41.67	2.46	0.00	93.39
Unmitigated					41.67	2.46	0.00	93.39
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	205.3					41.67	2.46	0.00	93.39
Supermarket	0					0.00	0.00	0.00	0.00
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**41.67**	**2.46**	**0.00**	**93.39**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e

Land Use	tons	tons/yr				MT/yr			
Parking Lot	0					0.00	0.00	0.00	0.00
Regional Shopping Center	205.3					41.67	2.46	0.00	93.39
Supermarket	0					0.00	0.00	0.00	0.00
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**41.67**	**2.46**	**0.00**	**93.39**

9.0 Vegetation

RoadwayConst1 - Phase 2 and 3 (South)

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Retail	1	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics - Phase 2 and 3 South

Land Use - Roadway Const to the south of project (1.21 acres = 52708 sq ft)

Construction Phase - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Trips and VMT - 16 vendor trips based on 245+75 cubic yards of material imported/exported

Demolition -

Grading - Using entire land use area for acres disturbed.

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.02	0.15	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	16.31	16.31	0.00	0.00	16.35
Total	**0.02**	**0.15**	**0.12**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**16.31**	**16.31**	**0.00**	**0.00**	**16.35**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.02	0.15	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	16.31	16.31	0.00	0.00	16.35
Total	**0.02**	**0.15**	**0.12**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**16.31**	**16.31**	**0.00**	**0.00**	**16.35**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Area	0.27	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.27**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.27	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.27**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	6.64	6.64	0.00	0.00	6.66
Total	**0.01**	**0.06**	**0.05**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**6.64**	**6.64**	**0.00**	**0.00**	**6.66**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.00	0.00	0.39
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.39**	**0.39**	**0.00**	**0.00**	**0.39**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	6.64	6.64	0.00	0.00	6.66
Total	**0.01**	**0.06**	**0.05**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**6.64**	**6.64**	**0.00**	**0.00**	**6.66**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.00	0.00	0.39
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.39**	**0.39**	**0.00**	**0.00**	**0.39**

3.3 New Traffic Signals - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.45	1.45	0.00	0.00	1.45
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.45**	**1.45**	**0.00**	**0.00**	**1.45**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.20**	**0.20**	**0.00**	**0.00**	**0.20**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.45	1.45	0.00	0.00	1.45

Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.45**	**1.45**	**0.00**	**0.00**	**1.45**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.20**	**0.20**	**0.00**	**0.00**	**0.20**

3.4 New Concrete and Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	3.72	3.72	0.00	0.00	3.73
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.01**	**0.04**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.72**	**3.72**	**0.00**	**0.00**	**3.73**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.60	0.00	0.00	0.60
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.00	0.00	0.39
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.99**	**0.99**	**0.00**	**0.00**	**0.99**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	3.72	3.72	0.00	0.00	3.73
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.01**	**0.04**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.72**	**3.72**	**0.00**	**0.00**	**3.73**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.60	0.00	0.00	0.60
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.00	0.00	0.39
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.99**	**0.99**	**0.00**	**0.00**	**0.99**

3.5 Landscaping - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.81	2.81	0.00	0.00	2.82
Total	**0.00**	**0.03**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.81**	**2.81**	**0.00**	**0.00**	**2.82**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.12
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.12**	**0.12**	**0.00**	**0.00**	**0.12**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.81	2.81	0.00	0.00	2.82
Total	**0.00**	**0.03**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.81**	**2.81**	**0.00**	**0.00**	**2.82**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.12
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.12**	**0.12**	**0.00**	**0.00**	**0.12**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Retail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.27	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.27	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.21					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.27**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.21					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.27**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
User Defined Retail	0					0.00	0.00	0.00	0.00

Total						0.00	0.00	0.00	0.00

9.0 Vegetation

RoadwayConst1 - Phase 4 and 5 (West)

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Retail	1	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics - Phase 4 and 5 West

Land Use - Roadway Const to the west of project (0.36 acres = 15682 sq ft)

Construction Phase - Based on client info. Switched hours/day and total days values to maintain constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Trips and VMT - Based on soil imported/exported

Demolition -

Grading - Used entire land use area for acreage.

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.01	0.09	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	10.54	10.54	0.00	0.00	10.56
Total	**0.01**	**0.09**	**0.08**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**10.54**	**10.54**	**0.00**	**0.00**	**10.56**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.01	0.09	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	10.54	10.54	0.00	0.00	10.56
Total	**0.01**	**0.09**	**0.08**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**10.54**	**10.54**	**0.00**	**0.00**	**10.56**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Area	0.08	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.08	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.95	2.95	0.00	0.00	2.95
Total	**0.00**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.95**	**2.95**	**0.00**	**0.00**	**2.95**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.20**	**0.20**	**0.00**	**0.00**	**0.20**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.95	2.95	0.00	0.00	2.95
Total	**0.00**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.95**	**2.95**	**0.00**	**0.00**	**2.95**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.20**	**0.20**	**0.00**	**0.00**	**0.20**

3.3 New Traffic Signals - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.45	1.45	0.00	0.00	1.45
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.45**	**1.45**	**0.00**	**0.00**	**1.45**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.20**	**0.20**	**0.00**	**0.00**	**0.20**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.45	1.45	0.00	0.00	1.45

Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.45**	**1.45**	**0.00**	**0.00**	**1.45**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.20**	**0.20**	**0.00**	**0.00**	**0.20**

3.4 New Concrete and Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	3.00	3.00	0.00	0.00	3.01
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.00**	**3.00**	**0.00**	**0.00**	**3.01**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.45	0.00	0.00	0.45
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.31	0.00	0.00	0.31
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.76**	**0.76**	**0.00**	**0.00**	**0.76**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	3.00	3.00	0.00	0.00	3.01
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.00**	**3.00**	**0.00**	**0.00**	**3.01**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.45	0.00	0.00	0.45
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.31	0.00	0.00	0.31
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.76**	**0.76**	**0.00**	**0.00**	**0.76**

3.5 Landscaping - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.87	1.87	0.00	0.00	1.88
Total	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.87**	**1.87**	**0.00**	**0.00**	**1.88**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.12
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.12**	**0.12**	**0.00**	**0.00**	**0.12**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.87	1.87	0.00	0.00	1.88
Total	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.87**	**1.87**	**0.00**	**0.00**	**1.88**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.12
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.12**	**0.12**	**0.00**	**0.00**	**0.12**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Retail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.08	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.08	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.02					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.08**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.02					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.08**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
User Defined Retail	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
User Defined Retail	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
User Defined Retail	0					0.00	0.00	0.00	0.00

Total						0.00	0.00	0.00	0.00

9.0 Vegetation

Safeway 51st - Construction "Phase I"

Alameda County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	334	Space
Regional Shopping Center	32.7	1000sqft
Supermarket	65.01	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Climate Zone 5

Wind Speed (m/s) 2.2

Precipitation Freq (Days) 63

Utility Company Pacific Gas & Electric Company

1.3 User Entered Comments

Project Characteristics -

Land Use -

Demolition -

Vehicle Trips - Disregard operational emissions from this model (they were quantified in a separate model)

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2013	10.46	88.96	51.35	0.10	22.95	4.12	27.07	9.94	4.12	13.88	0.00	10,446.30	0.00	0.90	0.00	10,465.28
2014	268.37	38.47	32.60	0.06	1.65	2.74	3.89	0.08	2.74	2.75	0.00	6,121.13	0.00	0.51	0.00	6,131.81
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2013	10.46	88.96	51.35	0.10	18.08	4.12	22.02	9.94	4.12	13.88	0.00	10,446.30	0.00	0.90	0.00	10,465.28
2014	268.37	38.47	32.60	0.06	0.08	2.74	2.75	0.08	2.74	2.75	0.00	6,121.13	0.00	0.51	0.00	6,131.81
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.08	0.71	0.60	0.00		0.00	0.05		0.00	0.05		857.57		0.02	0.02	862.79

Mobile	49.86	109.45	362.33	0.51	52.97	3.20	56.17	1.85	3.20	5.04		52,830.76		2.66		52,886.67
Total	**56.36**	**110.16**	**362.93**	**0.51**	**52.97**	**3.20**	**56.22**	**1.85**	**3.20**	**5.09**		**53,688.33**		**2.68**	**0.02**	**53,749.46**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.08	0.71	0.60	0.00		0.00	0.05		0.00	0.05		857.57		0.02	0.02	862.79
Mobile	49.86	109.45	362.33	0.51	52.97	3.20	56.17	1.85	3.20	5.04		52,830.76		2.66		52,886.67
Total	**56.36**	**110.16**	**362.93**	**0.51**	**52.97**	**3.20**	**56.22**	**1.85**	**3.20**	**5.09**		**53,688.33**		**2.68**	**0.02**	**53,749.46**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.18	0.00	7.18	0.00	0.00	0.00						0.00
Off-Road	8.86	70.71	42.55	0.07		3.50	3.50		3.50	3.50		7,510.81		0.80		7,527.57
Total	**8.86**	**70.71**	**42.55**	**0.07**	**7.18**	**3.50**	**10.68**	**0.00**	**3.50**	**3.50**		**7,510.81**		**0.80**		**7,527.57**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.48	18.13	7.57	0.03	15.54	0.61	16.15	0.09	0.61	0.70		2,752.58		0.07		2,754.08
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.23	0.00	0.22	0.01	0.23	0.01	0.01	0.02		182.91		0.01		183.15
Total	**1.60**	**18.24**	**8.80**	**0.03**	**15.76**	**0.62**	**16.38**	**0.10**	**0.62**	**0.72**		**2,935.49**		**0.08**		**2,937.23**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Fugitive Dust					7.18	0.00	7.18	0.00	0.00	0.00						0.00
Off-Road	8.86	70.71	42.55	0.07		3.50	3.50		3.50	3.50	0.00	7,510.81		0.80		7,527.57
Total	**8.86**	**70.71**	**42.55**	**0.07**	**7.18**	**3.50**	**10.68**	**0.00**	**3.50**	**3.50**	**0.00**	**7,510.81**		**0.80**		**7,527.57**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.48	18.13	7.57	0.03	0.09	0.61	0.70	0.09	0.61	0.70		2,752.58		0.07		2,754.08
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.23	0.00	0.01	0.01	0.02	0.01	0.01	0.02		182.91		0.01		183.15
Total	**1.60**	**18.24**	**8.80**	**0.03**	**0.10**	**0.62**	**0.72**	**0.10**	**0.62**	**0.72**		**2,935.49**		**0.08**		**2,937.23**

3.3 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.90	79.99	45.35	0.07		3.93	3.93		3.93	3.93		7,997.69		0.89		8,016.38
Total	**9.90**	**79.99**	**45.35**	**0.07**	**18.07**	**3.93**	**22.00**	**9.93**	**3.93**	**13.86**		**7,997.69**		**0.89**		**8,016.38**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.14	0.14	1.48	0.00	0.27	0.01	0.28	0.01	0.01	0.02		219.49		0.01		219.78
Total	**0.14**	**0.14**	**1.48**	**0.00**	**0.27**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**219.49**		**0.01**		**219.78**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.90	79.99	45.35	0.07		3.93	3.93		3.93	3.93	0.00	7,997.69		0.89		8,016.38
Total	**9.90**	**79.99**	**45.35**	**0.07**	**18.07**	**3.93**	**22.00**	**9.93**	**3.93**	**13.86**	**0.00**	**7,997.69**		**0.89**		**8,016.38**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.14	0.14	1.48	0.00	0.01	0.01	0.02	0.01	0.01	0.02		219.49		0.01		219.78
Total	**0.14**	**0.14**	**1.48**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**219.49**		**0.01**		**219.78**

3.4 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.55	0.00	6.55	3.31	0.00	3.31						0.00
Off-Road	6.36	48.81	31.00	0.05		2.73	2.73		2.73	2.73		5,240.06		0.57		5,252.04
Total	**6.36**	**48.81**	**31.00**	**0.05**	**6.55**	**2.73**	**9.28**	**3.31**	**2.73**	**6.04**		**5,240.06**		**0.57**		**5,252.04**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.23	0.00	0.22	0.01	0.23	0.01	0.01	0.02		182.91		0.01		183.15
Total	**0.12**	**0.11**	**1.23**	**0.00**	**0.22**	**0.01**	**0.23**	**0.01**	**0.01**	**0.02**		**182.91**		**0.01**		**183.15**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.55	0.00	6.55	3.31	0.00	3.31						0.00

Off-Road	6.36	48.81	31.00	0.05		2.73	2.73		2.73	2.73	0.00	5,240.06		0.57		5,252.04
Total	**6.36**	**48.81**	**31.00**	**0.05**	**6.55**	**2.73**	**9.28**	**3.31**	**2.73**	**6.04**	**0.00**	**5,240.06**		**0.57**		**5,252.04**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.23	0.00	0.01	0.01	0.02	0.01	0.01	0.02		182.91		0.01		183.15
Total	**0.12**	**0.11**	**1.23**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**182.91**		**0.01**		**183.15**

3.5 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28		4,040.62		0.46		4,050.31
Total	**5.17**	**34.66**	**23.45**	**0.04**		**2.28**	**2.28**		**2.28**	**2.28**		**4,040.62**		**0.46**		**4,050.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.51	6.34	3.15	0.01	0.35	0.19	0.54	0.03	0.19	0.22		1,040.61		0.02		1,041.13
Worker	0.69	0.66	7.14	0.01	1.30	0.04	1.34	0.05	0.04	0.09		1,060.86		0.07		1,062.26
Total	**1.20**	**7.00**	**10.29**	**0.02**	**1.65**	**0.23**	**1.88**	**0.08**	**0.23**	**0.31**		**2,101.47**		**0.09**		**2,103.39**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28	0.00	4,040.62		0.46		4,050.31
Total	**5.17**	**34.66**	**23.45**	**0.04**		**2.28**	**2.28**		**2.28**	**2.28**	**0.00**	**4,040.62**		**0.46**		**4,050.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.51	6.34	3.15	0.01	0.03	0.19	0.22	0.03	0.19	0.22		1,040.61		0.02		1,041.13
Worker	0.69	0.66	7.14	0.01	0.05	0.04	0.09	0.05	0.04	0.09		1,060.86		0.07		1,062.26
Total	**1.20**	**7.00**	**10.29**	**0.02**	**0.08**	**0.23**	**0.31**	**0.08**	**0.23**	**0.31**		**2,101.47**		**0.09**		**2,103.39**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02		4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**		**4,040.61**		**0.42**		**4,049.51**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.48	5.81	2.94	0.01	0.35	0.17	0.52	0.03	0.17	0.20		1,041.50		0.02		1,041.98
Worker	0.63	0.60	6.47	0.01	1.30	0.04	1.34	0.05	0.04	0.09		1,039.02		0.06		1,040.32
Total	**1.11**	**6.41**	**9.41**	**0.02**	**1.65**	**0.21**	**1.86**	**0.08**	**0.21**	**0.29**		**2,080.52**		**0.08**		**2,082.30**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02	0.00	4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**	**0.00**	**4,040.61**		**0.42**		**4,049.51**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.48	5.81	2.94	0.01	0.03	0.17	0.20	0.03	0.17	0.20		1,041.50		0.02		1,041.98
Worker	0.63	0.60	6.47	0.01	0.05	0.04	0.09	0.05	0.04	0.09		1,039.02		0.06		1,040.32
Total	**1.11**	**6.41**	**9.41**	**0.02**	**0.08**	**0.21**	**0.29**	**0.08**	**0.21**	**0.29**		**2,080.52**		**0.08**		**2,082.30**

3.6 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.20	32.09	20.70	0.03		2.74	2.74		2.74	2.74		2,917.65		0.47		2,927.48
Paving	0.39					0.00	0.00		0.00	0.00						0.00
Total	**5.59**	**32.09**	**20.70**	**0.03**		**2.74**	**2.74**		**2.74**	**2.74**		**2,917.65**		**0.47**		**2,927.48**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.12	0.00	0.22	0.01	0.23	0.01	0.01	0.02		179.14		0.01		179.36
Total	**0.11**	**0.10**	**1.12**	**0.00**	**0.22**	**0.01**	**0.23**	**0.01**	**0.01**	**0.02**		**179.14**		**0.01**		**179.36**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.20	32.09	20.70	0.03		2.74	2.74		2.74	2.74	0.00	2,917.65		0.47		2,927.48
Paving	0.39					0.00	0.00		0.00	0.00						0.00
Total	**5.59**	**32.09**	**20.70**	**0.03**		**2.74**	**2.74**		**2.74**	**2.74**	**0.00**	**2,917.65**		**0.47**		**2,927.48**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.12	0.00	0.01	0.01	0.02	0.01	0.01	0.02		179.14		0.01		179.36
Total	**0.11**	**0.10**	**1.12**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**179.14**		**0.01**		**179.36**

3.7 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	267.80					0.00	0.00		0.00	0.00						0.00

Off-Road	0.45	2.77	1.92	0.00		0.24	0.24		0.24	0.24		281.19		0.04		282.03
Total	**268.25**	**2.77**	**1.92**	**0.00**		**0.24**	**0.24**		**0.24**	**0.24**		**281.19**		**0.04**		**282.03**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.12	1.26	0.00	0.25	0.01	0.26	0.01	0.01	0.02		203.03		0.01		203.28
Total	**0.12**	**0.12**	**1.26**	**0.00**	**0.25**	**0.01**	**0.26**	**0.01**	**0.01**	**0.02**		**203.03**		**0.01**		**203.28**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	267.80					0.00	0.00		0.00	0.00						0.00
Off-Road	0.45	2.77	1.92	0.00		0.24	0.24		0.24	0.24	0.00	281.19		0.04		282.03
Total	**268.25**	**2.77**	**1.92**	**0.00**		**0.24**	**0.24**		**0.24**	**0.24**	**0.00**	**281.19**		**0.04**		**282.03**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.12	1.26	0.00	0.01	0.01	0.02	0.01	0.01	0.02		203.03		0.01		203.28
Total	**0.12**	**0.12**	**1.26**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**203.03**		**0.01**		**203.28**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	49.86	109.45	362.33	0.51	52.97	3.20	56.17	1.85	3.20	5.04		52,830.76		2.66		52,886.67
Unmitigated	49.86	109.45	362.33	0.51	52.97	3.20	56.17	1.85	3.20	5.04		52,830.76		2.66		52,886.67
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT

Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,404.14	1,634.02	825.35	2,374,490	2,374,490
Supermarket	6,646.62	11,545.13	10820.26	9,034,308	9,034,308
Total	8,050.76	13,179.14	11,645.61	11,408,798	11,408,798

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	7.30	7.30	6.50	74.50	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.08	0.71	0.60	0.00		0.00	0.05		0.00	0.05		857.57		0.02	0.02	862.79
NaturalGas Unmitigated	0.08	0.71	0.60	0.00		0.00	0.05		0.00	0.05		857.57		0.02	0.02	862.79
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Regional Shopping Center	430.014	0.00	0.04	0.04	0.00		0.00	0.00		0.00	0.00		50.59		0.00	0.00	50.90
Supermarket	6859.32	0.07	0.67	0.56	0.00		0.00	0.05		0.00	0.05		806.98		0.02	0.01	811.89
Total		**0.07**	**0.71**	**0.60**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**		**857.57**		**0.02**	**0.01**	**862.79**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Regional Shopping Center	0.430014	0.00	0.04	0.04	0.00		0.00	0.00		0.00	0.00		50.59		0.00	0.00	50.90
Supermarket	6.85932	0.07	0.67	0.56	0.00		0.00	0.05		0.00	0.05		806.98		0.02	0.01	811.89
Total		**0.07**	**0.71**	**0.60**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**		**857.57**		**0.02**	**0.01**	**862.79**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.47					0.00	0.00		0.00	0.00						0.00
Consumer Products	4.95					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**6.42**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.47					0.00	0.00		0.00	0.00						0.00
Consumer Products	4.95					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

Total	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Safeway 51st - Construction "Phase II"

Alameda County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	667	Space
Regional Shopping Center	195.52	1000sqft
Supermarket	0	1000sqft
User Defined Retail	29	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics -

Land Use - User defined retail represents auxiliary space.

Construction Phase -

Demolition -

Vehicle Trips - Disregard operational emissions from this model (they were quantified in a separate model)

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	11.36	90.79	52.32	0.10	18.34	4.19	21.95	9.94	4.19	13.56	0.00	11,095.51	0.00	1.02	0.00	11,116.88
2015	569.48	41.69	41.25	0.09	3.50	2.55	5.71	0.16	2.55	2.56	0.00	8,411.14	0.00	0.56	0.00	8,422.82
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	11.36	90.79	52.32	0.10	18.08	4.19	21.69	9.94	4.19	13.56	0.00	11,095.51	0.00	1.02	0.00	11,116.88
2015	569.48	41.69	41.25	0.09	0.16	2.55	2.56	0.16	2.55	2.56	0.00	8,411.14	0.00	0.56	0.00	8,422.82
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	13.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Mobile	41.09	96.88	322.40	0.54	56.73	3.10	59.82	1.98	3.10	5.07		53,834.60		2.09		53,878.51
Total	**54.75**	**97.13**	**322.61**	**0.54**	**56.73**	**3.10**	**59.84**	**1.98**	**3.10**	**5.09**		**54,137.10**		**2.10**	**0.01**	**54,182.85**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	13.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Mobile	41.09	96.88	322.40	0.54	56.73	3.10	59.82	1.98	3.10	5.07		53,834.60		2.09		53,878.51
Total	**54.75**	**97.13**	**322.61**	**0.54**	**56.73**	**3.10**	**59.84**	**1.98**	**3.10**	**5.09**		**54,137.10**		**2.10**	**0.01**	**54,182.85**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.94	0.00	1.94	0.00	0.00	0.00						0.00
Off-Road	8.39	66.18	41.03	0.07		3.21	3.21		3.21	3.21		7,510.81		0.75		7,526.57
Total	**8.39**	**66.18**	**41.03**	**0.07**	**1.94**	**3.21**	**5.15**	**0.00**	**3.21**	**3.21**		**7,510.81**		**0.75**		**7,526.57**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.37	4.45	1.90	0.01	4.21	0.15	4.36	0.03	0.15	0.17		747.50		0.02		747.88
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.12	0.00	0.22	0.01	0.23	0.01	0.01	0.02		179.14		0.01		179.36
Total	**0.48**	**4.55**	**3.02**	**0.01**	**4.43**	**0.16**	**4.59**	**0.04**	**0.16**	**0.19**		**926.64**		**0.03**		**927.24**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.94	0.00	1.94	0.00	0.00	0.00						0.00
Off-Road	8.39	66.18	41.03	0.07		3.21	3.21		3.21	3.21	0.00	7,510.81		0.75		7,526.57
Total	**8.39**	**66.18**	**41.03**	**0.07**	**1.94**	**3.21**	**5.15**	**0.00**	**3.21**	**3.21**	**0.00**	**7,510.81**		**0.75**		**7,526.57**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.37	4.45	1.90	0.01	0.03	0.15	0.17	0.03	0.15	0.17		747.50		0.02		747.88
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.12	0.00	0.01	0.01	0.02	0.01	0.01	0.02		179.14		0.01		179.36
Total	**0.48**	**4.55**	**3.02**	**0.01**	**0.04**	**0.16**	**0.19**	**0.04**	**0.16**	**0.19**		**926.64**		**0.03**		**927.24**

3.3 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.37	74.88	43.05	0.07		3.61	3.61		3.61	3.61		7,997.69		0.84		8,015.31
Total	**9.37**	**74.88**	**43.05**	**0.07**	**18.07**	**3.61**	**21.68**	**9.93**	**3.61**	**13.54**		**7,997.69**		**0.84**		**8,015.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.12	1.34	0.00	0.27	0.01	0.28	0.01	0.01	0.02		214.97		0.01		215.24
Total	**0.13**	**0.12**	**1.34**	**0.00**	**0.27**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**214.97**		**0.01**		**215.24**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.37	74.88	43.05	0.07		3.61	3.61		3.61	3.61	0.00	7,997.69		0.84		8,015.31
Total	**9.37**	**74.88**	**43.05**	**0.07**	**18.07**	**3.61**	**21.68**	**9.93**	**3.61**	**13.54**	**0.00**	**7,997.69**		**0.84**		**8,015.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.12	1.34	0.00	0.01	0.01	0.02	0.01	0.01	0.02		214.97		0.01		215.24
Total	**0.13**	**0.12**	**1.34**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**214.97**		**0.01**		**215.24**

3.4 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.67	0.00	8.67	3.31	0.00	3.31						0.00
Off-Road	11.22	90.65	50.83	0.10		4.18	4.18		4.18	4.18		10,856.65		1.00		10,877.72
Total	**11.22**	**90.65**	**50.83**	**0.10**	**8.67**	**4.18**	**12.85**	**3.31**	**4.18**	**7.49**		**10,856.65**		**1.00**		**10,877.72**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.14	0.14	1.49	0.00	0.30	0.01	0.31	0.01	0.01	0.02		238.86		0.01		239.15
Total	**0.14**	**0.14**	**1.49**	**0.00**	**0.30**	**0.01**	**0.31**	**0.01**	**0.01**	**0.02**		**238.86**		**0.01**		**239.15**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.67	0.00	8.67	3.31	0.00	3.31						0.00
Off-Road	11.22	90.65	50.83	0.10		4.18	4.18		4.18	4.18	0.00	10,856.65		1.00		10,877.72
Total	**11.22**	**90.65**	**50.83**	**0.10**	**8.67**	**4.18**	**12.85**	**3.31**	**4.18**	**7.49**	**0.00**	**10,856.65**		**1.00**		**10,877.72**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.14	0.14	1.49	0.00	0.01	0.01	0.02	0.01	0.01	0.02		238.86		0.01		239.15
Total	**0.14**	**0.14**	**1.49**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**238.86**		**0.01**		**239.15**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02		4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**		**4,040.61**		**0.42**		**4,049.51**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.02	12.39	6.26	0.02	0.75	0.37	1.11	0.06	0.37	0.42		2,220.03		0.05		2,221.07
Worker	1.33	1.26	13.68	0.02	2.76	0.08	2.84	0.10	0.08	0.18		2,197.47		0.13		2,200.21
Total	**2.35**	**13.65**	**19.94**	**0.04**	**3.51**	**0.45**	**3.95**	**0.16**	**0.45**	**0.60**		**4,417.50**		**0.18**		**4,421.28**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02	0.00	4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**	**0.00**	**4,040.61**		**0.42**		**4,049.51**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.02	12.39	6.26	0.02	0.06	0.37	0.42	0.06	0.37	0.42		2,220.03		0.05		2,221.07
Worker	1.33	1.26	13.68	0.02	0.10	0.08	0.18	0.10	0.08	0.18		2,197.47		0.13		2,200.21
Total	**2.35**	**13.65**	**19.94**	**0.04**	**0.16**	**0.45**	**0.60**	**0.16**	**0.45**	**0.60**		**4,417.50**		**0.18**		**4,421.28**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.34	29.16	22.98	0.04		1.80	1.80		1.80	1.80		4,040.61		0.39		4,048.81
Total	**4.34**	**29.16**	**22.98**	**0.04**		**1.80**	**1.80**		**1.80**	**1.80**		**4,040.61**		**0.39**		**4,048.81**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.95	11.39	5.84	0.02	0.75	0.33	1.08	0.06	0.33	0.39		2,221.70		0.05		2,222.66
Worker	1.23	1.14	12.43	0.02	2.76	0.08	2.84	0.10	0.08	0.18		2,148.82		0.12		2,151.34
Total	**2.18**	**12.53**	**18.27**	**0.04**	**3.51**	**0.41**	**3.92**	**0.16**	**0.41**	**0.57**		**4,370.52**		**0.17**		**4,374.00**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.34	29.16	22.98	0.04		1.80	1.80		1.80	1.80	0.00	4,040.61		0.39		4,048.81
Total	**4.34**	**29.16**	**22.98**	**0.04**		**1.80**	**1.80**		**1.80**	**1.80**	**0.00**	**4,040.61**		**0.39**		**4,048.81**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.95	11.39	5.84	0.02	0.06	0.33	0.39	0.06	0.33	0.39		2,221.70		0.05		2,222.66
Worker	1.23	1.14	12.43	0.02	0.10	0.08	0.18	0.10	0.08	0.18		2,148.82		0.12		2,151.34
Total	**2.18**	**12.53**	**18.27**	**0.04**	**0.16**	**0.41**	**0.57**	**0.16**	**0.41**	**0.57**		**4,370.52**		**0.17**		**4,374.00**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.89	30.10	20.54	0.03		2.54	2.54		2.54	2.54		2,917.65		0.44		2,926.87
Paving	0.79					0.00	0.00		0.00	0.00						0.00
Total	**5.68**	**30.10**	**20.54**	**0.03**		**2.54**	**2.54**		**2.54**	**2.54**		**2,917.65**		**0.44**		**2,926.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.10	0.09	1.01	0.00	0.22	0.01	0.23	0.01	0.01	0.02		175.18		0.01		175.38
Total	**0.10**	**0.09**	**1.01**	**0.00**	**0.22**	**0.01**	**0.23**	**0.01**	**0.01**	**0.02**		**175.18**		**0.01**		**175.38**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.89	30.10	20.54	0.03		2.54	2.54		2.54	2.54	0.00	2,917.65		0.44		2,926.87
Paving	0.79					0.00	0.00		0.00	0.00						0.00
Total	**5.68**	**30.10**	**20.54**	**0.03**		**2.54**	**2.54**		**2.54**	**2.54**	**0.00**	**2,917.65**		**0.44**		**2,926.87**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.10	0.09	1.01	0.00	0.01	0.01	0.02	0.01	0.01	0.02		175.18		0.01		175.38
Total	**0.10**	**0.09**	**1.01**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**175.18**		**0.01**		**175.38**

3.7 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	568.83					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22		281.19		0.04		281.96
Total	**569.24**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**		**281.19**		**0.04**		**281.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.25	0.23	2.50	0.00	0.55	0.02	0.57	0.02	0.02	0.04		432.10		0.02		432.61
Total	**0.25**	**0.23**	**2.50**	**0.00**	**0.55**	**0.02**	**0.57**	**0.02**	**0.02**	**0.04**		**432.10**		**0.02**		**432.61**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	568.83					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22	0.00	281.19		0.04		281.96
Total	**569.24**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**281.19**		**0.04**		**281.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.25	0.23	2.50	0.00	0.02	0.02	0.04	0.02	0.02	0.04		432.10		0.02		432.61
Total	**0.25**	**0.23**	**2.50**	**0.00**	**0.02**	**0.02**	**0.04**	**0.02**	**0.02**	**0.04**		**432.10**		**0.02**		**432.61**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	41.09	96.88	322.40	0.54	56.73	3.10	59.82	1.98	3.10	5.07		53,834.60		2.09		53,878.51
Unmitigated	41.09	96.88	322.40	0.54	56.73	3.10	59.82	1.98	3.10	5.07		53,834.60		2.09		53,878.51
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	8,395.63	9,770.13	4934.92	14,197,562	14,197,562
Supermarket	0.00	0.00	0.00		
User Defined Retail	0.00	0.00	0.00		
Total	8,395.63	9,770.13	4,934.92	14,197,562	14,197,562

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	7.30	7.30	6.50	74.50	19.00
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
NaturalGas Unmitigated	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Regional Shopping Center	2571.24	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Supermarket	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.03**	**0.25**	**0.21**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**302.50**		**0.01**	**0.01**	**304.34**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Regional Shopping Center	2.57124	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Supermarket	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.03**	**0.25**	**0.21**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**302.50**		**0.01**	**0.01**	**304.34**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	13.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	13.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.12					0.00	0.00		0.00	0.00						0.00
Consumer Products	10.51					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**13.63**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.12					0.00	0.00		0.00	0.00						0.00
Consumer Products	10.51					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**13.63**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

RoadwayConst1 - Phase 2 and 3 (South)

Alameda County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Retail	1	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics - Phase 2 and 3 South

Land Use - Roadway Const to the south of project (1.21 acres = 52708 sq ft)

Construction Phase - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Trips and VMT - 16 vendor trips based on 245+75 cubic yards of material imported/exported

Demolition -

Grading - Using entire land use area for acres disturbed.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	2.37	15.63	12.96	0.02	0.53	1.24	1.43	0.01	1.24	1.24	0.00	1,950.77	0.00	0.21	0.00	1,955.22
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	2.37	15.63	12.96	0.02	0.01	1.24	1.24	0.01	1.24	1.24	0.00	1,950.77	0.00	0.21	0.00	1,955.22
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Area	1.46	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**1.46**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.46	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**1.46**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.30	15.56	12.22	0.02		1.23	1.23		1.23	1.23		1,831.34		0.21		1,835.64
Total	**2.30**	**15.56**	**12.22**	**0.02**		**1.23**	**1.23**		**1.23**	**1.23**		**1,831.34**		**0.21**		**1,835.64**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.07	0.07	0.74	0.00	0.15	0.00	0.15	0.01	0.00	0.01		119.43		0.01		119.58
Total	**0.07**	**0.07**	**0.74**	**0.00**	**0.15**	**0.00**	**0.15**	**0.01**	**0.00**	**0.01**		**119.43**		**0.01**		**119.58**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	2.30	15.56	12.22	0.02		1.23	1.23		1.23	1.23	0.00	1,831.34		0.21		1,835.64
Total	**2.30**	**15.56**	**12.22**	**0.02**		**1.23**	**1.23**		**1.23**	**1.23**	**0.00**	**1,831.34**		**0.21**		**1,835.64**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.07	0.07	0.74	0.00	0.01	0.00	0.01	0.01	0.00	0.01		119.43		0.01		119.58
Total	**0.07**	**0.07**	**0.74**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**		**119.43**		**0.01**		**119.58**

3.3 New Traffic Signals - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.52	3.54	2.61	0.00		0.28	0.28		0.28	0.28		399.33		0.05		400.30
Total	**0.52**	**3.54**	**2.61**	**0.00**	**0.00**	**0.28**	**0.28**	**0.00**	**0.28**	**0.28**		**399.33**		**0.05**		**400.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.37	0.00	0.07	0.00	0.08	0.00	0.00	0.01		59.71		0.00		59.79
Total	**0.04**	**0.03**	**0.37**	**0.00**	**0.07**	**0.00**	**0.08**	**0.00**	**0.00**	**0.01**		**59.71**		**0.00**		**59.79**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.52	3.54	2.61	0.00		0.28	0.28		0.28	0.28	0.00	399.33		0.05		400.30
Total	**0.52**	**3.54**	**2.61**	**0.00**	**0.00**	**0.28**	**0.28**	**0.00**	**0.28**	**0.28**	**0.00**	**399.33**		**0.05**		**400.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.37	0.00	0.00	0.00	0.01	0.00	0.00	0.01		59.71		0.00		59.79
Total	**0.04**	**0.03**	**0.37**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**		**59.71**		**0.00**		**59.79**

3.4 New Concrete and Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.63	10.37	7.10	0.01		0.87	0.87		0.87	0.87		1,024.22		0.15		1,027.29
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.63**	**10.37**	**7.10**	**0.01**		**0.87**	**0.87**		**0.87**	**0.87**		**1,024.22**		**0.15**		**1,027.29**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.08	0.99	0.42	0.00	0.38	0.03	0.41	0.01	0.03	0.04		166.11		0.00		166.20
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.07	0.07	0.74	0.00	0.15	0.00	0.15	0.01	0.00	0.01		119.43		0.01		119.58
Total	**0.15**	**1.06**	**1.16**	**0.00**	**0.53**	**0.03**	**0.56**	**0.02**	**0.03**	**0.05**		**285.54**		**0.01**		**285.78**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.63	10.37	7.10	0.01		0.87	0.87		0.87	0.87	0.00	1,024.22		0.15		1,027.29

Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.63**	**10.37**	**7.10**	**0.01**		**0.87**	**0.87**		**0.87**	**0.87**	**0.00**	**1,024.22**		**0.15**		**1,027.29**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.08	0.99	0.42	0.00	0.01	0.03	0.04	0.01	0.03	0.04		166.11		0.00		166.20
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.07	0.07	0.74	0.00	0.01	0.00	0.01	0.01	0.00	0.01		119.43		0.01		119.58
Total	**0.15**	**1.06**	**1.16**	**0.00**	**0.02**	**0.03**	**0.05**	**0.02**	**0.03**	**0.05**		**285.54**		**0.01**		**285.78**

3.5 Landscaping - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.95	6.37	5.24	0.01		0.50	0.50		0.50	0.50		774.51		0.08		776.29
Total	**0.95**	**6.37**	**5.24**	**0.01**	**0.00**	**0.50**	**0.50**	**0.00**	**0.50**	**0.50**		**774.51**		**0.08**		**776.29**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.22	0.00	0.04	0.00	0.05	0.00	0.00	0.00		35.83		0.00		35.87
Total	**0.02**	**0.02**	**0.22**	**0.00**	**0.04**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**35.83**		**0.00**		**35.87**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.95	6.37	5.24	0.01		0.50	0.50		0.50	0.50	0.00	774.51		0.08		776.29
Total	**0.95**	**6.37**	**5.24**	**0.01**	**0.00**	**0.50**	**0.50**	**0.00**	**0.50**	**0.50**	**0.00**	**774.51**		**0.08**		**776.29**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.83		0.00		35.87
Total	**0.02**	**0.02**	**0.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**35.83**		**0.00**		**35.87**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Retail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.46	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	1.46	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

Architectural Coating	0.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	1.13					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**1.46**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	1.13					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**1.46**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

RoadwayConst1 - Phase 4 and 5 (West)

Alameda County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Retail	1	User Defined Unit

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Utility Company Pacific Gas & Electric Company

Climate Zone 4

Precipitation Freq (Days) 63

1.3 User Entered Comments

Project Characteristics - Phase 4 and 5 West

Land Use - Roadway Const to the west of project (0.36 acres = 15682 sq ft)

Construction Phase - Based on client info. Switched hours/day and total days values to maintain constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Trips and VMT - Based on soil imported/exported

Demolition -

Grading - Used entire land use area for acreage.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	1.34	8.72	6.53	0.01	0.40	0.68	1.08	0.01	0.68	0.69	0.00	1,046.36	0.00	0.12	0.00	1,048.83
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	1.34	8.72	6.53	0.01	0.01	0.68	0.69	0.01	0.68	0.69	0.00	1,046.36	0.00	0.12	0.00	1,048.83
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Area	0.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.02	6.93	5.41	0.01		0.55	0.55		0.55	0.55		812.40		0.09		814.32
Total	**1.02**	**6.93**	**5.41**	**0.01**		**0.55**	**0.55**		**0.55**	**0.55**		**812.40**		**0.09**		**814.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.37	0.00	0.07	0.00	0.08	0.00	0.00	0.01		59.71		0.00		59.79
Total	**0.04**	**0.03**	**0.37**	**0.00**	**0.07**	**0.00**	**0.08**	**0.00**	**0.00**	**0.01**		**59.71**		**0.00**		**59.79**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	1.02	6.93	5.41	0.01		0.55	0.55		0.55	0.55	0.00	812.40		0.09		814.32
Total	**1.02**	**6.93**	**5.41**	**0.01**		**0.55**	**0.55**		**0.55**	**0.55**	**0.00**	**812.40**		**0.09**		**814.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.37	0.00	0.00	0.00	0.01	0.00	0.00	0.01		59.71		0.00		59.79
Total	**0.04**	**0.03**	**0.37**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**		**59.71**		**0.00**		**59.79**

3.3 New Traffic Signals - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.52	3.54	2.61	0.00		0.28	0.28		0.28	0.28		399.33		0.05		400.30
Total	**0.52**	**3.54**	**2.61**	**0.00**	**0.00**	**0.28**	**0.28**	**0.00**	**0.28**	**0.28**		**399.33**		**0.05**		**400.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.37	0.00	0.07	0.00	0.08	0.00	0.00	0.01		59.71		0.00		59.79
Total	**0.04**	**0.03**	**0.37**	**0.00**	**0.07**	**0.00**	**0.08**	**0.00**	**0.00**	**0.01**		**59.71**		**0.00**		**59.79**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.52	3.54	2.61	0.00		0.28	0.28		0.28	0.28	0.00	399.33		0.05		400.30
Total	**0.52**	**3.54**	**2.61**	**0.00**	**0.00**	**0.28**	**0.28**	**0.00**	**0.28**	**0.28**	**0.00**	**399.33**		**0.05**		**400.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.37	0.00	0.00	0.00	0.01	0.00	0.00	0.01		59.71		0.00		59.79
Total	**0.04**	**0.03**	**0.37**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**		**59.71**		**0.00**		**59.79**

3.4 New Concrete and Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.22	7.93	5.62	0.01		0.65	0.65		0.65	0.65		826.23		0.11		828.52
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.22**	**7.93**	**5.62**	**0.01**		**0.65**	**0.65**		**0.65**	**0.65**		**826.23**		**0.11**		**828.52**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.06	0.74	0.32	0.00	0.28	0.02	0.31	0.00	0.02	0.03		124.58		0.00		124.65
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.05	0.59	0.00	0.12	0.00	0.12	0.00	0.00	0.01		95.54		0.01		95.66
Total	**0.12**	**0.79**	**0.91**	**0.00**	**0.40**	**0.02**	**0.43**	**0.00**	**0.02**	**0.04**		**220.12**		**0.01**		**220.31**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.22	7.93	5.62	0.01		0.65	0.65		0.65	0.65	0.00	826.23		0.11		828.52

Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.22**	**7.93**	**5.62**	**0.01**		**0.65**	**0.65**		**0.65**	**0.65**	**0.00**	**826.23**		**0.11**		**828.52**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.06	0.74	0.32	0.00	0.00	0.02	0.03	0.00	0.02	0.03		124.58		0.00		124.65
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.05	0.59	0.00	0.00	0.00	0.01	0.00	0.00	0.01		95.54		0.01		95.66
Total	**0.12**	**0.79**	**0.91**	**0.00**	**0.00**	**0.02**	**0.04**	**0.00**	**0.02**	**0.04**		**220.12**		**0.01**		**220.31**

3.5 Landscaping - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.63	4.24	3.50	0.01		0.34	0.34		0.34	0.34		516.34		0.06		517.52
Total	**0.63**	**4.24**	**3.50**	**0.01**	**0.00**	**0.34**	**0.34**	**0.00**	**0.34**	**0.34**		**516.34**		**0.06**		**517.52**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.22	0.00	0.04	0.00	0.05	0.00	0.00	0.00		35.83		0.00		35.87
Total	**0.02**	**0.02**	**0.22**	**0.00**	**0.04**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**35.83**		**0.00**		**35.87**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.63	4.24	3.50	0.01		0.34	0.34		0.34	0.34	0.00	516.34		0.06		517.52
Total	**0.63**	**4.24**	**3.50**	**0.01**	**0.00**	**0.34**	**0.34**	**0.00**	**0.34**	**0.34**	**0.00**	**516.34**		**0.06**		**517.52**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.83		0.00		35.87
Total	**0.02**	**0.02**	**0.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**35.83**		**0.00**		**35.87**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Retail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

Architectural Coating	0.10					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.34					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.44**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.10					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.34					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.44**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Safeway 51st - Construction "Phase I"

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	334	Space
Regional Shopping Center	32.7	1000sqft
Supermarket	65.01	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Climate Zone 5

Wind Speed (m/s) 2.2

Precipitation Freq (Days) 63

Utility Company Pacific Gas & Electric Company

1.3 User Entered Comments

Project Characteristics -

Land Use -

Demolition -

Vehicle Trips - Disregard operational emissions from this model (they were quantified in a separate model)

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2013	10.52	88.98	52.30	0.10	22.95	4.12	27.08	9.94	4.12	13.88	0.00	10,411.25	0.00	0.90	0.00	10,430.22
2014	268.38	38.50	32.85	0.06	1.65	2.74	3.89	0.08	2.74	2.75	0.00	5,998.76	0.00	0.51	0.00	6,009.40
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2013	10.52	88.98	52.30	0.10	18.08	4.12	22.02	9.94	4.12	13.88	0.00	10,411.25	0.00	0.90	0.00	10,430.22
2014	268.38	38.50	32.85	0.06	0.08	2.74	2.75	0.08	2.74	2.75	0.00	5,998.76	0.00	0.51	0.00	6,009.40
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.08	0.71	0.60	0.00		0.00	0.05		0.00	0.05		857.57		0.02	0.02	862.79

Mobile	48.67	111.30	405.37	0.47	52.97	3.30	56.27	1.85	3.30	5.15		48,363.16		2.28		48,411.00
Total	**55.17**	**112.01**	**405.97**	**0.47**	**52.97**	**3.30**	**56.32**	**1.85**	**3.30**	**5.20**		**49,220.73**		**2.30**	**0.02**	**49,273.79**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.08	0.71	0.60	0.00		0.00	0.05		0.00	0.05		857.57		0.02	0.02	862.79
Mobile	48.67	111.30	405.37	0.47	52.97	3.30	56.27	1.85	3.30	5.15		48,363.16		2.28		48,411.00
Total	**55.17**	**112.01**	**405.97**	**0.47**	**52.97**	**3.30**	**56.32**	**1.85**	**3.30**	**5.20**		**49,220.73**		**2.30**	**0.02**	**49,273.79**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.18	0.00	7.18	0.00	0.00	0.00						0.00
Off-Road	8.86	70.71	42.55	0.07		3.50	3.50		3.50	3.50		7,510.81		0.80		7,527.57
Total	**8.86**	**70.71**	**42.55**	**0.07**	**7.18**	**3.50**	**10.68**	**0.00**	**3.50**	**3.50**		**7,510.81**		**0.80**		**7,527.57**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.53	18.14	8.60	0.03	15.54	0.61	16.16	0.09	0.61	0.71		2,737.47		0.07		2,739.03
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.15	0.00	0.22	0.01	0.23	0.01	0.01	0.02		162.97		0.01		163.20
Total	**1.66**	**18.27**	**9.75**	**0.03**	**15.76**	**0.62**	**16.39**	**0.10**	**0.62**	**0.73**		**2,900.44**		**0.08**		**2,902.23**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					7.18	0.00	7.18	0.00	0.00	0.00						0.00
Off-Road	8.86	70.71	42.55	0.07		3.50	3.50		3.50	3.50	0.00	7,510.81		0.80		7,527.57
Total	**8.86**	**70.71**	**42.55**	**0.07**	**7.18**	**3.50**	**10.68**	**0.00**	**3.50**	**3.50**	**0.00**	**7,510.81**		**0.80**		**7,527.57**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.53	18.14	8.60	0.03	0.09	0.61	0.71	0.09	0.61	0.71		2,737.47		0.07		2,739.03
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.15	0.00	0.01	0.01	0.02	0.01	0.01	0.02		162.97		0.01		163.20
Total	**1.66**	**18.27**	**9.75**	**0.03**	**0.10**	**0.62**	**0.73**	**0.10**	**0.62**	**0.73**		**2,900.44**		**0.08**		**2,902.23**

3.3 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.90	79.99	45.35	0.07		3.93	3.93		3.93	3.93		7,997.69		0.89		8,016.38
Total	**9.90**	**79.99**	**45.35**	**0.07**	**18.07**	**3.93**	**22.00**	**9.93**	**3.93**	**13.86**		**7,997.69**		**0.89**		**8,016.38**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.15	0.15	1.38	0.00	0.27	0.01	0.28	0.01	0.01	0.02		195.57		0.01		195.84
Total	**0.15**	**0.15**	**1.38**	**0.00**	**0.27**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**195.57**		**0.01**		**195.84**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.90	79.99	45.35	0.07		3.93	3.93		3.93	3.93	0.00	7,997.69		0.89		8,016.38
Total	**9.90**	**79.99**	**45.35**	**0.07**	**18.07**	**3.93**	**22.00**	**9.93**	**3.93**	**13.86**	**0.00**	**7,997.69**		**0.89**		**8,016.38**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.15	0.15	1.38	0.00	0.01	0.01	0.02	0.01	0.01	0.02		195.57		0.01		195.84
Total	**0.15**	**0.15**	**1.38**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**195.57**		**0.01**		**195.84**

3.4 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.55	0.00	6.55	3.31	0.00	3.31						0.00
Off-Road	6.36	48.81	31.00	0.05		2.73	2.73		2.73	2.73		5,240.06		0.57		5,252.04
Total	**6.36**	**48.81**	**31.00**	**0.05**	**6.55**	**2.73**	**9.28**	**3.31**	**2.73**	**6.04**		**5,240.06**		**0.57**		**5,252.04**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.15	0.00	0.22	0.01	0.23	0.01	0.01	0.02		162.97		0.01		163.20
Total	**0.13**	**0.13**	**1.15**	**0.00**	**0.22**	**0.01**	**0.23**	**0.01**	**0.01**	**0.02**		**162.97**		**0.01**		**163.20**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.55	0.00	6.55	3.31	0.00	3.31						0.00

Off-Road	6.36	48.81	31.00	0.05		2.73	2.73		2.73	2.73	0.00	5,240.06		0.57		5,252.04
Total	**6.36**	**48.81**	**31.00**	**0.05**	**6.55**	**2.73**	**9.28**	**3.31**	**2.73**	**6.04**	**0.00**	**5,240.06**		**0.57**		**5,252.04**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.15	0.00	0.01	0.01	0.02	0.01	0.01	0.02		162.97		0.01		163.20
Total	**0.13**	**0.13**	**1.15**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**162.97**		**0.01**		**163.20**

3.5 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28		4,040.62		0.46		4,050.31
Total	**5.17**	**34.66**	**23.45**	**0.04**		**2.28**	**2.28**		**2.28**	**2.28**		**4,040.62**		**0.46**		**4,050.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.55	6.31	3.85	0.01	0.35	0.19	0.54	0.03	0.19	0.22		1,031.96		0.03		1,032.52
Worker	0.73	0.73	6.67	0.01	1.30	0.04	1.34	0.05	0.04	0.09		945.23		0.06		946.56
Total	**1.28**	**7.04**	**10.52**	**0.02**	**1.65**	**0.23**	**1.88**	**0.08**	**0.23**	**0.31**		**1,977.19**		**0.09**		**1,979.08**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28	0.00	4,040.62		0.46		4,050.31
Total	**5.17**	**34.66**	**23.45**	**0.04**		**2.28**	**2.28**		**2.28**	**2.28**	**0.00**	**4,040.62**		**0.46**		**4,050.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.55	6.31	3.85	0.01	0.03	0.19	0.22	0.03	0.19	0.22		1,031.96		0.03		1,032.52
Worker	0.73	0.73	6.67	0.01	0.05	0.04	0.09	0.05	0.04	0.09		945.23		0.06		946.56
Total	**1.28**	**7.04**	**10.52**	**0.02**	**0.08**	**0.23**	**0.31**	**0.08**	**0.23**	**0.31**		**1,977.19**		**0.09**		**1,979.08**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02		4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**		**4,040.61**		**0.42**		**4,049.51**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.51	5.78	3.63	0.01	0.35	0.18	0.53	0.03	0.18	0.20		1,032.74		0.02		1,033.26
Worker	0.67	0.66	6.02	0.01	1.30	0.04	1.34	0.05	0.04	0.09		925.41		0.06		926.63
Total	**1.18**	**6.44**	**9.65**	**0.02**	**1.65**	**0.22**	**1.87**	**0.08**	**0.22**	**0.29**		**1,958.15**		**0.08**		**1,959.89**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02	0.00	4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**	**0.00**	**4,040.61**		**0.42**		**4,049.51**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.51	5.78	3.63	0.01	0.03	0.18	0.20	0.03	0.18	0.20		1,032.74		0.02		1,033.26
Worker	0.67	0.66	6.02	0.01	0.05	0.04	0.09	0.05	0.04	0.09		925.41		0.06		926.63
Total	**1.18**	**6.44**	**9.65**	**0.02**	**0.08**	**0.22**	**0.29**	**0.08**	**0.22**	**0.29**		**1,958.15**		**0.08**		**1,959.89**

3.6 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.20	32.09	20.70	0.03		2.74	2.74		2.74	2.74		2,917.65		0.47		2,927.48
Paving	0.39					0.00	0.00		0.00	0.00						0.00
Total	**5.59**	**32.09**	**20.70**	**0.03**		**2.74**	**2.74**		**2.74**	**2.74**		**2,917.65**		**0.47**		**2,927.48**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.04	0.00	0.22	0.01	0.23	0.01	0.01	0.02		159.55		0.01		159.76
Total	**0.12**	**0.11**	**1.04**	**0.00**	**0.22**	**0.01**	**0.23**	**0.01**	**0.01**	**0.02**		**159.55**		**0.01**		**159.76**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.20	32.09	20.70	0.03		2.74	2.74		2.74	2.74	0.00	2,917.65		0.47		2,927.48
Paving	0.39					0.00	0.00		0.00	0.00						0.00
Total	**5.59**	**32.09**	**20.70**	**0.03**		**2.74**	**2.74**		**2.74**	**2.74**	**0.00**	**2,917.65**		**0.47**		**2,927.48**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.04	0.00	0.01	0.01	0.02	0.01	0.01	0.02		159.55		0.01		159.76
Total	**0.12**	**0.11**	**1.04**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**159.55**		**0.01**		**159.76**

3.7 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	267.80					0.00	0.00		0.00	0.00						0.00

Off-Road	0.45	2.77	1.92	0.00		0.24	0.24		0.24	0.24		281.19		0.04		282.03
Total	**268.25**	**2.77**	**1.92**	**0.00**		**0.24**	**0.24**		**0.24**	**0.24**		**281.19**		**0.04**		**282.03**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.18	0.00	0.25	0.01	0.26	0.01	0.01	0.02		180.83		0.01		181.07
Total	**0.13**	**0.13**	**1.18**	**0.00**	**0.25**	**0.01**	**0.26**	**0.01**	**0.01**	**0.02**		**180.83**		**0.01**		**181.07**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	267.80					0.00	0.00		0.00	0.00						0.00
Off-Road	0.45	2.77	1.92	0.00		0.24	0.24		0.24	0.24	0.00	281.19		0.04		282.03
Total	**268.25**	**2.77**	**1.92**	**0.00**		**0.24**	**0.24**		**0.24**	**0.24**	**0.00**	**281.19**		**0.04**		**282.03**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.18	0.00	0.01	0.01	0.02	0.01	0.01	0.02		180.83		0.01		181.07
Total	**0.13**	**0.13**	**1.18**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**180.83**		**0.01**		**181.07**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	48.67	111.30	405.37	0.47	52.97	3.30	56.27	1.85	3.30	5.15		48,363.16		2.28		48,411.00
Unmitigated	48.67	111.30	405.37	0.47	52.97	3.30	56.27	1.85	3.30	5.15		48,363.16		2.28		48,411.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT

Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,404.14	1,634.02	825.35	2,374,490	2,374,490
Supermarket	6,646.62	11,545.13	10820.26	9,034,308	9,034,308
Total	8,050.76	13,179.14	11,645.61	11,408,798	11,408,798

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	7.30	7.30	6.50	74.50	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.08	0.71	0.60	0.00		0.00	0.05		0.00	0.05		857.57		0.02	0.02	862.79
NaturalGas Unmitigated	0.08	0.71	0.60	0.00		0.00	0.05		0.00	0.05		857.57		0.02	0.02	862.79
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Regional Shopping Center	430.014	0.00	0.04	0.04	0.00		0.00	0.00		0.00	0.00		50.59		0.00	0.00	50.90
Supermarket	6859.32	0.07	0.67	0.56	0.00		0.00	0.05		0.00	0.05		806.98		0.02	0.01	811.89
Total		**0.07**	**0.71**	**0.60**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**		**857.57**		**0.02**	**0.01**	**862.79**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Regional Shopping Center	0.430014	0.00	0.04	0.04	0.00		0.00	0.00		0.00	0.00		50.59		0.00	0.00	50.90
Supermarket	6.85932	0.07	0.67	0.56	0.00		0.00	0.05		0.00	0.05		806.98		0.02	0.01	811.89
Total		**0.07**	**0.71**	**0.60**	**0.00**		**0.00**	**0.05**		**0.00**	**0.05**		**857.57**		**0.02**	**0.01**	**862.79**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.47					0.00	0.00		0.00	0.00						0.00
Consumer Products	4.95					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**6.42**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.47					0.00	0.00		0.00	0.00						0.00
Consumer Products	4.95					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

Total	6.42	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Safeway 51st - Construction "Phase II"
Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	667	Space
Regional Shopping Center	195.52	1000sqft
Supermarket	0	1000sqft
User Defined Retail	29	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5				
Utility Company	Pacific Gas & Electric Company				

1.3 User Entered Comments

Project Characteristics -

Land Use - User defined retail represents auxiliary space.

Construction Phase -

Demolition -

Vehicle Trips - Disregard operational emissions from this model (they were quantified in a separate model)

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	11.37	90.80	52.22	0.10	18.34	4.19	21.95	9.94	4.19	13.56	0.00	11,069.39	0.00	1.02	0.00	11,090.74
2015	569.50	41.71	41.79	0.08	3.50	2.55	5.72	0.16	2.55	2.56	0.00	8,156.64	0.00	0.55	0.00	8,168.23
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	11.37	90.80	52.22	0.10	18.08	4.19	21.69	9.94	4.19	13.56	0.00	11,069.39	0.00	1.02	0.00	11,090.74
2015	569.50	41.71	41.79	0.08	0.16	2.55	2.56	0.16	2.55	2.56	0.00	8,156.64	0.00	0.55	0.00	8,168.23
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	13.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Mobile	41.37	98.49	342.77	0.49	56.73	3.17	59.89	1.98	3.17	5.14		49,251.94		2.15		49,297.10
Total	**55.03**	**98.74**	**342.98**	**0.49**	**56.73**	**3.17**	**59.91**	**1.98**	**3.17**	**5.16**		**49,554.44**		**2.16**	**0.01**	**49,601.44**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	13.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Mobile	41.37	98.49	342.77	0.49	56.73	3.17	59.89	1.98	3.17	5.14		49,251.94		2.15		49,297.10
Total	**55.03**	**98.74**	**342.98**	**0.49**	**56.73**	**3.17**	**59.91**	**1.98**	**3.17**	**5.16**		**49,554.44**		**2.16**	**0.01**	**49,601.44**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.94	0.00	1.94	0.00	0.00	0.00						0.00
Off-Road	8.39	66.18	41.03	0.07		3.21	3.21		3.21	3.21		7,510.81		0.75		7,526.57
Total	**8.39**	**66.18**	**41.03**	**0.07**	**1.94**	**3.21**	**5.15**	**0.00**	**3.21**	**3.21**		**7,510.81**		**0.75**		**7,526.57**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.38	4.44	2.17	0.01	4.21	0.15	4.36	0.03	0.15	0.17		743.36		0.02		743.74
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.04	0.00	0.22	0.01	0.23	0.01	0.01	0.02		159.55		0.01		159.76
Total	**0.50**	**4.55**	**3.21**	**0.01**	**4.43**	**0.16**	**4.59**	**0.04**	**0.16**	**0.19**		**902.91**		**0.03**		**903.50**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.94	0.00	1.94	0.00	0.00	0.00						0.00
Off-Road	8.39	66.18	41.03	0.07		3.21	3.21		3.21	3.21	0.00	7,510.81		0.75		7,526.57
Total	**8.39**	**66.18**	**41.03**	**0.07**	**1.94**	**3.21**	**5.15**	**0.00**	**3.21**	**3.21**	**0.00**	**7,510.81**		**0.75**		**7,526.57**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.38	4.44	2.17	0.01	0.03	0.15	0.17	0.03	0.15	0.17		743.36		0.02		743.74
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.04	0.00	0.01	0.01	0.02	0.01	0.01	0.02		159.55		0.01		159.76
Total	**0.50**	**4.55**	**3.21**	**0.01**	**0.04**	**0.16**	**0.19**	**0.04**	**0.16**	**0.19**		**902.91**		**0.03**		**903.50**

3.3 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.37	74.88	43.05	0.07		3.61	3.61		3.61	3.61		7,997.69		0.84		8,015.31
Total	**9.37**	**74.88**	**43.05**	**0.07**	**18.07**	**3.61**	**21.68**	**9.93**	**3.61**	**13.54**		**7,997.69**		**0.84**		**8,015.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.14	0.14	1.25	0.00	0.27	0.01	0.28	0.01	0.01	0.02		191.46		0.01		191.72
Total	**0.14**	**0.14**	**1.25**	**0.00**	**0.27**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**191.46**		**0.01**		**191.72**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.37	74.88	43.05	0.07		3.61	3.61		3.61	3.61	0.00	7,997.69		0.84		8,015.31
Total	**9.37**	**74.88**	**43.05**	**0.07**	**18.07**	**3.61**	**21.68**	**9.93**	**3.61**	**13.54**	**0.00**	**7,997.69**		**0.84**		**8,015.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.14	0.14	1.25	0.00	0.01	0.01	0.02	0.01	0.01	0.02		191.46		0.01		191.72
Total	**0.14**	**0.14**	**1.25**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**191.46**		**0.01**		**191.72**

3.4 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.67	0.00	8.67	3.31	0.00	3.31						0.00
Off-Road	11.22	90.65	50.83	0.10		4.18	4.18		4.18	4.18		10,856.65		1.00		10,877.72
Total	**11.22**	**90.65**	**50.83**	**0.10**	**8.67**	**4.18**	**12.85**	**3.31**	**4.18**	**7.49**		**10,856.65**		**1.00**		**10,877.72**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.15	0.15	1.38	0.00	0.30	0.01	0.31	0.01	0.01	0.02		212.74		0.01		213.02
Total	**0.15**	**0.15**	**1.38**	**0.00**	**0.30**	**0.01**	**0.31**	**0.01**	**0.01**	**0.02**		**212.74**		**0.01**		**213.02**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.67	0.00	8.67	3.31	0.00	3.31						0.00
Off-Road	11.22	90.65	50.83	0.10		4.18	4.18		4.18	4.18	0.00	10,856.65		1.00		10,877.72
Total	**11.22**	**90.65**	**50.83**	**0.10**	**8.67**	**4.18**	**12.85**	**3.31**	**4.18**	**7.49**	**0.00**	**10,856.65**		**1.00**		**10,877.72**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.15	0.15	1.38	0.00	0.01	0.01	0.02	0.01	0.01	0.02		212.74		0.01		213.02
Total	**0.15**	**0.15**	**1.38**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**212.74**		**0.01**		**213.02**

3.5 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02		4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**		**4,040.61**		**0.42**		**4,049.51**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.10	12.32	7.73	0.02	0.75	0.38	1.12	0.06	0.38	0.43		2,201.36		0.05		2,202.48
Worker	1.42	1.39	12.74	0.02	2.76	0.08	2.84	0.10	0.08	0.18		1,957.19		0.12		1,959.76
Total	**2.52**	**13.71**	**20.47**	**0.04**	**3.51**	**0.46**	**3.96**	**0.16**	**0.46**	**0.61**		**4,158.55**		**0.17**		**4,162.24**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02	0.00	4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**	**0.00**	**4,040.61**		**0.42**		**4,049.51**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.10	12.32	7.73	0.02	0.06	0.38	0.43	0.06	0.38	0.43		2,201.36		0.05		2,202.48
Worker	1.42	1.39	12.74	0.02	0.10	0.08	0.18	0.10	0.08	0.18		1,957.19		0.12		1,959.76
Total	**2.52**	**13.71**	**20.47**	**0.04**	**0.16**	**0.46**	**0.61**	**0.16**	**0.46**	**0.61**		**4,158.55**		**0.17**		**4,162.24**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.34	29.16	22.98	0.04		1.80	1.80		1.80	1.80		4,040.61		0.39		4,048.81
Total	**4.34**	**29.16**	**22.98**	**0.04**		**1.80**	**1.80**		**1.80**	**1.80**		**4,040.61**		**0.39**		**4,048.81**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.02	11.30	7.28	0.02	0.75	0.34	1.09	0.06	0.34	0.40		2,202.80		0.05		2,203.84
Worker	1.32	1.25	11.53	0.02	2.76	0.08	2.84	0.10	0.08	0.18		1,913.22		0.11		1,915.58
Total	**2.34**	**12.55**	**18.81**	**0.04**	**3.51**	**0.42**	**3.93**	**0.16**	**0.42**	**0.58**		**4,116.02**		**0.16**		**4,119.42**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.34	29.16	22.98	0.04		1.80	1.80		1.80	1.80	0.00	4,040.61		0.39		4,048.81
Total	**4.34**	**29.16**	**22.98**	**0.04**		**1.80**	**1.80**		**1.80**	**1.80**	**0.00**	**4,040.61**		**0.39**		**4,048.81**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.02	11.30	7.28	0.02	0.06	0.34	0.40	0.06	0.34	0.40		2,202.80		0.05		2,203.84
Worker	1.32	1.25	11.53	0.02	0.10	0.08	0.18	0.10	0.08	0.18		1,913.22		0.11		1,915.58
Total	**2.34**	**12.55**	**18.81**	**0.04**	**0.16**	**0.42**	**0.58**	**0.16**	**0.42**	**0.58**		**4,116.02**		**0.16**		**4,119.42**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.89	30.10	20.54	0.03		2.54	2.54		2.54	2.54		2,917.65		0.44		2,926.87
Paving	0.79					0.00	0.00		0.00	0.00						0.00
Total	**5.68**	**30.10**	**20.54**	**0.03**		**2.54**	**2.54**		**2.54**	**2.54**		**2,917.65**		**0.44**		**2,926.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	0.94	0.00	0.22	0.01	0.23	0.01	0.01	0.02		155.97		0.01		156.16
Total	**0.11**	**0.10**	**0.94**	**0.00**	**0.22**	**0.01**	**0.23**	**0.01**	**0.01**	**0.02**		**155.97**		**0.01**		**156.16**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.89	30.10	20.54	0.03		2.54	2.54		2.54	2.54	0.00	2,917.65		0.44		2,926.87
Paving	0.79					0.00	0.00		0.00	0.00						0.00
Total	**5.68**	**30.10**	**20.54**	**0.03**		**2.54**	**2.54**		**2.54**	**2.54**	**0.00**	**2,917.65**		**0.44**		**2,926.87**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	0.94	0.00	0.01	0.01	0.02	0.01	0.01	0.02		155.97		0.01		156.16
Total	**0.11**	**0.10**	**0.94**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**155.97**		**0.01**		**156.16**

3.7 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	568.83					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22		281.19		0.04		281.96
Total	**569.24**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**		**281.19**		**0.04**		**281.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.26	0.25	2.32	0.00	0.55	0.02	0.57	0.02	0.02	0.04		384.72		0.02		385.20
Total	**0.26**	**0.25**	**2.32**	**0.00**	**0.55**	**0.02**	**0.57**	**0.02**	**0.02**	**0.04**		**384.72**		**0.02**		**385.20**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	568.83					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22	0.00	281.19		0.04		281.96
Total	**569.24**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**281.19**		**0.04**		**281.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.26	0.25	2.32	0.00	0.02	0.02	0.04	0.02	0.02	0.04		384.72		0.02		385.20
Total	**0.26**	**0.25**	**2.32**	**0.00**	**0.02**	**0.02**	**0.04**	**0.02**	**0.02**	**0.04**		**384.72**		**0.02**		**385.20**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	41.37	98.49	342.77	0.49	56.73	3.17	59.89	1.98	3.17	5.14		49,251.94		2.15		49,297.10
Unmitigated	41.37	98.49	342.77	0.49	56.73	3.17	59.89	1.98	3.17	5.14		49,251.94		2.15		49,297.10
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	8,395.63	9,770.13	4934.92	14,197,562	14,197,562
Supermarket	0.00	0.00	0.00		
User Defined Retail	0.00	0.00	0.00		
Total	8,395.63	9,770.13	4,934.92	14,197,562	14,197,562

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Supermarket	9.50	7.30	7.30	6.50	74.50	19.00
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
NaturalGas Unmitigated	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Regional Shopping Center	2571.24	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Supermarket	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.03**	**0.25**	**0.21**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**302.50**		**0.01**	**0.01**	**304.34**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Regional Shopping Center	2.57124	0.03	0.25	0.21	0.00		0.00	0.02		0.00	0.02		302.50		0.01	0.01	304.34
Supermarket	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.03**	**0.25**	**0.21**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**302.50**		**0.01**	**0.01**	**304.34**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	13.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	13.63	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.12					0.00	0.00		0.00	0.00						0.00
Consumer Products	10.51					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**13.63**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.12					0.00	0.00		0.00	0.00						0.00
Consumer Products	10.51					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**13.63**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

RoadwayConst1 - Phase 2 and 3 (South)

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Retail	1	User Defined Unit

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Utility Company Pacific Gas & Electric Company

Climate Zone 4

Precipitation Freq (Days) 63

1.3 User Entered Comments

Project Characteristics - Phase 2 and 3 South

Land Use - Roadway Const to the south of project (1.21 acres = 52708 sq ft)

Construction Phase - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Off-road Equipment - Based on client info. Switched hours/day and total days values to allow constant days in a phase and variable hours by equipment.

Trips and VMT - 16 vendor trips based on 245+75 cubic yards of material imported/exported

Demolition -

Grading - Using entire land use area for acres disturbed.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	2.38	15.64	12.91	0.02	0.53	1.24	1.43	0.01	1.24	1.24	0.00	1,937.71	0.00	0.21	0.00	1,942.15
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	2.38	15.64	12.91	0.02	0.01	1.24	1.24	0.01	1.24	1.24	0.00	1,937.71	0.00	0.21	0.00	1,942.15
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Area	1.46	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**1.46**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.46	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**1.46**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.30	15.56	12.22	0.02		1.23	1.23		1.23	1.23		1,831.34		0.21		1,835.64
Total	**2.30**	**15.56**	**12.22**	**0.02**		**1.23**	**1.23**		**1.23**	**1.23**		**1,831.34**		**0.21**		**1,835.64**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.08	0.69	0.00	0.15	0.00	0.15	0.01	0.00	0.01		106.37		0.01		106.51
Total	**0.08**	**0.08**	**0.69**	**0.00**	**0.15**	**0.00**	**0.15**	**0.01**	**0.00**	**0.01**		**106.37**		**0.01**		**106.51**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	2.30	15.56	12.22	0.02		1.23	1.23		1.23	1.23	0.00	1,831.34		0.21		1,835.64
Total	**2.30**	**15.56**	**12.22**	**0.02**		**1.23**	**1.23**		**1.23**	**1.23**	**0.00**	**1,831.34**		**0.21**		**1,835.64**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.08	0.69	0.00	0.01	0.00	0.01	0.01	0.00	0.01		106.37		0.01		106.51
Total	**0.08**	**0.08**	**0.69**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**		**106.37**		**0.01**		**106.51**

3.3 New Traffic Signals - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.52	3.54	2.61	0.00		0.28	0.28		0.28	0.28		399.33		0.05		400.30
Total	**0.52**	**3.54**	**2.61**	**0.00**	**0.00**	**0.28**	**0.28**	**0.00**	**0.28**	**0.28**		**399.33**		**0.05**		**400.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.35	0.00	0.07	0.00	0.08	0.00	0.00	0.01		53.18		0.00		53.25
Total	**0.04**	**0.04**	**0.35**	**0.00**	**0.07**	**0.00**	**0.08**	**0.00**	**0.00**	**0.01**		**53.18**		**0.00**		**53.25**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.52	3.54	2.61	0.00		0.28	0.28		0.28	0.28	0.00	399.33		0.05		400.30
Total	**0.52**	**3.54**	**2.61**	**0.00**	**0.00**	**0.28**	**0.28**	**0.00**	**0.28**	**0.28**	**0.00**	**399.33**		**0.05**		**400.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.35	0.00	0.00	0.00	0.01	0.00	0.00	0.01		53.18		0.00		53.25
Total	**0.04**	**0.04**	**0.35**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**		**53.18**		**0.00**		**53.25**

3.4 New Concrete and Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.63	10.37	7.10	0.01		0.87	0.87		0.87	0.87		1,024.22		0.15		1,027.29
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.63**	**10.37**	**7.10**	**0.01**		**0.87**	**0.87**		**0.87**	**0.87**		**1,024.22**		**0.15**		**1,027.29**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.08	0.99	0.48	0.00	0.38	0.03	0.41	0.01	0.03	0.04		165.19		0.00		165.28
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.08	0.69	0.00	0.15	0.00	0.15	0.01	0.00	0.01		106.37		0.01		106.51
Total	**0.16**	**1.07**	**1.17**	**0.00**	**0.53**	**0.03**	**0.56**	**0.02**	**0.03**	**0.05**		**271.56**		**0.01**		**271.79**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.63	10.37	7.10	0.01		0.87	0.87		0.87	0.87	0.00	1,024.22		0.15		1,027.29

Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.63**	**10.37**	**7.10**	**0.01**		**0.87**	**0.87**		**0.87**	**0.87**	**0.00**	**1,024.22**		**0.15**		**1,027.29**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.08	0.99	0.48	0.00	0.01	0.03	0.04	0.01	0.03	0.04		165.19		0.00		165.28
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.08	0.69	0.00	0.01	0.00	0.01	0.01	0.00	0.01		106.37		0.01		106.51
Total	**0.16**	**1.07**	**1.17**	**0.00**	**0.02**	**0.03**	**0.05**	**0.02**	**0.03**	**0.05**		**271.56**		**0.01**		**271.79**

3.5 Landscaping - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.95	6.37	5.24	0.01		0.50	0.50		0.50	0.50		774.51		0.08		776.29
Total	**0.95**	**6.37**	**5.24**	**0.01**	**0.00**	**0.50**	**0.50**	**0.00**	**0.50**	**0.50**		**774.51**		**0.08**		**776.29**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.21	0.00	0.04	0.00	0.05	0.00	0.00	0.00		31.91		0.00		31.95
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.04**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**31.91**		**0.00**		**31.95**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.95	6.37	5.24	0.01		0.50	0.50		0.50	0.50	0.00	774.51		0.08		776.29
Total	**0.95**	**6.37**	**5.24**	**0.01**	**0.00**	**0.50**	**0.50**	**0.00**	**0.50**	**0.50**	**0.00**	**774.51**		**0.08**		**776.29**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00		31.91		0.00		31.95
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**31.91**		**0.00**		**31.95**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Retail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.46	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	1.46	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

Architectural Coating	0.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	1.13					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**1.46**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	1.13					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**1.46**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

RoadwayConst1 - Phase 4 and 5 (West)

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Retail	1	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics - Phase 4 and 5 West

Land Use - Roadway Const to the west of project (0.36 acres = 15682 sq ft)

Construction Phase - Based on client info. Switched hours/day and total days values to maintain constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Off-road Equipment - Client data. Switched hours/day and total days values to allow constant days in a phase and variable hours for equipment.

Trips and VMT - Based on soil imported/exported

Demolition -

Grading - Used entire land use area for acreage.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	1.34	8.73	6.54	0.01	0.40	0.68	1.08	0.01	0.68	0.69	0.00	1,035.22	0.00	0.12	0.00	1,037.69
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	1.34	8.73	6.54	0.01	0.01	0.68	0.69	0.01	0.68	0.69	0.00	1,035.22	0.00	0.12	0.00	1,037.69
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Area	0.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.02	6.93	5.41	0.01		0.55	0.55		0.55	0.55		812.40		0.09		814.32
Total	**1.02**	**6.93**	**5.41**	**0.01**		**0.55**	**0.55**		**0.55**	**0.55**		**812.40**		**0.09**		**814.32**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.35	0.00	0.07	0.00	0.08	0.00	0.00	0.01		53.18		0.00		53.25
Total	**0.04**	**0.04**	**0.35**	**0.00**	**0.07**	**0.00**	**0.08**	**0.00**	**0.00**	**0.01**		**53.18**		**0.00**		**53.25**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	1.02	6.93	5.41	0.01		0.55	0.55		0.55	0.55	0.00	812.40		0.09		814.32
Total	**1.02**	**6.93**	**5.41**	**0.01**		**0.55**	**0.55**		**0.55**	**0.55**	**0.00**	**812.40**		**0.09**		**814.32**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.35	0.00	0.00	0.00	0.01	0.00	0.00	0.01		53.18		0.00		53.25
Total	**0.04**	**0.04**	**0.35**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**		**53.18**		**0.00**		**53.25**

3.3 New Traffic Signals - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.52	3.54	2.61	0.00		0.28	0.28		0.28	0.28		399.33		0.05		400.30
Total	**0.52**	**3.54**	**2.61**	**0.00**	**0.00**	**0.28**	**0.28**	**0.00**	**0.28**	**0.28**		**399.33**		**0.05**		**400.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.35	0.00	0.07	0.00	0.08	0.00	0.00	0.01		53.18		0.00		53.25
Total	**0.04**	**0.04**	**0.35**	**0.00**	**0.07**	**0.00**	**0.08**	**0.00**	**0.00**	**0.01**		**53.18**		**0.00**		**53.25**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.52	3.54	2.61	0.00		0.28	0.28		0.28	0.28	0.00	399.33		0.05		400.30
Total	**0.52**	**3.54**	**2.61**	**0.00**	**0.00**	**0.28**	**0.28**	**0.00**	**0.28**	**0.28**	**0.00**	**399.33**		**0.05**		**400.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.35	0.00	0.00	0.00	0.01	0.00	0.00	0.01		53.18		0.00		53.25
Total	**0.04**	**0.04**	**0.35**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**		**53.18**		**0.00**		**53.25**

3.4 New Concrete and Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Off-Road	1.22	7.93	5.62	0.01		0.65	0.65		0.65	0.65		826.23		0.11		828.52
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.22**	**7.93**	**5.62**	**0.01**		**0.65**	**0.65**		**0.65**	**0.65**		**826.23**		**0.11**		**828.52**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Hauling	0.06	0.74	0.36	0.00	0.28	0.02	0.31	0.00	0.02	0.03		123.89		0.00		123.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.06	0.55	0.00	0.12	0.00	0.12	0.00	0.00	0.01		85.10		0.01		85.21
Total	**0.12**	**0.80**	**0.91**	**0.00**	**0.40**	**0.02**	**0.43**	**0.00**	**0.02**	**0.04**		**208.99**		**0.01**		**209.17**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Off-Road	1.22	7.93	5.62	0.01		0.65	0.65		0.65	0.65	0.00	826.23		0.11		828.52

Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.22**	**7.93**	**5.62**	**0.01**		**0.65**	**0.65**		**0.65**	**0.65**	**0.00**	**826.23**		**0.11**		**828.52**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.06	0.74	0.36	0.00	0.00	0.02	0.03	0.00	0.02	0.03		123.89		0.00		123.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.06	0.55	0.00	0.00	0.00	0.01	0.00	0.00	0.01		85.10		0.01		85.21
Total	**0.12**	**0.80**	**0.91**	**0.00**	**0.00**	**0.02**	**0.04**	**0.00**	**0.02**	**0.04**		**208.99**		**0.01**		**209.17**

3.5 Landscaping - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.63	4.24	3.50	0.01		0.34	0.34		0.34	0.34		516.34		0.06		517.52
Total	**0.63**	**4.24**	**3.50**	**0.01**	**0.00**	**0.34**	**0.34**	**0.00**	**0.34**	**0.34**		**516.34**		**0.06**		**517.52**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.21	0.00	0.04	0.00	0.05	0.00	0.00	0.00		31.91		0.00		31.95
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.04**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**31.91**		**0.00**		**31.95**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	0.63	4.24	3.50	0.01		0.34	0.34		0.34	0.34	0.00	516.34		0.06		517.52
Total	**0.63**	**4.24**	**3.50**	**0.01**	**0.00**	**0.34**	**0.34**	**0.00**	**0.34**	**0.34**	**0.00**	**516.34**		**0.06**		**517.52**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00		31.91		0.00		31.95
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**31.91**		**0.00**		**31.95**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Retail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
User Defined Retail	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
User Defined Retail	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.44	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

Architectural Coating	0.10					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.34					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.44**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.10					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.34					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.44**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Table A4a
Site Construction Emissions Phase 1
51st and Broadway
Oakland, CA

	Raw Annual Emissions (tons per year)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
3.2 Demolition - 2013										
Fugitive Dust					0.07	0.00	0.07	0.01	0.00	0.01
Off-Road	0.09	0.71	0.43	0.00		0.04	0.04		0.04	0.04
Hauling	0.02	0.18	0.08	0.00	0.12	0.01	0.13	0.00	0.01	0.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.3 Site Preparation - 2013										
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05
Off-Road	0.05	0.40	0.23	0.00		0.02	0.02		0.02	0.02
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.4 Grading - 2013										
Fugitive Dust					0.07	0.00	0.07	0.03	0.00	0.03
Off-Road	0.06	0.49	0.31	0.00		0.03	0.03		0.03	0.03
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.5 Building Construction - 2013										
Off-Road	0.21	1.42	0.96	0.00		0.09	0.09		0.09	0.09
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.25	0.15	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Worker	0.03	0.03	0.27	0.00	0.04	0.00	0.04	0.00	0.00	0.00
3.5 Building Construction - 2014										
Off-Road	0.35	2.37	1.72	0.00		0.15	0.15		0.15	0.15
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.42	0.25	0.00	0.02	0.01	0.03	0.00	0.01	0.01
Worker	0.04	0.05	0.44	0.00	0.08	0.00	0.08	0.00	0.00	0.01
3.6 Paving - 2014										
Off-Road	0.05	0.32	0.21	0.00		0.03	0.03		0.03	0.03
Paving	0.00					0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.7 Architectural Coating - 2014										
Archit. Coating	2.68					0.00	0.00		0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**3.64**	**6.67**	**5.12**	**0.00**	**0.50**	**0.39**	**0.89**	**0.09**	**0.39**	**0.49**

Table A4a
Site Construction Emissions Phase 1
51st and Broadway
Oakland, CA

Subtotals by Type of Emissions

	Raw Total Emissions (tons)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
Fugitive Dust	0	0	0	0	0.23	0	0.23	0.09	0	0.09
Off-Road	0.81	5.74	3.88	0	0	0.36	0.36	0	0.36	0.36
Hauling	0.02	0.18	0.08	0	0.12	0.01	0.13	0	0.01	0.01
Vendor	0.06	0.67	0.4	0	0.03	0.02	0.05	0	0.02	0.02
Worker	0.07	0.08	0.76	0	0.12	0	0.12	0	0	0.01
Archit. Coating	2.68	0	0	0	0	0	0	0	0	0
Paving	0	0	0	0	0	0	0	0	0	0
TOTAL	**3.64**	**6.67**	**5.12**	**0**	**0.5**	**0.39**	**0.89**	**0.09**	**0.39**	**0.49**

Adjustments

33%	Reduction in load factor from OFFROAD applied to all off-road exhaust (See Appendix for justification.)
20%	Reduction in NOx from off-road equipment from Oakland Standard Conditions of Approval (SCM)
45%	Reduction in PM10 and PM2.5 from off-road equipment from Oakland SCM
20%	Reduction in NOx from 2-minute idling restriction in Oakland SCM. Percent reduction from BAAQMD CEQA Guideli
45%	Reduction in PM10 and PM2.5 from 2-minute idling restriction in Oakland SCM. Percent reduction from BAAQMD C

	Adjusted Total Emissions (tons)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
Fugitive Dust	0	0	0	0	0.23	0	0.23	0.09	0	0.09
Off-Road	0.54	2.46	2.60	0	0.00	0.07	0.07	0.00	0.07	0.07
Hauling	0.02	0.18	0.08	0	0.12	0.01	0.13	0	0.01	0.01
Vendor	0.06	0.67	0.4	0	0.03	0.02	0.05	0	0.02	0.02
Worker	0.07	0.08	0.76	0	0.12	0	0.12	0	0	0.01
Archit. Coating	2.68	0	0	0	0	0	0	0	0	0
Paving	0	0	0	0	0	0	0	0	0	0
TOTAL	**3.37**	**3.39**	**3.84**	**0**	**0.50**	**0.10**	**0.60**	**0.09**	**0.10**	**0.20**

	Adjusted Average Daily Emissions (pounds per day)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
TOTAL	**22**	**23**	**26**	**0**	**3.3**	**0.7**	**4.0**	**0.6**	**0.7**	**1.4**

Conversions and Parameters

2000 lbs/short ton
300 days in Phase I

Table A4b
Site Construction Emissions Phase 2
51st and Broadway
Oakland, CA

	Raw Annual Emissions (tons per year)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
3.2 Demolition - 2014										
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00
Off-Road	0.08	0.66	0.41	0.00		0.03	0.03		0.03	0.03
Hauling	0.00	0.04	0.02	0.00	0.03	0.00	0.03	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.3 Site Preparation - 2014										
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05
Off-Road	0.05	0.37	0.22	0.00		0.02	0.02		0.02	0.02
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.4 Grading - 2014										
Fugitive Dust					0.13	0.00	0.13	0.05	0.00	0.05
Off-Road	0.17	1.36	0.76	0.00		0.06	0.06		0.06	0.06
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.5 Building Construction - 2014										
Off-Road	0.27	1.84	1.33	0.00		0.12	0.12		0.12	0.12
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.06	0.70	0.42	0.00	0.03	0.02	0.06	0.00	0.02	0.02
Worker	0.07	0.07	0.73	0.00	0.13	0.00	0.13	0.01	0.00	0.01
3.5 Building Construction - 2015										
Off-Road	0.40	2.70	2.13	0.00		0.17	0.17		0.17	0.17
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	1.03	0.63	0.00	0.06	0.03	0.09	0.01	0.03	0.04
Worker	0.11	0.11	1.06	0.00	0.20	0.01	0.21	0.01	0.01	0.02
3.6 Paving - 2015										
Off-Road	0.05	0.30	0.21	0.00		0.03	0.03		0.03	0.03
Paving	0.01					0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.7 Architectural Coating - 2015										
Archit. Coating	5.69					0.00	0.00		0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**7.05**	**9.21**	**8.01**	**0.00**	**0.69**	**0.49**	**1.19**	**0.13**	**0.49**	**0.62**

Table A4b
Site Construction Emissions Phase 2
51st and Broadway

Subtotals by Type of Emissions

	Raw Total Emissions (tons)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
Fugitive Dust	0	0	0	0	0.24	0	0.24	0.1	0	0.1
Off-Road	1.02	7.26	5.08	0	0	0.43	0.43	0	0.43	0.43
Hauling	0	0.04	0.02	0	0.03	0	0.03	0	0	0
Vendor	0.15	1.73	1.05	0	0.09	0.05	0.15	0.01	0.05	0.06
Worker	0.18	0.18	1.86	0	0.33	0.01	0.34	0.02	0.01	0.03
Archit. Coating	5.69	0	0	0	0	0	0	0	0	0
Paving	0.01	0	0	0	0	0	0	0	0	0
TOTAL	**7.05**	**9.21**	**8.01**	**0**	**0.69**	**0.49**	**1.19**	**0.13**	**0.49**	**0.62**

Adjustments

33%	Reduction in load factor from OFFROAD applied to all off-road exhaust (See Appendix for justification.)
20%	Reduction in NOx from off-road equipment from Oakland Standard Conditions of Approval (SCM)
45%	Reduction in PM10 and PM2.5 from off-road equipment from Oakland SCM
20%	Reduction in NOx from 2-minute idling restriction in Oakland SCM. Percent reduction from BAAQMD CEQA Guideli
45%	Reduction in PM10 and PM2.5 from 2-minute idling restriction in Oakland SCM. Percent reduction from BAAQMD C

	Adjusted Total Emissions (tons)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
Fugitive Dust	0	0	0	0	0.24	0	0.24	0.1	0	0.1
Off-Road	0.68	3.11	3.40	0	0.00	0.09	0.09	0.00	0.09	0.09
Hauling	0	0.04	0.02	0	0.03	0	0.03	0	0	0
Vendor	0.15	1.73	1.05	0	0.09	0.05	0.15	0.01	0.05	0.06
Worker	0.18	0.18	1.86	0	0.33	0.01	0.34	0.02	0.01	0.03
Archit. Coating	5.69	0	0	0	0	0	0	0	0	0
Paving	0.01	0	0	0	0	0	0	0	0	0
TOTAL	**6.71**	**5.06**	**6.33**	**0**	**0.69**	**0.15**	**0.85**	**0.13**	**0.15**	**0.28**

	Adjusted Average Daily Emissions (pounds per day)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
TOTAL	**45**	**34**	**42**	**0**	**4.6**	**1.0**	**5.6**	**0.9**	**1.0**	**1.8**

Conversions and Parameters

2000 lbs/short ton
300 days in Phase II

Table A4c
Summary of Site Construction Emissions
51st and Broadway
Oakland, CA

	Adjusted Total Emissions (tons)									
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Phase I	3.4	3.4	3.8	0	0.50	0.10	0.60	0.09	0.10	0.20
Phase II	6.7	5.1	6.3	0.0	0.69	0.15	0.85	0.13	0.15	0.28
TOTAL	**10.1**	**8.5**	**10**	**0.0**	**1.2**	**0.25**	**1.5**	**0.22**	**0.25**	**0.48**

	Adjusted Average Daily Emissions (pounds per day)									
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Phase I	22	23	26	0	3.3	0.7	4.0	0.6	0.7	1.4
Phase II	45	34	42	0	4.6	1.0	5.6	0.9	1.0	1.8

Table A4d
Summary of Roadway Construction - South Emissions
51st and Broadway
Oakland, CA

	Raw Annual Emissions (tons per year)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
3.2 Demolition - 2014										
Fugitive Dust										
Off-Road	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.3 New Traffic Signals - 2014										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.4 New Concrete and Paving - 2014										
Off-Road	0.01	0.04	0.03	0.00		0.00	0.00		0.00	0.00
Paving	0.00					0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.5 Lanscaping - 2014										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**0.02**	**0.14**	**0.11**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Table A4d
Summary of Roadway Construction - South Emissions
51st and Broadway
Oakland, CA

Subtotals by Type of Emissions

	Raw Total Emissions (tons)									
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust	0	0	0	0	0.01	0.01	0.01	0.01	0.01	0.01
Off-Road	0.03	0.14	0.11	0.02	0	0.02	0.02	0	0.02	0.02
Hauling	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Vendor	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Worker	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Paving	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01
TOTAL	**0.10**	**0.20**	**0.17**	**0.08**	**0.07**	**0.10**	**0.10**	**0.07**	**0.10**	**0.10**

Adjustments

33%	Reduction in load factor from OFFROAD applied to all off-road exhaust (See Appendix for justification.)
20%	Reduction in NOx from off-road equipment from Oakland Standard Conditions of Approval (SCM)
45%	Reduction in PM10 and PM2.5 from off-road equipment from Oakland SCM
20%	Reduction in NOx from 2-minute idling restriction in Oakland SCM. Percent reduction from BAAQMD CEQA Guideli
45%	Reduction in PM10 and PM2.5 from 2-minute idling restriction in Oakland SCM. Percent reduction from BAAQMD C

	Adjusted Total Emissions (tons)									
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust	0	0	0	0	0.01	0.01	0.01	0.01	0.01	0.01
Off-Road	0.02	0.06	0.07	0	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Vendor	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Worker	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Paving	0	0	0	0	0	0.005	0.005	0	0.005	0.005
TOTAL	**0.09**	**0.12**	**0.13**	**0**	**0.07**	**0.08**	**0.08**	**0.07**	**0.08**	**0.08**

	Adjusted Average Daily Emissions (pounds per day)									
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
TOTAL	**1.1**	**1.6**	**1.7**	**1.0**	**0.9**	**1.0**	**1.0**	**0.9**	**1.0**	**1.0**

Conversions and Parameters

2000 lbs/short ton
153 days in Phase II and III

Table A4e
Summary of Roadway Construction - West Emissions
51st and Broadway
Oakland, CA

	Raw Annual Emissions (tons per year)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
3.2 Demolition - 2014										
Fugitive Dust										
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.3 New Traffic Signals - 2014										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.4 New Concrete and Paving - 2014										
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00
Paving	0.00					0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.5 Lanscaping - 2014										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**0.00**	**0.09**	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Table A4e
Summary of Roadway Construction - West Emissions
51st and Broadway
Oakland, CA

Subtotals by Type of Emissions

	Raw Total Emissions (tons)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
Fugitive Dust	0	0	0	0	0.01	0.01	0.01	0.01	0.01	0.01
Off-Road	0.02	0.09	0.06	0.02	0	0.02	0.02	0	0.02	0.02
Hauling	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Vendor	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Worker	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Paving	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01
TOTAL	**0.085**	**0.15**	**0.12**	**0.08**	**0.07**	**0.095**	**0.095**	**0.07**	**0.095**	**0.095**

Adjustments

33%	Reduction in load factor from OFFROAD applied to all off-road exhaust (See Appendix for justification.)
20%	Reduction in NOx from off-road equipment from Oakland Standard Conditions of Approval (SCM)
45%	Reduction in PM10 and PM2.5 from off-road equipment from Oakland SCM
20%	Reduction in NOx from 2-minute idling restriction in Oakland SCM. Percent reduction from BAAQMD CEQA Guideli
45%	Reduction in PM10 and PM2.5 from 2-minute idling restriction in Oakland SCM. Percent reduction from BAAQMD C

	Adjusted Total Emissions (tons)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
Fugitive Dust	0	0	0	0	0.01	0.01	0.01	0.01	0.01	0.01
Off-Road	0.01	0.04	0.04	0	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Vendor	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Worker	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Paving	0.01	0	0	0	0	0.005	0.005	0	0.005	0.005
TOTAL	**0.08**	**0.10**	**0.10**	**0**	**0.07**	**0.08**	**0.08**	**0.07**	**0.08**	**0.08**

	Adjusted Average Daily Emissions (pounds per day)									
	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**
TOTAL	**2**	**2**	**2**	**2**	**1.5**	**1.7**	**1.7**	**1.5**	**1.7**	**1.7**

Conversions and Parameters

2000 lbs/short ton
92 days in Phase IV and V

Table A4f
Summary of Roadway Construction Emissions
51st and Broadway
Oakland, CA

	Adjusted Total Emissions (tons)									
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Roadway-South	0.09	0.12	0.13	0.07	0.07	0.08	0.08	0.07	0.08	0.08
Roadway-West	0.08	0.10	0.10	0.07	0.07	0.08	0.08	0.07	0.08	0.08
TOTAL	**0.2**	**0.2**	**0**	**0.1**	**0.1**	**0.16**	**0.2**	**0.1**	**0.16**	**0.2**

	Adjusted Average Daily Emissions (pounds per day)									
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Roadway-South	1	2	2	1	0.9	1.0	1.0	0.9	1.0	1.0
Roadway-West	2	2	2	2	1.5	1.7	1.7	1.5	1.7	1.7

Attachment B

Air Dispersion and Health Risk Modeling Supporting Information

Attachment B: Air Dispersion and Health Risk Modeling Supporting Information

<u>Section B1: Modeling Parameters</u>

Table B1a: Modeling Parameters for Construction Equipment

Table B1b: Emission Rates for Construction Modeling

<u>Section B2: Exposure and Toxicity Parameters</u>

Table B2a: Exposure Parameters for Construction Scenario

Table B2b: Age Sensitivity Factor for Construction Scenario

Table B2c: Carcinogenic and Chronic Noncarcinogenic Toxicity Values

<u>Section B3: Speciation</u>

Table B3: BAAQMD Specified Speciation Profile for Offroad Diesel TOG

<u>Section B4: Conversion from ROG to TOG</u>

<u>Section B5: Screening-Level Risk Calculator</u>

Table B5a: BAAQMD Stationary Source Inquiry Form

Table B5b: Screening-Level Risks for Source G8933

Table B5c: Screening-Level Risks for Source 20198

Table B1a
Modeling Parameters for Construction Equipment
51st and Broadway
Oakland, CA

Construction Source	Source Type[1]	Source Dimension[2] [m]	Number of Sources[3]	Release Height[4] [m]	Initial Vertical Dimension[5] [m]	Initial Lateral Dimension[6] [m]
Site Equipment	Volume	20 x 20	146	5.0	1.2	4.7
Roadway Equipment - South	Volume	10 x 10	47	5.0	1.2	2.3
Roadway Equipment - West	Volume	10 x 10	13	5.0	1.2	2.3

Notes:
1. Due to lack of specific instructions on modeling of construction emissions from BAAQMD, ENVIRON used SCAQMD LST methodology when setting up the model. According to the LST methodology, construction sources were modeled as adjacent volume sources.
2. For volume sources, source dimensions were determined by size of construction zone. Size of construction zone was estimated based on a site map provided by Project Sponsor.
3. Number of sources were determined by size of construction zone and source dimensions.
4. According to the LST methodology, release height of the modeled volume sources representing construction equipment was set to 5 meters.
5. According to USEPA ISC3 User's Guide Volume II, initial vertical dimension of an elevated source not adjacent to a building is the vertical dimension of the source divided by 4.3.
6. According to USEPA ISC3 User's Guide Volume II, initial lateral dimension of single volume sources is length of side divided by 4.3.

Abbreviations:
BAAQMD: Bay Area Air Quality Management District
ISC: Industrial Source Complex Model
LST: Local Significance Threshold
m: meter
SCAQMD: South Coast Air Quality Management District
USEPA: United States Environmental Protection Agency

Sources:
SCAQMD. 2008. Final Localized Significance Threshold (LST) Methodology. July. Available at: http://www.aqmd.gov/ceqa/handbook/lst/Method_final.pdf
USEPA. 1995. User's Guide for the Industrial Source Complex (ISC3) Dispersion Models. Volume II - Description of Model Algorithms. September. Available at: http://www.epa.gov/scram001/userg/regmod/isc3v2.pdf

Table B1b
Emission Rates for Construction Modeling
51st and Broadway
Oakland, CA

Source Group Description[1]	Modeled Annual DPM Emission Rate[2]	Modeled Maximum Hourly TOG Emission Rate[2]	Modeled Annual $PM_{2.5}$ Emission Rate[2]
[Model]	[g/s]	[g/s]	[g/s]
Site	6.6E-03	1.2E-01	1.5E-02
Roadway - South	1.7E-04	2.0E-02	1.7E-04
Roadway - North	1.7E-04	1.0E-02	1.7E-04

Notes:
1. Construction emissions were estimated using CalEEMod as shown in Table 1.
2. Construction emissions are assumed to occur daily anytime during the 10 hours between 7a.m. and 5p.m based on Client provided information.

Abbreviations:
DPM: Diesel Particulate Matter
$PM_{2.5}$: particles in the atmosphere with a diameter of 2.5 micrometers or less
TOG: Total Organic Gases
USEPA: United States Environmental Protection Agency

Table B2a
Exposure Parameters for Construction Scenario
51st and Broadway Street
Oakland, California

Exposure Parameter	Units	Resident Adult	Resident Child
Daily Breathing Rate (DBR) [1]	[L/kg-day]	302	581
Exposure Time (ET) [2]	[hours/24 hours]	24	24
Exposure Frequency (EF) [3]	[days/year]	350	350
Exposure Duration (ED) [4]	[years]	1.7	1.7
Averaging Time (AT)	[days]	25550	25550
Intake Factor, Inhalation (IF_{inh})	[m^3/kg-day]	0.007	0.013

Notes:
1. Daily breathing rates for residents reflect default breathing rates from BAAQMD 2010.
2. Exposure times for residents reflect default exposure times from BAAQMD 2010.
3. Exposure frequencies for residents reflect default exposure frequencies from BAAQMD 2010.
4. Exposure durations are assumed to be 1.7 years for residents reflecting the actual construction duration of 20 months.

Calculation:
IF_{inh} = DBR * ET * EF * ED * CF / AT
CF = 0.001 (m^3/L)

Abbreviations:
BAAQMD = Bay Area Air Quality Management District
kg = kilogram
L = liter
m^3 = cubic meter

Sources:
Bay Area Air Quality Management District (BAAQMD). 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.

Table B2b
Age Sensitivity Factors (ASFs) - Construction
51st and Broadway Street
Oakland, California

Receptor	Age Sensitivity Factor (ASF)
Resident Adult[1,2]	1
Resident Child[1,3]	10

Notes:
1. Based on BAAQMD 2010.
2. A resident adult is assumed to be 16 years old and above.
3. A resident child is assumed to be exposed at some point from the third trimester of pregnancy to two years of age.

Abbreviations:
BAAQMD: Bay Area Air Quality Management District

Sources:
Bay Area Air Quality Management District (BAAQMD). 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.

Table B2c
Carcinogenic and Chronic Noncarcinogenic Toxicity Values[1]
51st and Broadway Street
Oakland, California

Source	Analysis	Chemical		Cancer Potency Factor	Chronic Reference Exposure Level	Acute Reference Exposure Level
				$[mg/kg\text{-}day]^{-1}$	$\mu g/m^3$	$\mu g/m^3$
Construction and Operation	Cancer Risk and Chronic HI	Diesel PM		1.1	5.0	
	Acute HI	TACs from Speciated Diesel TOG	formaldehyde			55.0
			acetaldehyde			470
			benzene			1,300
			methyl ethyl ketone (mek) (2-butanone)			13,000
			toluene			37,000
			m-xylene			22,000
			o-xylene			22,000

Notes:
1. Values presented in this table reflect values used in this analysis. A shaded cancer potency factor and reference exposure level for a chemical implies this value was not needed in this analysis. The chemical might in fact have an associated potency factor or reference exposure level.

Abbreviations:
mg/kg-day: milligram per kilogram-day
$\mu g/m^3$: micrograms per cubic meter
ARB: Air Resources Board
HI: Hazard Index
OEHHA: Office of Environmental Health Hazard Assessment
PM: Particulate Matter
TAC: Toxic Air Contaminant
TOG: Total Organic Gas

Sources:
California Environmental Protection Agency (Cal/EPA). 2012. OEHHA/ARB Consolidated Table of Approved Risk Assessment Health Values. May 3.
http://www.arb.ca.gov/toxics/healthval/contable.pdf

Table B3
BAAQMD Specified Speciation Profile for Offroad Diesel TOG
51st and Broadway Street
Oakland, CA

Chemical	CAS	Quantity [mass fraction]
ethylbenzene	100414	0.00305
benzaldehyde	100527	0.00699
n-butane	106978	0.00104
m-xylene	108383	0.00611
toluene	108883	0.01473
n-pentane	109660	0.00175
n-hexane	110543	0.00157
propylene	115071	0.02597
propionaldehyde	123386	0.0097
formaldehyde	50000	0.14714
ethanol	64175	0.00009
benzene	71432	0.02001
methane	74828	0.04084
ethylene	74851	0.14377
acetaldehyde	75070	0.07353
isobutane	75285	0.01222
isopentane	78784	0.00602
methyl ethyl ketone (mek) (2-butanone)	78933	0.01477
o-xylene	95476	0.00335
methylcyclopentane	96377	0.00149

Notes:
1. All fractions are from USEPA Speciation Profile 3161.

Abbreviations:
BAAQMD - Bay Area Air Quality Management District
USEPA - United States Environmental Protection Agency

EPA420-P-03-002
May 2003

Conversion Factors for Hydrocarbon Emission Components

NR-002a

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

Purpose

The purpose of this memorandum is to document the conversion factors for reporting hydrocarbon emissions in different forms. The general forms are total hydrocarbons (THC), total organic gas (TOG), nonmethane hydrocarbons (NMHC), nonmethane organic gas (NMOG), and volatile organic compounds (VOC), all defined in the introduction below. For reporting hydrocarbon emissions from nonroad equipment, it is helpful to provide an accepted means to estimate the hydrocarbons in the different forms. This is not a substitute for full speciation of hydrocarbons in the exhaust.

Introduction

Hydrocarbon emissions can be reported in a variety of styles depending on the end use of the emission estimates and the measurement technique used in the underlying data. Not all emissions are measured for all engines, so a conversion from the most common measurement type to others is needed to supply an estimate in terms required by the user.

Most hydrocarbon emissions data from mobile sources is measured as total hydrocarbon (THC). THC is the measured hydrocarbon emissions using a Flame Ionization Detector (FID) calibrated with propane. The FID is assumed to respond to all hydrocarbons identically as it responds to propane in determining the concentration of carbon atoms in a gas sample. Most hydrocarbons respond nearly identically as propane with notable exceptions being oxygenated hydrocarbons such as alcohols and aldehydes commonly found in engine exhaust.

Because alcohols and especially aldehydes are chemically reactive and therefore ozone-forming hydrocarbons, the California Air Resources Board defined a measurement that adds the THC and the oxygenated components into a new measurement called total organic gas (TOG). [1] The oxygenated components are measured by collecting aldehydes on dinitro- phenylhydrazine impregnated filter traps and alcohols in chilled water impingers. The aldehydes and alcohols are extracted and measured using chromatography to determine emission rates. Each mole of aldehydes and alcohols is added by weight as formaldehyde and methanol.

Methane is an organic gas that is orders of magnitude less reactive than other hydrocarbons, so it is often excluded from emission estimations. The methane is measured by chromatographically separating the methane from the THC and analyzing the concentrations using a FID calibrated specifically for methane. The methane emissions are subtracted from the THC and TOG emission estimations to produce a nonmethane hydrocarbon (NMHC) and a nonmethane organic gas (NMOG) emission estimate. Some newer instruments can measure the NMHC directly however leading to lower uncertainty.

Some hydrocarbons are less ozone-forming than other hydrocarbons, so EPA has officially excluded them from the definition of regulated hydrocarbons called volatile organic compounds (VOC). This definition excludes methane, ethane, and compounds not commonly found in large quantities in engine exhaust like chlorohydrocarbons from consideration as VOC. For this work the definition of VOC is the result of subtracting methane and ethane from the TOG emission estimates.

Conversion Factors

Because all studies to date have measured THC, all other hydrocarbon types will be given as a proportion of THC. The proportionalities given in the Table below were derived from those studies that measured methane, ethane, and aldehydes. Alcohols are only found if the fuel contains alcohols, so they would have been considered if data were available.

The hydrocarbon speciation data from nonroad engines is sparse. The 2-stroke engine conversions are derived from the study of only one moped engine while the 4-stroke engine results are an averaged result of 11 lawnmower engines studied. The diesel results are the average of two late 70s and early 80s vintage on-highway truck engines. The factors for compressed natural gas (CNG) and liquid petroleum gas (LPG) engines were estimated from data collected using on-highway light-duty vehicles equipped with catalysts. Nonroad equipment does not use this technology but no emissions data from nonroad CNG and LPG engines was available.

Table for Conversion Factors for Hydrocarbon Emission Results

Engine Type	TOG/THC	NMOG/THC	NMHC/THC	VOC/THC
2-Stroke Gasoline [2]	1.044	1.035	0.991	1.034
4-Stroke Gasoline [2, 3]	1.043	0.943	0.900	0.933
Diesel [4]	1.070	1.054	0.984	1.053
LPG [5]	1.099	1.019	0.920	0.995
CNG [5]	1.002	0.049	0.048	0.004

Bay Area Air Quality Management
Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD. This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

For guidance on conducting a risk & hazard screening, including for roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Also see the District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requestor Contact Information	
Contact Name:	Shweta Mehta
Affiliation:	ENVIRON
Phone:	415-426-5008
Email:	smehta@environcorp.com
Date of Request	
Project Name:	51st and Broadway
Address:	51st and Broadway
City:	Oakland
County:	Alameda
Type (residential, commercial, mixed use, industrial, etc.):	commercial
Project size (# of units, or building square	323,000 building square feet
Comments:	

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in Table A. Incomplete forms will not be processed. Please include a project site map.
2. Download and install the free program Google Earth, http://www.google.com/earth/download/ge/, and then download the county specific Google Earth stationary source application files from the District's website, http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.
3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.
4. Identify stationary sources near the project. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.
5. List the stationary source information in Table B Section 1 below.
6. Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.
7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Alison Kirk at 415-749-5169, or akirk@baaqmd.gov .

Map B: Snapshot of Google Earth with Plant G8736 Information Table Selected Showing HRSA Values

Note the asterisk next to the plant name. This means that the values that appear below are from the HRSA. These values cannot be further adjusted using our screening tools, such as the diesel multiplier sheet. These values are based on modeling. If the Information Table says "Contact District Staff" include in Table B below.

Table B: Stationary Sources

Table B Section 1: Requestor fills out these columns based on Google Earth data | Table B Section 2: BAAQMD returns form with additional information in these columns as needed

Distance from Receptor (feet)	Plant # or Gas Dispensary #	Facility Name	Street Address	Corrected UTM_East	Corrected UTM_North	Screening Level Cancer Risk (1)	Screening Level Hazard Index (1)	Screening Level PM2.5 (1)	Permit #s (2)	Source #s (2)	Fuel Code (3)	Type of Source(s) (4)	HRSA Ap # (5)	HRSA Date (6)	HRSA Engineer (7)	HRSA Cancer Risk in a million	Age Sensitivity Factor (8)	HRSA Adjusted Cancer Risk	HRSA Chronic Health (9)	HRSA PM2.5 Risk	Status/Comments
520	G8633	Claremont Country Club	5295 Broadway Ter	566216.4803	4187975.491	na	na	na												0	Benzene emissions estimated at 0.029 #/yr.
750	G6254	Unocal SS# 251028	5300 Broadway Ave	565973.8352	4188034.233	11.032	0.016	na												0	Use gas station multiplier
250	14617	Claremont House	4500 GILBERT STREET	n/a	n/a	57.19	0.03	0.142	5707 = cogen, 17906 = ER gen	1, 2	1= 189, 2 = 98	1 Gas fired prepackaged cogen unit, 2 ER generator								0	new plant #20198; see attached spreadsheet. You can use the emissions calculator attached to determine the risk/concentration from each source and apply the diesel emissions distance multiplier to source 2.
5	1329	Emil Villa's Hickory Pit Restaurant	1982 PLEASANT VALLEY RD	566057.5317	4187584.081	9.7	0.119	0.067	27947 , 30376 = pit	1,2	175 "meat", 305 "wood"	1 Grill, 2 BBQ Pit								0	use screening levels; 9/20/12
1135	G784	Betts Sud Machine	4400 Piedmont Ave	566267.5141	4187452.289	6.558	0.01	na												0	Use gas station multiplier
																				0	
																				0	
																				0	

Footnotes:

1. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.

2. Each plant may have multiple permits and sources.
3. Fuel codes: 98 = diesel, 189 = Natural Gas.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
6. The date that the HRSA was completed.
7. Engineer who completed the HRSA. For District purposes only.
8. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
9. The HRSA "Chronic Health" number represents the Hazard Index.
10. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003 or less. To be conservative, requestor should assume the cancer risk is 1 in a million and the hazard index is 0.003 for these sources.
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should reflect the number of years perc use will continue after the project's residents or other sensitive receptors (such as students, patients, etc) take occupancy.
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last
updated:
5/30/12

Monarch Place (P# 20198)

S# SOURCE NAME
MATERIAL SOURCE CODE
THROUGHPUT DATE POLLUTANT CODE LBS/DAY

---

1 Gas Fired Prepackaged Cogen unit
C72AF189

Benzene	41	2.24E-03
Formaldehyde	124	2.02E-02
Organics (part not spec el	989	1.89E-01
Particulates (portion of t	1990	2.90E-02
Nitrous Oxide (N2O)	2030	7.38E-06
Nitrogen Oxides (part not	2990	1.09E-01
Sulfur Dioxide (SO2)	3990	1.65E-03
Carbon Monoxide (CO) pollu	4990	4.49E-02
Carbon Dioxide, non-biogen	6960	3.56E+02
Methane (CH4)	6970	1.81E+00

2 Emergency Standby Generator Set: Diesel Engine

C22AG098

Benzene	41	8.10E-05
Formaldehyde	124	6.70E-06
Organics (part not spec el	990	3.91E-03
Arsenic (all)	1030	7.06E-08
Beryllium (all) pollutant	1040	4.14E-08
Cadmium	1070	1.76E-07
Chromium (hexavalent)	1095	3.65E-09
Lead (all) pollutant	1140	1.50E-07
Manganese	1160	2.35E-07
Nickel pollutant	1180	2.85E-06
Mercury (all) pollutant	1190	4.99E-08
Diesel Engine Exhaust Part	1350	4.07E-03
PAH's (non-speciated)	1840	3.72E-07
Nitrous Oxide (N2O)	2030	2.17E-05

Nitrogen Oxides (part not	2990	3.45E-02
Sulfur Dioxide (SO2)	3990	2.65E-05
Carbon Monoxide (CO) pollu	4990	1.24E-02
Carbon Dioxide, non-biogen	6960	2.71E+00
Methane (CH4)	6970	1.09E-04

PLANT TOTAL:

lbs/day	Pollutant
7.06E-08	Arsenic (all) (1030)
2.32E-03	Benzene (41)
4.14E-08	Beryllium (all) pollutant (1040)
1.76E-07	Cadmium (1070)
3.58E+02	Carbon Dioxide, non-biogenic CO2 (6960)
5.74E-02	Carbon Monoxide (CO) pollutant (4990)
3.65E-09	Chromium (hexavalent) (1095)
4.07E-03	Diesel Engine Exhaust Particulate Matter (1350)
2.02E-02	Formaldehyde (124)
1.50E-07	Lead (all) pollutant (1140)
2.35E-07	Manganese (1160)
4.99E-08	Mercury (all) pollutant (1190)
1.81E+00	Methane (CH4) (6970)
2.85E-06	Nickel pollutant (1180)
1.43E-01	Nitrogen Oxides (part not spec elsewhere) (2990)
2.91E-05	Nitrous Oxide (N2O) (2030)
1.89E-01	Organics (part not spec elsewhere) -- excluding Methane (989)
3.91E-03	Organics (part not spec elsewhere) -- including Methane (990)
3.72E-07	PAH's (non-speciated) (1840)
2.90E-02	Particulates (portion of total not spec elsewhere) (1990)
1.68E-03	Sulfur Dioxide (SO2) (3990)

Emil Villa's Hick'ry Pit Restaurant (P# 1329)

```
  S#  SOURCE NAME
MATERIAL          SOURCE CODE
  THROUGHPUT            DATE  POLLUTANT               CODE  LBS/DAY
-------------------------------------------------------------------------------
   1  Grill
                C1600305 (305 here is the fuel code: "Wood - other/not specified")
                       Formaldehyde              124  4.79E-01
                       Phenol                    214  1.99E+00
                       Organics (part not spec el   990  5.19E-01
                       Particulates (portion of t  1990  3.49E-02
                       Nitrous Oxide (N2O)        2030  8.96E-02
                       Nitrogen Oxides (part not   2990  2.99E+00
                       Sulfur Dioxide (SO2)       3990  2.49E+00
                       Carbon Monoxide (CO) pollu  4990  9.97E+00
                       Carbon Dioxide, biogenic C  6961  3.79E+03
                       Methane (CH4)              6970  2.97E-01
                G1003305
                       Organics (part not spec el   990  4.99E+00
                       Particulates (portion of t  1990  4.99E-04
  2  Barbeque Pit
                G1003175 (175 is the fuel code: "Meat" - this is smoke not coming from the BBQ but from the meat as it chars, according to my source)
                                             0  0.00E+00

PLANT TOTAL:
 lbs/day  Pollutant

 3.79E+03  Carbon Dioxide, biogenic CO2 (6961)
 9.97E+00  Carbon Monoxide (CO) pollutant (4990)
 4.79E-01  Formaldehyde (124)
 2.97E-01  Methane (CH4) (6970)
 2.99E+00  Nitrogen Oxides (part not spec elsewhere) (2990)
 8.96E-02  Nitrous Oxide (N2O) (2030)
 5.50E+00  Organics (part not spec elsewhere) -- including Methane (990)
 3.54E-02  Particulates (portion of total not spec elsewhere) (1990)
 1.99E+00  Phenol (214)
 2.49E+00  Sulfur Dioxide (SO2) (3990)
```

Plant #: G8633
Plant Name:
Number of Sources:

Cancer Risk

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
ACETALDEHYDE		0.00E+00
ACETAMIDE		0.00E+00
ACRYLAMIDE		0.00E+00
ACRYLONITRILE		0.00E+00
ALLYL CHLORIDE		0.00E+00
2-AMINOANTHRAQUINONE		0.00E+00
ANILINE		0.00E+00
ARSENIC AND COMPOUNDS (INORGANIC)[1,2]		0.00E+00
ASBESTOS[3]		0.00E+00
BENZENE[1]	2.90E-02	2.80E-06
BENZIDINE (AND ITS SALTS) values also apply to:		0.00E+00
Benzidine based dyes		0.00E+00
Direct Black 38		0.00E+00
Direct Blue 6		0.00E+00
Direct Brown 95 (technical grade)		0.00E+00
BENZYL CHLORIDE		0.00E+00
BERYLLIUM AND COMPOUNDS[2]		0.00E+00
BIS(2-CHLOROETHYL)ETHER (Dichloroethyl ether)		0.00E+00
BIS(CHLOROMETHYL)ETHER		0.00E+00
POTASSIUM BROMATE		0.00E+00
1,3-BUTADIENE		0.00E+00
CADMIUM AND COMPOUNDS[2]		0.00E+00
CARBON TETRACHLORIDE[1] (Tetrachloromethane)		0.00E+00
CHLORINATED PARAFFINS		0.00E+00
4-CHLORO-O-PHENYLENEDIAMINE		0.00E+00
CHLOROFORM[1]		0.00E+00
PENTACHLOROPHENOL		0.00E+00
2,4,6-TRICHLOROPHENOL		0.00E+00
p-CHLORO-o-TOLUIDINE		0.00E+00
CHROMIUM 6+2		0.00E+00
Barium chromate2		0.00E+00
Calcium chromate2		0.00E+00
Lead chromate2		0.00E+00
Sodium dichromate2		0.00E+00
Strontium chromate2		0.00E+00
CHROMIC TRIOXIDE (as chromic acid mist)		0.00E+00

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
p-CRESIDINE		0.00E+00
CUPFERRON		0.00E+00
2,4-DIAMINOANISOLE		0.00E+00
2,4-DIAMINOTOLUENE		0.00E+00
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)		0.00E+00
1,4-DICHLOROBENZENE		0.00E+00
3,3-DICHLOROBENZIDINE		0.00E+00
1,1,-DICHLOROETHANE (Ethylidene dichloride)		0.00E+00
DI(2-ETHYLHEXYL)PHTHALATE (DEHP)		0.00E+00
p-DIMETHYLAMINOAZOBENZENE		0.00E+00
2,4-DINITROTOLUENE		0.00E+00
1,4-DIOXANE (1,4-Diethylene dioxide)		0.00E+00
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0.00E+00
ETHYL BENZENE		0.00E+00
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0.00E+00
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0.00E+00
ETHYLENE OXIDE (1,2-Epoxyethane)		0.00E+00
ETHYLENE THIOUREA		0.00E+00
FORMALDEHYDE		0.00E+00
HEXACHLOROBENZENE		0.00E+00
HEXACHLOROCYCLOHEXANES (mixed or technical grade)		0.00E+00
alpha-HEXACHLOROCYCLOHEXANE		0.00E+00
beta- HEXACHLOROCYCLOHEXANE		0.00E+00
gamma-HEXACHLOROCYCLOHEXANE (Lindane)		0.00E+00
HYDRAZINE		0.00E+00
LEAD AND COMPOUNDS 2,4 (inorganic) values also apply to:		0.00E+00
Lead acetate2		0.00E+00
Lead phosphate2		0.00E+00
Lead subacetate2		0.00E+00
METHYL tertiary-BUTYL ETHER		0.00E+00
4,4'-METHYLENE BIS (2-CHLOROANILINE) (MOCA)		0.00E+00
METHYLENE CHLORIDE (Dichloromethane)		0.00E+00
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0.00E+00
MICHLER'S KETONE (4,4’-Bis(dimethylamino)benzophenone)		0.00E+00

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
N-NITROSODI-n-BUTYLAMINE		0.00E+00
N-NITROSODI-n-PROPYLAMINE		0.00E+00
N-NITROSODIETHYLAMINE		0.00E+00
N-NITROSODIMETHYLAMINE		0.00E+00
N-NITROSODIPHENYLAMINE		0.00E+00
N-NITROSO-N-METHYLETHYLAMINE		0.00E+00
N-NITROSOMORPHOLINE		0.00E+00
N-NITROSOPIPERIDINE		0.00E+00
N-NITROSOPYRROLIDINE		0.00E+00
NICKEL AND COMPOUNDS2 (values also apply to:)		0.00E+00
Nickel acetate2		0.00E+00
Nickel carbonate2		0.00E+00
Nickel carbonyl2		0.00E+00
Nickel hydroxide2		0.00E+00
Nickelocene2		0.00E+00
NICKEL OXIDE2		0.00E+00
Nickel refinery dust from the pyrometallurgical process2		0.00E+00
Nickel subsulfide2		0.00E+00
p-NITROSODIPHENYLAMINE		0.00E+00
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0.00E+00
PERCHLOROETHYLENE (Tetrachloroethylene)		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [low risk] 2,6		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [high risk] 2,6		0.00E+00
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0.00E+00
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0.00E+00
POLYCYCLIC AROMATIC HYDROCARBON2 (PAH) (AS B(a)P-EQUIV)5		0.00E+00
BENZO(A)PYRENE2,5		0.00E+00
NAPHTHALENE		0.00E+00
1,3-PROPANE SULTONE		0.00E+00

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
PROPYLENE OXIDE		0.00E+00
1,1,2,2-TETRACHLOROETHANE		0.00E+00
THIOACETAMIDE		0.00E+00
Toluene diisocyantates		0.00E+00
TOLUENE-2,4-DIISOCYANATE		0.00E+00
TOLUENE-2,6-DIISOCYANATE		0.00E+00
1,1,2-TRICHLOROETHANE (Vinyl trichloride)		0.00E+00
TRICHLOROETHYLENE		0.00E+00
URETHANE (Ethyl carbamate)		0.00E+00
VINYL CHLORIDE (Chloroethylene)		0.00E+00
	TOTAL:	2.80E-06

Plant #: G8633
Plant Name:
Number of Sources:

Chronic HI

Pollutant Name	Emission/lbs per day	Chronic Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLONITRILE		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1	0.029	0.000912426
BERYLLIUM AND COMPOUNDS2		0
1,3-BUTADIENE		0
CADMIUM AND COMPOUNDS2		0
CARBON DISULFIDE1		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLORINE DIOXIDE		0
CHLOROBENZENE		0
CHLOROFORM1		0
2,3,4,6-Tetrachlorophenol		0
CHLOROPICRIN		0
CHROMIUM 6+2		0
Barium chromate2		0
Calcium chromate2		0
Lead chromate2		0
Sodium dichromate2		0
Strontium chromate2		0
CHROMIC TRIOXIDE (as chromic acid mist)		0
CRESOLS		0
M-CRESOL		0
O-CRESOL		0
P-CRESOL		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DICHLOROBENZENE		0
DIETHANOLAMINE		0
DIMETHYLAMINE		0
N,N-DIMETHYL FORMAMIDE		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emission/lbs per day	Chronic Hazard
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
1,2-EPOXYBUTANE		0
ETHYL BENZENE		0
ETHYL CHLORIDE (Chloroethane)		0
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0
ETHYLENE GLYCOL		0
ETHYLENE OXIDE (1,2-Epoxyethane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE		0
GASOLINE VAPORS		0
GLUTARALDEHYDE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
ETHYLENE GLYCOL METHYL ETHER ACETATE – EGMEA		0
n-HEXANE		0
HYDRAZINE		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPHORONE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MALEIC ANHYDRIDE		0
MANGANESE AND COMPOUNDS		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL tertiary-BUTYL ETHER		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ISOCYANATE		0
METHYLENE CHLORIDE (Dichloromethane)		0
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0
METHYLENE DIPHENYL ISOCYANATE		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emission/lbs per day	Chronic Hazard
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITROGEN DIOXIDE		0
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0
PERCHLOROETHYLENE (Tetrachloroethylene)		0
PHENOL		0
PHOSPHINE		0
PHOSPHORIC ACID		0
PHOSPHORUS (WHITE)		0
PHTHALIC ANHYDRIDE		0
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN2,7		0
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0
1,2,3,7,8-PENTACHLORODIBENZOFURAN2,7		0
2,3,4,7,8-PENTACHLORODIBENZOFURAN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN2,7		0
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN2,7		0

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emission/lbs per day	Chronic Hazard
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN2,7		0
NAPHTHALENE		0
PROPYLENE (PROPENE)		0
PROPYLENE GLYCOL MONOMETHYL ETHER		0
PROPYLENE OXIDE		0
SELENIUM AND COMPOUNDS		0
Selenium sulfide		0
SILICA (Crystalline, Respirable)		0
STYRENE		0
SULFUR DIOXIDE		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
Toluene diisocyantates		0
TOLUENE-2,4-DIISOCYANATE		0
TOLUENE-2,6-DIISOCYANATE		0
TRICHLOROETHYLENE		0
TRIETHYLAMINE		0
VINYL ACETATE		0
VINYLIDENE CHLORIDE (1,1-Dichloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	9.12E-04

Plant #: G8633
Plant Name:
Number of Sources:

Acute HI

Pollutant Name	Emission/lbs per day	Acute Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLIC ACID		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1		0
BENZYL CHLORIDE		0
CARBON DISULFIDE1		0
CARBON MONOXIDE		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLOROFORM1		0
CHLOROPICRIN		0
COPPER AND COMPOUNDS		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE		0
ETHYLENE GLYCOL BUTYL ETHER – EGBE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ETHYL KETONE (2-Butanone)		0
METHYLENE CHLORIDE (Dichloromethane)		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emission/lbs per day	Acute Hazard
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITRIC ACID		0
OZONE		0
PROPYLENE OXIDE		0
HYDROGEN SELENIDE		0
SODIUM HYDROXIDE		0
STYRENE		0
SULFATES		0
SULFUR DIOXIDE		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
TRIETHYLAMINE		0
Vanadium (fume or dust)		0
VANADIUM PENTOXIDE		0
VINYL CHLORIDE (Chloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	0.00E+00

Plant #: G8633
Plant Name:
Number of Sources:

PM2.5 Concentration

Diesel PM Concentrations	Emissions (lbs/day)	M2.5 Concentration (ug/m3)
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
TOTAL:		0

Plant #: 20198
Plant Name:
Number of Sources: Source 1

Cancer Risk

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
ACETALDEHYDE		0.00E+00
ACETAMIDE		0.00E+00
ACRYLAMIDE		0.00E+00
ACRYLONITRILE		0.00E+00
ALLYL CHLORIDE		0.00E+00
2-AMINOANTHRAQUINONE		0.00E+00
ANILINE		0.00E+00
ARSENIC AND COMPOUNDS (INORGANIC)[1,2]		0.00E+00
ASBESTOS [3]		0.00E+00
BENZENE[1]	2.24E-03	2.16E-07
BENZIDINE (AND ITS SALTS) values also apply to:		0.00E+00
Benzidine based dyes		0.00E+00
Direct Black 38		0.00E+00
Direct Blue 6		0.00E+00
Direct Brown 95 (technical grade)		0.00E+00
BENZYL CHLORIDE		0.00E+00
BERYLLIUM AND COMPOUNDS[2]		0.00E+00
BIS(2-CHLOROETHYL)ETHER (Dichloroethyl ether)		0.00E+00
BIS(CHLOROMETHYL)ETHER		0.00E+00
POTASSIUM BROMATE		0.00E+00
1,3-BUTADIENE		0.00E+00
CADMIUM AND COMPOUNDS[2]		0.00E+00
CARBON TETRACHLORIDE[1] (Tetrachloromethane)		0.00E+00
CHLORINATED PARAFFINS		0.00E+00
4-CHLORO-O-PHENYLENEDIAMINE		0.00E+00
CHLOROFORM[1]		0.00E+00
PENTACHLOROPHENOL		0.00E+00
2,4,6-TRICHLOROPHENOL		0.00E+00
p-CHLORO-o-TOLUIDINE		0.00E+00
CHROMIUM 6+2		0.00E+00
Barium chromate2		0.00E+00
Calcium chromate2		0.00E+00
Lead chromate2		0.00E+00
Sodium dichromate2		0.00E+00
Strontium chromate2		0.00E+00
CHROMIC TRIOXIDE (as chromic acid mist)		0.00E+00

Plant #: 20198
Plant Name:
Number of Sources: Source 1

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
p-CRESIDINE		0.00E+00
CUPFERRON		0.00E+00
2,4-DIAMINOANISOLE		0.00E+00
2,4-DIAMINOTOLUENE		0.00E+00
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)		0.00E+00
1,4-DICHLOROBENZENE		0.00E+00
3,3-DICHLOROBENZIDINE		0.00E+00
1,1,-DICHLOROETHANE (Ethylidene dichloride)		0.00E+00
DI(2-ETHYLHEXYL)PHTHALATE (DEHP)		0.00E+00
p-DIMETHYLAMINOAZOBENZENE		0.00E+00
2,4-DINITROTOLUENE		0.00E+00
1,4-DIOXANE (1,4-Diethylene dioxide)		0.00E+00
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0.00E+00
ETHYL BENZENE		0.00E+00
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0.00E+00
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0.00E+00
ETHYLENE OXIDE (1,2-Epoxyethane)		0.00E+00
ETHYLENE THIOUREA		0.00E+00
FORMALDEHYDE	2.02E-02	4.09E-07
HEXACHLOROBENZENE		0.00E+00
HEXACHLOROCYCLOHEXANES (mixed or technical grade)		0.00E+00
alpha-HEXACHLOROCYCLOHEXANE		0.00E+00
beta- HEXACHLOROCYCLOHEXANE		0.00E+00
gamma-HEXACHLOROCYCLOHEXANE (Lindane)		0.00E+00
HYDRAZINE		0.00E+00
LEAD AND COMPOUNDS 2,4 (inorganic) values also apply to:		0.00E+00
Lead acetate2		0.00E+00
Lead phosphate2		0.00E+00
Lead subacetate2		0.00E+00
METHYL tertiary-BUTYL ETHER		0.00E+00
4,4'-METHYLENE BIS (2-CHLOROANILINE) (MOCA)		0.00E+00
METHYLENE CHLORIDE (Dichloromethane)		0.00E+00
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0.00E+00
MICHLER'S KETONE (4,4’-Bis(dimethylamino)benzophenone)		0.00E+00

Plant #: 20198
Plant Name:
Number of Sources: Source 1

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
N-NITROSODI-n-BUTYLAMINE		0.00E+00
N-NITROSODI-n-PROPYLAMINE		0.00E+00
N-NITROSODIETHYLAMINE		0.00E+00
N-NITROSODIMETHYLAMINE		0.00E+00
N-NITROSODIPHENYLAMINE		0.00E+00
N-NITROSO-N-METHYLETHYLAMINE		0.00E+00
N-NITROSOMORPHOLINE		0.00E+00
N-NITROSOPIPERIDINE		0.00E+00
N-NITROSOPYRROLIDINE		0.00E+00
NICKEL AND COMPOUNDS2 (values also apply to:)		0.00E+00
Nickel acetate2		0.00E+00
Nickel carbonate2		0.00E+00
Nickel carbonyl2		0.00E+00
Nickel hydroxide2		0.00E+00
Nickelocene2		0.00E+00
NICKEL OXIDE2		0.00E+00
Nickel refinery dust from the pyrometallurgical process2		0.00E+00
Nickel subsulfide2		0.00E+00
p-NITROSODIPHENYLAMINE		0.00E+00
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0.00E+00
PERCHLOROETHYLENE (Tetrachloroethylene)		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [low risk] 2,6		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [high risk] 2,6		0.00E+00
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0.00E+00
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0.00E+00
POLYCYCLIC AROMATIC HYDROCARBON2 (PAH) (AS B(a)P-EQUIV)5		0.00E+00
BENZO(A)PYRENE2,5		0.00E+00
NAPHTHALENE		0.00E+00
1,3-PROPANE SULTONE		0.00E+00

Plant #: 20198
Plant Name:
Number of Sources: Source 1

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
PROPYLENE OXIDE		0.00E+00
1,1,2,2-TETRACHLOROETHANE		0.00E+00
THIOACETAMIDE		0.00E+00
Toluene diisocyantates		0.00E+00
TOLUENE-2,4-DIISOCYANATE		0.00E+00
TOLUENE-2,6-DIISOCYANATE		0.00E+00
1,1,2-TRICHLOROETHANE (Vinyl trichloride)		0.00E+00
TRICHLOROETHYLENE		0.00E+00
URETHANE (Ethyl carbamate)		0.00E+00
VINYL CHLORIDE (Chloroethylene)		0.00E+00
	TOTAL:	6.26E-07

Plant #: 20198
Plant Name:
Number of Sources: Source 1

Chronic HI

Pollutant Name	Emission/lbs per day	Chronic Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLONITRILE		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1	2.24E-03	7.04771E-05
BERYLLIUM AND COMPOUNDS2		0
1,3-BUTADIENE		0
CADMIUM AND COMPOUNDS2		0
CARBON DISULFIDE1		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLORINE DIOXIDE		0
CHLOROBENZENE		0
CHLOROFORM1		0
2,3,4,6-Tetrachlorophenol		0
CHLOROPICRIN		0
CHROMIUM 6+2		0
Barium chromate2		0
Calcium chromate2		0
Lead chromate2		0
Sodium dichromate2		0
Strontium chromate2		0
CHROMIC TRIOXIDE (as chromic acid mist)		0
CRESOLS		0
M-CRESOL		0
O-CRESOL		0
P-CRESOL		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DICHLOROBENZENE		0
DIETHANOLAMINE		0
DIMETHYLAMINE		0
N,N-DIMETHYL FORMAMIDE		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emission/lbs per day	Chronic Hazard
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
1,2-EPOXYBUTANE		0
ETHYL BENZENE		0
ETHYL CHLORIDE (Chloroethane)		0
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0
ETHYLENE GLYCOL		0
ETHYLENE OXIDE (1,2-Epoxyethane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE	2.02E-02	0.004237014
GASOLINE VAPORS		0
GLUTARALDEHYDE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
ETHYLENE GLYCOL METHYL ETHER ACETATE – EGMEA		0
n-HEXANE		0
HYDRAZINE		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPHORONE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MALEIC ANHYDRIDE		0
MANGANESE AND COMPOUNDS		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL tertiary-BUTYL ETHER		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ISOCYANATE		0
METHYLENE CHLORIDE (Dichloromethane)		0
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0
METHYLENE DIPHENYL ISOCYANATE		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emission/lbs per day	Chronic Hazard
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITROGEN DIOXIDE	1.09E-01	0.000437804
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0
PERCHLOROETHYLENE (Tetrachloroethylene)		0
PHENOL		0
PHOSPHINE		0
PHOSPHORIC ACID		0
PHOSPHORUS (WHITE)		0
PHTHALIC ANHYDRIDE		0
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN2,7		0
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0
1,2,3,7,8-PENTACHLORODIBENZOFURAN2,7		0
2,3,4,7,8-PENTACHLORODIBENZOFURAN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN2,7		0
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN2,7		0

Plant #: 20198
Plant Name:
Number of Sources: Source 1

Pollutant Name	Emission/lbs per day	Chronic Hazard
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN2,7		0
NAPHTHALENE		0
PROPYLENE (PROPENE)		0
PROPYLENE GLYCOL MONOMETHYL ETHER		0
PROPYLENE OXIDE		0
SELENIUM AND COMPOUNDS		0
Selenium sulfide		0
SILICA (Crystalline, Respirable)		0
STYRENE		0
SULFUR DIOXIDE	1.65E-03	4.71945E-06
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
Toluene diisocyantates		0
TOLUENE-2,4-DIISOCYANATE		0
TOLUENE-2,6-DIISOCYANATE		0
TRICHLOROETHYLENE		0
TRIETHYLAMINE		0
VINYL ACETATE		0
VINYLIDENE CHLORIDE (1,1-Dichloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	4.75E-03

Plant #: 20198
Plant Name:
Number of Sources: Source 1

Acute HI

Pollutant Name	Emission/lbs per day	Acute Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLIC ACID		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1		0
BENZYL CHLORIDE		0
CARBON DISULFIDE1		0
CARBON MONOXIDE		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLOROFORM1		0
CHLOROPICRIN		0
COPPER AND COMPOUNDS		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE		0
ETHYLENE GLYCOL BUTYL ETHER – EGBE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ETHYL KETONE (2-Butanone)		0
METHYLENE CHLORIDE (Dichloromethane)		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0

Plant #:
Plant Name:
Number of Sources:

Pollutant Name	Emission/lbs per day	Acute Hazard
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITRIC ACID		0
OZONE		0
PROPYLENE OXIDE		0
HYDROGEN SELENIDE		0
SODIUM HYDROXIDE		0
STYRENE		0
SULFATES		0
SULFUR DIOXIDE		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
TRIETHYLAMINE		0
Vanadium (fume or dust)		0
VANADIUM PENTOXIDE		0
VINYL CHLORIDE (Chloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	0.00E+00

Plant #: 20198
Plant Name:
Number of Sources: Source 1

PM2.5 Conc

Diesel PM Concentrations	Emissions (lbs/day)	PM2.5 Concentration (ug/m3)
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
TOTAL:		0

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Cancer Risk

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
ACETALDEHYDE		0.00E+00
ACETAMIDE		0.00E+00
ACRYLAMIDE		0.00E+00
ACRYLONITRILE		0.00E+00
ALLYL CHLORIDE		0.00E+00
2-AMINOANTHRAQUINONE		0.00E+00
ANILINE		0.00E+00
ARSENIC AND COMPOUNDS (INORGANIC)[1,2]		0.00E+00
ASBESTOS [3]		0.00E+00
BENZENE[1]		0.00E+00
BENZIDINE (AND ITS SALTS) values also apply to:		0.00E+00
Benzidine based dyes		0.00E+00
Direct Black 38		0.00E+00
Direct Blue 6		0.00E+00
Direct Brown 95 (technical grade)		0.00E+00
BENZYL CHLORIDE		0.00E+00
BERYLLIUM AND COMPOUNDS[2]		0.00E+00
BIS(2-CHLOROETHYL)ETHER (Dichloroethyl ether)		0.00E+00
BIS(CHLOROMETHYL)ETHER		0.00E+00
POTASSIUM BROMATE		0.00E+00
1,3-BUTADIENE		0.00E+00
CADMIUM AND COMPOUNDS[2]		0.00E+00
CARBON TETRACHLORIDE[1] (Tetrachloromethane)		0.00E+00
CHLORINATED PARAFFINS		0.00E+00
4-CHLORO-O-PHENYLENEDIAMINE		0.00E+00
CHLOROFORM[1]		0.00E+00
PENTACHLOROPHENOL		0.00E+00
2,4,6-TRICHLOROPHENOL		0.00E+00
p-CHLORO-o-TOLUIDINE		0.00E+00
CHROMIUM 6+2		0.00E+00
Barium chromate2		0.00E+00
Calcium chromate2		0.00E+00
Lead chromate2		0.00E+00
Sodium dichromate2		0.00E+00
Strontium chromate2		0.00E+00
CHROMIC TRIOXIDE (as chromic acid mist)		0.00E+00

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
p-CRESIDINE		0.00E+00
CUPFERRON		0.00E+00
2,4-DIAMINOANISOLE		0.00E+00
2,4-DIAMINOTOLUENE		0.00E+00
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)		0.00E+00
1,4-DICHLOROBENZENE		0.00E+00
3,3-DICHLOROBENZIDINE		0.00E+00
1,1,-DICHLOROETHANE (Ethylidene dichloride)		0.00E+00
DI(2-ETHYLHEXYL)PHTHALATE (DEHP)		0.00E+00
p-DIMETHYLAMINOAZOBENZENE		0.00E+00
2,4-DINITROTOLUENE		0.00E+00
1,4-DIOXANE (1,4-Diethylene dioxide)		0.00E+00
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0.00E+00
ETHYL BENZENE		0.00E+00
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0.00E+00
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0.00E+00
ETHYLENE OXIDE (1,2-Epoxyethane)		0.00E+00
ETHYLENE THIOUREA		0.00E+00
FORMALDEHYDE		0.00E+00
HEXACHLOROBENZENE		0.00E+00
HEXACHLOROCYCLOHEXANES (mixed or technical grade)		0.00E+00
alpha-HEXACHLOROCYCLOHEXANE		0.00E+00
beta- HEXACHLOROCYCLOHEXANE		0.00E+00
gamma-HEXACHLOROCYCLOHEXANE (Lindane)		0.00E+00
HYDRAZINE		0.00E+00
LEAD AND COMPOUNDS 2,4 (inorganic) values also apply to:		0.00E+00
Lead acetate2		0.00E+00
Lead phosphate2		0.00E+00
Lead subacetate2		0.00E+00
METHYL tertiary-BUTYL ETHER		0.00E+00
4,4'-METHYLENE BIS (2-CHLOROANILINE) (MOCA)		0.00E+00
METHYLENE CHLORIDE (Dichloromethane)		0.00E+00
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0.00E+00
MICHLER'S KETONE (4,4'-Bis(dimethylamino)benzophenone)		0.00E+00

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
N-NITROSODI-n-BUTYLAMINE		0.00E+00
N-NITROSODI-n-PROPYLAMINE		0.00E+00
N-NITROSODIETHYLAMINE		0.00E+00
N-NITROSODIMETHYLAMINE		0.00E+00
N-NITROSODIPHENYLAMINE		0.00E+00
N-NITROSO-N-METHYLETHYLAMINE		0.00E+00
N-NITROSOMORPHOLINE		0.00E+00
N-NITROSOPIPERIDINE		0.00E+00
N-NITROSOPYRROLIDINE		0.00E+00
NICKEL AND COMPOUNDS2 (values also apply to:)		0.00E+00
Nickel acetate2		0.00E+00
Nickel carbonate2		0.00E+00
Nickel carbonyl2		0.00E+00
Nickel hydroxide2		0.00E+00
Nickelocene2		0.00E+00
NICKEL OXIDE2		0.00E+00
Nickel refinery dust from the pyrometallurgical process2		0.00E+00
Nickel subsulfide2		0.00E+00
p-NITROSODIPHENYLAMINE		0.00E+00
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES	4.07E-03	4.32E-06
PERCHLOROETHYLENE (Tetrachloroethylene)		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [low risk] 2,6		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [high risk] 2,6		0.00E+00
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0.00E+00
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0.00E+00
POLYCYCLIC AROMATIC HYDROCARBON2 (PAH) (AS B(a)P-EQUIV)5		0.00E+00
BENZO(A)PYRENE2,5		0.00E+00
NAPHTHALENE		0.00E+00
1,3-PROPANE SULTONE		0.00E+00

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
PROPYLENE OXIDE		0.00E+00
1,1,2,2-TETRACHLOROETHANE		0.00E+00
THIOACETAMIDE		0.00E+00
Toluene diisocyantates		0.00E+00
TOLUENE-2,4-DIISOCYANATE		0.00E+00
TOLUENE-2,6-DIISOCYANATE		0.00E+00
1,1,2-TRICHLOROETHANE (Vinyl trichloride)		0.00E+00
TRICHLOROETHYLENE		0.00E+00
URETHANE (Ethyl carbamate)		0.00E+00
VINYL CHLORIDE (Chloroethylene)		0.00E+00
	TOTAL:	4.32E-06

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Chronic HI

Pollutant Name	Emission/lbs per day	Chronic Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLONITRILE		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1		0
BERYLLIUM AND COMPOUNDS2		0
1,3-BUTADIENE		0
CADMIUM AND COMPOUNDS2		0
CARBON DISULFIDE1		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLORINE DIOXIDE		0
CHLOROBENZENE		0
CHLOROFORM1		0
2,3,4,6-Tetrachlorophenol		0
CHLOROPICRIN		0
CHROMIUM 6+2		0
Barium chromate2		0
Calcium chromate2		0
Lead chromate2		0
Sodium dichromate2		0
Strontium chromate2		0
CHROMIC TRIOXIDE (as chromic acid mist)		0
CRESOLS		0
M-CRESOL		0
O-CRESOL		0
P-CRESOL		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DICHLOROBENZENE		0
DIETHANOLAMINE		0
DIMETHYLAMINE		0
N,N-DIMETHYL FORMAMIDE		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Pollutant Name	Emission/lbs per day	Chronic Hazard
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
1,2-EPOXYBUTANE		0
ETHYL BENZENE		0
ETHYL CHLORIDE (Chloroethane)		0
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0
ETHYLENE GLYCOL		0
ETHYLENE OXIDE (1,2-Epoxyethane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE		0
GASOLINE VAPORS		0
GLUTARALDEHYDE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
ETHYLENE GLYCOL METHYL ETHER ACETATE – EGMEA		0
n-HEXANE		0
HYDRAZINE		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPHORONE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MALEIC ANHYDRIDE		0
MANGANESE AND COMPOUNDS		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL tertiary-BUTYL ETHER		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ISOCYANATE		0
METHYLENE CHLORIDE (Dichloromethane)		0
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0
METHYLENE DIPHENYL ISOCYANATE		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Pollutant Name	Emission/lbs per day	Chronic Hazard
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITROGEN DIOXIDE		0
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES	4.07E-03	0.001536652
PERCHLOROETHYLENE (Tetrachloroethylene)		0
PHENOL		0
PHOSPHINE		0
PHOSPHORIC ACID		0
PHOSPHORUS (WHITE)		0
PHTHALIC ANHYDRIDE		0
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN2,7		0
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0
1,2,3,7,8-PENTACHLORODIBENZOFURAN2,7		0
2,3,4,7,8-PENTACHLORODIBENZOFURAN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN2,7		0
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN2,7		0

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Pollutant Name	Emission/lbs per day	Chronic Hazard
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN2,7		0
NAPHTHALENE		0
PROPYLENE (PROPENE)		0
PROPYLENE GLYCOL MONOMETHYL ETHER		0
PROPYLENE OXIDE		0
SELENIUM AND COMPOUNDS		0
Selenium sulfide		0
SILICA (Crystalline, Respirable)		0
STYRENE		0
SULFUR DIOXIDE		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
Toluene diisocyantates		0
TOLUENE-2,4-DIISOCYANATE		0
TOLUENE-2,6-DIISOCYANATE		0
TRICHLOROETHYLENE		0
TRIETHYLAMINE		0
VINYL ACETATE		0
VINYLIDENE CHLORIDE (1,1-Dichloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	1.54E-03

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Acute HI

Pollutant Name	Emission/lbs per day	Acute Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLIC ACID		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1		0
BENZYL CHLORIDE		0
CARBON DISULFIDE1		0
CARBON MONOXIDE		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLOROFORM1		0
CHLOROPICRIN		0
COPPER AND COMPOUNDS		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE		0
ETHYLENE GLYCOL BUTYL ETHER – EGBE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ETHYL KETONE (2-Butanone)		0
METHYLENE CHLORIDE (Dichloromethane)		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0

Plant #: 20198
Plant Name:
Number of Sources: Source 2

Pollutant Name	Emission/lbs per day	Acute Hazard
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITRIC ACID		0
OZONE		0
PROPYLENE OXIDE		0
HYDROGEN SELENIDE		0
SODIUM HYDROXIDE		0
STYRENE		0
SULFATES		0
SULFUR DIOXIDE		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
TRIETHYLAMINE		0
Vanadium (fume or dust)		0
VANADIUM PENTOXIDE		0
VINYL CHLORIDE (Chloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	0.00E+00

Plant #: 20198
Plant Name:
Number of Sources: Source 2

PM2.5 Concentration

Diesel PM Concentrations	Emissions (lbs/day)	M2.5 Concentration (ug/m3)
	4.07E-03	0.00785856
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
TOTAL:		0.00785856

Attachment C

Operational Emission Estimates Supporting Information

Attachment C: Operational Emission Estimates Supporting Information

Table C1: CAP and GHG Emissions – Emergency Generator

Table C2: TAC Emissions – Emergency Generator

Table C1
CAP and GHG Emissions - Emergency Generator
Safeway Rockridge Center Shopping Project
Oakland, CA

Type	Pollutant Name	Source[1]	Emission Factor[2]	Unit[3]	Annual Emissions[4] [lb/yr]
Criteria Pollutant	NOx	AP-42	2.27E+00	lb/MMBtu	208
	CO		3.72E+00	lb/MMBtu	341
	SO_2		5.88E-04	lb/MMBtu	0.05
	VOC		2.96E-02	lb/MMBtu	2.7
	PM_{10}		9.50E-03	lb/MMBtu	0.87
	$PM_{2.5}$		9.50E-03	lb/MMBtu	0.87
GHG	CH_4	AP-42	2.30E-01	lb/MMBtu	21
	CO_2		1.10E+02	lb/MMBtu	10,098
	CO2,e	Calculated	--	--	10,541

Notes:
1. Uncontrolled emission factors for all the pollutants were obtained from AP-42 for a rich burn, natural gas-fired reciprocating engine. CO_2,e emissions were calculated by multiplying the CO_2 and CH_4 emissions by their GWP potential of 1 and 21, respectively.
2. To be conservative, the maximum emission factor was choosen for each pollutant from AP-42. PM_{10} and $PM_{2.5}$ are the filterable emission factors were selected.
3. Units consistent with AP-42.
4. Annual emissions were calculated assuming a default heating rate of 1020 BTU/scf as per AP-42 and a fuel consumption rate of 900 cubic feet per hour at 100% load from the generator specifications shown in Attachment E. Annual emissions were calculated assuming maximum operation of 100 hours per year.

Abbreviations:
CAP: criteria air pollutant
CH_4: methane
CO: carbon monoxide
CO_2: carbon dioxide
CO_2,e: carbon dioxide equivalent
GHG: greenhouse gas
GWP: global warming potential
lb: pound
MMBtu: million British thermal units
NOx: oxides of nitrogen
$PM_{2.5}$: particles in the atmosphere with a diameter of 2.5 micrometers or less
PM_{10}: particles in the atmosphere with a diameter of 10 micrometers or less
SO_2: sulfur dioxide
VOC: Volatile Organic Compounds
yr: year

Sources:
1. AP-42. Online at: http://www.epa.gov/ttnchie1/ap42/. Accessed: November 16, 2012

Table C2
TAC Emissions - Emergency Generator
Safeway Rockridge Center Shopping Project
Oakland, CA

Pollutant Name[1]	CAS Number	Source[4]	PEF[5]	Emission Factor[6]	Unit[7]	Annual Emissions[8] [lb/yr]	Chronic Trigger Level[9] [lb/yr]	Exceeds Trigger?[10] [Yes/No]	Max Hourly Emissions[8] [lb/hr]	Acute Trigger Level[9] [lb/hr]	Exceeds Trigger?[10] [Yes/No]
1,1,2,2-Tetrachloroethane	79-34-5	AP-42		2.53E-05	lb/MMBtu	2.32E-03	1.90E+00	No	2.32E-05	--	No
1,1,2-Trichloroethane	79-00-5	AP-42		1.53E-05	lb/MMBtu	1.40E-03	6.60E+00	No	1.40E-05	--	No
1,1-Dichloroethane	75-34-3	AP-42		1.13E-05	lb/MMBtu	1.04E-03	6.60E+01	No	1.04E-05	--	No
1,2-Dichloroethane	107-06-2	AP-42		1.13E-05	lb/MMBtu	1.04E-03	5.30E+00	No	1.04E-05	--	No
1,3-Butadiene	106-99-0	AP-42		6.63E-04	lb/MMBtu	6.09E-02	6.30E-01	No	6.09E-04	--	No
Acetaldehyde	75-07-0	CATEF		1.82E+00	lb/MMcf	1.64E-01	3.80E+01	No	1.64E-03	1.00E+00	No
Acrolein	107-02-8	CATEF		1.37E+00	lb/MMcf	1.23E-01	1.40E+01	No	1.23E-03	5.50E-03	No
Benzene	71-43-2	CATEF		1.02E+01	lb/MMcf	9.18E-01	3.80E+00	No	9.18E-03	2.90E+00	No
Carbon Tetrachloride	56-23-5	AP-42	--	1.77E-05	lb/MMBtu	1.62E-03	2.50E+00	No	1.62E-05	4.20E+00	No
Chlorobenzene	108-90-7	AP-42		1.29E-05	lb/MMBtu	1.18E-03	3.90E+04	No	1.18E-05	--	No
Chloroform	67-66-3	AP-42		1.37E-05	lb/MMBtu	1.26E-03	2.00E+01	No	1.26E-05	3.30E-01	No
Ethylbenzene	100-41-4	AP-42		2.48E-05	lb/MMBtu	2.28E-03	4.30E+01	No	2.28E-05	--	No
Ethylene Dibromide	106-93-4	AP-42		2.13E-05	lb/MMBtu	1.96E-03	1.50E+00	No	1.96E-05	--	No
Formaldehyde	50-00-0	AP-42		2.05E-02	lb/MMBtu	1.88E+00	1.80E+01	No	1.88E-02	1.20E-01	No
Methanol	67-56-1	AP-42		3.06E-03	lb/MMBtu	2.81E-01	1.50E+05	No	2.81E-03	6.20E+01	No
Methylene Chloride	75-09-2	AP-42		4.12E-05	lb/MMBtu	3.78E-03	1.10E+02	No	3.78E-05	3.10E+01	No
Naphthalene	91-20-3	AP-42		9.71E-05	lb/MMBtu	8.91E-03	3.20E+00	No	8.91E-05	--	No
Benzo(a)anthracene[2]	56-55-3	CATEF	0.1	3.39E-04	lb/MMcf		--	No		--	No
Benzo(a)pyrene[2]	50-32-8	CATEF	1.0	1.51E-04	lb/MMcf		--	No		--	No
Benzo(b)fluoranthene[2]	205-99-2	CATEF	0.1	3.01E-04	lb/MMcf		--	No		--	No
Benzo(k)fluoranthene[2]	207-08-9	CATEF	0.1	1.17E-04	lb/MMcf		--	No		--	No
Chrysene[2]	218-01-9	CATEF	0.01	3.95E-04	lb/MMcf		--	No		--	No
Dibenz(a,h)anthracene[2]	53-70-3	CATEF	1.05	1.45E-05	lb/MMcf		--	No		--	No
Indeno(1,2,3-cd)pyrene[2]	193-39-5	CATEF	0.1	2.07E-04	lb/MMcf		--	No	1.86E-07	--	No
PAH (Total)[3]				2.67E-04	lb/MMcf	2.40E-05	6.90E-03	No	2.40E-07	--	No
Propylene	115-07-1	CATEF		4.20E+01	lb/MMcf	3.78E+00	1.20E+05	No	3.78E-02	--	No
Styrene	100-42-5	AP-42		1.19E-05	lb/MMBtu	1.09E-03	3.50E+04	No	1.09E-05	4.60E+01	No
Toluene	108-88-3	CATEF	--	2.62E+00	lb/MMcf	2.36E-01	1.20E+04	No	2.36E-03	8.20E+01	No
Vinyl Chloride	75-01-4	AP-42		7.18E-06	lb/MMBtu	6.59E-04	1.40E+00	No	6.59E-06	4.00E+02	No
Xylene (m,p)	1330-20-7	CATEF		4.54E-01	lb/MMcf	4.09E-02	2.70E+04	No	4.09E-04	4.90E+01	No
Xylene (o)	95-47-6	CATEF		2.22E-01	lb/MMcf	2.00E-02	2.70E+04	No	2.00E-04	4.90E+01	No
Xylene (Total)	1330-20-7*	CATEF		7.38E-02	lb/MMcf	6.64E-03	2.70E+04	No	6.64E-05	4.90E+01	No

Notes:

1. Only those TACs which have a trigger level as per BAAQMD Regulation 2, Rule 5 were evaluated in this analysis.
2. These substances are PAH-derivatives that have OEHHA-developed PEFs.
3. Total PAH was calculated by multiplying individual PAH-specific emission levels with their corresponding PEFs. THe sum of these products is the total PAH, which is the benzo(a)pyrene-equivalent. As per BAAQMD Regulation 2, Rule 5, PAH should be evaluated as benzo(a)pyrene-equivalents and should be copmared against the benzo(a)pyrene equivalent trigger level.
4. Emission factors were obtained either from AP-42 or from the Air Resource Board's CATEF, as listed.
5. PEFs for the PAH-derivative substances were obtained from BAAQMD Regulation 2, Rule 5.
6. Emission factor was obtained from AP-42 or from CATEF as mentioned above.
7. Units consistent with AP-42 or CATEF.
8. TAC emission factors which were obtained from CATEF are in units of lb/MMcf. These were converted to maximum hourly emissions by using a fuel consumption rate of 900 cubic feet per hour at 100% load from the generator specifications shown in Attachment E. TAC emission factors obtained from AP-42 are in units of lb/MMBtu. These were converted to maximum hourly emissions by using the fuel consumption rate mentioned above and a default heating rate of 1020 BTU/scf as per AP-42. Finally, the maximum hourly emissions were converte d to annual emissions assuming that the generator operates for a maximum of 100 hours per year.
9. Chronic and Acute trigger levels are obtained from BAAQMD Regulation 2, Rule 5 and are pollutant specific.
10. Annual emissions are compared against the chronic trigger levels and the maximum hourly emissions are compared against the acute trigger levels.

Abbreviations:

CATEF: California Air Toxics Emission Factor Database
lb: pound
MMBtu: million British thermal units
MMcf: million cubic feet
OEHHA: Office of Environmental Health Hazard Assessment
PAH: polycyclic aromatic hydrocarbon
PEF: Potency Equivalent Factors
scf: standard cubic feet
TAC: toxic air contaminants
yr: year

Sources:

1. BAAQMD. Regulation 2, Rule 5. New Source Review of Toxic Air Contaminants. Online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Rules%20and%20Regs/reg%2002/rg0205.ashx?la=en. Accessed: November 16, 2012
2. AP-42. Online at: http://www.epa.gov/ttnchie1/ap42/. Accessed: November 16, 2012
3. CATEF. California Air Toxics Emission Factor Database. Online at: http://www.arb.ca.gov/ei/catef/catef.htm. Accessed: November 16, 2012.

Attachment D

Operational Air Dispersion Modeling Supporting Information

Attachment D: Operational Air Dispersion Modeling Supporting Information

Table D1: SCREEN3 – Test Cases: Input and Output

Table D2: SCREEN3 Outputs

Table D1
SCREEN3 - Test Cases: Input and Outputs
Safeway Rockridge Center Shopping Project
Oakland, CA

Inputs[1]	Case 1	Case 2	Case 3a	Case 3b	Case 4a	Case 4b
Source Type[2]	Point					
Emission Rate (g/s)[3]	1					
Stack height (m)[4]	2					
Stack Inside Diameter (m)[4]	0.0635					
Stack Gas Exit Velocity (m/s)[4]	77.5					
Stack Gas Exit Temperature (K)[4]	839					
Ambient Air Temperature (K)	293					
Receptor Height (m)	1.8					
Urban/Rural (U/R)	U					
Consider Building Downwash (Y/N)	Y					
Building Height (m)[5]	7					
Bldg - Minimum Horizontal Dimension (m)[6]	73	109	73		109	
Bldg - Maximum Horizontal Dimension (m)[6]	100	147	100		147	
Complex terrain screen? (Y/N)[7]	N		Y			
Terrain Ht above Stack Base (m) [8]			18	19	18	19
Distance to Terrain (m) [8]			45	60	45	60
Simple terrain screen? (Y/N)	N					
Met Choice	1 - Full Met					
Automated Dist Array	Y					
Min (m)	0					
Max (m)	500					
Results[9]	**Case 1**	**Case 2**	**Case 3a**	**Case 3b**	**Case 4a**	**Case 4b**
Distance to location of max conc/closest receptor (m)	21	21	45	60	45	60
1-hr Dispersion Factor (µg/m3 / g/s)[9]	1.61E+04	1.61E+04				
24-hr Dispersion Factor (µg/m3 / g/s)[9]			45.61	97.48	45.61	97.48
Annual Dispersion Factor (µg/m3 / g/s)[10]	1614	1614	11	24	11	24
Calculations						
$PM_{2.5}$ Emission (g/s)[11]	1.25E-05	1.25E-05	1.25E-05	1.25E-05	1.25E-05	1.25E-05
$PM_{2.5}$ Concentration (µg/m3)[12]	2.02E-02	2.02E-02	1.43E-04	3.06E-04	1.43E-04	3.06E-04

Notes:
1. Several cases were evaluated to determine the worst case scenario. Since the location of the emergency generator is not known, a couple building downwash scenarios were considered. Also, the terrain was varied to be either complex or simple to model the topography around the Project.
2. The emergency generator emissions stack was modeled as a point source.
3. Unit emission rate was assumed in the model to get dispersion factors.
4. Stack height, inner diameter and exit gas temperature was obtained from the generator specification sheet in Attachment E. Stack outlet diameter was used to calculate the area of the outlet. Stack exit gas velocity was calculated based on the calculate area of the stack outlet and the flow rate which was obtained from the generator specifications in Appendix E.
5. Building height for the proposed Safeway store was obtained from information provided by the Client.
6. Minimum and maximum building dimensions were calculated from site maps provided by the Client. For Case 1, 3a and 3b, the dimensions of the proposed Safeway store were considered. For Case 2, 4a and 4b, adjacent buildings in addition to the Safeway store were considered.
7. The complex terrain option in SCREEN3 accounts for elevation which is greater than the height of the stack. This option was selected in Case 3a, 3b, 4a and 4b to account for elevation north of the Project which is at a much higher elevation. The complex terrain option was not selected in Case 1 and 2 to model the terrain to the west, east and south of the Project.
8. Terrain height above the stack base and distance to the terrain were measured in Google Earth.
9. Results for each case are shown in Attachment D. Output for Case 1 and 2 are 1-hour maximum dispersion factors, whereas for the other cases which are modeled as complex terrain, it is the 24 -hour maximum dispersion factor.
10. The annual dispersion factor is calculated from the maximum 1-hourly or 24-hourly dispersion factor based on BAAQMDs permit modeling guidance.
11. Annual $PM_{2.5}$ emissions in lb/yr are shown in Attachment C. It is converted to g/s assuming uniform emissions over the entire course of the year.
12. $PM_{2.5}$ concentration is calculated by multiplying the annual dispersion factor with the annualized emission rate.

Abbreviations:
µg: microgram
g: gram
lb: pound
m: meter
$PM_{2.5}$: particles in the atmosphere with a diameter of 2.5 micrometers or less
s: second
yr: year

Sources:

1. BAAQMD. Permit Modeling Guidance. 2007 Online at: http://www.baaqmd.gov/~/media/Files/Engineering/Air%20Toxics%20Programs/pmt_modeling_guidance.ashx. Accessed: November

```
                                                            11/15/12
                                                            09:59:25
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 96043 ***

Case1

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE            =        POINT
   EMISSION RATE (G/S)    =      1.00000
   STACK HEIGHT (M)       =       2.0000
   STK INSIDE DIAM (M)    =        .0635
   STK EXIT VELOCITY (M/S)=      77.5000
   STK GAS EXIT TEMP (K)  =     839.0000
   AMBIENT AIR TEMP (K)   =     293.0000
   RECEPTOR HEIGHT (M)    =       1.8000
   URBAN/RURAL OPTION     =        URBAN
   BUILDING HEIGHT (M)    =       7.0000
   MIN HORIZ BLDG DIM (M) =      73.0000
   MAX HORIZ BLDG DIM (M) =     100.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =     .499 M**4/S**3;  MOM. FLUX =    2.114 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES
***

  DIST     CONC              U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
   (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
   DWASH
-------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
     1.   .0000        0      .0     .0      .0     .00     .00     .00    NA
   100.   1255.        4     1.0    1.0   320.0    7.62   15.69   13.79    SS
   200.   674.2        6     1.0    1.0 10000.0   13.41   21.17   14.64    SS
   300.   401.3        6     1.0    1.0 10000.0   13.41   31.18   20.48    SS
   400.   263.3        6     1.0    1.0 10000.0   13.41   40.85   25.80    SS
   500.   187.4        6     1.0    1.0 10000.0   13.41   50.21   30.71    SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
    21.   .1614E+05    5     1.5    1.5 10000.0    2.99    2.41    4.33    SS

 DWASH=   MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****************************************
     *** REGULATORY (Default) ***
    PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
          (BRODE, 1988)
****************************************
```

```
 *** CAVITY CALCULATION - 1 ***       *** CAVITY CALCULATION - 2 ***
  CONC (UG/M**3)     =    913.4        CONC (UG/M**3)     =    1251.
  CRIT WS @10M (M/S) =     2.09        CRIT WS @10M (M/S) =     2.09
  CRIT WS @ HS (M/S) =     2.09        CRIT WS @ HS (M/S) =     2.09
  DILUTION WS (M/S)  =     1.04        DILUTION WS (M/S)  =     1.04
  CAVITY HT (M)      =     7.00        CAVITY HT (M)      =     7.00
  CAVITY LENGTH (M)  =    38.28        CAVITY LENGTH (M)  =    35.42
  ALONGWIND DIM (M)  =    73.00        ALONGWIND DIM (M)  =   100.00

****************************************
      END OF CAVITY CALCULATIONS
****************************************


     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************

 CALCULATION         MAX CONC    DIST TO   TERRAIN
  PROCEDURE         (UG/M**3)    MAX (M)    HT (M)
--------------    -----------   -------   -------
SIMPLE TERRAIN      .1614E+05       21.        0.

BLDG. CAVITY-1      913.4           38.        --  (DIST = CAVITY LENGTH)

BLDG. CAVITY-2      1251.           35.        --  (DIST = CAVITY LENGTH)


***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
```

```
                                                     11/15/12
                                                     10:10:55
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 96043 ***

Case2

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE            =        POINT
   EMISSION RATE (G/S)    =      1.00000
   STACK HEIGHT (M)       =       2.0000
   STK INSIDE DIAM (M)    =        .0635
   STK EXIT VELOCITY (M/S)=      77.5000
   STK GAS EXIT TEMP (K)  =     839.0000
   AMBIENT AIR TEMP (K)   =     293.0000
   RECEPTOR HEIGHT (M)    =       1.8000
   URBAN/RURAL OPTION     =        URBAN
   BUILDING HEIGHT (M)    =       7.0000
   MIN HORIZ BLDG DIM (M) =     109.0000
   MAX HORIZ BLDG DIM (M) =     147.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =     .499 M**4/S**3;  MOM. FLUX =    2.114 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES
***

  DIST     CONC              U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
   (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
   DWASH
-------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
     1.   .0000       0      .0     .0      .0     .00     .00     .00    NA
   100.   1255.       4     1.0    1.0   320.0    7.62   15.69   13.79    SS
   200.   674.2       6     1.0    1.0 10000.0   13.41   21.17   14.64    SS
   300.   401.3       6     1.0    1.0 10000.0   13.41   31.18   20.48    SS
   400.   263.3       6     1.0    1.0 10000.0   13.41   40.85   25.80    SS
   500.   187.4       6     1.0    1.0 10000.0   13.41   50.21   30.71    SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
    21.   .1614E+05    5     1.5    1.5 10000.0    2.99    2.41    4.33    SS

 DWASH=   MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****************************************
     *** REGULATORY (Default) ***
    PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
          (BRODE, 1988)
****************************************
```

```
 *** CAVITY CALCULATION - 1 ***       *** CAVITY CALCULATION - 2 ***
  CONC (UG/M**3)      =    621.3        CONC (UG/M**3)      =    837.9
  CRIT WS @10M (M/S) =      2.09        CRIT WS @10M (M/S) =      2.09
  CRIT WS @ HS (M/S) =      2.09        CRIT WS @ HS (M/S) =      2.09
  DILUTION WS (M/S)  =      1.04        DILUTION WS (M/S)  =      1.04
  CAVITY HT (M)      =      7.00        CAVITY HT (M)      =      7.00
  CAVITY LENGTH (M)  =     41.16        CAVITY LENGTH (M)  =     38.99
  ALONGWIND DIM (M)  =    109.00        ALONGWIND DIM (M)  =    147.00

****************************************
      END OF CAVITY CALCULATIONS
****************************************


     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************

 CALCULATION         MAX CONC    DIST TO   TERRAIN
  PROCEDURE         (UG/M**3)    MAX (M)    HT (M)
--------------    -----------   -------   -------
SIMPLE TERRAIN      .1614E+05       21.        0.

BLDG. CAVITY-1      621.3           41.       --  (DIST = CAVITY LENGTH)

BLDG. CAVITY-2      837.9           39.       --  (DIST = CAVITY LENGTH)


***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
```

```
                                                              11/15/12
                                                              11:09:01
  ***  SCREEN3 MODEL RUN  ***
  *** VERSION DATED 96043 ***

 Case3a and Case3b

 COMPLEX TERRAIN INPUTS:
    SOURCE TYPE            =        POINT
    EMISSION RATE (G/S)    =      1.00000
    STACK HT (M)           =       2.0000
    STACK DIAMETER (M)     =        .0635
    STACK VELOCITY (M/S)   =      77.5000
    STACK GAS TEMP (K)     =     839.0000
    AMBIENT AIR TEMP (K)   =     293.0000
    RECEPTOR HEIGHT (M)    =        .0000
    URBAN/RURAL OPTION     =        URBAN

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


 BUOY. FLUX =     .499 M**4/S**3;  MOM. FLUX =    2.114 M**4/S**2.


 FINAL STABLE PLUME HEIGHT (M) =   19.4
 DISTANCE TO FINAL RISE (M)    =  200.2
```

```
                                                          11/15/12
                                                          11:16:12
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 96043 ***

Case4a and Case4b

COMPLEX TERRAIN INPUTS:
   SOURCE TYPE            =        POINT
   EMISSION RATE (G/S)    =      1.00000
   STACK HT (M)           =       2.0000
   STACK DIAMETER (M)     =        .0635
   STACK VELOCITY (M/S)   =      77.5000
   STACK GAS TEMP (K)     =     839.0000
   AMBIENT AIR TEMP (K)   =     293.0000
   RECEPTOR HEIGHT (M)    =        .0000
   URBAN/RURAL OPTION     =        URBAN

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =     .499 M**4/S**3;  MOM. FLUX =    2.114 M**4/S**2.


FINAL STABLE PLUME HEIGHT (M) =   19.4
DISTANCE TO FINAL RISE (M)    =  200.2
```

Attachment E

Emergency Generator Specification Supporting Information

SD060

GENERAC® | INDUSTRIAL POWER

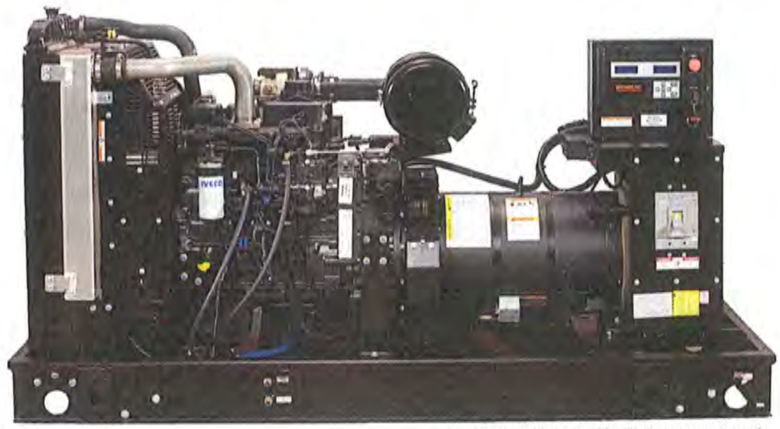
Industrial Diesel Generator Set

EPA Certified Stationary Emergency

60 kW Diesel

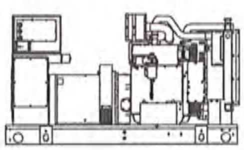
Standby Power Rating
75kVA 60kW 60Hz

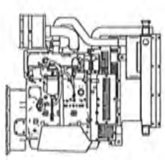
Prime Power Rating
68kVA 54KW 60Hz

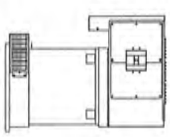


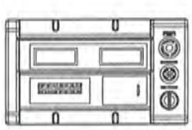
Generator image used for illustration purposes only

*EPA Certified Prime ratings are not available in the U.S. or its Territories for engine model year 2011 and beyond









features	benefits
Generator Set	
PROTOTYPE & TORSIONALLY TESTED	PROVIDES A PROVEN UNIT
UL2200 TESTED	ENSURES A QUALITY PRODUCT
RHINOCOAT PAINT SYSTEM	IMPROVES RESISTANCE TO ELEMENTS
WIDE RANGE OF ENCLOSURES AND TANKS	PROVIDES A SINGLE SOURCE SOLUTION
Engine	
EPA COMPLIANT	ENVIRONMENTALLY FRIENDLY
INDUSTRIAL TESTED, GENERAC APPROVED	ENSURES INDUSTRIAL STANDARDS
POWER-MATCHED OUTPUT	ENGINEERED FOR PERFORMANCE
INDUSTRIAL GRADE	IMPROVES LONGEVITY AND RELIABILITY
Alternator	
TWO-THIRDS PITCH	ELIMINATES HARMFUL 3RD HARMONIC
LAYER WOUND ROTOR & STATOR	IMPROVES COOLING
CLASS H MATERIALS	HEAT TOLERANT DESIGN
DIGITAL 3-PHASE VOLTAGE CONTROL	FAST AND ACCURATE RESPONSE
Controls	
ENCAPSULATED BOARD W/ SEALED HARNESS	EASY, AFFORDABLE REPLACEMENT
4-20mA VOLTAGE-TO-CURRENT SENSORS	NOISE RESISTANT 24/7 MONITORING
SURFACE-MOUNT TECHNOLOGY	PROVIDES VIBRATION RESISTANCE
ADVANCED DIAGNOSTICS & COMMUNICATIONS	HARDENED RELIABILITY

primary codes and standards

NEMA c UL us LISTED NFPA ASTM INTERNATIONAL ISO ICC

GENERAC | INDUSTRIAL POWER

SD060

application and engineering data

ENGINE SPECIFICATIONS

General

Make	Iveco / FPT
EPA Emissions Compliance	Stationary Emergency
EPA Emissions Reference	See Emissions Data Sheet
Cylinder #	4
Type	Diesel
Displacement - L (cu. in.)	4.5 (274)
Bore - mm (in.)	105 (4.1)
Stroke - mm (in.)	132 (5.2)
Compression Ratio	17.5:1
Intake Air Method	Turbocharged
Cylinder Head Type	2 Valve
Piston Type	Aluminum
Crankshaft Type	Forged Steel
Engine Block Type	Cast Iron / Wet Sleeve

Engine Governing

Governor	Electronic Isochronous
Frequency Regulation (Steady State)	± 0.25%

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full Flow
Crankcase Capacity - L (qts)	13.6 (14.4)

Cooling System

Cooling System Type	Closed
Water Pump Flow	Belt Driven Centrifugal
Fan Type	Pusher
Fan Blade Number	2538
Fan Diameter mm (in.)	26
Coolant Heater Wattage	1500
Coolant Heater Standard Voltage	120

Fuel System

Fuel Type*	Ultra Low Sulfur Diesel Fuel
Fuel Specifications	ASTM
Fuel Filtering (microns)	5
Fuel Inject Pump Make	Stanadyne
Fuel Pump Type	Engine Driven Gear
Injector Type	Mechanical
Engine Type	Direct Injection
Fuel Supply Line - mm (in.)	¼" NPT
Fuel Return Line - mm (in.)	¼" NPT

Engine Electrical System

System Voltage	12VDC
Battery Charging Alternator	Std
Battery Size (at 0ºC)	995 CCA
Battery Group	31
Battery Voltage	12 Volt DC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	390 mm Generac
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	< 5%
Telephone Interference Factor (TIF)	< 50
Standard Excitation	Synchronous Brushless
Bearings	One-Pre Lubed & Sealed
Coupling	Direct, Flexible Disc
Load Capacity - Standby	100%
Prototype Short Circuit Test	Yes

Voltage Regulator Type	Digital
Number of Sensed Phases	3
Regulation Accuracy (Steady State)	± 0.25%

CODES AND STANDARDS COMPLIANCE (WHERE APPLICABLE)

NFPA 99
NFPA 110
ISO 8528-5
ISO 1708A.5
ISO 3046
BS5514
SAE J1349
DIN6271
IEEE C62.41 TESTING
NEMA ICS 1

Rating Definitions:
Standby – Applicable for a varying emergency load for the duration of a utility power outage with no overload capability. (Max. load factor = 70%)
Prime – Applicable for supplying power to a varying load in lieu of utility for an unlimited amount of running time. (Max. load factor = 80%) A 10% overload capacity is available for 1 out of every 12 hours.

SD060

operating data (60Hz)

POWER RATINGS (kW)

	STANDBY		PRIME	
Single-Phase 120/240VAC @1.0pf	60 kW	Amps: 250	44 kW	Amps: 225
Three-Phase 120/208VAC @0.8pf	60 kW	Amps: 208	44 kW	Amps: 187
Three-Phase 120/240VAC @0.8pf	60 kW	Amps: 180	44 kW	Amps: 162
Three-Phase 277/480VAC @0.8pf	60 kW	Amps: 90	44 kW	Amps: 81
Three-Phase 346/600VAC @0.8pf	60 kW	Amps: 72	44 kW	Amps: 65

STARTING CAPABILITIES (sKVA)

sKVA vs. Voltage Dip

		480VAC						208/240VAC					
Alternator	kW	10%	15%	20%	25%	30%	35%	10%	15%	20%	25%	30%	35%
Standard	60	42	63	83	104	125	146	32	47	62	78	94	110
Upsize 1	80	59	88	117	147	176	205	44	66	88	110	132	154
Upsize 2	100	79	118	157	197	236	275	59	89	118	148	177	206

FUEL

Fuel Pump Lift - in (mm)
36 (900)

Total Fuel Pump Flow (Combustion + Return)
13.6 gph

Fuel Consumption Rates*

STANDBY			PRIME		
Percent Load	gph	lph	Percent Load	gph	lph
25%	1.4	5.3	25%	1.3	4.9
50%	2.7	10.2	50%	2.4	9.1
75%	3.8	14.4	75%	3.4	12.9
100%	4.8	18.2	100%	4.4	16.7

* Refer to "Emissions Data Sheet" for maximum fuel flow for EPA and SCAQMD permitting purposes.

COOLING

		STANDBY	PRIME
Coolant Flow per Minute	gpm (lpm)	32.7 (123.8)	32.7 (123.8)
Heat Rejection to Coolant	BTU/hr	123,000	123,000
Inlet Air	cfm (m3/min)	6,360 (180)	6,360 (180)
Max. Operating Radiator Air Temp	F° (C°)	122 (50)	122 (50)
Max. Operating Ambient Temperature	F° (C°)	104 (40)	104 (40)
Coolant System Capacity	gal (L)	(4.5) 17.44	(4.5) 17.44
Maximum Radiator Backpressure	in H_2O	1.5	1.5

COMBUSTION AIR REQUIREMENTS

		STANDBY	PRIME
Flow at Rated Power	cfm (m3/min)	247 (7.00)	222 (6.30)

ENGINE

		STANDBY	PRIME
Rated Engine Speed	rpm	1800	1800
Horsepower at Rated kW**	hp	93	84
Piston Speed	ft/min	1559 (475)	1559 (475)
BMEP	psi	154	143

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

EXHAUST

		STANDBY	PRIME
Exhaust Flow (Rated Output)	cfm (m^3/min)	534 (15.1)	502 (14.2)
Max. Backpressure (Post Silencer)	inHg (Kpa)	1.5 (5.1)	1.5 (5.1)
Exhaust Temp (Rated Output)	°F (°C)	930 (498.8)	857 (459)
Exhaust Outlet Size (Open Set)	NPT (male)	3.0	3.0

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

GENERAC | INDUSTRIAL

SD060

standard features and options

GENERATOR SET

●	Genset Vibration Isolation	Std
○	IBC Seismic Certified/Seismic Rated Vibration Isolators	Opt
○	Extended warranty	Opt
○	Gen-Link Communications Software	Opt
○	Steel Enclosure	Opt
○	Aluminum Enclosure	Opt

ENGINE SYSTEM

General

●	Oil Drain Extension	Std
○	Oil Make-Up System	Opt
○	Oil Heater	Opt
●	Air cleaner	Std
●	Fan guard	Std
●	Radiator duct adapter	Std

Fuel System

●	Fuel lockoff solenoid	Std
●	Secondary fuel filter	Std
●	Stainless steel flexible exhaust connection	Std
●	Industrial Exhaust Silencer	Std
○	Critical Exhaust Silencer	Opt
○	Flexible fuel lines	Opt
○	Primary fuel filter	Opt
○	Single Wall Tank (Export Only)	-
○	UL 142 Fuel Tank	Opt

Cooling System

○	120VAC Coolant Heater	Opt
○	208VAC Coolant Heater	Opt
○	240VAC Coolant Heater	Opt
○	Other Coolant Heater ____________	-
●	Closed Coolant Recovery System	Std
●	UV/Ozone resistant hoses	Std
●	Factory-Installed Radiator	Std
●	Radiator Drain Extension	Std

Engine Electrical System

●	Battery charging alternator	Std
●	Battery cables	Std
●	Battery tray	Std
○	Battery box	Opt
○	Battery heater	Opt
●	Solenoid activated starter motor	Std
○	2.5A UL battery charger	Opt
○	10A UL float/equalize battery charger	Opt
●	Rubber-booted engine electrical connections	Std

ALTERNATOR SYSTEM

●	UL2200 GENprotectTM	
○	Main Line Circuit Breaker	Opt
○	2nd Circuit Breaker	Opt
○	3rd Circuit Breaker	-
○	Alternator Upsizing	Opt
○	Anti-Condensation Heater	Opt
○	Tropical coating	Opt
○	Permanent Magnet Generator	Opt

CONTROL SYSTEM

Control Panel

●	Digital H Control Panel - Dual 4x20 Display	Std
○	Digital G-100 Control Panel - Touchscreen	na
○	Digital G-200 Paralleling Control Panel - Touchscreen	na
●	Programmable Crank Limiter	Std
○	21-Light Remote Annunciator	Opt
○	Remote Relay Panel (8 or 16)	Opt
●	7-Day Programmable Exerciser	Std
●	Special Applications Programmable PLC	Std
●	RS-232	Std
●	RS-485	Std
●	All-Phase Sensing DVR	Std
●	Full System Status	Std
●	Utility Monitoring (Req. H-Transfer Switch)	Std
●	2-Wire Start Compatible	Std
●	Power Output (kW)	Std
●	Power Factor	Std
●	Reactive Power	Std
●	All phase AC Voltage	Std
●	All phase Currents	Std
●	Oil Pressure	Std
●	Coolant Temperature	Std
●	Coolant Level	Std
○	Oil Temperature	Opt
●	Fuel Pressure	Std
●	Engine Speed	Std
●	Battery Voltage	Std
●	Frequency	Std
●	Date/Time Fault History (Event Log)	Std
○	Low-Speed Exercise	-
●	Isochronous Governor Control	Std
●	-40deg C - 70deg C Operation	Std
●	Waterproof Plug-In Connectors	Std
●	Audible Alarms and Shutdowns	Std
●	Not in Auto (Flashing Light)	Std
●	Auto/Off/Manual Switch	Std
●	E-Stop (Red Mushroom-Type)	Std
○	Remote E-Stop (Break Glass-Type, Surface Mount)	Opt
○	Remote E-Stop (Red Mushroom-Type, Surface Mount)	Opt
○	Remote E-Stop (Red Mushroom-Type, Flush Mount)	Opt
●	NFPA 110 Level I and II (Programmable)	Std
●	Remote Communication - RS232	Std
○	Remote Communication - Modem	Opt
○	Remote Communication - Ethernet	Opt
○	10A Run Relay	Opt

Alarms (Programmable Tolerances, Pre-Alarms and Shutdowns)

○	Low Fuel	Opt
●	Oil Pressure (Pre-programmed Low Pressure Shutdown)	Std
●	Coolant Temperature (Pre-programmed High Temp Shutdown)	Std
●	Coolant Level (Pre-programmed Low Level Shutdown)	Std
○	Oil Temperature	Opt
●	Engine Speed (Pre-programmed Overspeed Shutdown)	Std
●	Voltage (Pre-programmed Overvoltage Shutdown)	Std
●	Battery Voltage	Std

Other Options

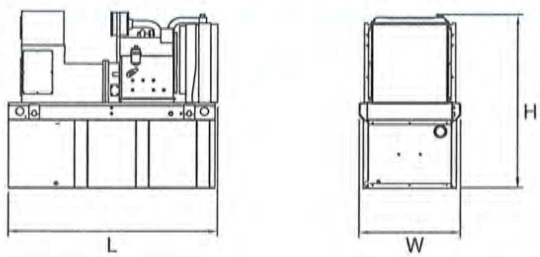
○ ____________________

○ ____________________

○ ____________________

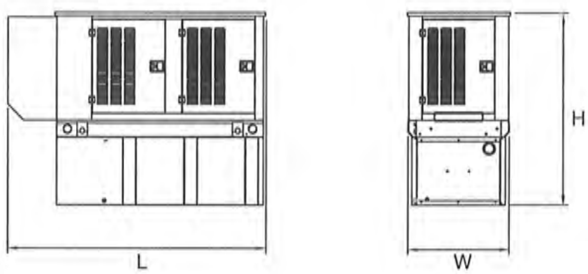
SD060

dimensions, weights and sound levels



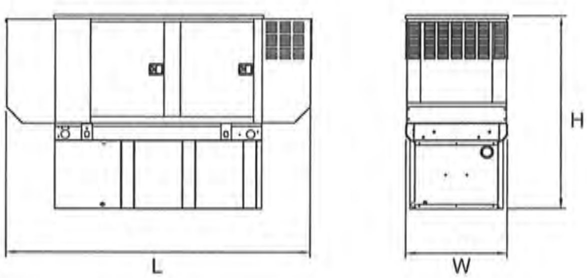
OPEN SET

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBA*
NO TANK	-	93	40	49	2425	
16	79	93	40	62	2947	
39	189	93	40	74	3183	
63	300	93	40	86	3407	86.3
73	350	110	40	86	3809	
106	510	117	47	86	3790	
123	589	128	49	86	4269	



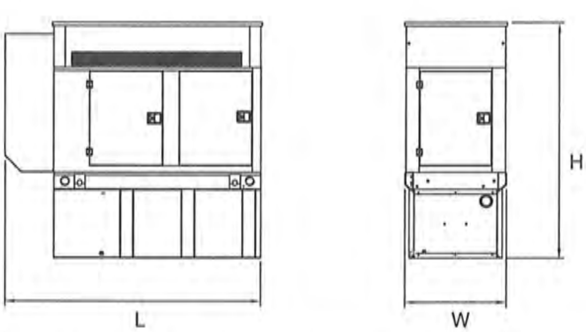
WEATHERPROOF ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBA*
NO TANK	-	112	41	56	2850	
16	79	112	41	69	3372	
39	189	112	41	81	3608	
63	300	112	41	93	3832	80.5
73	350	112	41	93	4234	
106	510	117	47	93	4215	
123	589	128	49	93	4694	



LEVEL 1 SOUND ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBA*
NO TANK	-	130	41	56	2875	
16	79	130	41	69	3397	
39	189	130	41	81	3633	
63	300	130	41	93	3857	74.7
73	350	130	41	93	4259	
106	510	130	47	93	4240	
123	589	130	49	93	4719	



LEVEL 2 SOUND ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBA*
NO TANK	-	112	41	69	3050	
16	79	112	41	82	3572	
39	189	112	41	94	3808	
63	300	112	41	106	4032	71.6
73	350	112	41	106	4434	
106	510	117	47	106	4415	
123	589	128	49	106	4894	

*All measurements are approximate and for estimation purposes only. Weights are without fuel in tank. Sound levels measured at 23ft (7m) and does not account for ambient site conditions.

Tank Options

O	MDEQ	OPT
O	Florida DERM/DEP	OPT
O	Chicago Fire Code	OPT
O	IFC Certification	CALL
O	ULC	CALL

Other Custom Options Available from your Generac Industrial Power Dealer

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

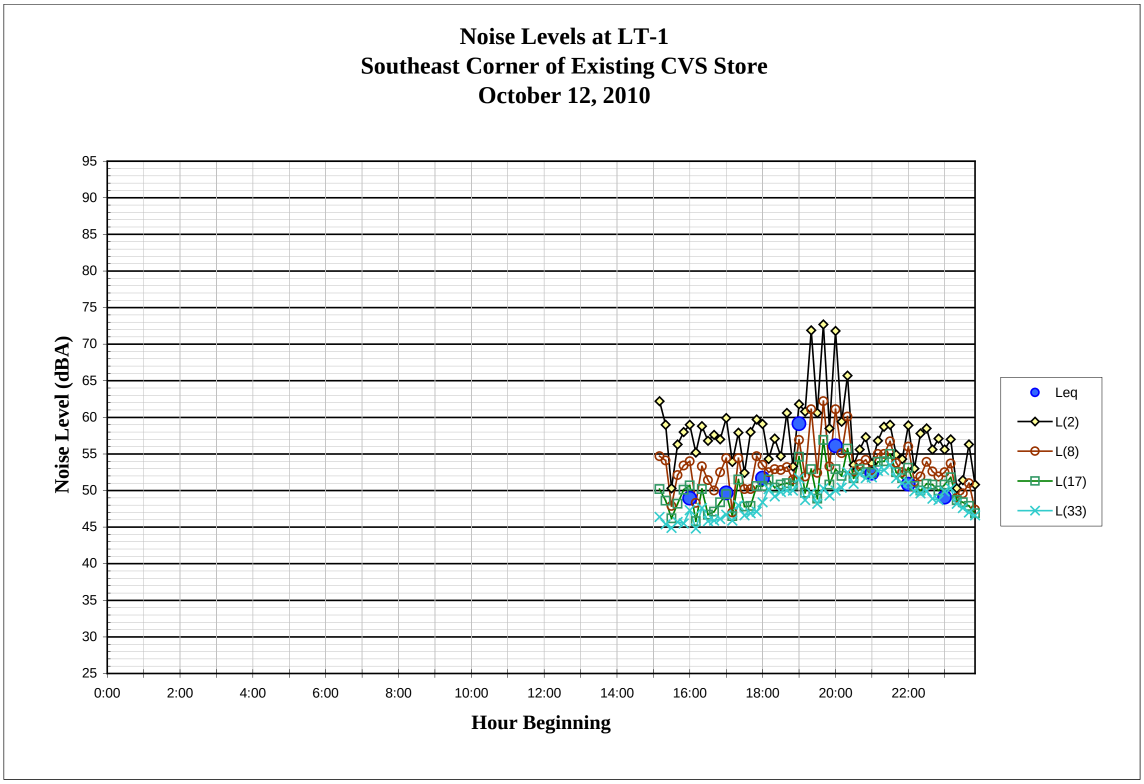
Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

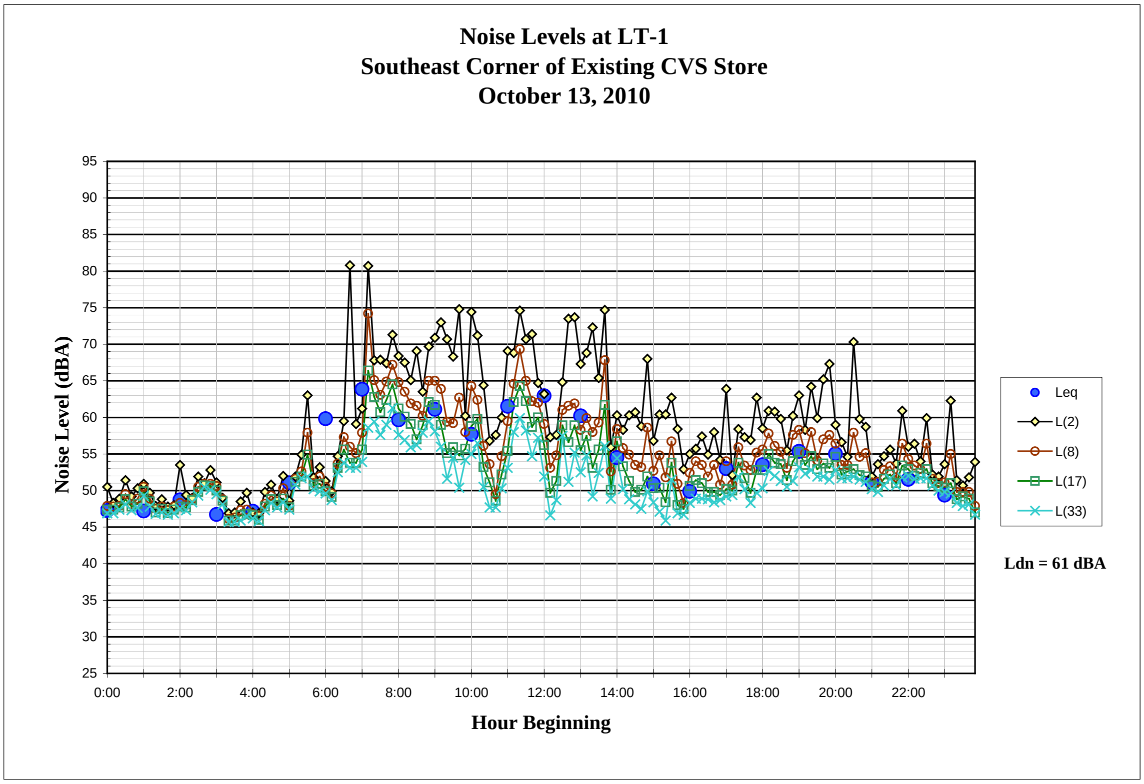
Appendix 4.10:

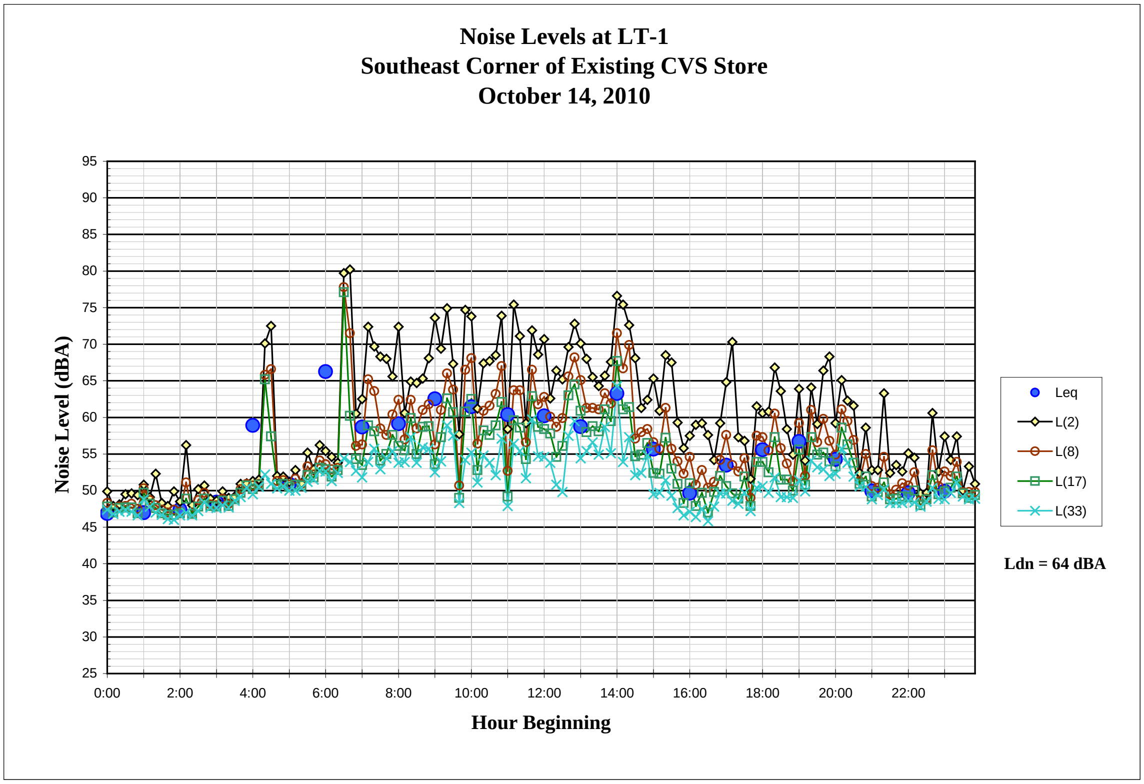
Daily Trend in Noise Levels

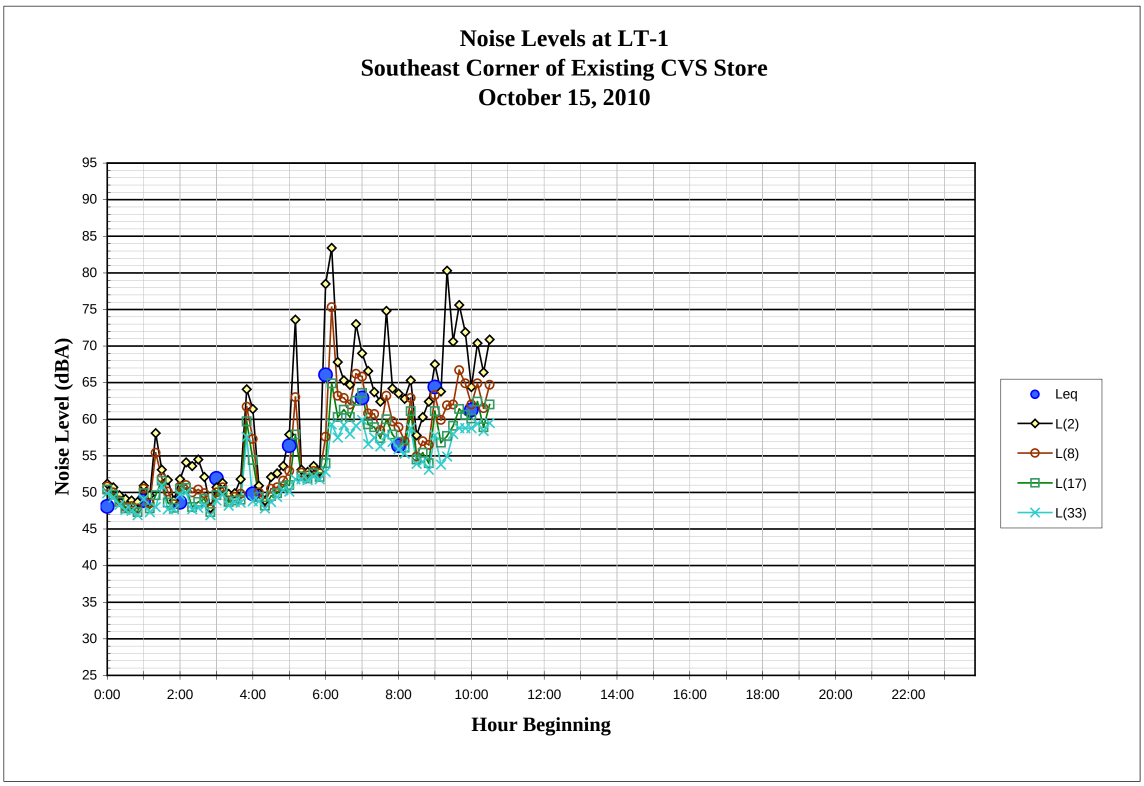
Illingworth & Rodkin, Inc.

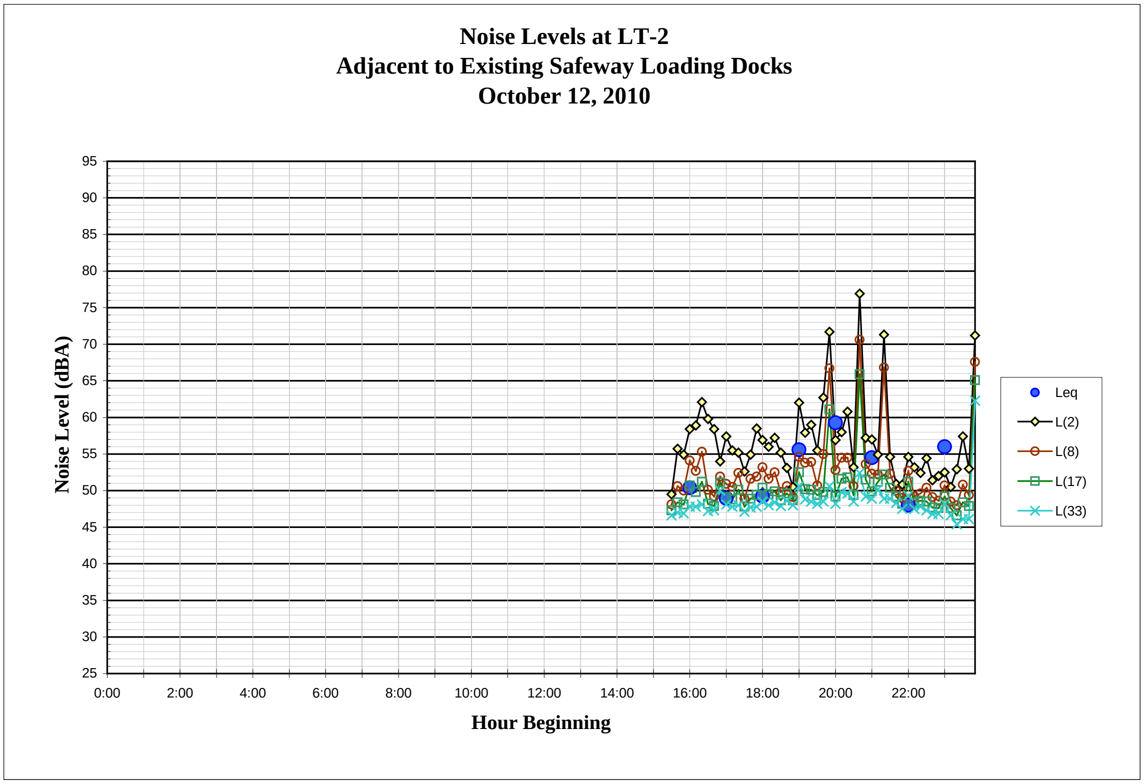
Appendix 4.10 Daily Trend in Noise Levels.

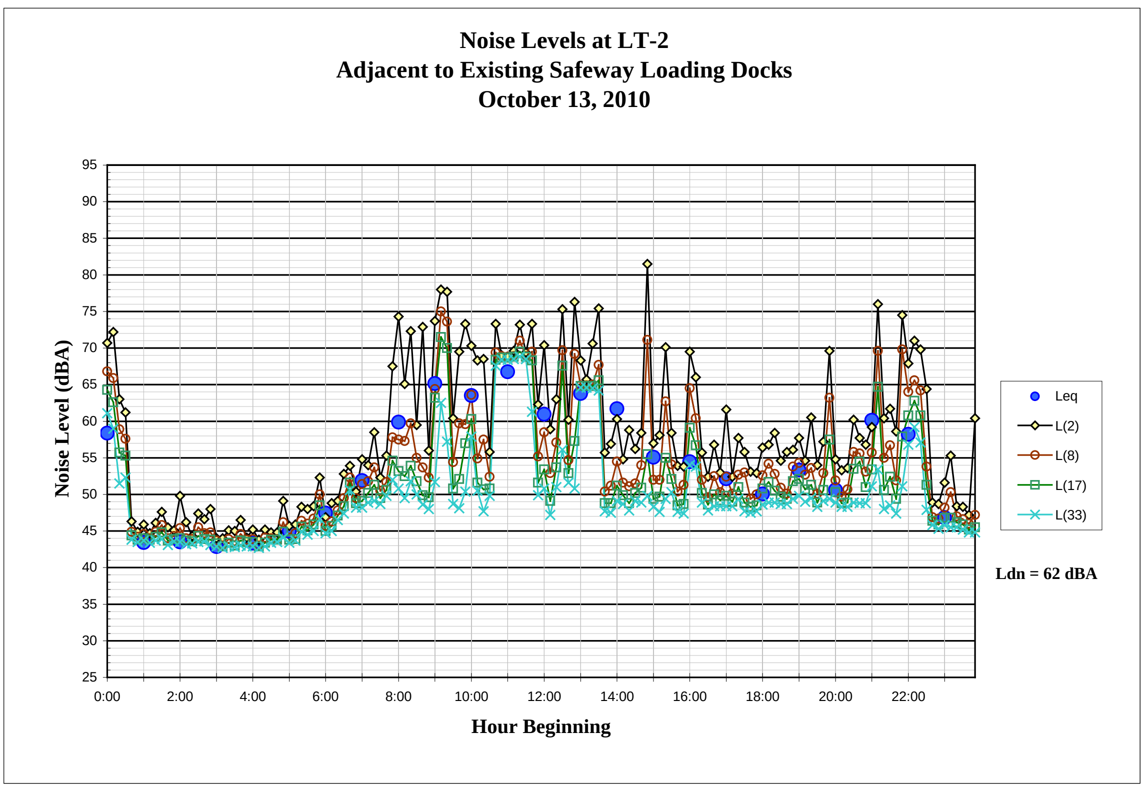


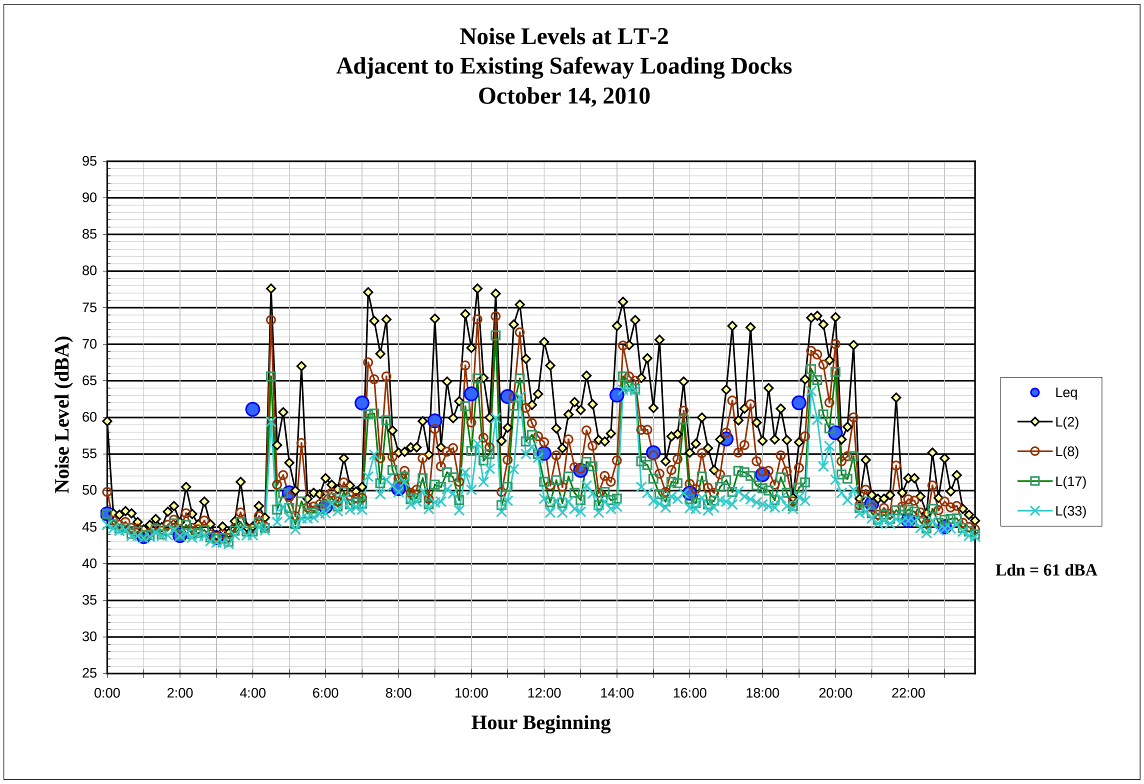


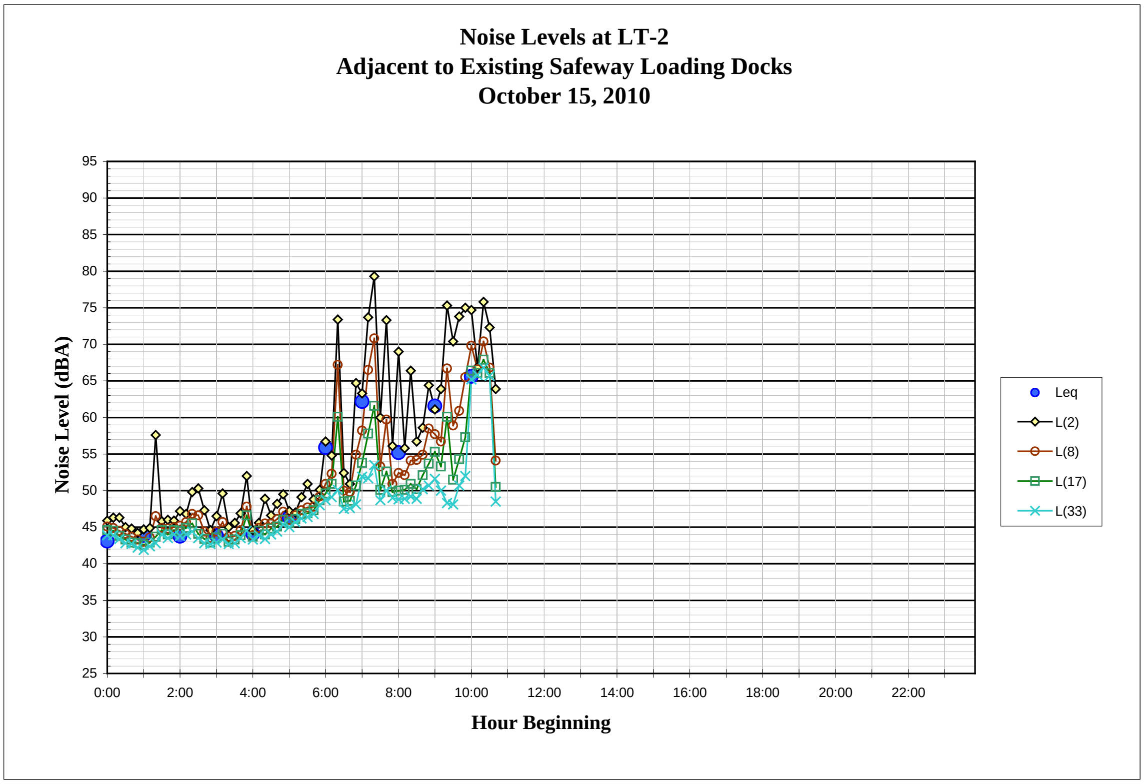

Noise Levels at LT-1
Southeast Corner of Existing CVS Store
October 14, 2010
Noise Level (dBA)
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Leq
L(2)
L(8)
L(17)
L(33)
Ldn = 64 dBA


Noise Levels at LT-1
Southeast Corner of Existing CVS Store
October 15, 2010
Noise Level (dBA)
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Leq
L(2)
L(8)
L(17)
L(33)


Noise Levels at LT-2
Adjacent to Existing Safeway Loading Docks
October 12, 2010
Noise Level (dBA)
Hour Beginning
Leq
L(2)
L(8)
L(17)
L(33)


Noise Levels at LT-2
Adjacent to Existing Safeway Loading Docks
October 13, 2010
Noise Level (dBA)
Hour Beginning
Leq
L(2)
L(8)
L(17)
L(33)
Ldn = 62 dBA


Noise Levels at LT-2
Adjacent to Existing Safeway Loading Docks
October 14, 2010
Noise Level (dBA)
Hour Beginning
Leq
L(2)
L(8)
L(17)
L(33)
Ldn = 61 dBA


Noise Levels at LT-2
Adjacent to Existing Safeway Loading Docks
October 15, 2010
Noise Level (dBA)
Hour Beginning
Leq
L(2)
L(8)
L(17)
L(33)

Appendix 4.11:

Technical Transportation Appendices

Fehr & Peers

FEHR & PEERS

TECHNICAL TRANSPORTATION APPENDIX

51ST AND BROADWAY CENTER

December 2012

WC10-2728

Appendix A: Peak Hour Selection

Appendix B: Intersection Count Data Sheets

Appendix C: LOS Calculation Worksheets – Existing Conditions

Appendix D: Signal Warrant Worksheets

Appendix E: Broadway Bicycle lanes

Appendix F: Sample Survey Questionnaire

Appendix G: Safeway Customer Spotting Data

Appendix H: LOS Calculation Worksheets – Existing Plus Project Conditions

Appendix I: ACTC Model Land Use Modifications

Appendix J: LOS Calculation Worksheets – 2015 No Project Conditions

Appendix K: LOS Calculation Worksheets – 2015 Plus Project Conditions

Appendix L: LOS Calculation Worksheets – 2035 No Project Conditions

Appendix M: LOS Calculation Worksheets – 2035 Plus Project Conditions

Appendix N: CMP Analysis Calculations

Appendix O: Queuing Analysis Summary

Appendix A

Peak Hour Selection

FEHR & PEERS

APPENDIX A – PEAK HOUR SELECTION

The Project impacts and mitigation measures identified in the DEIR are based on analysis of traffic impacts at study intersections during the weekday PM, Saturday midday, and Saturday PM peak hours. These time periods were selected because trips generated by the proposed Project, in combination with background traffic, would represent typical worst traffic conditions. This appendix describes why the DEIR did not analyze traffic impacts during the weekday AM peak hour.

WEEKDAY AM PEAK HOUR

Fehr & Peers conducted 24-hour tube counts on Broadway and Pleasant Valley Avenue adjacent to the Project site on during the weeks of October 10 and October 17, 2011. **Figure A-1** shows the average hourly traffic volume on both streets on weekdays.

Based on the October 2011 data, the weekday AM peak hour is between 8:00 and 9:00 AM and the weekday PM peak hour is between 5:00 and 6:00 PM. The PM peak hour traffic volumes on both Broadway and Pleasant Valley Avenue combined is about 28 percent higher than the AM peak hour.

Table A-1 summarizes the weekday AM peak hour trip generation for the proposed Project. Unlike the weekday PM peak hour trip generation, the trip generation is not reduced to account for the existing CVS Store that would be demolished, pass-by trips, or internalization between Safeway and other uses in the shopping center due to unavailability of data. Despite these conservative assumptions, the weekday AM peak hour trip generation is about 36 percent lower than the PM peak hour trip generation.

Figure A-1: Weekday Hourly Traffic Volumes

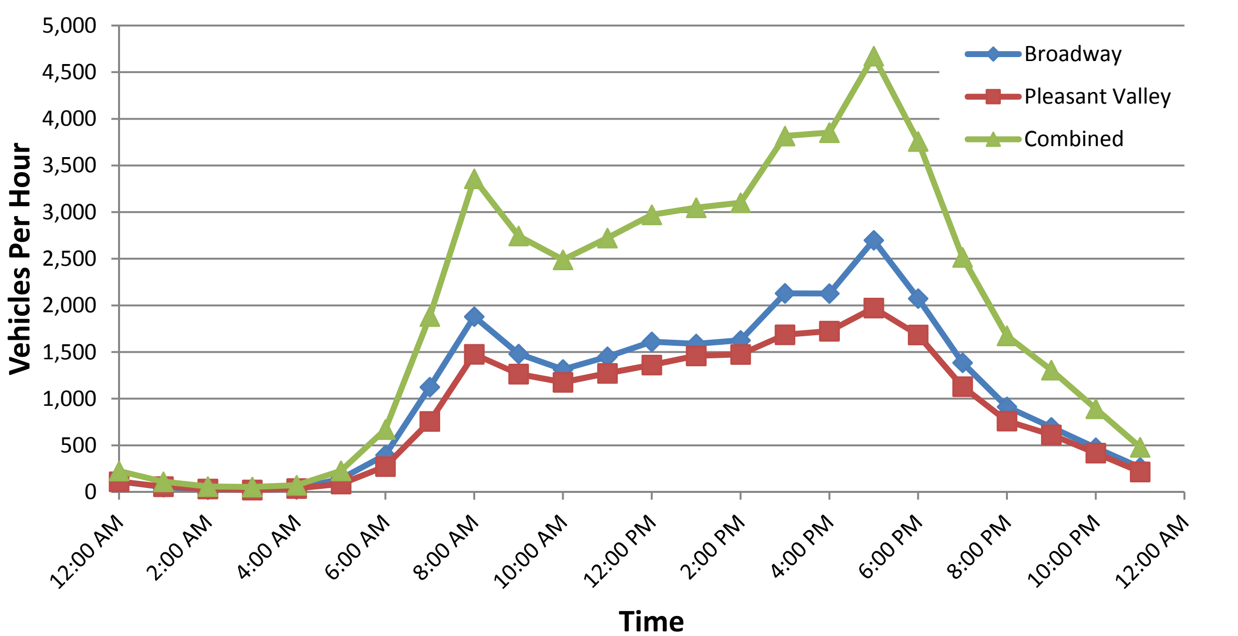


TABLE A-1
PROJECT TRIP GENERATION ESTIMATES – AM PEAK HOUR NET NEW VEHICLE TRIPS

Land Use	ITE Code	Units[1]	In	Out	Total
New Safeway Trips[2]	850	65.0 ksf	37	24	61
Proposed New Retail[3]	820	178.0 ksf	132	84	216
Existing CVS[4]	n/a	-87.2 ksf	n/a	n/a	n/a
New Project Trips			*169*	*108*	*277*
Pass-By Vehicles[5]			*0*	*0*	*0*
Internalized Trips[6]			*0*	*0*	*0*
Net AM Peak Hour New Project Trips			***169***	***108***	***277***
Net PM Peak Hour New Project Trips			***211***	***225***	***436***
Difference			***-42***	***-117***	***-159***

1. KSF = 1,000-square feet
2. Trip generation based on Institute of Transportation Engineers (ITE), *Trip Generation*, (8th Edition) average rate for supermarket (Land Use Code 850) applied to the net increase in Safeway size :

   Average Rate = 3.59 trips per KSF; Enter = 61%, Exit = 39%
3. Trip generation based on ITE *Trip Generation*, (8th Edition) regression equations for Shopping Center (Land Use Code 820) :

   Ln(T) = 0.59 Ln(X) + 2.32; Enter = 61%, Exit = 39%

   Where: T = trips generated, X = 1,000 square feet, Ln = natural log
4. AM peak hour data not available for the existing CVS store. This analysis conservatively assumes zero trip generation for the existing CVS store.
5. No AM peak hour pass-by data available. This analysis conservatively assumes zero pass-by trips.
6. No AM peak hour internalization data available. This analysis conservatively assumes zero internalization.

Source: Trip Generation (8th Edition), ITE, 2008; and Fehr & Peers, 2012.

The DEIR identifies a number of impacts and mitigation measures at the study intersections based on analysis of traffic operations during the weekday PM peak hour. Considering that both existing traffic volumes and Project trip generation are higher during the weekday PM peak hour, an analysis of Project impacts during the weekday AM peak hour is not expected to identify new impacts or mitigation measures.

Appendix B

Intersection Count Data Sheets

MARKS TRAFFIC DATA

CITY OF OAKLAND

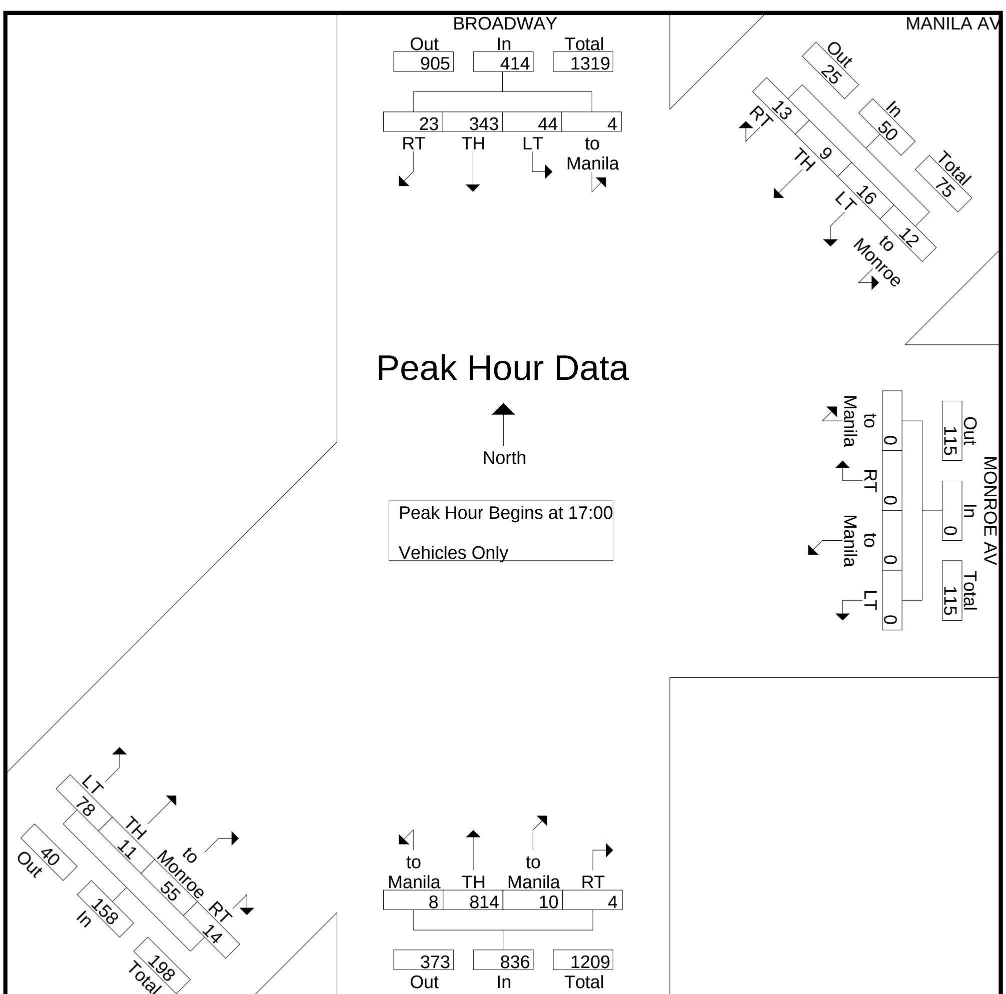
fp
Mietek 916-806-0250

File Name : broadway-manila-p
Site Code : 1
Start Date : 5/13/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound					MANILA AV Southwestbound					MONROE AV Westbound					BROADWAY Northbound					MANILA AV Northeastbound					
Start Time	RT	TH	LT	to Manila	App. Total	RT	TH	LT	to Monroe	App. Total	to Manila	RT	to Manila	LT	App. Total	RT	to Manila	TH	to Manila	App. Total	RT	to Monroe	TH	LT	App. Total	Int. Total
16:00	9	79	13	1	102	2	1	1	3	7	0	0	0	0	0	2	1	138	0	141	0	8	1	8	17	267
16:15	6	76	16	2	100	2	2	3	4	11	0	0	0	0	0	1	0	131	0	132	2	8	1	11	22	265
16:30	3	85	6	0	94	2	1	3	0	6	0	0	0	0	0	0	4	191	1	196	2	10	2	8	22	318
16:45	8	73	9	0	90	3	4	4	2	13	0	0	0	0	0	1	2	169	1	173	0	16	1	17	34	310
Total	26	313	44	3	386	9	8	11	9	37	0	0	0	0	0	4	7	629	2	642	4	42	5	44	95	1160
17:00	10	86	10	2	108	2	3	5	6	16	0	0	0	0	0	2	2	215	2	221	1	12	2	19	34	379
17:15	3	95	9	1	108	3	0	4	1	8	0	0	0	0	0	0	1	209	3	213	2	15	4	16	37	366
17:30	6	73	9	1	89	3	1	1	0	5	0	0	0	0	0	1	4	217	1	223	5	10	2	20	37	354
17:45	4	89	16	0	109	5	5	6	5	21	0	0	0	0	0	1	3	173	2	179	6	18	3	23	50	359
Total	23	343	44	4	414	13	9	16	12	50	0	0	0	0	0	4	10	814	8	836	14	55	11	78	158	1458
Grand Total	49	656	88	7	800	22	17	27	21	87	0	0	0	0	0	8	17	1443	10	1478	18	97	16	122	253	2618
Apprch %	6.1	82	11	0.9		25.3	19.5	31	24.1		0	0	0	0		0.5	1.2	97.6	0.7		7.1	38.3	6.3	48.2		
Total %	1.9	25.1	3.4	0.3	30.6	0.8	0.6	1	0.8	3.3	0	0	0	0	0	0.3	0.6	55.1	0.4	56.5	0.7	3.7	0.6	4.7	9.7	

	BROADWAY Southbound					MANILA AV Southwestbound					MONROE AV Westbound					BROADWAY Northbound					MANILA AV Northeastbound					
Start Time	RT	TH	LT	to Manila	App. Total	RT	TH	LT	to Monroe	App. Total	to Manila	RT	to Manila	LT	App. Total	RT	to Manila	TH	to Manila	App. Total	RT	to Monroe	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 17:00																										
17:00	**10**	86	10	**2**	108	2	3	5	**6**	16	0	0	0	0	0	**2**	2	215	2	221	1	12	2	19	34	**379**
17:15	3	**95**	9	1	108	3	0	4	1	8	0	0	0	0	0	0	1	209	**3**	213	2	15	**4**	16	37	366
17:30	6	73	9	1	89	3	1	1	0	5	0	0	0	0	0	1	**4**	**217**	1	**223**	5	10	2	20	37	354
17:45	4	89	**16**	0	**109**	**5**	**5**	**6**	5	**21**	0	0	0	0	0	1	3	173	2	179	**6**	**18**	3	**23**	**50**	359
Total Volume	23	343	44	4	414	13	9	16	12	50	0	0	0	0	0	4	10	814	8	836	14	55	11	78	158	1458
% App. Total	5.6	82.9	10.6	1		26	18	32	24		0	0	0	0		0.5	1.2	97.4	1		8.9	34.8	7	49.4		
PHF	.575	.903	.688	.500	.950	.650	.450	.667	.500	.595	.000	.000	.000	.000	.000	.500	.625	.938	.667	.937	.583	.764	.688	.848	.790	.962



Car

Study Name WC10-2728_1 Broadway/Manila Ave/Monroe Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code 1

	Broadway Southbound					Manila Avenue Southwestbound					Monroe Avenue Westbound					Broadway Northbound					Manila Avenue Eastbound				
Start Time	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn
11:00 AM	6	74	3	1	0	1	0	0	0	0	0	10	6	1	0	2	7	64	3	0	0	5	6	11	0
11:15 AM	4	86	6	5	0	0	0	0	0	0	1	5	8	2	0	2	5	65	3	0	1	5	1	4	0
11:30 AM	10	95	4	2	0	3	0	1	0	0	0	9	4	1	0	1	0	63	2	0	2	2	1	7	0
11:45 AM	10	77	5	3	0	0	1	1	0	0	1	8	4	0	0	0	1	80	1	0	2	8	2	8	0
12:00 PM	5	88	11	2	0	3	3	1	0	0	0	5	6	1	0	2	1	93	2	2	3	1	0	8	0
12:15 PM	5	104	8	1	0	3	0	1	0	0	0	10	6	0	0	0	2	83	6	1	8	7	0	6	0
12:30 PM	6	114	10	1	0	3	0	2	0	0	1	7	9	1	0	1	2	106	3	0	5	9	0	3	0
12:45 PM	5	86	10	0	0	3	1	4	0	0	0	4	3	1	0	3	4	86	4	0	4	4	1	14	0
1:00 PM	6	78	13	2	0	1	3	1	1	0	1	10	9	1	0	1	1	108	2	0	6	11	0	10	0
1:15 PM	5	77	11	2	1	2	1	2	0	0	1	14	3	1	0	0	2	137	1	0	6	7	2	8	0
1:30 PM	7	85	16	0	0	4	1	3	1	0	1	11	6	0	0	0	1	170	5	2	3	5	1	3	0
1:45 PM	8	88	8	0	0	0	2	4	0	0	0	11	8	0	0	2	0	106	3	1	1	5	1	8	0
2:00 PM	7	53	17	0	0	1	1	0	2	0	0	5	6	1	0	1	1	75	2	0	4	8	1	5	0
2:15 PM	10	65	10	2	0	1	1	1	0	0	0	8	3	0	0	2	1	84	1	0	5	10	0	6	0
2:30 PM	11	79	7	0	0	0	0	2	0	0	0	3	5	0	0	2	0	93	2	0	8	5	0	10	0
2:45 PM	11	78	6	0	0	0	0	0	0	0	0	4	2	0	0	0	0	81	0	1	6	5	0	11	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0

	Broadway Southbound					Manila Avenue Southwestbound					Monroe Avenue Westbound					Broadway Northbound					Manila Avenue Eastbound						
Start Time	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	8	74	3	1	0	1	1	0	0	0	0	10	6	1	0	2	7	64	3	0	0	5	6	11	0	203	827
11:15 AM	4	86	6	5	0	0	0	0	0	0	1	5	8	2	0	2	5	66	3	0	1	5	1	4	0	204	865
11:30 AM	10	95	4	2	0	3	0	1	0	0	0	9	4	1	0	1	0	63	2	0	2	2	1	7	0	207	912
11:45 AM	10	77	5	3	0	0	1	1	0	0	1	8	4	0	0	0	1	81	1	0	2	8	2	8	0	213	989
12:00 PM	5	90	11	2	0	3	3	1	0	0	0	5	6	1	0	2	1	95	2	2	3	1	0	8	0	241	1017
12:15 PM	5	104	8	1	0	3	0	1	0	0	0	10	6	0	0	0	2	83	6	1	8	7	0	6	0	251	1042
12:30 PM	6	114	10	1	0	3	0	2	0	0	1	7	9	1	0	1	2	107	3	0	5	9	0	3	0	284	1078
12:45 PM	5	88	10	0	0	3	1	4	0	0	0	4	3	1	0	3	5	87	4	0	4	4	1	14	0	241	1120
1:00 PM	6	78	13	2	0	1	3	1	1	0	1	10	9	1	0	1	1	109	2	0	6	11	0	10	0	266	1135
1:15 PM	5	77	11	2	1	2	1	2	0	0	1	14	4	1	0	0	2	140	1	0	6	7	2	8	0	287	1061
1:30 PM	7	85	16	0	0	4	1	3	1	0	1	11	6	0	0	0	1	171	5	2	3	5	1	3	0	326	985
1:45 PM	8	88	8	0	0	0	2	4	0	0	0	11	8	0	0	2	0	106	3	1	1	5	1	8	0	256	886
2:00 PM	7	53	18	0	0	1	1	0	2	0	0	5	7	1	0	1	1	75	2	0	4	8	1	5	0	192	837
2:15 PM	10	65	10	2	0	1	1	1	0	0	0	8	3	0	0	2	1	84	1	0	6	10	0	6	0	211	
2:30 PM	11	79	7	0	0	0	0	2	0	0	0	3	5	0	0	2	0	93	2	0	8	5	0	10	0	227	
2:45 PM	11	78	6	0	0	0	0	0	0	0	0	4	2	0	0	0	0	83	0	1	6	5	0	11	0	207	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	
Peak Hour	**23**	**328**	**50**	**4**	**1**	**10**	**6**	**10**	**2**	**0**	**3**	**39**	**22**	**3**	**0**	**4**	**9**	**507**	**12**	**2**	**19**	**27**	**4**	**35**	**0**	**0.86**	

Truck

Study Name **WC10-2728_1 Broadway/Manila Ave/Monroe Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code **1**

	Southbound Street Southbound					South-Westbound Street Southwestbound					Westbound Street Westbound					Northbound Street Northbound					Eastbound Street Eastbound				
Start Time	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn
11:00 AM	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
12:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
12:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pedal Bike (Road)

Study Name **WC10-2728_1 Broadway/Manila Ave/Monroe Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code **1**

	Southbound Street Southbound					South-Westbound Street Southwestbound					Westbound Street Westbound					Northbound Street Northbound					Eastbound Street Eastbound				
Start Time	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn
11:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
11:45 AM	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
12:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
12:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0
1:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	1	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**1**	**0**	**0**

People

Study Name **WC10-2728_1 Broadway/Manila Ave/Monroe Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code **1**

	Southbound Street Southbound		South-Westbound Street Southwestbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	1	3	0	6	0	4	0	0	1
11:15 AM	0	5	1	4	1	3	3	8	1	1
11:30 AM	0	1	0	1	0	0	3	0	0	0
11:45 AM	1	2	1	0	1	0	1	4	0	2
12:00 PM	1	1	4	1	1	0	3	6	1	2
12:15 PM	5	2	0	3	2	0	2	4	2	0
12:30 PM	0	1	2	2	5	2	0	7	1	1
12:45 PM	0	0	2	0	2	1	0	3	0	1
1:00 PM	1	0	1	3	0	4	0	1	0	1
1:15 PM	2	3	1	1	1	5	3	3	1	3
1:30 PM	1	1	0	1	0	4	0	2	2	1
1:45 PM	0	6	3	0	2	0	3	5	2	2
2:00 PM	0	1	2	3	10	3	8	4	2	1
2:15 PM	3	0	1	0	1	0	4	0	2	2
2:30 PM	5	0	3	2	5	1	4	0	5	1
2:45 PM	0	1	0	4	0	5	1	2	0	3
3:00 PM	0	0	0	0	0	0	0	0	0	0
Peak Hour	**4**	**4**	**4**	**5**	**3**	**14**	**3**	**9**	**3**	**6**
	8		9		17		12		9	

Pedal Bike (Crosswalk)

Study Name **WC10-2728_1 Broadway/Manila Ave/Monroe Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code **1**

	Southbound Street Southbound		South-Westbound Street Southwestbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	0	0	0	0	0	1	0
11:15 AM	0	0	0	0	1	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	1
2:00 PM	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Study Name **WC10-2728_1 Broadway/Manila Ave/Monroe Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code **1**

	Southbound Street Southbound					South-Westbound Street Southwestbound					Westbound Street Westbound					Northbound Street Northbound					Eastbound Street Eastbound				
Start Time	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn
11:00 AM	8	77	3	1	0	1	1	0	0	0	0	10	6	1	0	2	7	70	3	0	0	5	6	11	0
11:15 AM	4	86	6	5	0	0	0	0	0	0	1	5	9	2	0	2	5	66	3	0	1	5	1	4	0
11:30 AM	10	96	4	2	0	3	0	1	0	0	0	9	4	1	0	1	0	64	2	0	2	3	1	7	0
11:45 AM	10	80	5	3	0	0	1	1	0	0	1	8	5	0	0	0	1	81	1	0	2	9	2	8	0
12:00 PM	5	91	11	2	0	3	3	1	0	0	0	5	7	1	0	2	1	95	2	2	3	1	0	8	0
12:15 PM	5	104	8	1	0	3	0	1	0	0	0	10	6	0	0	0	2	83	6	1	8	7	0	6	0
12:30 PM	6	114	10	1	0	3	0	2	0	0	1	7	9	1	0	1	2	108	3	0	5	10	0	3	0
12:45 PM	6	88	10	0	0	3	1	4	0	0	0	4	3	1	0	3	5	87	4	0	4	4	1	14	0
1:00 PM	7	79	13	2	0	1	3	1	1	0	1	10	9	1	0	1	1	109	2	0	6	11	0	10	0
1:15 PM	5	77	11	2	1	2	1	2	2	0	1	14	4	1	0	0	2	143	1	0	6	7	3	8	0
1:30 PM	8	85	16	0	0	4	1	3	1	0	1	11	7	0	0	0	1	171	5	2	3	5	1	3	0
1:45 PM	9	88	8	0	0	0	2	4	0	0	0	12	10	0	0	2	0	106	3	1	1	5	1	8	0
2:00 PM	7	54	18	0	0	1	1	0	2	0	0	5	7	1	0	1	1	75	2	0	4	8	1	5	0
2:15 PM	10	65	10	2	0	1	1	1	0	0	0	8	3	0	0	2	1	84	1	0	6	10	0	6	0
2:30 PM	11	79	7	0	0	0	1	2	0	0	0	3	5	0	0	2	0	94	2	0	8	6	0	10	0
2:45 PM	11	78	6	0	0	0	0	0	0	0	0	4	2	0	0	0	0	83	0	1	6	5	0	12	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-manila-s
Site Code : 1
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound					MANILA AV Southwestbound					MONROE AV Westbound					BROADWAY Northbound					MANILA AV Northeastbound					
Start Time	RT	TH	LT	to Manila	App. Total	RT	TH	LT	to Monroe	App. Total	to Manila	RT	to Manila	LT	App. Total	RT	to Manila	TH	to Manila	App. Total	RT	to Monroe	TH	LT	App. Total	Int. Total
16:00	2	72	6	0	80	0	0	1	0	1	0	4	2	0	6	0	1	88	0	89	1	5	0	4	10	186
16:15	3	75	5	1	84	0	0	3	0	3	0	3	1	0	4	0	0	93	0	93	0	3	0	5	8	192
16:30	5	71	6	0	82	0	0	1	0	1	0	5	2	1	8	1	2	109	2	114	5	11	0	4	20	225
16:45	4	76	5	0	85	0	0	0	0	0	0	4	8	1	13	0	1	93	0	94	4	7	1	5	17	209
Total	14	294	22	1	331	0	0	5	0	5	0	16	13	2	31	1	4	383	2	390	10	26	1	18	55	812
17:00	6	67	11	1	85	0	1	1	0	2	0	3	8	0	11	2	1	93	1	97	2	6	1	5	14	209
17:15	9	63	8	0	80	0	0	1	0	1	0	1	2	0	3	1	0	72	2	75	6	8	1	5	20	179
17:30	6	83	10	1	100	0	1	1	0	2	0	4	5	0	9	0	1	79	5	85	3	9	4	5	21	217
17:45	10	77	14	1	102	1	0	2	0	3	0	6	4	1	11	2	0	106	2	110	2	4	0	3	9	235
Total	31	290	43	3	367	1	2	5	0	8	0	14	19	1	34	5	2	350	10	367	13	27	6	18	64	840
18:00	4	66	2	0	72	0	0	1	0	1	0	6	5	0	11	2	0	75	0	77	2	7	0	1	10	171
18:15	4	61	9	0	74	0	1	0	0	1	0	4	4	0	8	0	0	80	0	80	4	10	1	9	24	187
18:30	9	77	10	1	97	0	1	2	0	3	0	10	7	0	17	0	1	49	0	50	1	6	1	3	11	178
18:45	7	77	13	0	97	1	0	0	1	2	1	6	4	0	11	1	0	64	1	66	1	6	0	3	10	186
Total	24	281	34	1	340	1	2	3	1	7	1	26	20	0	47	3	1	268	1	273	8	29	2	16	55	722
Grand Total	69	865	99	5	1038	2	4	13	1	20	1	56	52	3	112	9	7	1001	13	1030	31	82	9	52	174	2374
Apprch %	6.6	83.3	9.5	0.5		10	20	65	5		0.9	50	46.4	2.7		0.9	0.7	97.2	1.3		17.8	47.1	5.2	29.9		
Total %	2.9	36.4	4.2	0.2	43.7	0.1	0.2	0.5	0	0.8	0	2.4	2.2	0.1	4.7	0.4	0.3	42.2	0.5	43.4	1.3	3.5	0.4	2.2	7.3	

	BROADWAY Southbound					MANILA AV Southwestbound					MONROE AV Westbound					BROADWAY Northbound					MANILA AV Northeastbound					
Start Time	RT	TH	LT	to Manila	App. Total	RT	TH	LT	to Monroe	App. Total	to Manila	RT	to Manila	LT	App. Total	RT	to Manila	TH	to Manila	App. Total	RT	to Monroe	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:30 - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 17:00																										
17:00	6	67	11	**1**	85	0	**1**	1	0	2	0	3	**8**	0	**11**	**2**	**1**	93	1	97	2	6	1	**5**	14	209
17:15	9	63	8	0	80	0	0	1	0	1	0	1	2	0	3	1	0	72	2	75	**6**	8	1	5	20	179
17:30	6	**83**	10	1	100	0	1	1	0	2	0	4	5	0	9	0	1	79	**5**	85	3	**9**	**4**	5	**21**	217
17:45	**10**	77	**14**	1	**102**	**1**	0	**2**	0	**3**	0	**6**	4	**1**	11	2	0	**106**	2	**110**	2	4	0	3	9	**235**
Total Volume	31	290	43	3	367	1	2	5	0	8	0	14	19	1	34	5	2	350	10	367	13	27	6	18	64	840
% App. Total	8.4	79	11.7	0.8		12.5	25	62.5	0		0	41.2	55.9	2.9		1.4	0.5	95.4	2.7		20.3	42.2	9.4	28.1		
PHF	.775	.873	.768	.750	.900	.250	.500	.625	.000	.667	.000	.583	.594	.250	.773	.625	.500	.825	.500	.834	.542	.750	.375	.900	.762	.894

CITY OF OAKLAND

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Mietek 916-806-0250

File Name : broadway-manila-s
Site Code : 1
Start Date : 5/15/2010
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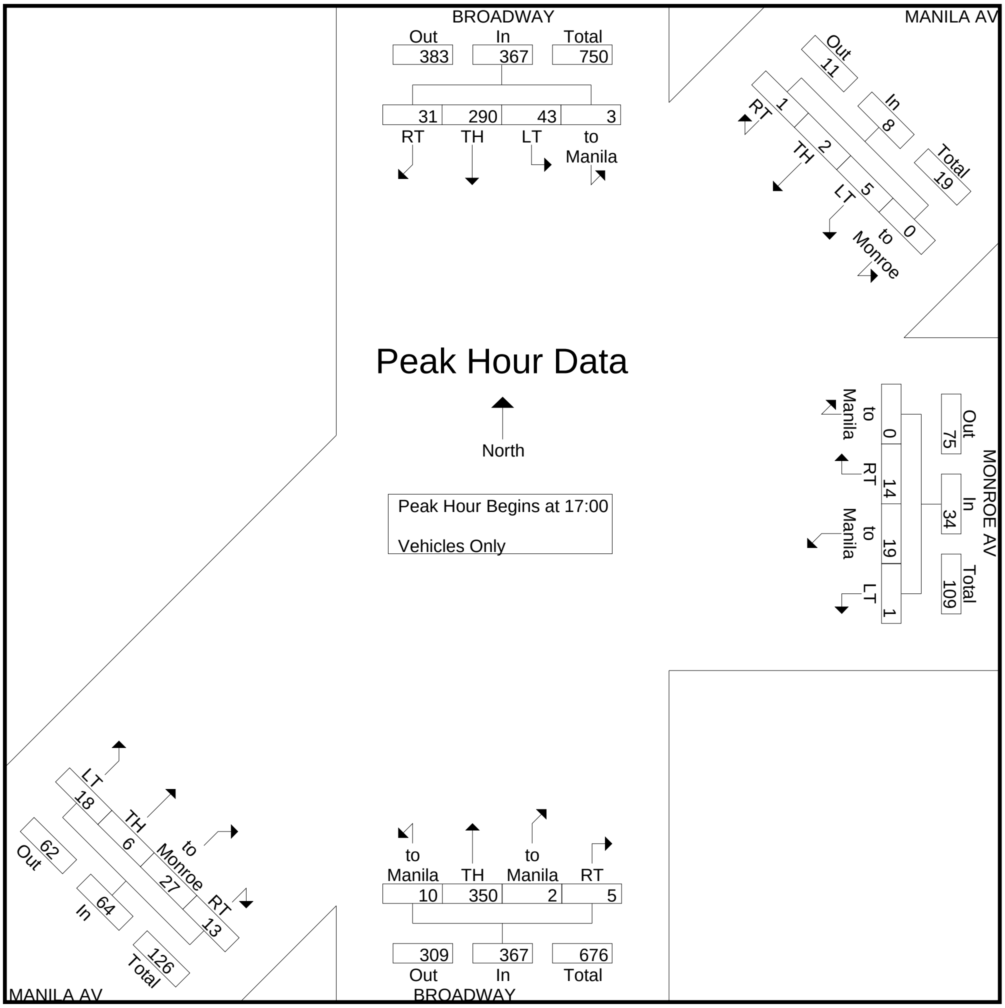

MARKS TRAFFIC DATA

CITY OF OAKLAND

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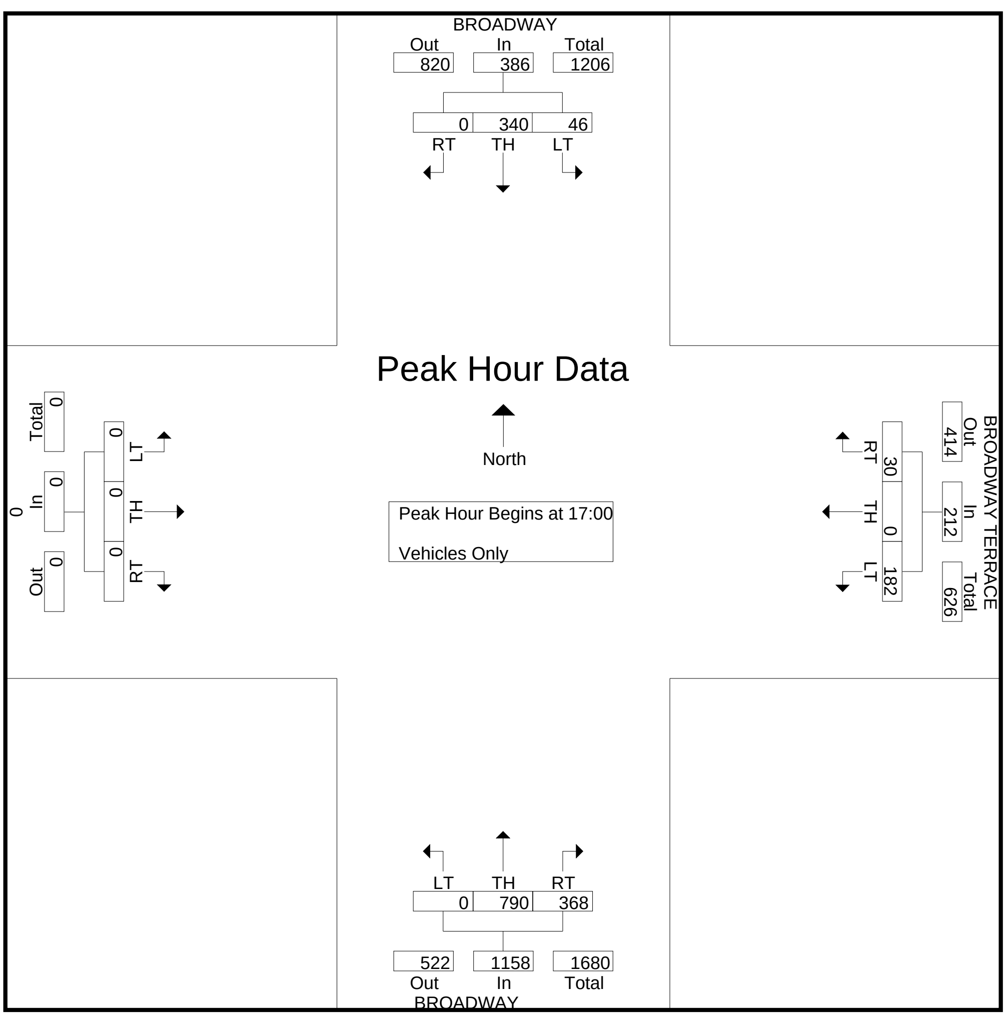
Mietek 916-806-0250

File Name : broadway-terrace-p
Site Code : 2
Start Date : 5/11/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				BROADWAY TERRACE Westbound				BROADWAY Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	86	3	89	5	0	53	58	56	137	0	193	0	0	0	0	340
16:15	0	98	3	101	7	0	46	53	63	140	0	203	0	0	0	0	357
16:30	0	72	7	79	6	0	39	45	66	161	0	227	0	0	0	0	351
16:45	0	70	5	75	7	0	44	51	75	175	0	250	0	0	0	0	376
Total	0	326	18	344	25	0	182	207	260	613	0	873	0	0	0	0	1424
17:00	0	95	8	103	8	0	35	43	82	202	0	284	0	0	0	0	430
17:15	0	78	14	92	3	0	49	52	101	208	0	309	0	0	0	0	453
17:30	0	80	9	89	10	0	39	49	86	196	0	282	0	0	0	0	420
17:45	0	87	15	102	9	0	59	68	99	184	0	283	0	0	0	0	453
Total	0	340	46	386	30	0	182	212	368	790	0	1158	0	0	0	0	1756
Grand Total	0	666	64	730	55	0	364	419	628	1403	0	2031	0	0	0	0	3180
Apprch %	0	91.2	8.8		13.1	0	86.9		30.9	69.1	0		0	0	0		
Total %	0	20.9	2	23	1.7	0	11.4	13.2	19.7	44.1	0	63.9	0	0	0	0	

	BROADWAY Southbound				BROADWAY TERRACE Westbound				BROADWAY Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	**95**	8	**103**	8	0	35	43	82	202	0	284	0	0	0	0	430
17:15	0	78	14	92	3	0	49	52	**101**	**208**	0	**309**	0	0	0	0	**453**
17:30	0	80	9	89	**10**	0	39	49	86	196	0	282	0	0	0	0	420
17:45	0	87	**15**	102	9	0	**59**	**68**	99	184	0	283	0	0	0	0	453
Total Volume	0	340	46	386	30	0	182	212	368	790	0	1158	0	0	0	0	1756
% App. Total	0	88.1	11.9		14.2	0	85.8		31.8	68.2	0		0	0	0		
PHF	.000	.895	.767	.937	.750	.000	.771	.779	.911	.950	.000	.937	.000	.000	.000	.000	.969



Car

Study Name **WC10-2728_2 Broadway/Broadway Terrace**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Broadway Southbound			Broadway Terrace Westbound			Broadway Northbound				
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	15-Min Total	Hour Total
11:00 AM	93	3	0	6	43	0	42	75	0	262	1018
11:15 AM	89	1	0	5	36	0	29	73	1	234	1036
11:30 AM	102	4	0	4	42	0	38	70	1	261	1084
11:45 AM	77	8	0	9	50	0	47	70	0	261	1178
12:00 PM	99	8	0	4	42	0	36	91	0	280	1238
12:15 PM	88	9	1	10	42	0	50	82	0	282	1289
12:30 PM	129	8	0	11	51	0	46	110	0	355	1349
12:45 PM	90	10	0	11	69	0	55	86	0	321	1366
1:00 PM	95	7	1	11	54	0	64	98	1	331	1372
1:15 PM	90	8	0	8	53	0	46	137	0	342	1301
1:30 PM	79	7	0	9	41	0	68	168	0	372	1228
1:45 PM	93	5	0	6	58	0	48	117	0	327	1130
2:00 PM	64	6	0	2	50	0	51	87	0	260	1115
2:15 PM	74	5	0	9	44	0	51	86	0	269	858
2:30 PM	83	7	1	7	42	0	58	76	0	274	
2:45 PM	96	7	0	8	45	0	61	94	1	312	
3:00 PM	0	0	0	0	0	0	1	2	0	3	

Cars + Trucks	Broadway Southbound			Broadway Terrace Westbound			Broadway Northbound				
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	15-Min Total	Hour Total
11:00 AM	93	3	0	6	44	0	42	75	0	263	1026
11:15 AM	89	1	0	5	37	0	31	74	1	238	1049
11:30 AM	102	4	0	4	44	0	39	70	1	264	1093
11:45 AM	77	8	0	9	50	0	47	70	0	261	1185
12:00 PM	101	8	0	4	43	0	37	93	0	286	1253
12:15 PM	88	9	1	10	42	0	50	82	0	282	1299
12:30 PM	129	8	0	11	51	0	46	111	0	356	1361
12:45 PM	92	10	0	11	71	0	57	88	0	329	1377
1:00 PM	95	7	1	11	54	0	64	99	1	332	1377
1:15 PM	90	8	0	8	53	0	46	139	0	344	1306
1:30 PM	79	7	0	9	41	0	68	168	0	372	1232
1:45 PM	93	5	0	6	58	0	50	117	0	329	1135
2:00 PM	64	6	0	2	51	0	51	87	0	261	1120
2:15 PM	74	5	0	9	45	0	51	86	0	270	862
2:30 PM	83	8	1	7	42	0	58	76	0	275	
2:45 PM	96	7	0	8	45	0	61	96	1	314	
3:00 PM	0	0	0	0	0	0	1	2	0	3	
Peak Hour	**356**	**32**	**1**	**39**	**219**	**0**	**235**	**494**	**1**	**0.93**	

Truck

Study Name **WC10-2728_2 Broadway/Broadway Terrace**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Westbound Street Westbound			Northbound Street Northbound				
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	15-Min Total	Hour Total
11:00 AM	0	0	0	0	1	0	0	0	0	1	8
11:15 AM	0	0	0	0	1	0	2	1	0	4	13
11:30 AM	0	0	0	0	2	0	1	0	0	3	9
11:45 AM	0	0	0	0	0	0	0	0	0	0	7
12:00 PM	2	0	0	0	1	0	1	2	0	6	15
12:15 PM	0	0	0	0	0	0	0	0	0	0	10
12:30 PM	0	0	0	0	0	0	0	1	0	1	12
12:45 PM	2	0	0	0	2	0	2	2	0	8	11
1:00 PM	0	0	0	0	0	0	0	1	0	1	5
1:15 PM	0	0	0	0	0	0	0	2	0	2	5
1:30 PM	0	0	0	0	0	0	0	0	0	0	4
1:45 PM	0	0	0	0	0	0	2	0	0	2	5
2:00 PM	0	0	0	0	1	0	0	0	0	1	5
2:15 PM	0	0	0	0	1	0	0	0	0	1	4
2:30 PM	0	1	0	0	0	0	0	0	0	1	
2:45 PM	0	0	0	0	0	0	0	2	0	2	
3:00 PM	0	0	0	0	0	0	0	0	0	0	
Peak Hour	2	0	0	0	2	0	2	5	0		

Pedal Bike (Road)

Study Name **WC10-2728_2 Broadway/Broadway Terrace**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Westbound Street Westbound			Northbound Street Northbound		
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn
11:00 AM	3	0	0	0	0	0	2	6	0
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	3	0	1	1	0
11:45 AM	0	0	0	0	1	0	0	0	0
12:00 PM	0	1	0	0	0	0	0	0	0
12:15 PM	2	0	0	0	0	0	1	0	0
12:30 PM	0	0	0	0	1	0	1	0	0
12:45 PM	2	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	2	0	0	0	0
1:15 PM	1	0	0	0	0	0	0	4	0
1:30 PM	1	0	0	0	0	0	0	1	0
1:45 PM	1	0	0	0	0	0	1	0	0
2:00 PM	0	2	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	2	0	0
2:30 PM	2	0	0	0	2	0	0	1	0
2:45 PM	0	0	0	0	0	0	1	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
Peak Hour	4	0	0	0	2	0	0	5	0

People

Study Name **WC10-2728_2 Broadway/Broadway Terrace**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	4	3	6	4	0	0	9	9
11:15 AM	7	2	7	5	0	0	9	6
11:30 AM	8	4	6	5	0	0	10	10
11:45 AM	34	5	36	8	0	0	11	9
12:00 PM	10	41	9	34	0	2	10	9
12:15 PM	10	4	10	7	0	0	12	11
12:30 PM	12	6	5	7	0	0	7	12
12:45 PM	6	18	13	14	0	0	8	1
1:00 PM	3	6	5	7	0	0	9	8
1:15 PM	5	8	5	7	0	0	8	12
1:30 PM	3	6	2	4	0	0	7	8
1:45 PM	3	1	3	3	0	0	10	4
2:00 PM	8	6	9	4	0	1	12	19
2:15 PM	8	8	2	6	0	0	6	6
2:30 PM	3	3	3	2	0	0	9	9
2:45 PM	5	12	7	3	0	0	16	14
3:00 PM	0	0	0	0	0	0	0	0
Peak Hour	17	38	25	32	0	0	32	29
	55		57		0		61	

Pedal Bike (Crosswalk)

Study Name **WC10-2728_2 Broadway/Broadway Terrace**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	1	1	0	1	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	1	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	4	1
12:45 PM	0	0	0	0	0	0	1	1
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	1	0
1:45 PM	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	2	1

Totals

Study Name **WC10-2728_2 Broadway/Broadway Terrace**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Westbound Street Westbound			Northbound Street Northbound		
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn
11:00 AM	96	3	0	6	44	0	44	81	0
11:15 AM	89	1	0	5	37	0	31	74	1
11:30 AM	102	4	0	4	47	0	40	71	1
11:45 AM	77	8	0	9	51	0	47	70	0
12:00 PM	101	9	0	4	43	0	37	93	0
12:15 PM	90	9	1	10	42	0	51	82	0
12:30 PM	129	8	0	11	52	0	47	111	0
12:45 PM	94	10	0	11	71	0	57	88	0
1:00 PM	95	7	1	11	56	0	64	99	1
1:15 PM	91	8	0	8	53	0	46	143	0
1:30 PM	80	7	0	9	41	0	68	169	0
1:45 PM	94	5	0	6	58	0	51	117	0
2:00 PM	64	8	0	2	51	0	51	87	0
2:15 PM	74	5	0	9	45	0	53	86	0
2:30 PM	85	8	1	7	44	0	58	77	0
2:45 PM	96	7	0	8	45	0	62	96	1
3:00 PM	0	0	0	0	0	0	1	2	0
Peak Hour	360	32	1	39	221	0	235	499	1

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-terrace-s
Site Code : 2
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				BROADWAY TERRACE Westbound				BROADWAY Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	95	2	97	4	0	35	39	31	118	0	149	0	0	0	0	285
16:15	0	64	6	70	5	0	36	41	48	103	0	151	0	0	0	0	262
16:30	0	48	9	57	7	0	51	58	43	110	0	153	0	0	0	0	268
16:45	0	66	5	71	6	0	44	50	39	87	0	126	0	0	0	0	247
Total	0	273	22	295	22	0	166	188	161	418	0	579	0	0	0	0	1062
17:00	0	68	5	73	5	0	48	53	37	105	0	142	0	0	0	0	268
17:15	0	83	6	89	5	0	45	50	29	91	0	120	0	0	0	0	259
17:30	0	92	5	97	5	0	32	37	29	77	0	106	0	0	0	0	240
17:45	0	67	7	74	5	0	37	42	28	78	0	106	0	0	0	0	222
Total	0	310	23	333	20	0	162	182	123	351	0	474	0	0	0	0	989
18:00	0	70	1	71	5	0	35	40	24	86	0	110	0	0	0	0	221
18:15	0	76	4	80	5	0	34	39	27	73	0	100	0	0	0	0	219
18:30	0	66	3	69	3	0	37	40	27	78	0	105	0	0	0	0	214
18:45	0	69	2	71	4	0	32	36	21	60	0	81	0	0	0	0	188
Total	0	281	10	291	17	0	138	155	99	297	0	396	0	0	0	0	842
Grand Total	0	864	55	919	59	0	466	525	383	1066	0	1449	0	0	0	0	2893
Apprch %	0	94	6		11.2	0	88.8		26.4	73.6	0		0	0	0		
Total %	0	29.9	1.9	31.8	2	0	16.1	18.1	13.2	36.8	0	50.1	0	0	0	0	

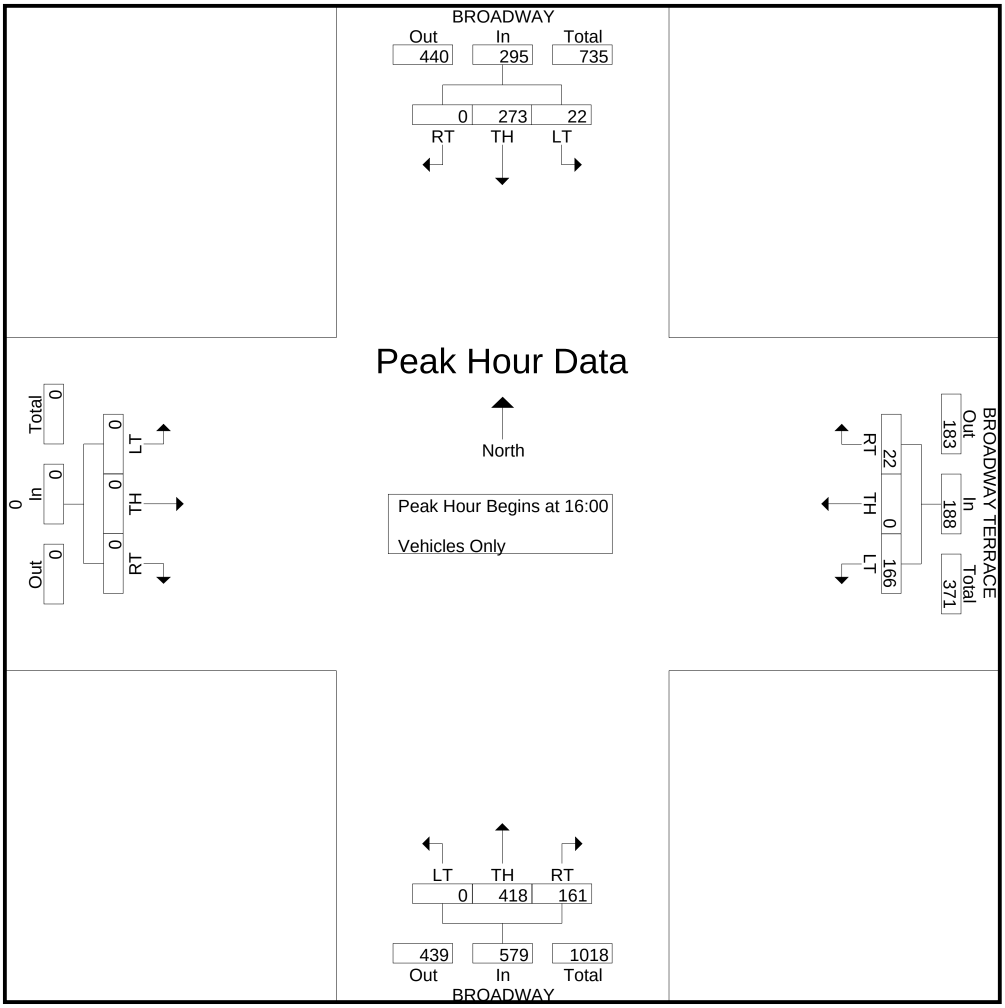
	BROADWAY Southbound				BROADWAY TERRACE Westbound				BROADWAY Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	0	**95**	2	**97**	4	0	35	39	31	**118**	0	149	0	0	0	0	**285**
16:15	0	64	6	70	5	0	36	41	**48**	103	0	151	0	0	0	0	262
16:30	0	48	**9**	57	**7**	0	**51**	**58**	43	110	0	**153**	0	0	0	0	268
16:45	0	66	5	71	6	0	44	50	39	87	0	126	0	0	0	0	247
Total Volume	0	273	22	295	22	0	166	188	161	418	0	579	0	0	0	0	1062
% App. Total	0	92.5	7.5		11.7	0	88.3		27.8	72.2	0		0	0	0		
PHF	.000	.718	.611	.760	.786	.000	.814	.810	.839	.886	.000	.946	.000	.000	.000	.000	.932

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-terrace-s
Site Code : 2
Start Date : 5/8/2010
Page No : 2



MARKS TRAFFIC DATA

CITY OF OAKLAND

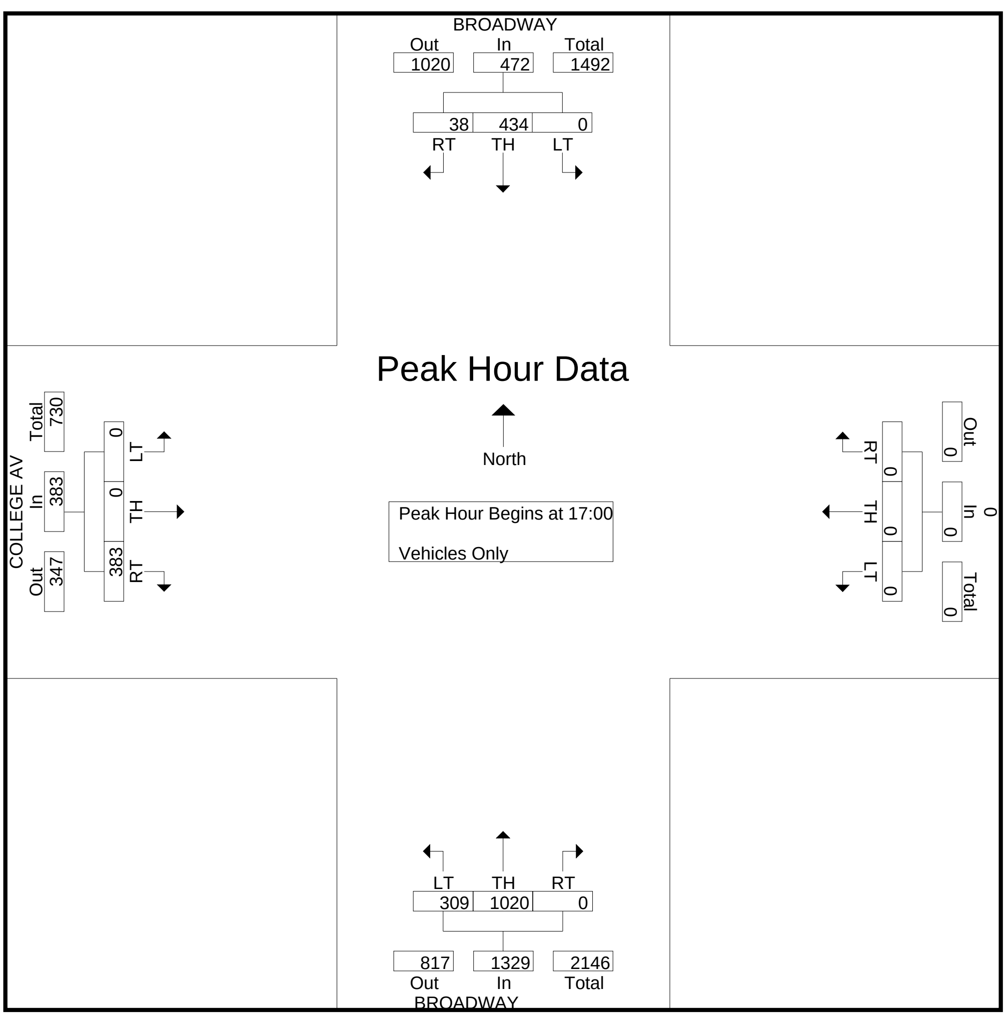
fp
Mietek 916-806-0250

File Name : broadway-college-p
Site Code : 3
Start Date : 5/11/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				0 Westbound				BROADWAY Northbound				COLLEGE AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	16	93	0	109	0	0	0	0	0	179	74	253	92	0	0	92	454
16:15	15	98	0	113	0	0	0	0	0	166	68	234	71	0	0	71	418
16:30	12	111	0	123	0	0	0	0	0	219	86	305	101	0	0	101	529
16:45	14	124	0	138	0	0	0	0	0	227	81	308	87	0	0	87	533
Total	57	426	0	483	0	0	0	0	0	791	309	1100	351	0	0	351	1934
17:00	11	96	0	107	0	0	0	0	0	283	79	362	98	0	0	98	567
17:15	8	119	0	127	0	0	0	0	0	237	84	321	84	0	0	84	532
17:30	5	102	0	107	0	0	0	0	0	245	63	308	89	0	0	89	504
17:45	14	117	0	131	0	0	0	0	0	255	83	338	112	0	0	112	581
Total	38	434	0	472	0	0	0	0	0	1020	309	1329	383	0	0	383	2184
Grand Total	95	860	0	955	0	0	0	0	0	1811	618	2429	734	0	0	734	4118
Apprch %	9.9	90.1	0		0	0	0		0	74.6	25.4		100	0	0		
Total %	2.3	20.9	0	23.2	0	0	0	0	0	44	15	59	17.8	0	0	17.8	

	BROADWAY Southbound				0 Westbound				BROADWAY Northbound				COLLEGE AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	11	96	0	107	0	0	0	0	0	**283**	79	**362**	98	0	0	98	567
17:15	8	**119**	0	127	0	0	0	0	0	237	**84**	321	84	0	0	84	532
17:30	5	102	0	107	0	0	0	0	0	245	63	308	89	0	0	89	504
17:45	**14**	117	0	**131**	0	0	0	0	0	255	83	338	**112**	0	0	**112**	**581**
Total Volume	38	434	0	472	0	0	0	0	0	1020	309	1329	383	0	0	383	2184
% App. Total	8.1	91.9	0		0	0	0		0	76.7	23.3		100	0	0		
PHF	.679	.912	.000	.901	.000	.000	.000	.000	.000	.901	.920	.918	.855	.000	.000	.855	.940



Car

Study Name **WC10-2728_3 Broadway/College Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code **0**

	College Avenue Southbound			Broadway Westbound			Broadway Eastbound				
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	73	0	0	22	106	0	121	58	0	380	1563
11:15 AM	68	0	0	12	123	0	105	64	0	372	1618
11:30 AM	69	1	0	23	118	0	102	76	1	390	1687
11:45 AM	84	0	0	13	116	0	123	85	0	421	1801
12:00 PM	87	1	0	16	127	0	138	64	2	435	1878
12:15 PM	97	0	0	19	125	0	130	69	1	441	1924
12:30 PM	89	0	0	19	166	0	150	77	3	504	2012
12:45 PM	86	0	0	19	140	0	143	108	2	498	2051
1:00 PM	86	0	0	25	120	0	167	83	0	481	2009
1:15 PM	93	0	0	22	118	0	200	96	0	529	1946
1:30 PM	98	0	0	25	107	0	227	86	0	543	1820
1:45 PM	71	0	0	13	126	0	159	86	1	456	1716
2:00 PM	86	1	0	8	117	0	124	82	0	418	1712
2:15 PM	78	0	0	12	99	0	149	65	0	403	
2:30 PM	94	0	0	28	110	0	135	72	0	439	
2:45 PM	92	0	0	22	112	0	156	70	0	452	

Cars+Trucks	College Avenue Southbound			Broadway Westbound			Broadway Eastbound				
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	74	0	0	22	107	0	121	64	0	388	1588
11:15 AM	69	0	0	12	124	0	108	66	0	379	1643
11:30 AM	71	1	0	24	119	0	104	77	1	397	1707
11:45 AM	85	0	0	13	116	0	124	86	0	424	1818
12:00 PM	88	1	0	17	129	0	141	65	2	443	1902
12:15 PM	98	0	0	19	125	0	130	70	1	443	1945
12:30 PM	90	0	0	19	166	0	151	79	3	508	2036
12:45 PM	87	0	0	19	143	0	148	109	2	508	2074
1:00 PM	87	0	0	25	120	0	168	86	0	486	2030
1:15 PM	95	0	0	22	118	0	203	96	0	534	1965
1:30 PM	99	0	0	25	107	0	228	87	0	546	1836
1:45 PM	74	0	0	13	128	0	160	88	1	464	1733
2:00 PM	87	1	0	8	118	0	124	83	0	421	1727
2:15 PM	79	0	0	12	99	0	149	66	0	405	
2:30 PM	97	0	0	28	110	0	135	73	0	443	
2:45 PM	93	0	0	22	112	0	158	73	0	458	
Peak Hour	**368**	**0**	**0**	**91**	**488**	**0**	**747**	**378**	**2**	**0.95**	

Truck

Study Name WC10-2728_3 Broadway/College Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code 0

	Southbound Street Southbound			Westbound Street Westbound			Eastbound Street Eastbound		
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn
11:00 AM	1	0	0	0	1	0	0	6	0
11:15 AM	1	0	0	0	1	0	3	2	0
11:30 AM	2	0	0	1	1	0	2	1	0
11:45 AM	1	0	0	0	0	0	1	1	0
12:00 PM	1	0	0	1	2	0	3	1	0
12:15 PM	1	0	0	0	0	0	0	1	0
12:30 PM	1	0	0	0	0	0	1	2	0
12:45 PM	1	0	0	0	3	0	5	1	0
1:00 PM	1	0	0	0	0	0	1	3	0
1:15 PM	2	0	0	0	0	0	3	0	0
1:30 PM	1	0	0	0	0	0	1	1	0
1:45 PM	3	0	0	0	2	0	1	2	0
2:00 PM	1	0	0	0	1	0	0	1	0
2:15 PM	1	0	0	0	0	0	0	1	0
2:30 PM	3	0	0	0	0	0	0	1	0
2:45 PM	1	0	0	0	0	0	2	3	0
Peak Hour	**5**	**0**	**0**	**0**	**3**	**0**	**10**	**5**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_3 Broadway/College Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code **0**

	Southbound Street Southbound			Westbound Street Westbound			Eastbound Street Eastbound		
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn
11:00 AM	1	0	0	0	2	0	8	1	0
11:15 AM	3	0	0	0	0	0	0	7	0
11:30 AM	0	0	0	5	3	0	6	1	0
11:45 AM	1	0	0	0	1	0	0	2	0
12:00 PM	0	0	0	0	1	0	0	3	0
12:15 PM	2	0	0	0	0	0	0	1	0
12:30 PM	4	0	0	0	4	0	5	4	0
12:45 PM	1	0	0	1	0	0	1	2	0
1:00 PM	1	0	0	1	1	0	1	1	0
1:15 PM	3	0	0	0	0	0	0	4	0
1:30 PM	2	0	0	0	0	0	1	2	0
1:45 PM	2	0	0	0	1	0	3	5	0
2:00 PM	7	0	0	0	0	0	2	5	0
2:15 PM	2	0	0	0	0	0	2	1	0
2:30 PM	3	0	0	2	1	0	4	3	0
2:45 PM	4	0	0	0	0	0	1	4	0
Peak Hour	**7**	**0**	**0**	**2**	**1**	**0**	**3**	**9**	**0**

People

Study Name **WC10-2728_3 Broadway/College Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code **0**

	Southbound Street Southbound		Westbound Street Westbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	10	11	27	16	0	0
11:15 AM	8	6	14	15	0	0
11:30 AM	8	9	21	6	0	0
11:45 AM	11	4	15	8	0	0
12:00 PM	11	12	22	13	0	0
12:15 PM	5	8	22	15	1	0
12:30 PM	2	9	15	12	0	0
12:45 PM	4	6	8	26	0	0
1:00 PM	19	5	23	15	0	0
1:15 PM	6	17	17	13	0	0
1:30 PM	8	10	4	18	0	0
1:45 PM	2	10	12	14	0	2
2:00 PM	13	3	18	26	0	0
2:15 PM	4	7	14	16	0	0
2:30 PM	8	11	12	14	0	0
2:45 PM	9	10	11	13	0	0
Peak Hour	**37**	**38**	**52**	**72**	**0**	**0**
	75		124		0	

Pedal Bike (Crosswalk)

Study Name WC10-2728_3 Broadway/College Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code 0

	Southbound Street Southbound		Westbound Street Westbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	0	0	0	0	0	0			
11:15 AM	0	0	0	0	0	0			
11:30 AM	0	0	0	1	0	0			
11:45 AM	0	0	0	4	0	0			
12:00 PM	0	0	0	0	0	0			
12:15 PM	0	0	0	0	0	0			
12:30 PM	0	0	0	0	0	0			
12:45 PM	0	0	0	0	0	0			
1:00 PM	0	0	0	0	0	0			
1:15 PM	0	0	0	0	0	0			
1:30 PM	0	0	0	0	0	0			
1:45 PM	1	0	0	0	0	0			
2:00 PM	1	0	1	0	0	0			
2:15 PM	0	0	0	1	0	0			
2:30 PM	0	0	3	0	0	0			
2:45 PM	0	0	0	0	0	0			
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name WC10-2728_3 Broadway/College Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code 0

	Southbound Street Southbound			Westbound Street Westbound			Eastbound Street Eastbound		
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn
11:00 AM	75	0	0	22	109	0	129	65	0
11:15 AM	72	0	0	12	124	0	108	73	0
11:30 AM	71	1	0	29	122	0	110	78	1
11:45 AM	86	0	0	13	117	0	124	88	0
12:00 PM	88	1	0	17	130	0	141	68	2
12:15 PM	100	0	0	19	125	0	130	71	1
12:30 PM	94	0	0	19	170	0	156	83	3
12:45 PM	88	0	0	20	143	0	149	111	2
1:00 PM	88	0	0	26	121	0	169	87	0
1:15 PM	98	0	0	22	118	0	203	100	0
1:30 PM	101	0	0	25	107	0	229	89	0
1:45 PM	76	0	0	13	129	0	163	93	1
2:00 PM	94	1	0	8	118	0	126	88	0
2:15 PM	81	0	0	12	99	0	151	67	0
2:30 PM	100	0	0	30	111	0	139	76	0
2:45 PM	97	0	0	22	112	0	159	77	0
Peak Hour	**375**	**0**	**0**	**93**	**489**	**0**	**750**	**387**	**2**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-college-s
Site Code : 3
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				0 Westbound				BROADWAY Northbound				COLLEGE AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	12	126	0	138	0	0	0	0	0	152	78	230	100	0	0	100	468
16:15	4	105	0	109	0	0	0	0	0	151	82	233	70	0	0	70	412
16:30	11	84	0	95	0	0	0	0	0	154	76	230	107	0	0	107	432
16:45	12	100	0	112	0	0	0	0	0	130	90	220	77	0	0	77	409
Total	39	415	0	454	0	0	0	0	0	587	326	913	354	0	0	354	1721
17:00	9	101	0	110	0	0	0	0	0	139	90	229	94	0	0	94	433
17:15	21	110	0	131	0	0	0	0	0	123	67	190	98	0	0	98	419
17:30	8	83	0	91	0	0	0	0	0	116	69	185	91	0	0	91	367
17:45	13	93	0	106	0	0	0	0	0	113	77	190	84	0	0	84	380
Total	51	387	0	438	0	0	0	0	0	491	303	794	367	0	0	367	1599
18:00	18	90	0	108	0	0	0	0	0	109	76	185	79	0	0	79	372
18:15	11	102	0	113	0	0	0	0	0	99	59	158	90	0	0	90	361
18:30	15	82	0	97	0	0	0	0	0	105	62	167	63	0	0	63	327
18:45	14	89	0	103	0	0	0	0	0	76	71	147	70	0	0	70	320
Total	58	363	0	421	0	0	0	0	0	389	268	657	302	0	0	302	1380
Grand Total	148	1165	0	1313	0	0	0	0	0	1467	897	2364	1023	0	0	1023	4700
Apprch %	11.3	88.7	0		0	0	0		0	62.1	37.9		100	0	0		
Total %	3.1	24.8	0	27.9	0	0	0	0	0	31.2	19.1	50.3	21.8	0	0	21.8	

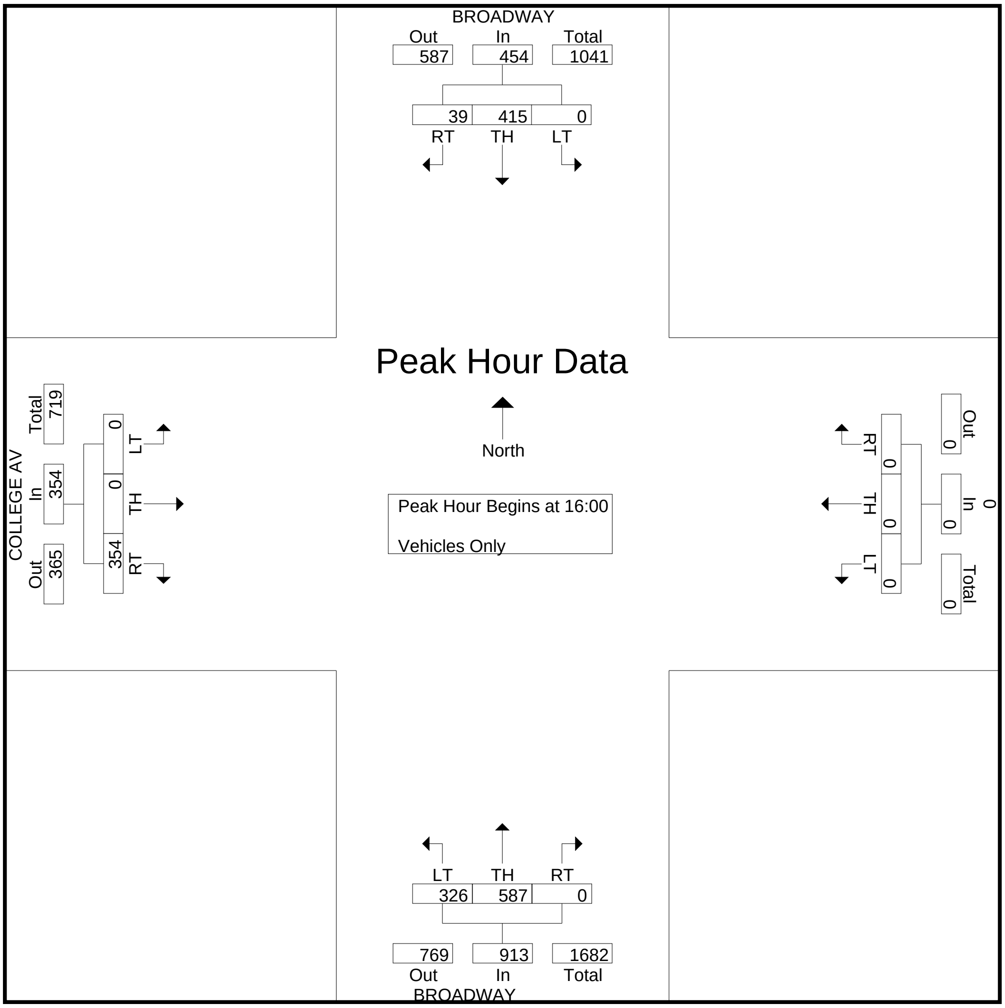
	BROADWAY Southbound				0 Westbound				BROADWAY Northbound				COLLEGE AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**12**	**126**	0	**138**	0	0	0	0	0	152	78	230	100	0	0	100	**468**
16:15	4	105	0	109	0	0	0	0	0	151	82	**233**	70	0	0	70	412
16:30	11	84	0	95	0	0	0	0	0	**154**	76	230	**107**	0	0	**107**	432
16:45	12	100	0	112	0	0	0	0	0	130	**90**	220	77	0	0	77	409
Total Volume	39	415	0	454	0	0	0	0	0	587	326	913	354	0	0	354	1721
% App. Total	8.6	91.4	0		0	0	0		0	64.3	35.7		100	0	0		
PHF	.813	.823	.000	.822	.000	.000	.000	.000	.000	.953	.906	.980	.827	.000	.000	.827	.919

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-college-s
Site Code : 3
Start Date : 5/8/2010
Page No : 2



CITY OF OAKLAND

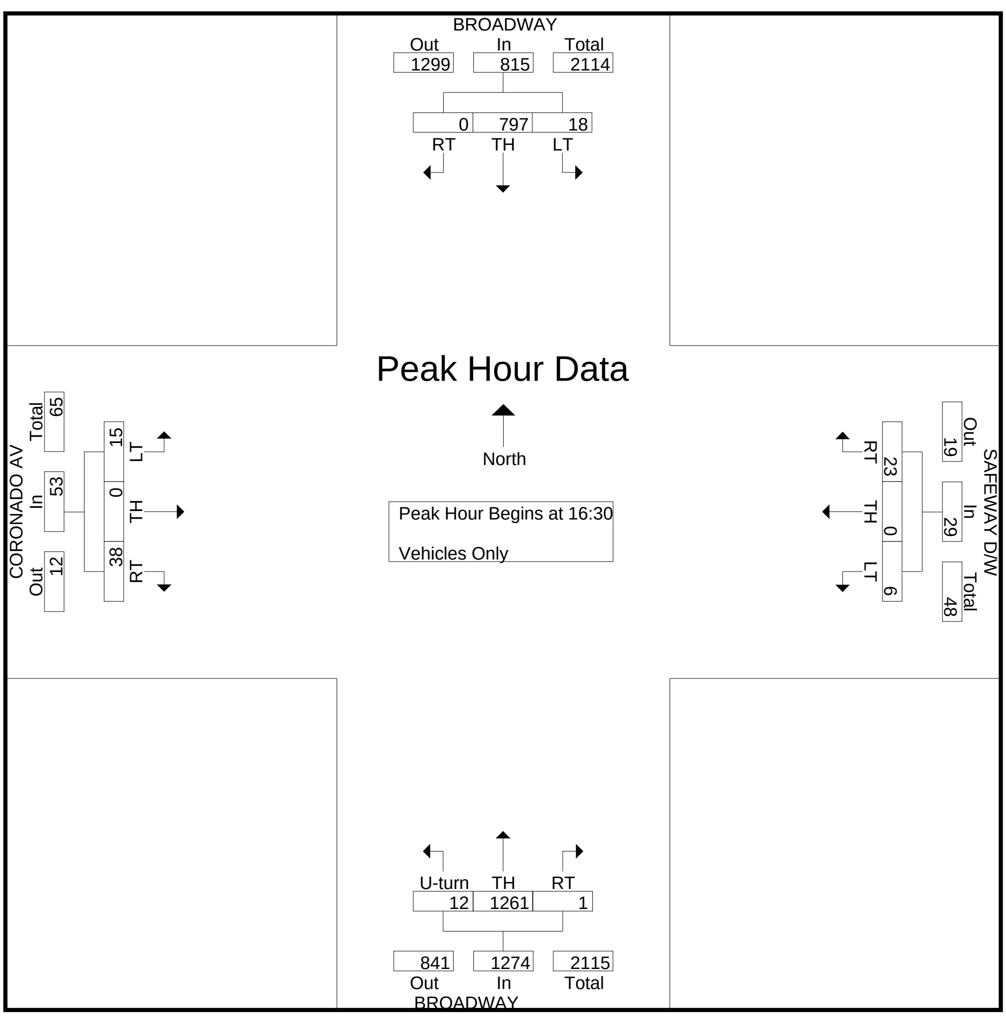
fp
Mietek 916-806-0250

File Name : broadway-coronado-p
Site Code : 4
Start Date : 5/11/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				SAFEWAY D/W Westbound				BROADWAY Northbound				CORONADO AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	186	3	189	5	0	3	8	2	270	6	278	11	0	2	13	488
16:15	0	162	3	165	3	0	1	4	0	230	5	235	15	0	6	21	425
16:30	0	210	8	218	4	0	2	6	0	307	5	312	11	0	3	14	550
16:45	0	204	4	208	6	0	1	7	1	308	0	309	13	0	4	17	541
Total	0	762	18	780	18	0	7	25	3	1115	16	1134	50	0	15	65	2004
17:00	0	193	2	195	7	0	3	10	0	340	5	345	5	0	2	7	557
17:15	0	190	4	194	6	0	0	6	0	306	2	308	9	0	6	15	523
17:30	0	180	2	182	4	0	2	6	1	292	5	298	13	0	4	17	503
17:45	0	212	3	215	5	0	2	7	0	329	2	331	9	0	7	16	569
Total	0	775	11	786	22	0	7	29	1	1267	14	1282	36	0	19	55	2152
Grand Total	0	1537	29	1566	40	0	14	54	4	2382	30	2416	86	0	34	120	4156
Apprch %	0	98.1	1.9		74.1	0	25.9		0.2	98.6	1.2		71.7	0	28.3		
Total %	0	37	0.7	37.7	1	0	0.3	1.3	0.1	57.3	0.7	58.1	2.1	0	0.8	2.9	

	BROADWAY Southbound				SAFEWAY D/W Westbound				BROADWAY Northbound				CORONADO AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	0	**210**	**8**	**218**	4	0	2	6	0	307	**5**	312	11	0	3	14	550
16:45	0	204	4	208	6	0	1	7	**1**	308	0	309	**13**	0	4	**17**	541
17:00	0	193	2	195	**7**	0	**3**	**10**	0	**340**	5	**345**	5	0	2	7	**557**
17:15	0	190	4	194	6	0	0	6	0	306	2	308	9	0	**6**	15	523
Total Volume	0	797	18	815	23	0	6	29	1	1261	12	1274	38	0	15	53	2171
% App. Total	0	97.8	2.2		79.3	0	20.7		0.1	99	0.9		71.7	0	28.3		
PHF	.000	.949	.563	.935	.821	.000	.500	.725	.250	.927	.600	.923	.731	.000	.625	.779	.974



Car

Study Name **WC10-2728_4 Broadway/Coronado Avenue/Project Driveway**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Broadway Southbound				Project Driveway Westbound				Broadway Northbound				Coronado Avenue Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	172	4	1	2	0	1	0	0	173	0	2	6	0	1	0
11:15 AM	0	200	4	0	0	0	0	0	0	188	0	4	8	1	3	0
11:30 AM	0	187	7	0	3	0	1	0	1	189	0	1	10	0	1	0
11:45 AM	1	184	4	0	2	0	1	0	0	196	0	6	10	2	7	0
12:00 PM	0	196	5	0	3	0	2	0	0	223	0	7	8	0	4	0
12:15 PM	1	230	7	0	5	0	0	0	1	202	0	4	11	0	2	0
12:30 PM	1	245	6	0	2	0	1	0	0	229	0	4	12	0	5	0
12:45 PM	0	219	5	0	1	0	3	0	0	261	0	4	11	0	4	0
1:00 PM	0	212	7	0	11	0	1	0	0	232	1	2	11	0	5	0
1:15 PM	0	214	4	0	4	0	0	0	0	317	1	5	14	0	4	0
1:30 PM	1	201	1	0	1	0	3	0	1	329	0	7	9	0	4	0
1:45 PM	0	195	6	1	3	0	3	0	0	232	0	4	11	0	4	0
2:00 PM	0	194	5	1	1	0	2	0	0	212	0	3	9	0	2	0
2:15 PM	0	187	1	0	3	0	3	0	0	216	0	4	13	0	4	0
2:30 PM	0	194	4	1	0	0	1	0	0	230	0	5	13	1	2	0
2:45 PM	0	204	5	1	3	0	0	0	0	238	0	3	9	0	3	0

	Broadway Southbound				Project Driveway Westbound				Broadway Northbound				Coronado Avenue Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	0	174	4	1	2	0	1	0	0	177	0	2	6	0	1	0	368	1603
11:15 AM	0	203	4	0	0	0	0	0	0	190	0	4	9	1	3	0	414	1691
11:30 AM	0	189	7	0	3	0	1	0	1	191	0	1	10	0	1	0	404	1741
11:45 AM	1	185	4	0	2	0	1	0	0	198	0	6	11	2	7	0	417	1848
12:00 PM	0	200	5	0	4	0	2	0	0	226	0	7	8	0	4	0	456	1948
12:15 PM	1	230	7	0	5	0	0	0	1	203	0	4	11	0	2	0	464	1977
12:30 PM	1	246	6	0	2	0	1	0	0	234	0	4	12	0	5	0	511	2082
12:45 PM	0	223	5	0	1	0	3	0	0	266	0	4	11	0	4	0	517	2132
1:00 PM	0	213	7	0	11	0	1	0	0	234	1	2	11	0	5	0	485	2080
1:15 PM	0	215	4	0	4	0	0	0	0	322	1	5	14	0	4	0	569	2028
1:30 PM	1	203	1	0	1	0	3	0	1	331	0	7	9	0	4	0	561	1892
1:45 PM	0	199	6	1	3	0	3	0	0	233	0	4	11	0	5	0	465	1786
2:00 PM	0	197	5	1	1	0	2	0	0	213	0	3	9	0	2	0	433	1792
2:15 PM	0	188	1	0	3	0	3	0	0	217	0	4	13	0	4	0	433	
2:30 PM	0	196	5	1	0	0	1	0	0	231	0	5	13	1	2	0	455	
2:45 PM	0	205	5	1	3	0	0	0	0	242	0	3	9	0	3	0	471	
Peak Hour	**1**	**854**	**17**	**0**	**17**	**0**	**7**	**0**	**1**	**1153**	**2**	**18**	**45**	**0**	**17**	**0**	**0.94**	

Truck

Study Name **WC10-2728_3 Broadway/College Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0
11:15 AM	0	3	0	0	0	0	0	0	0	2	0	0	1	0	0	0
11:30 AM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
11:45 AM	0	1	0	0	0	0	0	0	0	2	0	0	1	0	0	0
12:00 PM	0	4	0	0	1	0	0	0	0	3	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12:30 PM	0	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0
12:45 PM	0	4	0	0	0	0	0	0	0	5	0	0	0	0	0	0
1:00 PM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0
1:15 PM	0	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0
1:30 PM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
1:45 PM	0	4	0	0	0	0	0	0	0	1	0	0	0	0	1	0
2:00 PM	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2:30 PM	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0
2:45 PM	0	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0
Peak Hour	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_3 Broadway/College Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	2	1	0	0	0	0	0	0	4	0	0	0	0	0	0
11:15 AM	0	9	0	0	1	0	1	0	0	8	0	0	0	0	0	0
11:30 AM	0	4	0	0	4	0	0	0	0	3	0	0	0	0	0	0
11:45 AM	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0
12:00 PM	0	2	0	0	0	0	0	0	0	2	2	0	0	0	0	0
12:15 PM	0	2	1	0	1	0	0	0	0	1	0	0	0	0	0	0
12:30 PM	0	6	0	0	4	0	0	0	0	3	0	0	0	0	0	0
12:45 PM	0	1	1	0	2	0	0	0	0	1	0	0	0	0	0	0
1:00 PM	0	5	0	0	4	1	0	0	0	3	0	0	0	0	0	0
1:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	3	0	0	0	0	0	0	0	1	0	0	1	0	0	0
1:45 PM	0	7	0	0	2	0	0	0	0	3	0	0	0	0	0	0
2:00 PM	0	8	0	0	4	0	0	0	0	3	0	0	0	0	1	0
2:15 PM	0	0	2	0	1	0	0	0	0	2	0	0	0	0	0	0
2:30 PM	0	2	0	0	0	1	0	0	0	6	0	0	0	0	0	0
2:45 PM	0	3	1	0	0	0	0	0	0	3	0	0	0	0	0	0
Peak Hour	**0**	**11**	**1**	**0**	**6**	**1**	**0**	**0**	**0**	**5**	**0**	**0**	**1**	**0**	**0**	**0**

People

Study Name **WC10-2728_3 Broadway/College Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	0	1	14	4	0	0	3	5			
11:15 AM	0	0	10	5	1	0	2	2			
11:30 AM	0	0	7	6	2	0	1	3			
11:45 AM	0	0	5	5	1	2	4	3			
12:00 PM	0	4	15	6	0	3	5	12			
12:15 PM	1	1	9	7	0	2	2	7			
12:30 PM	0	2	13	15	0	0	8	5			
12:45 PM	5	1	22	6	2	0	5	1			
1:00 PM	4	3	12	12	0	0	5	3			
1:15 PM	1	0	13	7	0	1	3	2			
1:30 PM	0	0	9	5	0	0	6	13			
1:45 PM	0	0	20	14	0	0	2	1			
2:00 PM	0	1	10	9	0	0	9	2			
2:15 PM	2	0	11	24	0	0	8	1			
2:30 PM	1	3	13	14	0	0	6	6			
2:45 PM	2	1	11	14	0	0	6	3			
Peak Hour	**10**	**4**	**56**	**30**	**2**	**1**	**19**	**19**	**0**	**0**	**0**
	14		86		3		38				

Pedal Bike (Crosswalk)

Study Name **WC10-2728_3 Broadway/College Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	0	0	0	0	0	0	0	0								
11:15 AM	0	0	0	0	0	0	3	0								
11:30 AM	0	0	1	0	0	0	2	0								
11:45 AM	0	0	0	0	0	0	0	0								
12:00 PM	0	0	1	0	0	0	0	0								
12:15 PM	0	0	0	0	0	0	0	0								
12:30 PM	0	0	1	0	0	0	0	0								
12:45 PM	0	0	0	0	0	0	0	0								
1:00 PM	2	0	0	1	0	0	0	0								
1:15 PM	1	0	0	0	0	0	0	0								
1:30 PM	0	0	0	0	0	0	0	0								
1:45 PM	0	0	0	0	0	0	0	0								
2:00 PM	0	0	1	0	0	0	0	0								
2:15 PM	0	0	0	0	0	0	0	0								
2:30 PM	0	0	0	0	0	0	0	0								
2:45 PM	0	0	1	1	0	0	0	0								
Peak Hour	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_3 Broadway/College Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	176	5	1	2	0	1	0	0	181	0	2	6	0	1	0
11:15 AM	0	212	4	0	1	0	1	0	0	198	0	4	9	1	3	0
11:30 AM	0	193	7	0	7	0	1	0	1	194	0	1	10	0	1	0
11:45 AM	1	186	4	0	2	0	1	0	0	201	0	6	11	2	7	0
12:00 PM	0	202	5	0	4	0	2	0	0	228	2	7	8	0	4	0
12:15 PM	1	232	8	0	6	0	0	0	1	204	0	4	11	0	2	0
12:30 PM	1	252	6	0	6	0	1	0	0	237	0	4	12	0	5	0
12:45 PM	0	224	6	0	3	0	3	0	0	267	0	4	11	0	4	0
1:00 PM	0	218	7	0	15	1	1	0	0	237	1	2	11	0	5	0
1:15 PM	0	217	4	0	4	0	0	0	0	322	1	5	14	0	4	0
1:30 PM	1	206	1	0	1	0	3	0	1	332	0	7	10	0	4	0
1:45 PM	0	206	6	1	5	0	3	0	0	236	0	4	11	0	5	0
2:00 PM	0	205	5	1	5	0	2	0	0	216	0	3	9	0	3	0
2:15 PM	0	188	3	0	4	0	3	0	0	219	0	4	13	0	4	0
2:30 PM	0	198	5	1	0	1	1	0	0	237	0	5	13	1	2	0
2:45 PM	0	208	6	1	3	0	0	0	0	245	0	3	9	0	3	0
Peak Hour	**1**	**865**	**18**	**0**	**23**	**1**	**7**	**0**	**1**	**1158**	**2**	**18**	**46**	**0**	**17**	**0**

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-coronado-s
Site Code : 4
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				**SAFEWAY DWY Westbound**				**BROADWAY Northbound**				**CORONADO AVE Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	210	8	218	6	0	0	6	0	219	4	223	10	0	2	12	459
16:15	0	179	2	181	4	0	0	4	0	218	6	224	5	0	4	9	418
16:30	0	191	6	197	5	0	0	5	0	216	6	222	8	0	4	12	436
16:45	0	179	4	183	2	0	0	2	0	216	3	219	6	0	3	9	413
Total	0	759	20	779	17	0	0	17	0	869	19	888	29	0	13	42	1726
17:00	0	186	6	192	4	0	0	4	0	217	6	223	9	0	8	17	436
17:15	0	199	5	204	2	0	1	3	1	188	2	191	6	1	2	9	407
17:30	0	169	7	176	3	0	0	3	0	178	4	182	7	0	2	9	370
17:45	0	175	4	179	3	0	1	4	0	189	3	192	9	0	0	9	384
Total	0	729	22	751	12	0	2	14	1	772	15	788	31	1	12	44	1597
18:00	0	169	4	173	3	0	0	3	1	179	2	182	6	0	3	9	367
18:15	0	182	5	187	3	0	1	4	0	151	2	153	11	0	1	12	356
18:30	0	153	1	154	6	0	1	7	0	158	2	160	10	0	3	13	334
18:45	0	164	4	168	5	0	0	5	0	147	1	148	12	0	2	14	335
Total	0	668	14	682	17	0	2	19	1	635	7	643	39	0	9	48	1392
Grand Total	0	2156	56	2212	46	0	4	50	2	2276	41	2319	99	1	34	134	4715
Apprch %	0	97.5	2.5		92	0	8		0.1	98.1	1.8		73.9	0.7	25.4		
Total %	0	45.7	1.2	46.9	1	0	0.1	1.1	0	48.3	0.9	49.2	2.1	0	0.7	2.8	

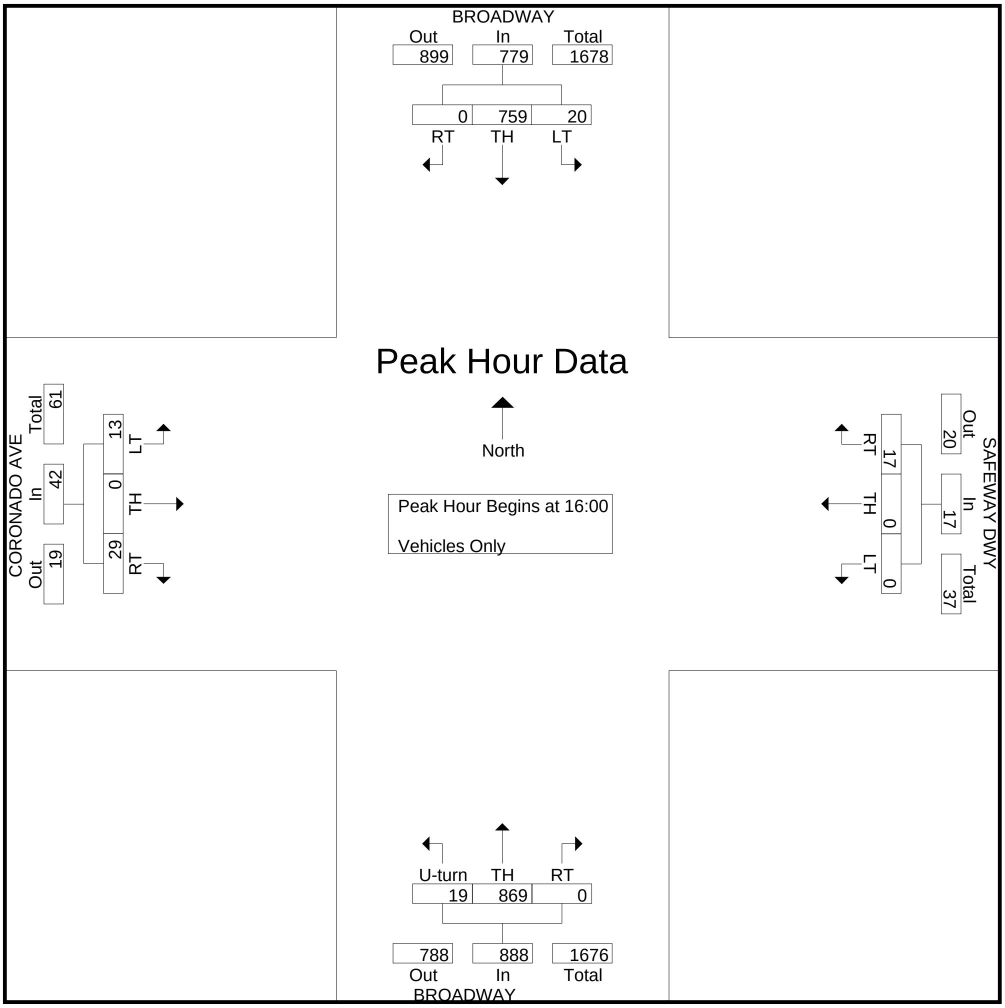
	BROADWAY Southbound				**SAFEWAY DWY Westbound**				**BROADWAY Northbound**				**CORONADO AVE Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	0	**210**	**8**	**218**	**6**	0	0	**6**	0	**219**	4	223	**10**	0	2	**12**	**459**
16:15	0	179	2	181	4	0	0	4	0	218	**6**	**224**	5	0	**4**	9	418
16:30	0	191	6	197	5	0	0	5	0	216	6	222	8	0	4	12	436
16:45	0	179	4	183	2	0	0	2	0	216	3	219	6	0	3	9	413
Total Volume	0	759	20	779	17	0	0	17	0	869	19	888	29	0	13	42	1726
% App. Total	0	97.4	2.6		100	0	0		0	97.9	2.1		69	0	31		
PHF	.000	.904	.625	.893	.708	.000	.000	.708	.000	.992	.792	.991	.725	.000	.813	.875	.940

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-coronado-s
Site Code : 4
Start Date : 5/8/2010
Page No : 2



MARKS TRAFFIC DATA

CITY OF OAKLAND

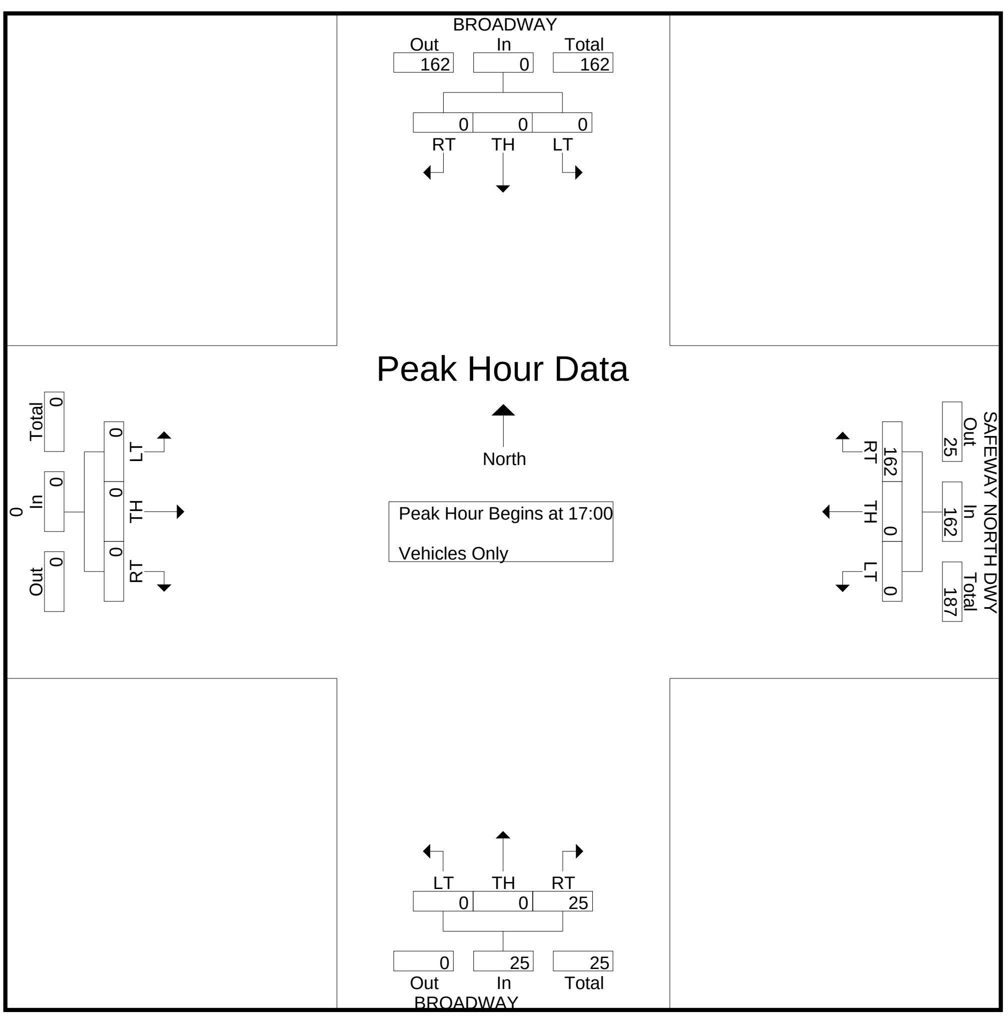
fp
Mietek 916-806-0250

File Name : broadway-north dwy-p
Site Code : 5
Start Date : 5/13/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				**SAFEWAY NORTH DWY Westbound**				**BROADWAY Northbound**				**0 Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	0	0	0	51	0	0	51	11	0	0	11	0	0	0	0	62
16:15	0	0	0	0	34	0	0	34	9	0	0	9	0	0	0	0	43
16:30	0	0	0	0	32	0	0	32	8	0	0	8	0	0	0	0	40
16:45	0	0	0	0	31	0	0	31	4	0	0	4	0	0	0	0	35
Total	0	0	0	0	148	0	0	148	32	0	0	32	0	0	0	0	180
17:00	0	0	0	0	40	0	0	40	5	0	0	5	0	0	0	0	45
17:15	0	0	0	0	39	0	0	39	7	0	0	7	0	0	0	0	46
17:30	0	0	0	0	43	0	0	43	10	0	0	10	0	0	0	0	53
17:45	0	0	0	0	40	0	0	40	3	0	0	3	0	0	0	0	43
Total	0	0	0	0	162	0	0	162	25	0	0	25	0	0	0	0	187
Grand Total	0	0	0	0	310	0	0	310	57	0	0	57	0	0	0	0	367
Apprch %	0	0	0		100	0	0		100	0	0		0	0	0		
Total %	0	0	0	0	84.5	0	0	84.5	15.5	0	0	15.5	0	0	0	0	

	BROADWAY Southbound				**SAFEWAY NORTH DWY Westbound**				**BROADWAY Northbound**				**0 Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	0	0	0	40	0	0	40	5	0	0	5	0	0	0	0	45
17:15	0	0	0	0	39	0	0	39	7	0	0	7	0	0	0	0	46
17:30	0	0	0	0	**43**	0	0	**43**	**10**	0	0	**10**	0	0	0	0	**53**
17:45	0	0	0	0	40	0	0	40	3	0	0	3	0	0	0	0	43
Total Volume	0	0	0	0	162	0	0	162	25	0	0	25	0	0	0	0	187
% App. Total	0	0	0		100	0	0		100	0	0		0	0	0		
PHF	.000	.000	.000	.000	.942	.000	.000	.942	.625	.000	.000	.625	.000	.000	.000	.000	.882



Car

Study Name **WC10-2728_5 Broadway/Center Project Driveway**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Broadway Southbound		Center Project Drivewa Westbound		Broadway Northbound		Driveway Eastbound	
Start Time	Right	Thru	Right	U-Turn	Right	Thru	Right	U-Turn
11:00 AM	0	193	23	0	5	161	0	0
11:15 AM	1	203	21	0	8	165	1	0
11:30 AM	0	191	21	0	5	161	0	0
11:45 AM	1	209	26	0	3	186	1	0
12:00 PM	0	218	31	0	5	190	0	0
12:15 PM	0	222	26	0	8	175	0	0
12:30 PM	0	273	30	0	7	207	0	0
12:45 PM	1	234	44	0	7	215	1	0
1:00 PM	1	232	34	0	3	221	0	0
1:15 PM	0	236	36	0	5	270	1	0
1:30 PM	0	217	38	0	5	286	0	0
1:45 PM	0	221	43	0	2	214	0	0
2:00 PM	1	208	28	0	7	197	1	0
2:15 PM	0	199	39	0	10	185	0	0
2:30 PM	0	222	34	0	4	180	0	0
2:45 PM	0	215	32	0	9	207	0	0

Cars + Trucks	Broadway Southbound		Center Project Drivewa Westbound		Broadway Northbound		Driveway Eastbound			
Start Time	Right	Thru	Right	U-Turn	Right	Thru	Right	U-Turn	15-Min Total	Hour Total
11:00 AM	0	196	23	0	5	165	0	0	389	1605
11:15 AM	1	205	21	0	8	169	1	0	405	1666
11:30 AM	0	194	21	0	5	163	0	0	383	1694
11:45 AM	1	210	26	0	3	187	1	0	428	1832
12:00 PM	0	221	31	0	5	193	0	0	450	1915
12:15 PM	0	223	26	0	8	176	0	0	433	1961
12:30 PM	0	274	30	0	7	210	0	0	521	2079
12:45 PM	1	238	45	0	7	219	1	0	511	2108
1:00 PM	1	233	34	0	3	225	0	0	496	2084
1:15 PM	0	236	36	0	5	273	1	0	551	2035
1:30 PM	0	219	38	0	5	288	0	0	550	1919
1:45 PM	0	226	43	0	2	216	0	0	487	1811
2:00 PM	1	212	28	0	7	198	1	0	447	1792
2:15 PM	0	200	39	0	10	186	0	0	435	
2:30 PM	0	223	34	0	4	181	0	0	442	
2:45 PM	0	216	32	0	9	211	0	0	468	
Peak Hour	**2**	**926**	**153**	**0**	**20**	**1005**	**2**	**0**	**0.96**	

Truck

Study Name WC10-2728_5 Broadway/Center Project Driveway
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Right	Thru	Right	U-Turn	Right	Thru	Right	U-Turn
11:00 AM	0	3	0	0	0	4	0	0
11:15 AM	0	2	0	0	0	4	0	0
11:30 AM	0	3	0	0	0	2	0	0
11:45 AM	0	1	0	0	0	1	0	0
12:00 PM	0	3	0	0	0	3	0	0
12:15 PM	0	1	0	0	0	1	0	0
12:30 PM	0	1	0	0	0	3	0	0
12:45 PM	0	4	1	0	0	4	0	0
1:00 PM	0	1	0	0	0	4	0	0
1:15 PM	0	0	0	0	0	3	0	0
1:30 PM	0	2	0	0	0	2	0	0
1:45 PM	0	5	0	0	0	2	0	0
2:00 PM	0	4	0	0	0	1	0	0
2:15 PM	0	1	0	0	0	1	0	0
2:30 PM	0	1	0	0	0	1	0	0
2:45 PM	0	1	0	0	0	4	0	0
Peak Hour	**0**	**7**	**1**	**0**	**0**	**13**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_5 Broadway/Center Project Driveway**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Right	Thru	Right	U-Turn	Right	Thru	Right	U-Turn
11:00 AM	0	1	2	0	0	8	0	0
11:15 AM	0	1	5	0	0	2	0	0
11:30 AM	0	7	0	0	0	4	0	0
11:45 AM	0	1	2	0	0	0	0	0
12:00 PM	0	1	1	0	0	1	0	0
12:15 PM	0	3	2	0	0	0	0	0
12:30 PM	0	6	0	0	0	2	0	0
12:45 PM	0	1	0	0	0	0	0	0
1:00 PM	0	0	1	0	0	1	0	0
1:15 PM	0	1	3	0	0	0	0	0
1:30 PM	0	4	1	0	0	1	0	0
1:45 PM	0	4	0	0	0	5	0	0
2:00 PM	0	4	0	0	0	2	0	0
2:15 PM	0	0	0	0	0	2	0	0
2:30 PM	0	2	2	0	0	5	0	0
2:45 PM	0	1	1	0	0	1	0	0
Peak Hour	**0**	**6**	**5**	**0**	**0**	**2**	**0**	**0**

People

Study Name **WC10-2728_5 Broadway/Center Project Driveway**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	2	0	2	3	0	0	0	2
11:15 AM	1	0	3	3	0	0	7	3
11:30 AM	2	0	2	6	0	1	1	1
11:45 AM	2	0	2	2	0	1	3	2
12:00 PM	2	0	4	5	2	0	3	4
12:15 PM	3	0	1	7	0	0	6	3
12:30 PM	1	0	2	7	0	0	4	2
12:45 PM	1	0	0	5	0	1	2	2
1:00 PM	0	0	6	2	0	0	3	0
1:15 PM	0	0	8	3	0	0	1	1
1:30 PM	0	1	3	3	0	0	2	8
1:45 PM	1	0	4	3	0	0	2	0
2:00 PM	1	0	3	6	0	1	8	0
2:15 PM	0	0	0	6	0	0	1	1
2:30 PM	0	1	5	3	0	0	3	3
2:45 PM	0	0	2	3	0	1	5	4
Peak Hour	**1**	**1**	**17**	**13**	**0**	**1**	**8**	**11**
	2		30		1		19	

Pedal Bike (Crosswalk)

Study Name WC10-2728_5 Broadway/Center Project Driveway
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	1	0
11:30 AM	0	0	0	0	0	0	5	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	2	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	2	0
2:00 PM	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	1	0
2:30 PM	0	0	0	0	0	0	1	0
2:45 PM	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_5 Broadway/Center Project Driveway**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Right	Thru	Right	U-Turn	Right	Thru	Right	U-Turn
11:00 AM	0	197	25	0	5	173	0	0
11:15 AM	1	206	26	0	8	171	1	0
11:30 AM	0	201	21	0	5	167	0	0
11:45 AM	1	211	28	0	3	187	1	0
12:00 PM	0	222	32	0	5	194	0	0
12:15 PM	0	226	28	0	8	176	0	0
12:30 PM	0	280	30	0	7	212	0	0
12:45 PM	1	239	45	0	7	219	1	0
1:00 PM	1	233	35	0	3	226	0	0
1:15 PM	0	237	39	0	5	273	1	0
1:30 PM	0	223	39	0	5	289	0	0
1:45 PM	0	230	43	0	2	221	0	0
2:00 PM	1	216	28	0	7	200	1	0
2:15 PM	0	200	39	0	10	188	0	0
2:30 PM	0	225	36	0	4	186	0	0
2:45 PM	0	217	33	0	9	212	0	0
Peak Hour	**2**	**932**	**158**	**0**	**20**	**1007**	**2**	**0**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-north dwy-s
Site Code : 5
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

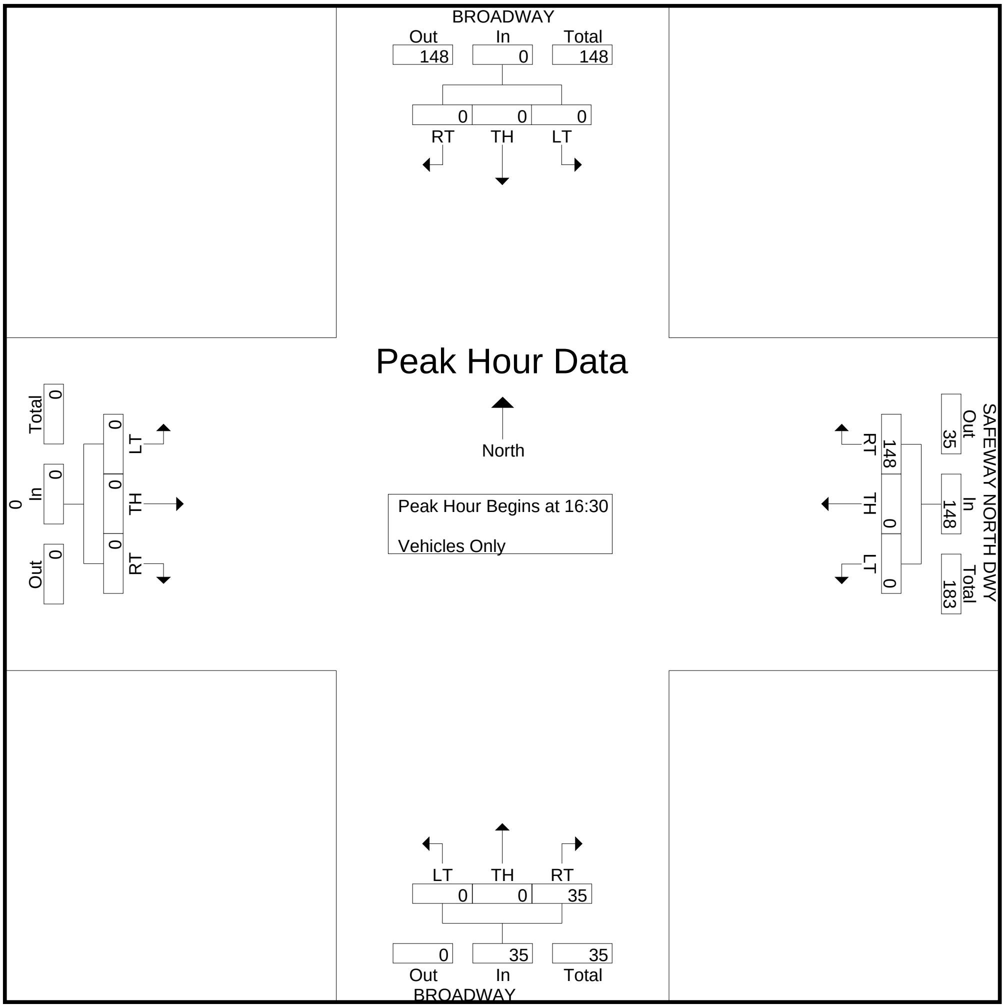
	BROADWAY Southbound				**SAFEWAY NORTH DWY Westbound**				**BROADWAY Northbound**				**0 Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	0	0	0	31	0	0	31	5	0	0	5	0	0	0	0	36
16:15	0	0	0	0	36	0	0	36	6	0	0	6	0	0	0	0	42
16:30	0	0	0	0	37	0	0	37	12	0	0	12	0	0	0	0	49
16:45	0	0	0	0	37	0	0	37	8	0	0	8	0	0	0	0	45
Total	0	0	0	0	141	0	0	141	31	0	0	31	0	0	0	0	172
17:00	0	0	0	0	34	0	0	34	10	0	0	10	0	0	0	0	44
17:15	0	0	0	0	40	0	0	40	5	0	0	5	0	0	0	0	45
17:30	0	0	0	0	30	0	0	30	4	0	0	4	0	0	0	0	34
17:45	0	0	0	0	30	0	0	30	3	0	0	3	0	0	0	0	33
Total	0	0	0	0	134	0	0	134	22	0	0	22	0	0	0	0	156
18:00	0	0	0	0	28	0	0	28	5	0	0	5	0	0	0	0	33
18:15	0	0	0	0	13	0	0	13	3	0	0	3	0	0	0	0	16
18:30	0	0	0	0	19	0	0	19	3	0	0	3	0	0	0	0	22
18:45	0	0	0	0	17	0	0	17	3	0	0	3	0	0	0	0	20
Total	0	0	0	0	77	0	0	77	14	0	0	14	0	0	0	0	91
Grand Total	0	0	0	0	352	0	0	352	67	0	0	67	0	0	0	0	419
Apprch %	0	0	0		100	0	0		100	0	0		0	0	0		
Total %	0	0	0	0	84	0	0	84	16	0	0	16	0	0	0	0	

	BROADWAY Southbound				**SAFEWAY NORTH DWY Westbound**				**BROADWAY Northbound**				**0 Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	0	0	0	0	37	0	0	37	**12**	0	0	**12**	0	0	0	0	**49**
16:45	0	0	0	0	37	0	0	37	8	0	0	8	0	0	0	0	45
17:00	0	0	0	0	34	0	0	34	10	0	0	10	0	0	0	0	44
17:15	0	0	0	0	**40**	0	0	**40**	5	0	0	5	0	0	0	0	45
Total Volume	0	0	0	0	148	0	0	148	35	0	0	35	0	0	0	0	183
% App. Total	0	0	0		100	0	0		100	0	0		0	0	0		
PHF	.000	.000	.000	.000	.925	.000	.000	.925	.729	.000	.000	.729	.000	.000	.000	.000	.934

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-north dwy-s
Site Code : 5
Start Date : 5/8/2010
Page No : 2



CITY OF OAKLAND

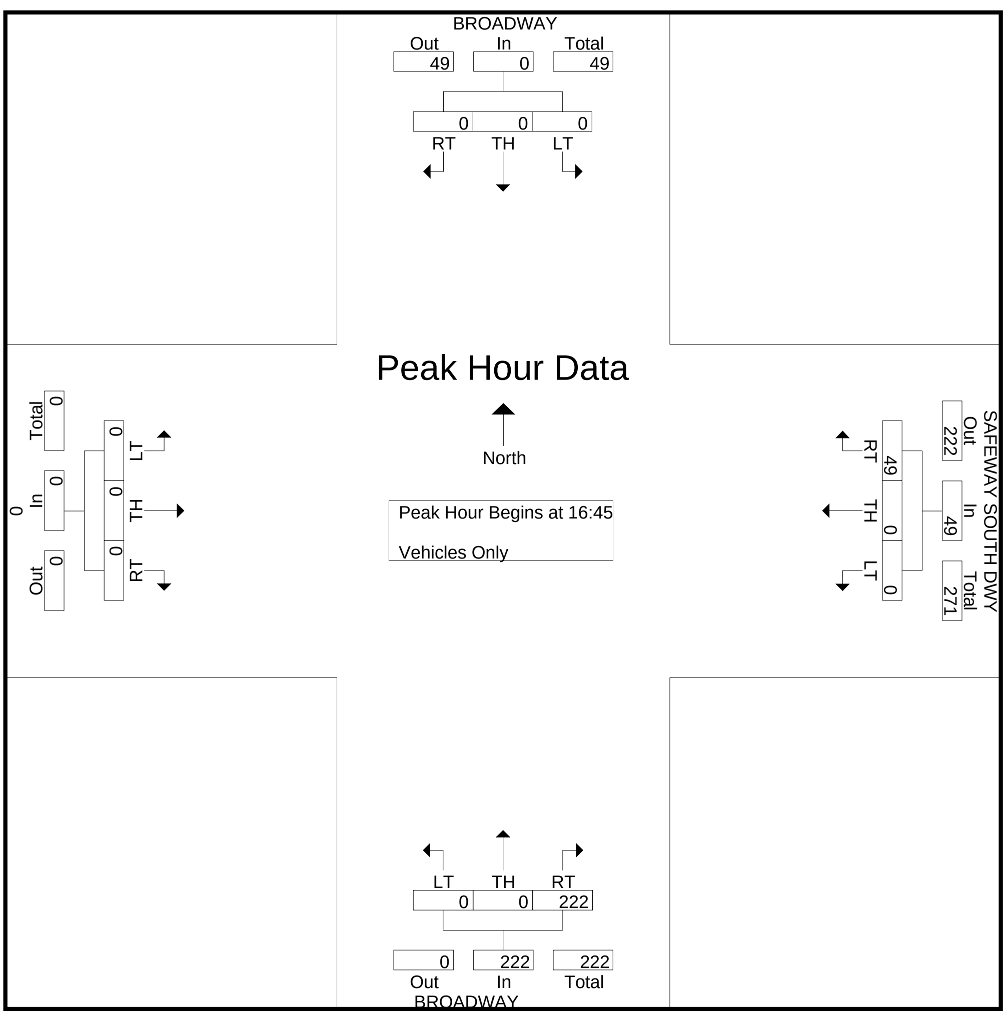
fp
Mietek 916-806-0250

File Name : broadway-south dwy-p
Site Code : 6
Start Date : 5/13/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				SAFEWAY SOUTH DWY Westbound				BROADWAY Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	0	0	0	8	0	0	8	45	0	0	45	0	0	0	0	53
16:15	0	0	0	0	6	0	0	6	41	0	0	41	0	0	0	0	47
16:30	0	0	0	0	15	0	0	15	54	0	0	54	0	0	0	0	69
16:45	0	0	0	0	10	0	0	10	55	0	0	55	0	0	0	0	65
Total	0	0	0	0	39	0	0	39	195	0	0	195	0	0	0	0	234
17:00	0	0	0	0	14	0	0	14	44	0	0	44	0	0	0	0	58
17:15	0	0	0	0	16	0	0	16	55	0	0	55	0	0	0	0	71
17:30	0	0	0	0	9	0	0	9	68	0	0	68	0	0	0	0	77
17:45	0	0	0	0	13	0	0	13	35	0	0	35	0	0	0	0	48
Total	0	0	0	0	52	0	0	52	202	0	0	202	0	0	0	0	254
Grand Total	0	0	0	0	91	0	0	91	397	0	0	397	0	0	0	0	488
Apprch %	0	0	0		100	0	0		100	0	0		0	0	0		
Total %	0	0	0	0	18.6	0	0	18.6	81.4	0	0	81.4	0	0	0	0	

	BROADWAY Southbound				SAFEWAY SOUTH DWY Westbound				BROADWAY Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	0	0	0	0	10	0	0	10	55	0	0	55	0	0	0	0	65
17:00	0	0	0	0	14	0	0	14	44	0	0	44	0	0	0	0	58
17:15	0	0	0	0	**16**	0	0	**16**	55	0	0	55	0	0	0	0	71
17:30	0	0	0	0	9	0	0	9	**68**	0	0	**68**	0	0	0	0	**77**
Total Volume	0	0	0	0	49	0	0	49	222	0	0	222	0	0	0	0	271
% App. Total	0	0	0		100	0	0		100	0	0		0	0	0		
PHF	.000	.000	.000	.000	.766	.000	.000	.766	.816	.000	.000	.816	.000	.000	.000	.000	.880



Car

Study Name **WC10-2728_6 Broadway/South Proje**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Broadway Southbound	South Project Driveway Westbound		Broadway Northbound	
Start Time	Thru	Right	U-Turn	Right	Thru
11:00 AM	186	13	0	31	152
11:15 AM	196	10	0	62	165
11:30 AM	191	5	0	48	163
11:45 AM	207	14	0	61	173
12:00 PM	215	11	0	50	183
12:15 PM	221	16	0	54	167
12:30 PM	268	12	0	70	201
12:45 PM	226	11	0	58	212
1:00 PM	231	17	0	56	204
1:15 PM	232	22	0	47	249
1:30 PM	220	15	0	63	272
1:45 PM	218	4	0	52	206
2:00 PM	205	9	0	65	195
2:15 PM	203	18	0	54	179
2:30 PM	221	9	0	47	174
2:45 PM	223	18	0	40	197

	Broadway Southbound	South Project Driveway Westbound		Broadway Northbound			
Start Time	Thru	Right	U-Turn	Right	Thru	15-Min Total	Hour Total
11:00 AM	189	13	0	31	156	389	1699
11:15 AM	198	10	0	62	169	439	1774
11:30 AM	194	5	0	48	165	412	1795
11:45 AM	209	14	0	61	175	459	1940
12:00 PM	217	11	0	50	186	464	1996
12:15 PM	222	16	0	54	168	460	2045
12:30 PM	269	12	0	71	205	557	2137
12:45 PM	229	11	0	59	216	515	2153
1:00 PM	232	17	0	56	208	513	2125
1:15 PM	233	22	0	47	250	552	2090
1:30 PM	221	15	0	63	274	573	1994
1:45 PM	223	4	0	52	208	487	1875
2:00 PM	208	9	0	65	196	478	1871
2:15 PM	204	18	0	54	180	456	
2:30 PM	223	9	0	47	175	454	
2:45 PM	224	18	0	40	201	483	
Peak Hour	**915**	**65**	**0**	**225**	**948**	**0.94**	

Truck

Study Name **WC10-2728_6 Broadway/South Projec**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	uthbound St Southbound	Westbound Street Westbound		Northbound Street Northbound	
Start Time	Thru	Right	U-Turn	Right	Thru
11:00 AM	3	0	0	0	4
11:15 AM	2	0	0	0	4
11:30 AM	3	0	0	0	2
11:45 AM	2	0	0	0	2
12:00 PM	2	0	0	0	3
12:15 PM	1	0	0	0	1
12:30 PM	1	0	0	1	4
12:45 PM	3	0	0	1	4
1:00 PM	1	0	0	0	4
1:15 PM	1	0	0	0	1
1:30 PM	1	0	0	0	2
1:45 PM	5	0	0	0	2
2:00 PM	3	0	0	0	1
2:15 PM	1	0	0	0	1
2:30 PM	2	0	0	0	1
2:45 PM	1	0	0	0	4
Peak Hour	**6**	**0**	**0**	**1**	**11**

Pedal Bike (Road)

Study Name **WC10-2728_6 Broadway/South Projec**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound	Westbound Street Westbound		Northbound Street Northbound	
Start Time	Thru	Right	U-Turn	Right	Thru
11:00 AM	2	0	0	0	6
11:15 AM	2	0	0	0	1
11:30 AM	6	0	0	1	3
11:45 AM	1	0	0	1	0
12:00 PM	0	0	0	0	0
12:15 PM	2	0	0	0	0
12:30 PM	3	0	0	0	3
12:45 PM	1	0	0	0	0
1:00 PM	2	0	0	0	1
1:15 PM	1	0	0	0	1
1:30 PM	4	0	0	0	0
1:45 PM	6	0	0	1	7
2:00 PM	5	0	0	0	2
2:15 PM	1	0	0	0	1
2:30 PM	3	0	0	2	5
2:45 PM	3	0	0	0	0
Peak Hour	**8**	**0**	**0**	**0**	**2**

People

Study Name WC10-2728_6 Broadway/South Project Drivewa
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	4	1	2	0
11:15 AM	0	0	3	3	0	0
11:30 AM	0	1	2	3	0	0
11:45 AM	0	0	3	7	0	0
12:00 PM	0	0	0	0	0	0
12:15 PM	0	0	0	2	0	1
12:30 PM	0	1	1	2	0	0
12:45 PM	0	0	2	7	0	0
1:00 PM	0	0	9	2	0	0
1:15 PM	0	0	8	2	0	0
1:30 PM	0	0	3	5	0	0
1:45 PM	0	0	8	5	0	0
2:00 PM	0	0	2	6	0	0
2:15 PM	0	0	3	7	0	1
2:30 PM	0	0	6	3	0	0
2:45 PM	0	0	3	6	0	0
Peak Hour	**0**	**0**	**22**	**16**	**0**	**0**
	0		38		0	

Pedal Bike (Crosswalk)

Study Name **WC10-2728_6 Broadway/South Project Drivewa**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0
11:30 AM	0	0	0	0	1	0
11:45 AM	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0
12:45 PM	0	0	1	0	0	0
1:00 PM	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0
Peak Hour	**0**	**0**	**1**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_6 Broadway/South Projec**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	thbound St Southbound	Westbound Street Westbound		Northbound Street Northbound	
Start Time	Thru	Right	U-Turn	Right	Thru
11:00 AM	191	13	0	31	162
11:15 AM	200	10	0	62	170
11:30 AM	200	5	0	49	168
11:45 AM	210	14	0	62	175
12:00 PM	217	11	0	50	186
12:15 PM	224	16	0	54	168
12:30 PM	272	12	0	71	208
12:45 PM	230	11	0	59	216
1:00 PM	234	17	0	56	209
1:15 PM	234	22	0	47	251
1:30 PM	225	15	0	63	274
1:45 PM	229	4	0	53	215
2:00 PM	213	9	0	65	198
2:15 PM	205	18	0	54	181
2:30 PM	226	9	0	49	180
2:45 PM	227	18	0	40	201
Peak Hour	**923**	**65**	**0**	**225**	**950**

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-south dwy-s
Site Code : 6
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				SAFEWAY SOUTH DWY Westbound				BROADWAY Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	0	0	0	7	0	0	7	39	0	0	39	0	0	0	0	46
16:15	0	0	0	0	5	0	0	5	49	0	0	49	0	0	0	0	54
16:30	0	0	0	0	13	0	0	13	36	0	0	36	0	0	0	0	49
16:45	0	0	0	0	15	0	0	15	40	0	0	40	0	0	0	0	55
Total	0	0	0	0	40	0	0	40	164	0	0	164	0	0	0	0	204
17:00	0	0	0	0	4	0	0	4	51	0	0	51	0	0	0	0	55
17:15	0	0	0	0	15	0	0	15	45	0	0	45	0	0	0	0	60
17:30	0	0	0	0	11	0	0	11	37	0	0	37	0	0	0	0	48
17:45	0	0	0	0	6	0	0	6	56	0	0	56	0	0	0	0	62
Total	0	0	0	0	36	0	0	36	189	0	0	189	0	0	0	0	225
18:00	0	0	0	0	6	0	0	6	37	0	0	37	0	0	0	0	43
18:15	0	0	0	0	3	0	0	3	36	0	0	36	0	0	0	0	39
18:30	0	0	0	0	7	0	0	7	22	0	0	22	0	0	0	0	29
18:45	0	0	0	0	6	0	0	6	41	0	0	41	0	0	0	0	47
Total	0	0	0	0	22	0	0	22	136	0	0	136	0	0	0	0	158
Grand Total	0	0	0	0	98	0	0	98	489	0	0	489	0	0	0	0	587
Apprch %	0	0	0		100	0	0		100	0	0		0	0	0		
Total %	0	0	0	0	16.7	0	0	16.7	83.3	0	0	83.3	0	0	0	0	

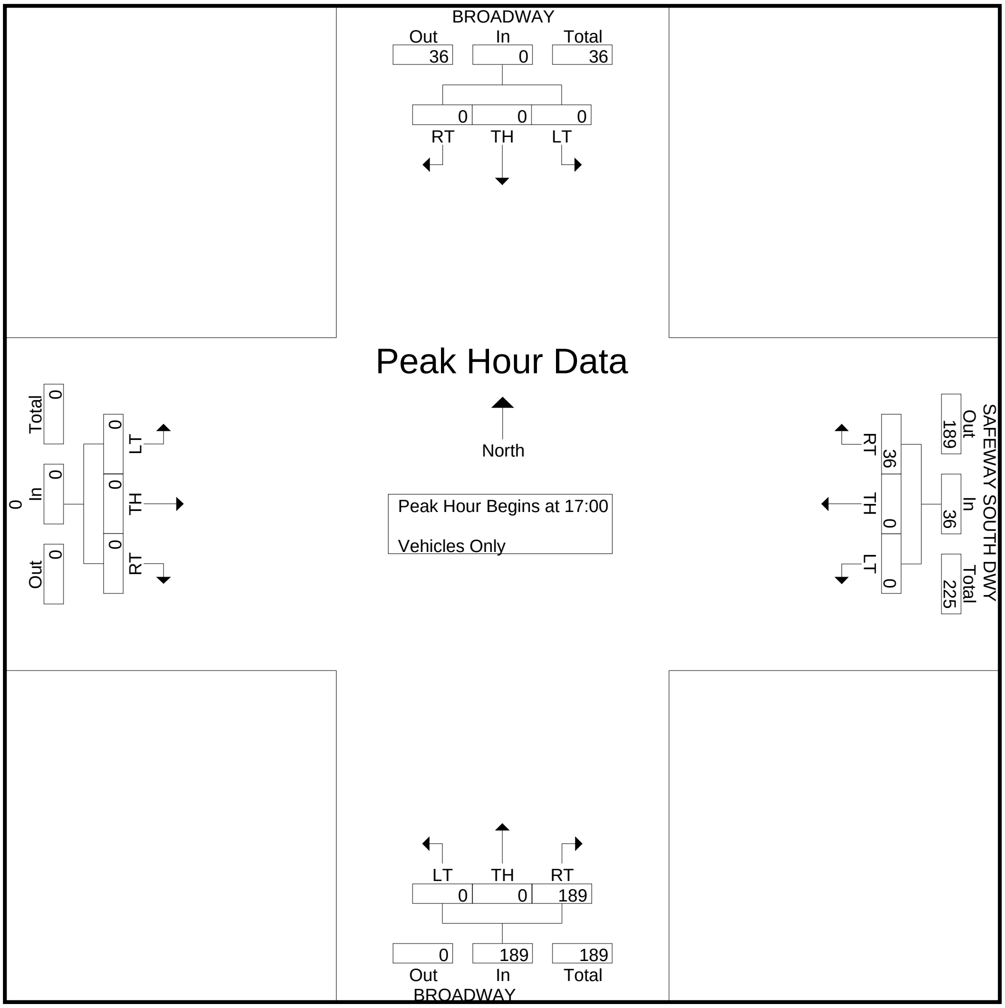
	BROADWAY Southbound				SAFEWAY SOUTH DWY Westbound				BROADWAY Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	0	0	0	4	0	0	4	51	0	0	51	0	0	0	0	55
17:15	0	0	0	0	**15**	0	0	**15**	45	0	0	45	0	0	0	0	60
17:30	0	0	0	0	11	0	0	11	37	0	0	37	0	0	0	0	48
17:45	0	0	0	0	6	0	0	6	**56**	0	0	**56**	0	0	0	0	**62**
Total Volume	0	0	0	0	36	0	0	36	189	0	0	189	0	0	0	0	225
% App. Total	0	0	0		100	0	0		100	0	0		0	0	0		
PHF	.000	.000	.000	.000	.600	.000	.000	.600	.844	.000	.000	.844	.000	.000	.000	.000	.907

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-south dwy-s
Site Code : 6
Start Date : 5/8/2010
Page No : 2



MARKS TRAFFIC DATA

CITY OF OAKLAND

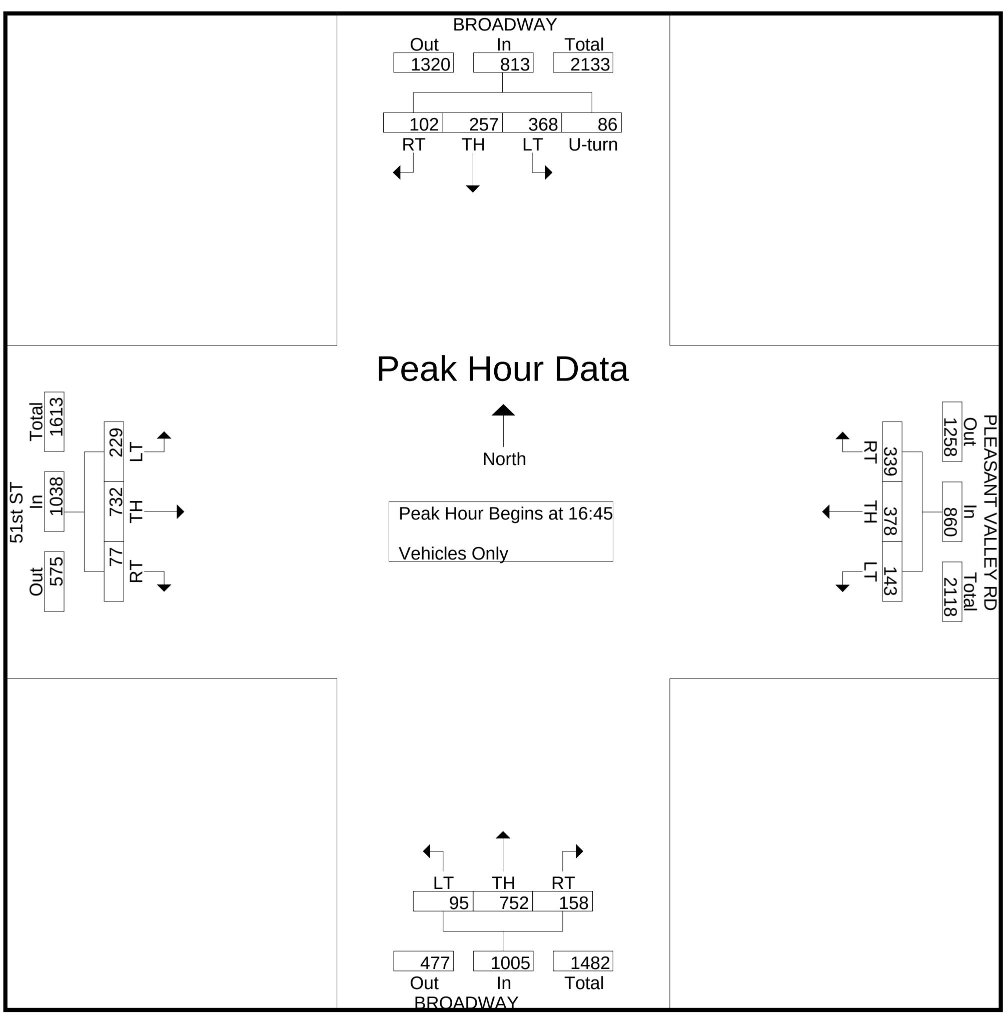
fp
Mietek 916-806-0250

File Name : broadway-51-p
Site Code : 7
Start Date : 5/12/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound					PLEASANT VALLEY RD Westbound				BROADWAY Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	20	69	74	13	176	74	76	22	172	36	196	24	256	14	102	34	150	754
16:15	18	64	77	17	176	82	72	24	178	42	184	27	253	16	112	36	164	771
16:30	21	72	96	22	211	88	78	28	194	35	167	23	225	15	84	49	148	778
16:45	21	62	97	24	204	73	93	39	205	38	186	18	242	18	134	48	200	851
Total	80	267	344	76	767	317	319	113	749	151	733	92	976	63	432	167	662	3154
17:00	33	54	91	23	201	109	83	35	227	43	175	31	249	16	176	59	251	928
17:15	25	61	106	19	211	80	94	32	206	41	204	23	268	21	199	58	278	963
17:30	23	80	74	20	197	77	108	37	222	36	187	23	246	22	223	64	309	974
17:45	22	64	139	8	233	82	82	40	204	39	233	27	299	20	118	64	202	938
Total	103	259	410	70	842	348	367	144	859	159	799	104	1062	79	716	245	1040	3803
Grand Total	183	526	754	146	1609	665	686	257	1608	310	1532	196	2038	142	1148	412	1702	6957
Apprch %	11.4	32.7	46.9	9.1		41.4	42.7	16		15.2	75.2	9.6		8.3	67.5	24.2		
Total %	2.6	7.6	10.8	2.1	23.1	9.6	9.9	3.7	23.1	4.5	22	2.8	29.3	2	16.5	5.9	24.5	

	BROADWAY Southbound					PLEASANT VALLEY RD Westbound				BROADWAY Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:30 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 16:45																		
16:45	21	62	97	**24**	204	73	93	**39**	205	38	186	18	242	18	134	48	200	851
17:00	**33**	54	91	23	201	**109**	83	35	**227**	**43**	175	**31**	249	16	176	59	251	928
17:15	25	61	**106**	19	**211**	80	94	32	206	41	**204**	23	**268**	21	199	58	278	963
17:30	23	**80**	74	20	197	77	**108**	37	222	36	187	23	246	**22**	**223**	**64**	**309**	**974**
Total Volume	102	257	368	86	813	339	378	143	860	158	752	95	1005	77	732	229	1038	3716
% App. Total	12.5	31.6	45.3	10.6		39.4	44	16.6		15.7	74.8	9.5		7.4	70.5	22.1		
PHF	.773	.803	.868	.896	.963	.778	.875	.917	.947	.919	.922	.766	.938	.875	.821	.895	.840	.954



Car

Study Name **WC10-2728_7 Broadway/51st Street/Pleasant Valley Avenue**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Broadway Southbound				Pleasant Valley Avenue Westbound				Broadway Northbound				51st Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	26	57	84	6	66	89	49	1	22	90	25	1	11	89	27	0
11:15 AM	27	66	103	14	72	96	31	1	36	97	18	1	19	87	42	0
11:30 AM	40	60	82	16	71	124	37	0	34	88	30	2	13	70	38	0
11:45 AM	35	69	81	18	72	123	42	0	46	89	29	0	18	103	45	0
12:00 PM	25	78	88	14	77	102	46	1	46	98	47	0	26	74	40	0
12:15 PM	31	76	100	16	63	111	37	0	42	114	21	0	16	124	35	0
12:30 PM	40	91	106	26	92	121	48	0	38	116	27	0	20	95	43	0
12:45 PM	34	85	97	16	86	116	41	0	43	130	29	0	25	92	40	0
1:00 PM	45	69	91	14	83	123	63	0	50	114	40	1	28	94	43	1
1:15 PM	44	86	83	15	99	142	51	0	51	158	39	3	22	103	50	0
1:30 PM	38	75	83	19	94	126	61	1	48	164	42	1	36	75	49	1
1:45 PM	32	77	90	10	83	121	50	0	34	121	31	1	30	113	33	0
2:00 PM	28	68	82	20	80	120	38	0	34	105	20	2	22	104	39	0
2:15 PM	32	71	103	15	74	116	38	2	30	98	40	0	26	72	43	0
2:30 PM	27	71	102	16	81	110	30	0	41	114	27	1	12	89	28	1
2:45 PM	31	77	98	19	89	138	38	0	35	99	33	1	17	111	37	0

	Broadway Southbound				Pleasant Valley Avenue Westbound				Broadway Northbound				51st Street Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	29	58	84	6	66	90	49	1	22	93	25	1	11	90	27	0	652	2857
11:15 AM	27	69	103	14	72	97	31	1	36	100	18	1	19	89	43	0	720	2975
11:30 AM	40	62	82	16	72	124	37	0	34	89	30	2	13	71	38	0	710	3046
11:45 AM	35	70	81	18	72	123	42	0	46	90	30	0	18	105	45	0	775	3207
12:00 PM	27	79	88	14	79	105	46	1	46	98	47	0	26	74	40	0	770	3278
12:15 PM	31	77	100	16	63	112	37	0	42	115	21	0	16	126	35	0	791	3373
12:30 PM	40	92	106	26	92	124	48	0	38	118	27	0	20	96	44	0	871	3535
12:45 PM	36	86	99	16	86	116	41	0	44	133	29	0	26	93	41	0	846	3586
1:00 PM	45	70	91	14	83	125	63	0	50	115	40	1	28	95	44	1	865	3574
1:15 PM	44	87	83	15	100	142	51	0	51	160	39	3	22	106	50	0	953	3477
1:30 PM	38	76	84	20	95	129	61	1	49	165	42	1	36	75	49	1	922	3291
1:45 PM	32	80	92	10	83	121	50	0	34	123	31	1	30	114	33	0	834	3127
2:00 PM	28	71	82	20	80	121	38	0	34	106	20	2	22	105	39	0	768	3123
2:15 PM	32	72	103	15	74	119	38	2	30	99	41	0	26	73	43	0	767	
2:30 PM	27	74	102	16	81	112	30	0	42	116	27	1	12	89	28	1	758	
2:45 PM	31	78	98	19	90	138	39	0	35	102	33	1	17	112	37	0	830	
Peak Hour	**163**	**319**	**357**	**65**	**364**	**512**	**216**	**1**	**194**	**573**	**150**	**5**	**112**	**369**	**184**	**2**	**0.94**	

Truck

Study Name **WC10-2728_7 Broadway/51st Street/Pleasant Valley Avenue**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	3	1	0	0	0	1	0	0	0	3	0	0	0	1	0	0
11:15 AM	0	3	0	0	0	1	0	0	0	3	0	0	0	2	1	0
11:30 AM	0	2	0	0	1	0	0	0	0	1	0	0	0	1	0	0
11:45 AM	0	1	0	0	0	0	0	0	0	1	1	0	0	2	0	0
12:00 PM	2	1	0	0	2	3	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	1	0	0	0	1	0	0	0	1	0	0	0	2	0	0
12:30 PM	0	1	0	0	0	3	0	0	0	2	0	0	0	1	1	0
12:45 PM	2	1	2	0	0	0	0	0	1	3	0	0	1	1	1	0
1:00 PM	0	1	0	0	0	2	0	0	0	1	0	0	0	1	1	0
1:15 PM	0	1	0	0	1	0	0	0	0	2	0	0	0	3	0	0
1:30 PM	0	1	1	1	1	3	0	0	1	1	0	0	0	0	0	0
1:45 PM	0	3	2	0	0	0	0	0	0	2	0	0	0	1	0	0
2:00 PM	0	3	0	0	0	1	0	0	0	1	0	0	0	1	0	0
2:15 PM	0	1	0	0	0	3	0	0	0	1	1	0	0	1	0	0
2:30 PM	0	3	0	0	0	2	0	0	1	2	0	0	0	0	0	0
2:45 PM	0	1	0	0	1	0	1	0	0	3	0	0	0	1	0	0
Peak Hour	**2**	**4**	**3**	**1**	**2**	**5**	**0**	**0**	**2**	**7**	**0**	**0**	**1**	**5**	**2**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_7 Broadway/51st Street/Pleasant Valley Avenue**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	2	0	1	0	0	0	0	1	0	0	0	1	1	0
11:15 AM	1	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	3	4	0	0	0	0	0	0	3	0	0	0	2	0	0
11:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
12:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2:00 PM	0	3	0	0	0	0	0	0	1	0	0	0	0	2	0	0
2:15 PM	0	0	0	0	0	2	0	0	1	1	0	0	0	0	0	0
2:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	2	2	0
2:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Peak Hour	**0**	**7**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**

People

Study Name **WC10-2728_7 Broadway/51st Street/Pleasant Valley Avenue**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound		
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	
11:00 AM	0	1	11	2	0	5	0	1	
11:15 AM	1	2	8	0	4	2	4	4	
11:30 AM	8	2	6	4	1	2	2	0	
11:45 AM	5	4	2	1	0	1	6	3	
12:00 PM	2	3	4	1	1	1	1	4	
12:15 PM	5	5	4	4	2	2	2	1	
12:30 PM	0	0	5	6	2	1	4	1	
12:45 PM	2	2	7	4	0	5	0	1	
1:00 PM	5	1	10	5	3	4	0	1	
1:15 PM	5	2	21	4	0	3	1	4	
1:30 PM	2	1	9	6	8	0	2	13	
1:45 PM	4	3	35	4	12	0	5	0	
2:00 PM	2	1	9	7	3	5	2	1	
2:15 PM	8	5	6	6	3	5	1	3	
2:30 PM	5	3	4	10	7	2	4	8	
2:45 PM	3	4	5	3	4	4	4	2	
Peak Hour	**14**	**6**	**47**	**19**	**11**	**12**	**3**	**19**	**0**
	20		66		23		22		

Pedal Bike (Crosswalk)

Study Name **WC10-2728_7 Broadway/51st Street/Pleasant Valley Avenue**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	1	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	1	0	0
12:15 PM	0	1	1	2	1	0	1	1
12:30 PM	1	0	1	1	0	0	0	0
12:45 PM	0	0	1	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	1	0
1:15 PM	1	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	1	0
2:00 PM	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0
2:30 PM	0	0	1	0	0	0	0	0
2:45 PM	0	0	2	0	0	0	0	0
Peak Hour	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**0**

Totals

Study Name **WC10-2728_7 Broadway/51st Street/Pleasant Valley Avenue**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	29	58	86	6	67	90	49	1	22	94	25	1	11	91	28	0
11:15 AM	28	71	104	14	72	100	31	1	36	100	18	1	19	89	43	0
11:30 AM	40	65	86	16	72	124	37	0	34	92	30	2	13	73	38	0
11:45 AM	35	70	81	18	72	123	42	0	47	90	30	0	18	106	45	0
12:00 PM	27	79	88	14	79	107	46	1	46	98	47	0	26	75	40	0
12:15 PM	31	77	100	16	63	112	37	0	42	115	21	0	16	126	35	0
12:30 PM	40	95	106	26	92	126	48	0	38	118	27	0	20	96	44	0
12:45 PM	36	86	99	16	86	116	41	0	44	133	29	0	26	94	41	0
1:00 PM	45	71	91	14	83	126	63	0	50	115	40	1	28	95	44	1
1:15 PM	44	89	83	15	100	142	51	0	51	160	39	3	22	106	50	0
1:30 PM	38	80	84	20	95	129	61	1	49	165	42	1	36	75	49	1
1:45 PM	32	81	92	10	83	121	50	0	34	124	31	1	30	114	33	0
2:00 PM	28	74	82	20	80	121	38	0	35	106	20	2	22	107	39	0
2:15 PM	32	72	103	15	74	121	38	2	31	100	41	0	26	73	43	0
2:30 PM	27	75	102	16	81	113	30	0	42	116	27	1	12	91	30	1
2:45 PM	31	81	98	19	90	138	39	0	35	102	33	1	17	114	37	0
Peak Hour	**163**	**326**	**357**	**65**	**364**	**513**	**216**	**1**	**194**	**573**	**150**	**5**	**112**	**370**	**184**	**2**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-51-s
Site Code : 7
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

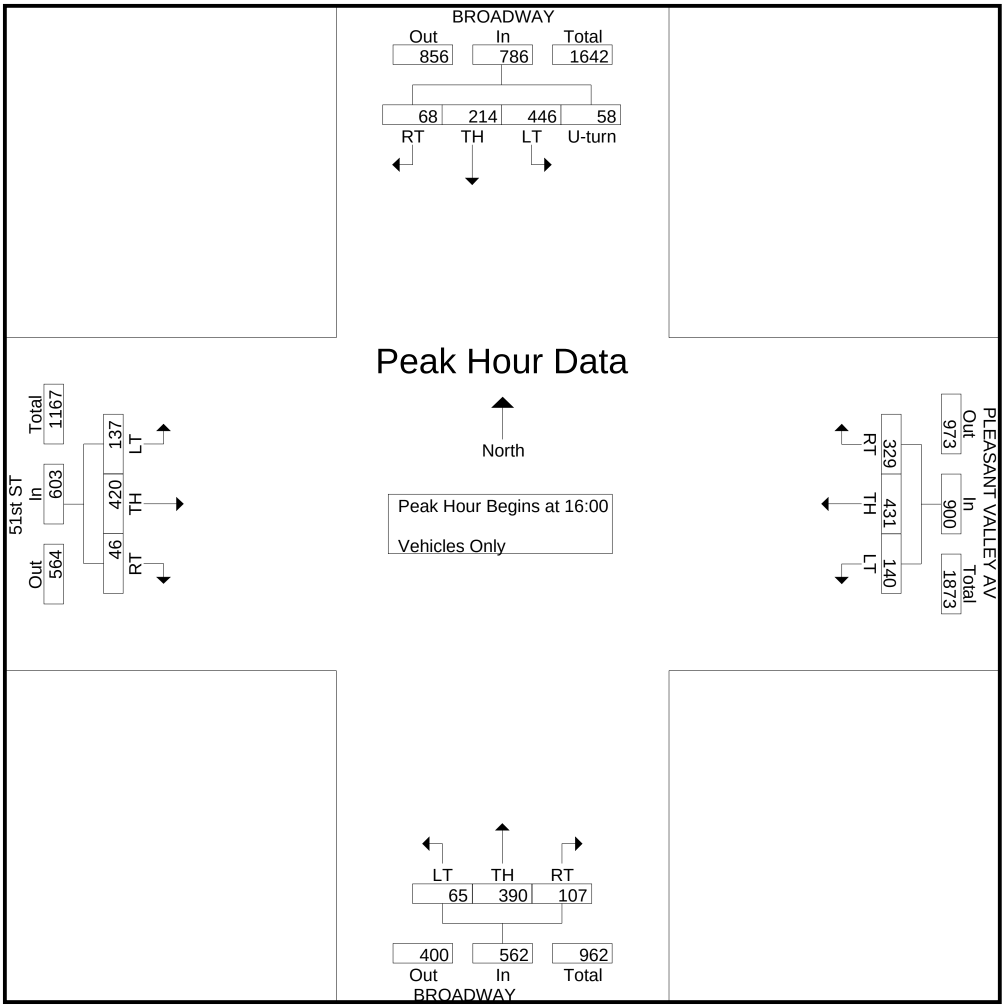
	BROADWAY Southbound					PLEASANT VALLEY AV Westbound				BROADWAY Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	11	58	128	18	215	84	108	42	234	27	92	16	135	12	99	36	147	731
16:15	15	62	96	15	188	81	113	33	227	33	103	18	154	11	111	34	156	725
16:30	18	49	124	9	200	79	104	38	221	26	101	18	145	10	108	36	154	720
16:45	24	45	98	16	183	85	106	27	218	21	94	13	128	13	102	31	146	675
Total	68	214	446	58	786	329	431	140	900	107	390	65	562	46	420	137	603	2851
17:00	19	54	98	20	191	81	100	25	206	22	90	17	129	10	98	35	143	669
17:15	11	51	136	22	220	67	105	28	200	33	75	20	128	19	84	31	134	682
17:30	18	53	79	12	162	72	107	37	216	16	69	26	111	11	96	30	137	626
17:45	17	52	105	18	192	80	83	34	197	26	76	21	123	11	68	31	110	622
Total	65	210	418	72	765	300	395	124	819	97	310	84	491	51	346	127	524	2599
18:00	23	47	90	8	168	66	87	20	173	23	85	15	123	18	86	30	134	598
18:15	14	48	114	10	186	69	100	27	196	21	73	16	110	11	84	21	116	608
18:30	20	44	83	8	155	49	72	27	148	24	75	15	114	13	90	29	132	549
18:45	8	61	96	9	174	66	88	15	169	23	65	20	108	11	56	30	97	548
Total	65	200	383	35	683	250	347	89	686	91	298	66	455	53	316	110	479	2303
Grand Total	198	624	1247	165	2234	879	1173	353	2405	295	998	215	1508	150	1082	374	1606	7753
Apprch %	8.9	27.9	55.8	7.4		36.5	48.8	14.7		19.6	66.2	14.3		9.3	67.4	23.3		
Total %	2.6	8	16.1	2.1	28.8	11.3	15.1	4.6	31	3.8	12.9	2.8	19.5	1.9	14	4.8	20.7	

	BROADWAY Southbound					PLEASANT VALLEY AV Westbound				BROADWAY Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 16:00																		
16:00	11	58	**128**	**18**	**215**	84	108	**42**	**234**	27	92	16	135	12	99	**36**	147	**731**
16:15	15	**62**	96	15	188	81	**113**	33	227	**33**	**103**	**18**	**154**	11	**111**	34	**156**	725
16:30	18	49	124	9	200	79	104	38	221	26	101	18	145	10	108	36	154	720
16:45	**24**	45	98	16	183	**85**	106	27	218	21	94	13	128	**13**	102	31	146	675
Total Volume	68	214	446	58	786	329	431	140	900	107	390	65	562	46	420	137	603	2851
% App. Total	8.7	27.2	56.7	7.4		36.6	47.9	15.6		19	69.4	11.6		7.6	69.7	22.7		
PHF	.708	.863	.871	.806	.914	.968	.954	.833	.962	.811	.947	.903	.912	.885	.946	.951	.966	.975

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-51-s
Site Code : 7
Start Date : 5/8/2010
Page No : 2



MARKS TRAFFIC DATA

CITY OF OAKLAND

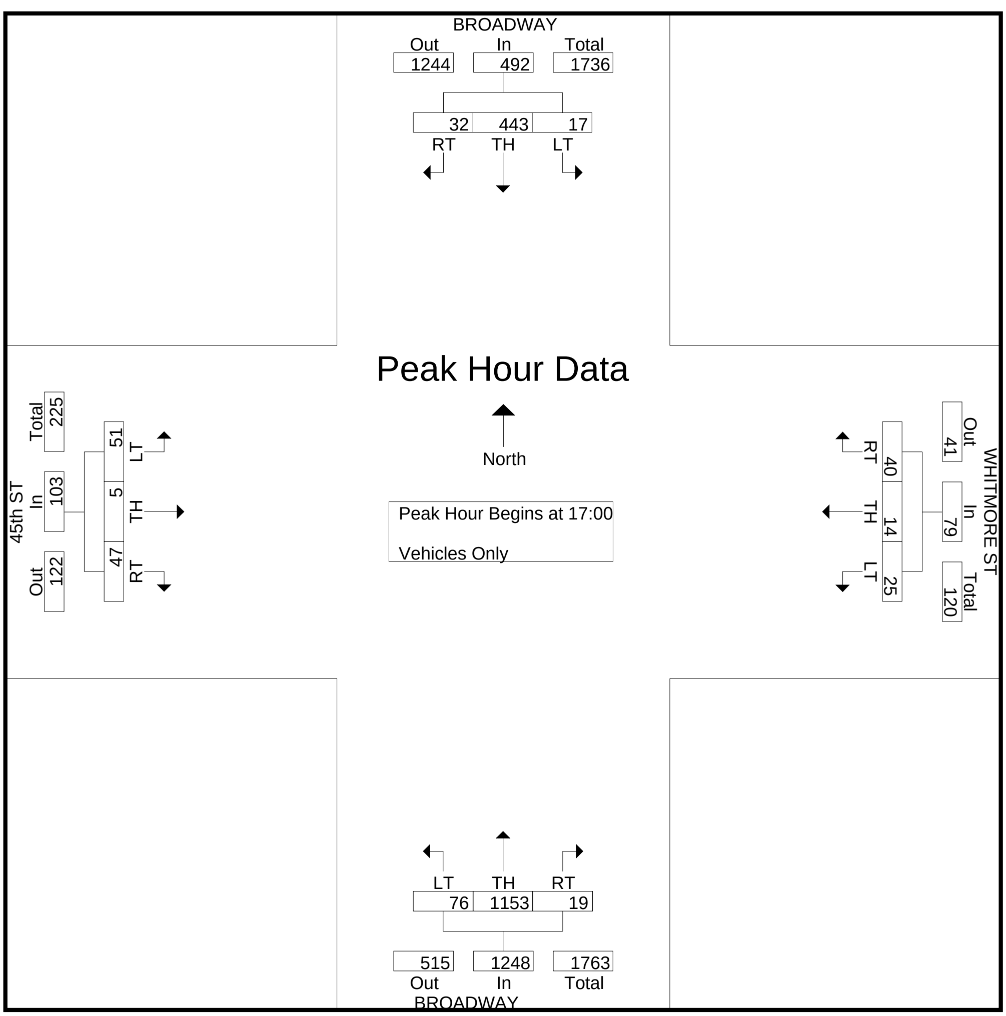
fp
Mietek 916-806-0250

File Name : broadway-45-p
Site Code : 8
Start Date : 5/5/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				WHITMORE ST Westbound				BROADWAY Northbound				45th ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	7	128	6	141	16	3	2	21	0	186	26	212	15	2	7	24	398
16:15	5	116	7	128	10	1	4	15	1	280	22	303	8	1	11	20	466
16:30	3	124	7	134	11	3	2	16	3	253	21	277	4	1	6	11	438
16:45	8	113	7	128	13	4	5	22	3	258	18	279	12	2	8	22	451
Total	23	481	27	531	50	11	13	74	7	977	87	1071	39	6	32	77	1753
17:00	6	108	5	119	5	2	4	11	2	278	20	300	12	1	14	27	457
17:15	6	108	4	118	12	4	4	20	4	272	20	296	8	0	15	23	457
17:30	14	108	5	127	13	5	7	25	9	312	16	337	10	3	11	24	513
17:45	6	119	3	128	10	3	10	23	4	291	20	315	17	1	11	29	495
Total	32	443	17	492	40	14	25	79	19	1153	76	1248	47	5	51	103	1922
Grand Total	55	924	44	1023	90	25	38	153	26	2130	163	2319	86	11	83	180	3675
Apprch %	5.4	90.3	4.3		58.8	16.3	24.8		1.1	91.8	7		47.8	6.1	46.1		
Total %	1.5	25.1	1.2	27.8	2.4	0.7	1	4.2	0.7	58	4.4	63.1	2.3	0.3	2.3	4.9	

	BROADWAY Southbound				WHITMORE ST Westbound				BROADWAY Northbound				45th ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	6	108	**5**	119	5	2	4	11	2	278	**20**	300	12	1	14	27	457
17:15	6	108	4	118	12	4	4	20	4	272	20	296	8	0	**15**	23	457
17:30	**14**	108	5	127	**13**	**5**	7	**25**	**9**	**312**	16	**337**	10	**3**	11	24	**513**
17:45	6	**119**	3	**128**	10	3	**10**	23	4	291	20	315	**17**	1	11	**29**	495
Total Volume	32	443	17	492	40	14	25	79	19	1153	76	1248	47	5	51	103	1922
% App. Total	6.5	90	3.5		50.6	17.7	31.6		1.5	92.4	6.1		45.6	4.9	49.5		
PHF	.571	.931	.850	.961	.769	.700	.625	.790	.528	.924	.950	.926	.691	.417	.850	.888	.937



Car

Study Name **WC10-2728_8 Broadway/45th Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Broadway Southbound				45th Street Westbound				Broadway Northbound				45th Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	8	96	2	1	12	1	6	0	4	132	5	9	5	0	5	0
11:15 AM	5	103	4	3	9	2	5	0	2	137	9	7	8	2	8	0
11:30 AM	10	104	2	3	16	1	4	0	2	146	6	6	4	0	5	0
11:45 AM	10	107	4	2	21	3	9	0	0	161	6	6	6	1	3	0
12:00 PM	14	132	0	4	9	0	8	0	3	164	6	17	5	1	6	0
12:15 PM	6	119	4	2	12	4	7	0	1	148	9	9	12	2	17	0
12:30 PM	19	146	3	4	10	5	4	0	3	160	12	6	8	0	8	0
12:45 PM	22	135	6	2	14	3	10	0	8	173	18	10	24	1	6	0
1:00 PM	15	145	2	3	8	8	6	0	1	185	24	11	8	3	4	0
1:15 PM	13	156	3	2	15	1	11	0	3	205	14	7	36	2	44	0
1:30 PM	11	150	4	5	17	4	8	0	4	202	18	11	43	2	47	0
1:45 PM	13	144	2	3	10	3	4	0	1	158	17	14	19	0	9	0
2:00 PM	6	116	3	3	7	7	8	0	1	156	10	9	11	5	2	0
2:15 PM	5	120	6	1	13	1	6	0	0	148	3	8	6	0	7	0
2:30 PM	2	115	3	0	18	1	8	0	4	159	6	6	12	1	7	0
2:45 PM	1	124	1	2	10	1	5	0	2	142	3	4	3	2	5	0

	Broadway Southbound				45th Street Westbound				Broadway Northbound				45th Street Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	8	97	2	1	12	1	6	0	4	135	5	9	5	0	5	0	290	1254
11:15 AM	5	105	4	3	9	2	5	0	2	139	9	7	8	2	8	0	308	1335
11:30 AM	10	107	2	3	16	1	4	0	2	147	7	6	4	0	5	0	314	1381
11:45 AM	10	108	4	2	21	3	9	0	0	163	6	6	6	1	3	0	342	1459
12:00 PM	14	133	0	4	9	0	8	0	3	165	6	17	5	1	6	0	371	1557
12:15 PM	6	120	4	2	12	4	7	0	1	149	9	9	12	2	17	0	354	1610
12:30 PM	19	147	3	4	10	5	4	0	3	163	12	6	8	0	8	0	392	1772
12:45 PM	22	137	6	2	14	3	10	0	8	179	18	10	24	1	6	0	440	1908
1:00 PM	15	145	2	3	8	8	6	0	1	186	24	11	8	3	4	0	424	1869
1:15 PM	13	158	3	2	15	1	11	0	3	207	14	7	36	2	44	0	516	1792
1:30 PM	11	151	4	5	17	4	8	0	4	203	18	11	43	2	47	0	528	1603
1:45 PM	13	146	2	3	10	3	4	0	1	160	17	14	19	0	9	0	401	1423
2:00 PM	6	118	3	3	7	7	8	0	1	157	10	9	11	5	2	0	347	1333
2:15 PM	5	121	6	1	13	1	6	0	0	150	3	8	6	0	7	0	327	
2:30 PM	3	118	3	0	18	1	8	0	4	161	6	6	12	1	7	0	348	
2:45 PM	1	126	1	2	10	1	5	0	2	146	3	4	3	2	5	0	311	
Peak Hour	**61**	**591**	**15**	**12**	**54**	**16**	**35**	**0**	**16**	**775**	**74**	**39**	**111**	**8**	**101**	**0**	**0.90**	

Truck

Study Name **WC10-2728_8 Broadway/45th Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0
11:15 AM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
11:30 AM	0	3	0	0	0	0	0	0	0	1	1	0	0	0	0	0
11:45 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0
12:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12:30 PM	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0
12:45 PM	0	2	0	0	0	0	0	0	0	6	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1:15 PM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
1:30 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1:45 PM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
2:00 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2:15 PM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0
2:30 PM	1	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0
2:45 PM	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0
Peak Hour	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**

Pedal Bike (Road)

Study Name WC10-2728_8 Broadway/45th Street
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0
11:30 AM	1	3	0	0	0	1	0	0	0	4	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
1:00 PM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0
1:15 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	1	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0
2:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
2:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Peak Hour	**0**	**6**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**

People

Study Name **WC10-2728_8 Broadway/45th Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	4	1	2	3	0	1
11:15 AM	0	4	4	2	0	1	2	2
11:30 AM	3	0	2	3	0	0	3	0
11:45 AM	3	2	4	4	4	8	1	1
12:00 PM	0	2	2	1	5	1	2	4
12:15 PM	1	3	1	4	12	3	5	4
12:30 PM	2	0	3	7	4	4	3	1
12:45 PM	5	0	6	8	1	4	0	0
1:00 PM	2	1	6	3	10	5	0	0
1:15 PM	3	2	10	4	21	6	6	6
1:30 PM	2	0	6	2	25	17	5	19
1:45 PM	3	0	10	0	7	3	4	5
2:00 PM	1	2	4	1	12	2	5	0
2:15 PM	5	0	9	5	0	1	3	1
2:30 PM	0	2	3	2	0	1	0	4
2:45 PM	0	1	4	3	0	3	0	0
Peak Hour	**12**	**3**	**28**	**17**	**57**	**32**	**11**	**25**
	15		45		89		36	

Pedal Bike (Crosswalk)

Study Name **WC10-2728_8 Broadway/45th Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	1	0	0	0	0
11:45 AM	0	0	0	0	0	1	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	1	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	1	0	0	0	0	0	0	0
1:00 PM	0	0	1	0	0	0	0	0
1:15 PM	0	0	1	0	0	0	0	0
1:30 PM	0	0	0	0	0	1	0	0
1:45 PM	0	0	1	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0
2:30 PM	0	0	1	0	0	0	0	0
2:45 PM	0	1	2	0	0	0	0	0
Peak Hour	**1**	**0**	**2**	**0**	**0**	**1**	**0**	**0**

Totals

Study Name **WC10-2728_8 Broadway/45th Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	8	97	2	1	12	1	6	0	4	135	5	9	5	0	5	0
11:15 AM	5	106	4	3	9	2	5	0	2	139	9	7	8	4	8	0
11:30 AM	11	110	2	3	16	2	4	0	2	151	7	6	4	0	5	0
11:45 AM	10	108	4	2	21	3	9	0	0	166	6	6	7	1	3	0
12:00 PM	14	133	0	4	9	0	8	0	3	165	6	17	5	1	6	0
12:15 PM	6	120	5	2	12	4	7	0	1	149	9	9	12	2	17	0
12:30 PM	21	148	3	4	10	6	4	0	3	163	12	6	8	0	8	0
12:45 PM	22	137	6	2	14	3	10	0	8	182	18	10	24	1	6	0
1:00 PM	15	146	2	3	8	9	7	0	1	186	24	11	8	3	4	0
1:15 PM	13	161	3	2	15	1	11	0	3	207	14	7	36	2	44	0
1:30 PM	11	153	4	5	17	4	8	0	4	203	18	11	43	2	47	0
1:45 PM	14	146	2	3	10	3	4	0	1	163	17	14	19	0	10	0
2:00 PM	6	119	3	3	7	7	8	0	1	157	10	9	11	5	2	0
2:15 PM	5	121	6	1	13	1	6	0	0	150	3	8	6	0	8	0
2:30 PM	3	119	3	0	18	1	8	0	4	161	6	6	12	1	7	0
2:45 PM	1	127	1	2	10	1	5	0	2	147	3	4	3	2	5	0
Peak Hour	**61**	**597**	**15**	**12**	**54**	**17**	**36**	**0**	**16**	**778**	**74**	**39**	**111**	**8**	**101**	**0**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-45-s
Site Code : 8
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound					WHITMORE ST Westbound				BROADWAY Northbound					45th ST Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	3	100	3	3	109	5	2	6	13	1	129	5	3	138	2	0	5	7	267
16:15	4	97	2	4	107	11	4	5	20	3	134	5	4	146	5	2	3	10	283
16:30	2	114	1	3	120	5	0	4	9	1	136	1	6	144	8	0	2	10	283
16:45	3	98	3	2	106	6	2	2	10	1	121	5	8	135	2	0	1	3	254
Total	12	409	9	12	442	27	8	17	52	6	520	16	21	563	17	2	11	30	1087
17:00	0	74	1	2	77	5	0	2	7	1	118	3	7	129	1	0	3	4	217
17:15	7	97	4	5	113	3	1	7	11	0	105	5	2	112	4	1	3	8	244
17:30	2	101	0	3	106	7	0	1	8	1	110	4	3	118	10	2	1	13	245
17:45	2	101	5	2	110	6	0	8	14	2	118	4	6	130	3	0	2	5	259
Total	11	373	10	12	406	21	1	18	40	4	451	16	18	489	18	3	9	30	965
18:00	3	82	5	0	90	4	1	4	9	1	105	5	4	115	3	1	4	8	222
18:15	2	92	2	1	97	2	1	3	6	1	99	4	3	107	2	0	5	7	217
18:30	3	77	1	0	81	7	3	1	11	1	93	3	3	100	2	0	4	6	198
18:45	3	80	2	0	85	9	1	1	11	0	87	4	1	92	1	1	2	4	192
Total	11	331	10	1	353	22	6	9	37	3	384	16	11	414	8	2	15	25	829
Grand Total	34	1113	29	25	1201	70	15	44	129	13	1355	48	50	1466	43	7	35	85	2881
Apprch %	2.8	92.7	2.4	2.1		54.3	11.6	34.1		0.9	92.4	3.3	3.4		50.6	8.2	41.2		
Total %	1.2	38.6	1	0.9	41.7	2.4	0.5	1.5	4.5	0.5	47	1.7	1.7	50.9	1.5	0.2	1.2	3	

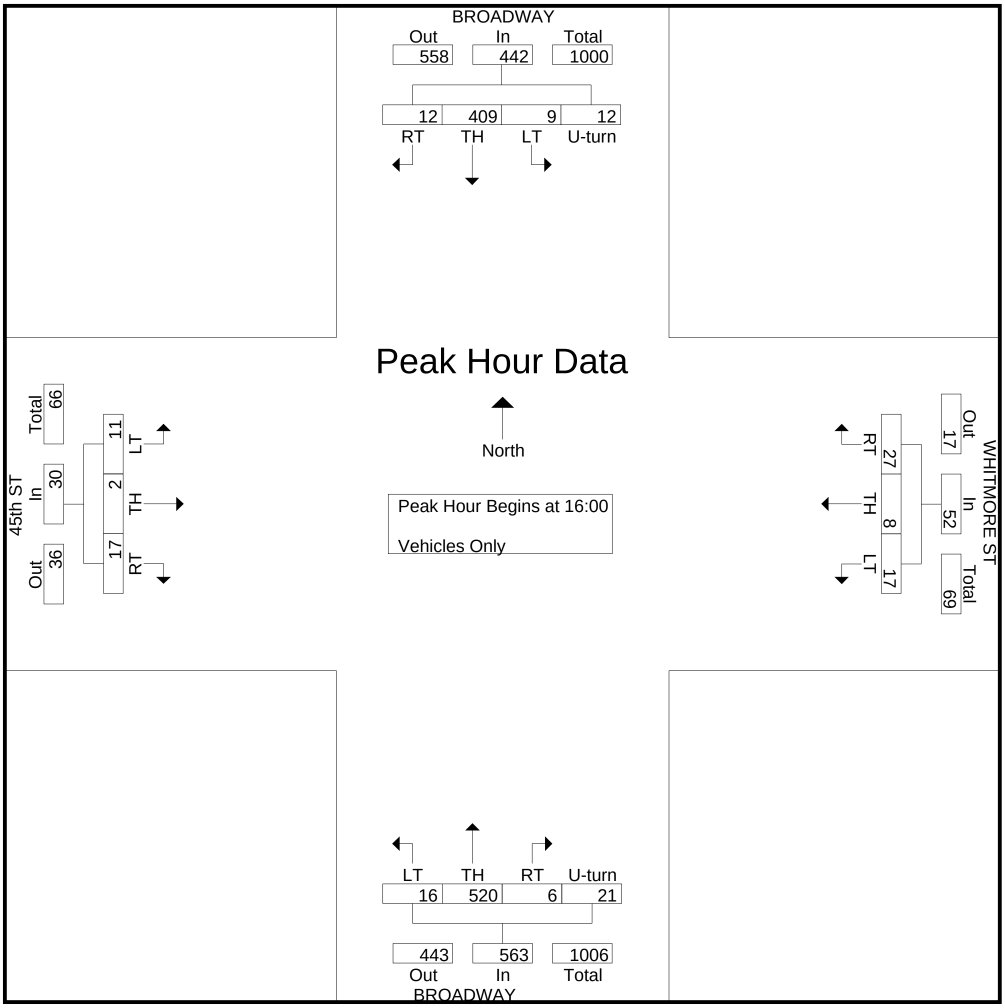
	BROADWAY Southbound					WHITMORE ST Westbound				BROADWAY Northbound					45th ST Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:00																			
16:00	3	100	**3**	3	109	5	2	**6**	13	1	129	**5**	3	138	2	0	**5**	7	267
16:15	**4**	97	2	**4**	107	**11**	**4**	5	**20**	**3**	134	5	4	**146**	5	**2**	3	**10**	**283**
16:30	2	**114**	1	3	**120**	5	0	4	9	1	**136**	1	6	144	**8**	0	2	10	283
16:45	3	98	3	2	106	6	2	2	10	1	121	5	**8**	135	2	0	1	3	254
Total Volume	12	409	9	12	442	27	8	17	52	6	520	16	21	563	17	2	11	30	1087
% App. Total	2.7	92.5	2	2.7		51.9	15.4	32.7		1.1	92.4	2.8	3.7		56.7	6.7	36.7		
PHF	.750	.897	.750	.750	.921	.614	.500	.708	.650	.500	.956	.800	.656	.964	.531	.250	.550	.750	.960

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-45-s
Site Code : 8
Start Date : 5/8/2010
Page No : 2



CITY OF OAKLAND

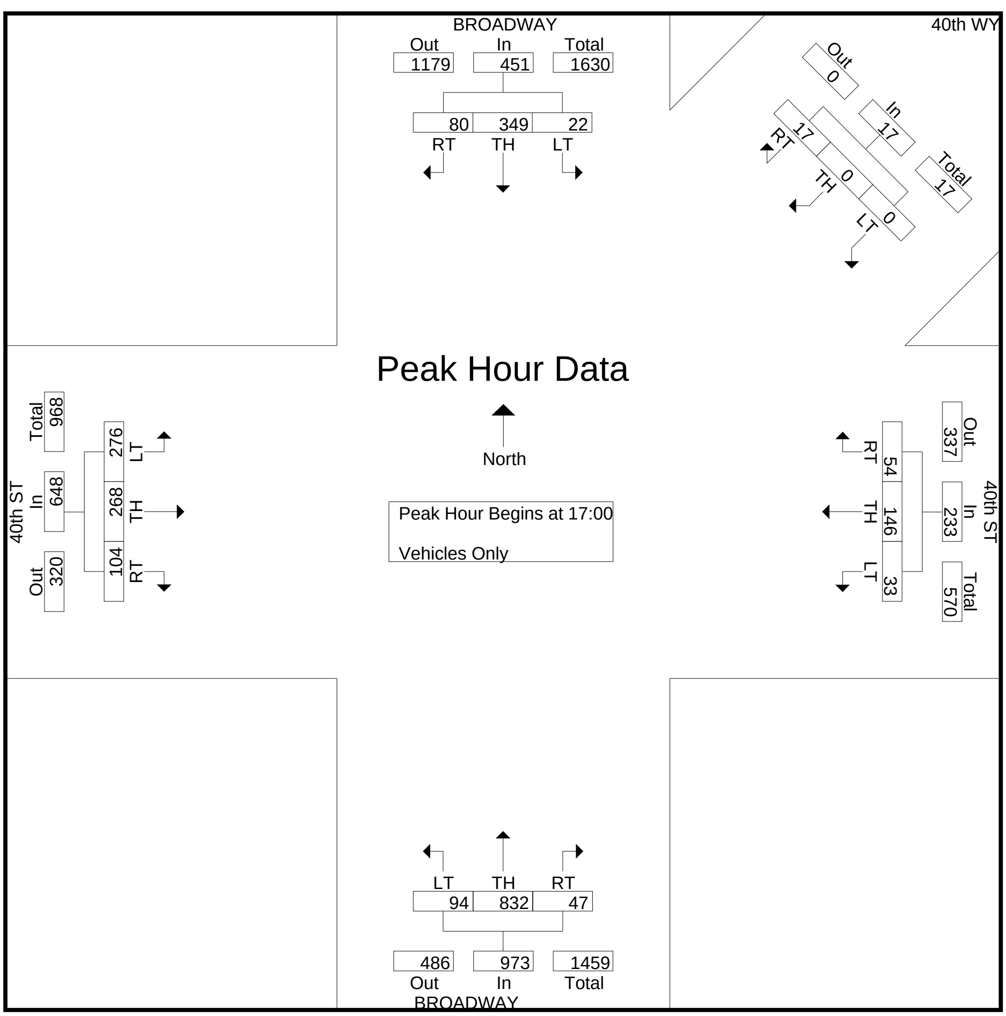
fp
Mietek 916-806-0250

File Name : broadway-40-p
Site Code : 9
Start Date : 5/4/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				40th WY Southwestbound				40th ST Westbound				BROADWAY Northbound				40th ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	20	104	14	138	8	0	0	8	14	47	16	77	16	147	28	191	23	51	31	105	519
16:15	23	104	5	132	1	0	0	1	16	30	10	56	29	131	25	185	26	56	54	136	510
16:30	21	84	6	111	5	0	0	5	17	46	18	81	12	149	33	194	13	61	61	135	526
16:45	22	96	6	124	5	0	0	5	10	37	14	61	11	171	28	210	23	52	49	124	524
Total	86	388	31	505	19	0	0	19	57	160	58	275	68	598	114	780	85	220	195	500	2079
17:00	22	85	6	113	2	0	0	2	17	41	9	67	17	214	27	258	29	57	61	147	587
17:15	22	83	5	110	2	0	0	2	10	32	11	53	11	220	23	254	21	69	70	160	579
17:30	17	99	5	121	6	0	0	6	19	36	10	65	11	205	22	238	28	57	68	153	583
17:45	19	82	6	107	7	0	0	7	8	37	3	48	8	193	22	223	26	85	77	188	573
Total	80	349	22	451	17	0	0	17	54	146	33	233	47	832	94	973	104	268	276	648	2322
Grand Total	166	737	53	956	36	0	0	36	111	306	91	508	115	1430	208	1753	189	488	471	1148	4401
Apprch %	17.4	77.1	5.5		100	0	0		21.9	60.2	17.9		6.6	81.6	11.9		16.5	42.5	41		
Total %	3.8	16.7	1.2	21.7	0.8	0	0	0.8	2.5	7	2.1	11.5	2.6	32.5	4.7	39.8	4.3	11.1	10.7	26.1	

	BROADWAY Southbound				40th WY Southwestbound				40th ST Westbound				BROADWAY Northbound				40th ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	**22**	85	**6**	113	2	0	0	2	17	**41**	9	**67**	**17**	214	**27**	**258**	**29**	57	61	147	**587**
17:15	22	83	5	110	2	0	0	2	10	32	**11**	53	11	**220**	23	254	21	69	70	160	579
17:30	17	**99**	5	**121**	6	0	0	6	**19**	36	10	65	11	205	22	238	28	57	68	153	583
17:45	19	82	6	107	**7**	0	0	**7**	8	37	3	48	8	193	22	223	26	**85**	**77**	**188**	573
Total Volume	80	349	22	451	17	0	0	17	54	146	33	233	47	832	94	973	104	268	276	648	2322
% App. Total	17.7	77.4	4.9		100	0	0		23.2	62.7	14.2		4.8	85.5	9.7		16	41.4	42.6		
PHF	.909	.881	.917	.932	.607	.000	.000	.607	.711	.890	.750	.869	.691	.945	.870	.943	.897	.788	.896	.862	.989



Car

Study Name **WC10-2728_9 Broadway/40th Street/40th Street Way**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Broadway Southbound				40th Street Way Southwestbound	40th Street Westbound				Broadway Northbound				40th Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	35	76	6	4	6	5	16	8	1	6	83	20	3	20	49	30	1
11:15 AM	27	84	3	2	17	5	20	4	3	6	125	21	4	20	34	34	4
11:30 AM	36	79	6	0	14	6	19	5	3	5	100	16	7	25	35	35	4
11:45 AM	31	101	5	1	11	3	23	10	3	12	116	17	4	22	46	44	1
12:00 PM	38	127	3	2	13	5	23	8	4	11	126	12	8	30	36	39	2
12:15 PM	27	119	10	0	8	5	19	11	3	5	119	20	2	24	43	37	4
12:30 PM	30	118	7	0	14	7	22	8	3	7	133	15	7	36	44	42	0
12:45 PM	35	137	9	1	13	16	20	5	3	7	148	21	7	19	35	49	1
1:00 PM	46	119	9	2	27	2	31	8	0	10	151	10	4	36	58	42	0
1:15 PM	55	137	5	0	6	5	31	6	1	10	123	20	5	32	48	41	5
1:30 PM	19	153	5	3	11	5	22	5	1	7	109	28	5	34	40	56	0
1:45 PM	24	148	6	4	10	6	31	6	2	7	108	20	4	25	39	38	2
2:00 PM	25	108	5	1	7	5	33	10	0	6	91	11	4	15	46	47	1
2:15 PM	35	94	6	1	10	0	24	2	0	8	98	14	3	24	47	43	3
2:30 PM	32	128	3	0	7	3	25	5	0	9	93	20	0	21	41	33	1
2:45 PM	32	97	11	2	15	2	40	10	0	7	91	15	2	17	56	36	1

	Broadway Southbound				40th Street Way Southwestbound	40th Street Westbound				Broadway Northbound				40th Street Eastbound					
Start Time	Right	Thru	Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	35	76	6	4	6	5	16	8	1	6	83	20	3	20	49	30	1	369	1627
11:15 AM	27	84	3	2	17	5	20	4	3	6	125	21	4	20	34	34	4	413	1745
11:30 AM	36	79	6	0	14	6	19	5	3	5	100	16	7	25	35	35	4	395	1788
11:45 AM	31	101	5	1	11	3	23	10	3	12	116	17	4	22	46	44	1	450	1886
12:00 PM	38	127	3	2	13	5	23	8	4	11	126	12	8	30	36	39	2	487	1962
12:15 PM	27	119	10	0	8	5	19	11	3	5	119	20	2	24	43	37	4	456	2030
12:30 PM	30	118	7	0	14	7	22	8	3	7	133	15	7	36	44	42	0	493	2104
12:45 PM	35	137	9	1	13	16	20	5	3	7	148	21	7	19	35	49	1	526	2114
1:00 PM	46	119	9	2	27	2	31	8	0	10	151	10	4	36	58	42	0	555	2068
1:15 PM	55	137	5	0	6	5	31	6	1	10	123	20	5	32	48	41	5	530	1928
1:30 PM	19	153	5	3	11	5	22	5	1	7	109	28	5	34	40	56	0	503	1810
1:45 PM	24	148	6	4	10	6	31	6	2	7	108	20	4	25	39	38	2	480	1728
2:00 PM	25	108	5	1	7	5	33	10	0	6	91	11	4	15	46	47	1	415	1682
2:15 PM	35	94	6	1	10	0	24	2	0	8	98	14	3	24	47	43	3	412	
2:30 PM	32	128	3	0	7	3	25	5	0	9	93	20	0	21	41	33	1	421	
2:45 PM	32	97	11	2	15	2	40	10	0	7	91	15	2	17	56	36	1	434	
Peak Hour	**155**	**546**	**28**	**6**	**57**	**28**	**104**	**24**	**5**	**34**	**531**	**79**	**21**	**121**	**181**	**188**	**6**	**0.95**	

Truck

Study Name **WC10-2728_9 Broadway/40th Street/40th Street Way**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound uthwestbou	Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	2	0	0	1	0	1	0	0	0	1	1	0	1	0	0	0
11:15 AM	0	2	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0
11:30 AM	0	3	1	0	0	0	0	0	0	0	0	2	0	2	0	0	0
11:45 AM	0	2	0	0	0	0	0	0	0	0	2	2	0	1	0	0	0
12:00 PM	0	2	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0
12:15 PM	0	2	0	0	0	0	0	0	0	0	2	1	0	2	0	0	0
12:30 PM	0	1	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	1	0	0	0	4	1	0	1	1	2	0
1:00 PM	2	2	0	0	0	0	0	0	0	0	2	1	0	2	0	0	0
1:15 PM	0	2	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
1:30 PM	1	2	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0
1:45 PM	0	4	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0
2:00 PM	1	2	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
2:15 PM	1	1	0	0	0	0	2	0	0	0	1	0	0	2	0	0	0
2:30 PM	2	2	0	0	0	0	0	0	0	0	3	1	0	1	0	0	0
2:45 PM	0	3	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0

Pedal Bike (Road)

Study Name **WC10-2728_9 Broadway/40th Street/40th Street Way**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound uthwestbou	Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
11:15 AM	0	1	1	0	0	0	1	0	0	0	2	1	0	1	1	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0
12:00 PM	0	1	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0
12:30 PM	0	2	0	0	0	0	2	0	0	0	1	1	0	0	1	0	0
12:45 PM	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
1:00 PM	0	2	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0
1:15 PM	0	2	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0
1:30 PM	0	2	0	0	0	0	0	0	0	0	3	2	0	0	1	0	0
1:45 PM	0	1	0	0	0	0	2	0	0	0	0	1	0	0	1	0	0
2:00 PM	0	4	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0
2:15 PM	0	3	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0
2:30 PM	1	2	0	0	0	0	0	0	0	1	3	0	0	0	2	0	0
2:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
Peak Hour	**0**	**7**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**6**	**3**	**0**	**2**	**3**	**0**	**0**

People

Study Name **WC10-2728_9 Broadway/40th Street/40th Street Way**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	12	7	6	0	4	3	3	7
11:15 AM	5	9	3	5	4	2	5	9
11:30 AM	2	6	6	8	10	5	1	4
11:45 AM	10	6	10	4	13	3	0	5
12:00 PM	10	2	10	4	8	4	5	4
12:15 PM	13	11	13	3	21	3	7	7
12:30 PM	6	11	6	5	5	8	5	11
12:45 PM	9	4	7	11	3	4	6	5
1:00 PM	5	1	5	16	4	6	6	6
1:15 PM	11	4	7	6	2	4	7	1
1:30 PM	9	5	4	3	5	3	10	5
1:45 PM	10	4	6	5	6	5	12	2
2:00 PM	14	4	3	1	2	4	3	3
2:15 PM	15	4	9	3	2	5	11	2
2:30 PM	9	1	2	2	6	2	3	4
2:45 PM	6	2	0	2	7	0	7	6
Peak Hour	**34**	**14**	**23**	**36**	**14**	**17**	**29**	**17**
	48		59		31		46	

Pedal Bike (Crosswalk)

Study Name **WC10-2728_9 Broadway/40th Street/40th Street Way**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	1	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	1	0	0	0	0	0	0	0
11:45 AM	1	0	0	0	0	0	0	1
12:00 PM	0	0	1	1	0	0	0	0
12:15 PM	2	0	2	0	1	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	1	0	1	0	0	1	0	1
1:30 PM	4	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	3
2:15 PM	0	0	0	0	3	0	0	1
2:30 PM	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0
Peak Hour	**5**	**0**	**1**	**0**	**0**	**1**	**0**	**1**

Totals

Study Name **WC10-2728_9 Broadway/40th Street/40th Street Way**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound uthwestbou	Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	36	78	6	4	8	5	17	8	1	6	84	22	3	21	49	30	1
11:15 AM	27	87	4	2	17	5	21	4	3	6	129	22	4	22	35	34	4
11:30 AM	36	82	7	0	14	6	19	5	3	5	104	18	7	27	35	35	4
11:45 AM	31	103	5	1	11	3	23	10	3	12	120	19	4	23	47	44	1
12:00 PM	38	130	3	2	13	5	23	8	4	11	129	14	8	32	38	39	2
12:15 PM	27	121	10	0	8	5	19	11	3	5	121	22	2	28	43	37	4
12:30 PM	30	121	7	0	14	7	24	8	3	7	137	18	7	36	45	42	0
12:45 PM	35	139	9	1	13	16	21	5	3	7	153	23	7	20	36	51	1
1:00 PM	48	123	9	2	27	2	32	8	0	10	154	11	4	38	60	42	0
1:15 PM	55	141	5	0	6	5	31	6	1	11	125	21	5	35	48	41	5
1:30 PM	20	157	5	3	11	5	22	5	1	7	113	31	5	35	42	56	0
1:45 PM	24	153	6	4	10	6	33	6	2	7	109	23	4	25	40	38	2
2:00 PM	26	114	5	1	7	5	34	10	0	6	92	13	4	16	47	47	1
2:15 PM	36	98	6	1	10	0	27	2	0	8	99	14	3	26	51	43	3
2:30 PM	35	132	3	0	7	3	25	5	0	10	99	21	0	22	43	33	1
2:45 PM	32	100	11	2	15	2	41	10	0	7	93	16	2	17	57	36	1

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-40-s
Site Code : 9
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				40th WY Southwestbound				40th ST Westbound				BROADWAY Northbound				40th ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	22	93	8	123	4	0	0	4	6	21	1	28	5	67	10	82	31	48	40	119	356
16:15	21	82	4	107	7	0	0	7	3	28	1	32	3	97	10	110	32	46	50	128	384
16:30	22	100	4	126	8	0	0	8	8	23	5	36	7	85	27	119	26	53	44	123	412
16:45	28	82	3	113	2	0	0	2	3	20	8	31	5	92	15	112	30	31	36	97	355
Total	93	357	19	469	21	0	0	21	20	92	15	127	20	341	62	423	119	178	170	467	1507
17:00	23	70	3	96	5	0	0	5	3	28	4	35	6	78	24	108	31	40	40	111	355
17:15	22	79	5	106	7	0	0	7	4	33	3	40	5	85	18	108	26	49	39	114	375
17:30	19	83	9	111	4	0	0	4	3	17	6	26	9	79	21	109	28	27	29	84	334
17:45	19	72	6	97	2	0	0	2	3	21	2	26	7	84	14	105	32	43	26	101	331
Total	83	304	23	410	18	0	0	18	13	99	15	127	27	326	77	430	117	159	134	410	1395
18:00	21	89	3	113	4	0	0	4	7	21	7	35	3	85	21	109	24	33	36	93	354
18:15	16	76	4	96	1	0	0	1	3	15	6	24	4	81	22	107	32	42	36	110	338
18:30	18	67	3	88	4	0	0	4	2	13	7	22	3	64	18	85	34	36	26	96	295
18:45	12	59	6	77	3	0	0	3	3	11	3	17	2	65	22	89	28	37	39	104	290
Total	67	291	16	374	12	0	0	12	15	60	23	98	12	295	83	390	118	148	137	403	1277
Grand Total	243	952	58	1253	51	0	0	51	48	251	53	352	59	962	222	1243	354	485	441	1280	4179
Apprch %	19.4	76	4.6		100	0	0		13.6	71.3	15.1		4.7	77.4	17.9		27.7	37.9	34.5		
Total %	5.8	22.8	1.4	30	1.2	0	0	1.2	1.1	6	1.3	8.4	1.4	23	5.3	29.7	8.5	11.6	10.6	30.6	

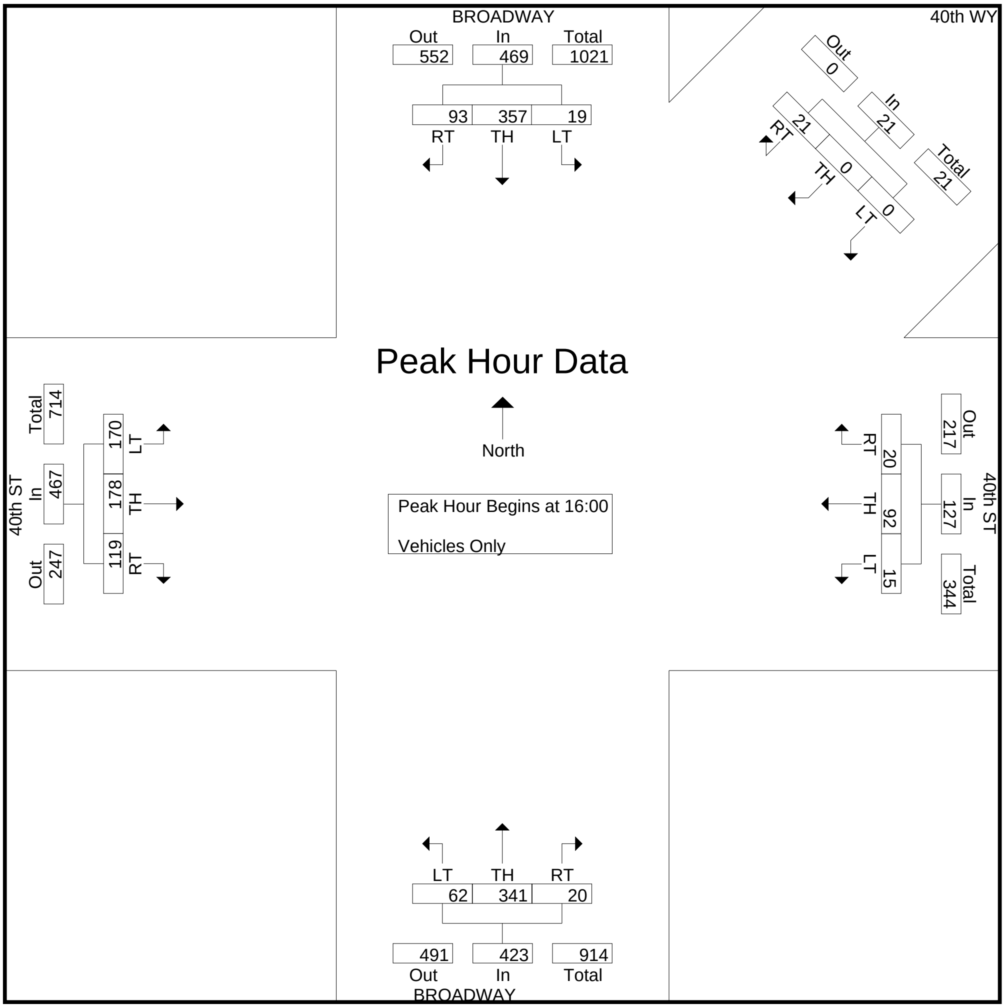
	BROADWAY Southbound				40th WY Southwestbound				40th ST Westbound				BROADWAY Northbound				40th ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	22	93	**8**	123	4	0	0	4	6	21	1	28	5	67	10	82	31	48	40	119	356
16:15	21	82	4	107	7	0	0	7	3	**28**	1	32	3	**97**	10	110	**32**	46	**50**	**128**	384
16:30	22	**100**	4	**126**	**8**	0	0	**8**	**8**	23	5	**36**	**7**	85	**27**	**119**	26	**53**	44	123	**412**
16:45	**28**	82	3	113	2	0	0	2	3	20	**8**	31	5	92	15	112	30	31	36	97	355
Total Volume	93	357	19	469	21	0	0	21	20	92	15	127	20	341	62	423	119	178	170	467	1507
% App. Total	19.8	76.1	4.1		100	0	0		15.7	72.4	11.8		4.7	80.6	14.7		25.5	38.1	36.4		
PHF	.830	.893	.594	.931	.656	.000	.000	.656	.625	.821	.469	.882	.714	.879	.574	.889	.930	.840	.850	.912	.914

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-40-s
Site Code : 9
Start Date : 5/8/2010
Page No : 2



CITY OF OAKLAND

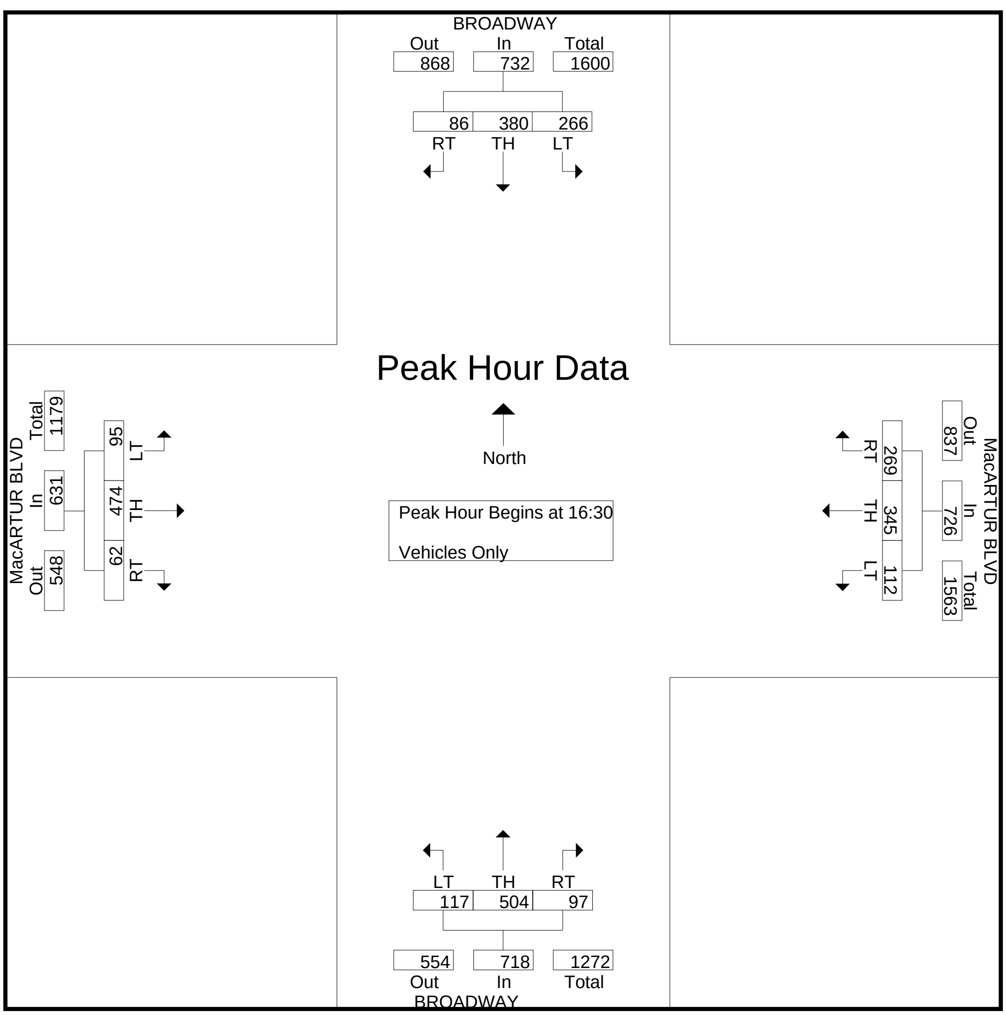
fp
Mietek 916-806-0250

File Name : broadway-macarthur-p
Site Code : 10
Start Date : 5/11/2010
Page No : 1

Groups Printed- Vehicles Only

	BROADWAY Southbound				MacARTUR BLVD Westbound				BROADWAY Northbound				MacARTUR BLVD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	30	67	54	151	63	101	23	187	34	103	23	160	30	94	17	141	639
16:15	29	93	65	187	55	84	18	157	28	112	25	165	14	96	16	126	635
16:30	24	87	78	189	68	99	35	202	19	119	29	167	14	128	29	171	729
16:45	21	112	65	198	69	69	26	164	26	123	26	175	18	124	19	161	698
Total	104	359	262	725	255	353	102	710	107	457	103	667	76	442	81	599	2701
17:00	18	96	61	175	67	84	29	180	20	127	32	179	14	101	26	141	675
17:15	23	85	62	170	65	93	22	180	32	135	30	197	16	121	21	158	705
17:30	18	83	55	156	67	80	20	167	22	147	34	203	15	129	17	161	687
17:45	14	72	50	136	69	90	20	179	14	119	20	153	11	105	25	141	609
Total	73	336	228	637	268	347	91	706	88	528	116	732	56	456	89	601	2676
Grand Total	177	695	490	1362	523	700	193	1416	195	985	219	1399	132	898	170	1200	5377
Apprch %	13	51	36		36.9	49.4	13.6		13.9	70.4	15.7		11	74.8	14.2		
Total %	3.3	12.9	9.1	25.3	9.7	13	3.6	26.3	3.6	18.3	4.1	26	2.5	16.7	3.2	22.3	

	BROADWAY Southbound				MacARTUR BLVD Westbound				BROADWAY Northbound				MacARTUR BLVD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	**24**	87	**78**	189	68	**99**	**35**	**202**	19	119	29	167	14	**128**	**29**	**171**	**729**
16:45	21	**112**	65	**198**	**69**	69	26	164	26	123	26	175	**18**	124	19	161	698
17:00	18	96	61	175	67	84	29	180	20	127	**32**	179	14	101	26	141	675
17:15	23	85	62	170	65	93	22	180	**32**	**135**	30	**197**	16	121	21	158	705
Total Volume	86	380	266	732	269	345	112	726	97	504	117	718	62	474	95	631	2807
% App. Total	11.7	51.9	36.3		37.1	47.5	15.4		13.5	70.2	16.3		9.8	75.1	15.1		
PHF	.896	.848	.853	.924	.975	.871	.800	.899	.758	.933	.914	.911	.861	.926	.819	.923	.963



Car

Study Name **WC10-2728_10 Broadway/W MacArthur Blvd**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Broadway Southbound				McArthur Blvd Westbound				Broadway Northbound				McArthur Blvd Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	15	71	32	1	60	90	22	0	20	54	14	0	7	64	11	1
11:15 AM	13	55	38	1	79	99	15	1	18	64	16	0	6	56	12	1
11:30 AM	11	57	50	1	68	101	25	1	13	44	23	0	10	69	13	0
11:45 AM	15	81	45	0	81	95	14	1	11	57	7	1	7	69	14	0
12:00 PM	24	88	63	2	76	89	13	1	11	78	21	0	6	65	15	3
12:15 PM	11	83	61	1	90	89	29	0	11	58	16	0	7	53	14	1
12:30 PM	12	108	59	3	68	95	21	0	16	76	20	0	7	68	13	0
12:45 PM	12	74	52	2	99	95	16	0	11	73	18	1	8	71	17	1
1:00 PM	16	112	61	4	84	82	26	1	4	92	27	0	17	70	12	3
1:15 PM	19	93	68	1	57	72	13	2	10	80	12	0	7	60	20	4
1:30 PM	21	100	75	1	56	87	14	0	18	76	19	2	7	70	12	3
1:45 PM	22	94	73	0	66	76	11	1	13	65	19	0	4	68	12	1
2:00 PM	19	85	45	2	33	78	14	2	8	73	11	0	9	68	13	2
2:15 PM	17	64	52	1	56	69	18	0	16	54	21	0	10	60	14	0
2:30 PM	11	82	64	3	53	79	14	2	23	62	20	0	9	79	13	1
2:45 PM	10	60	64	2	39	78	12	0	15	62	20	0	10	87	18	2

	Broadway Southbound				McArthur Blvd Westbound				Broadway Northbound				McArthur Blvd Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	16	72	33	1	62	90	22	0	20	55	14	0	7	67	11	1	471	1958
11:15 AM	13	56	39	1	80	100	15	1	19	66	16	0	6	56	12	1	481	2052
11:30 AM	12	59	52	1	71	102	26	1	14	44	23	0	10	69	13	0	497	2101
11:45 AM	15	84	45	0	81	97	14	1	13	59	7	1	7	70	15	0	509	2179
12:00 PM	24	90	67	2	77	91	13	1	11	79	21	0	6	65	15	3	565	2232
12:15 PM	11	84	62	1	90	91	29	0	11	60	16	0	7	53	14	1	530	2284
12:30 PM	13	109	59	3	70	96	21	0	17	79	20	0	7	68	13	0	575	2286
12:45 PM	12	75	52	2	102	95	16	0	11	76	19	1	9	74	17	1	562	2281
1:00 PM	16	113	63	4	85	82	26	1	4	93	27	0	17	70	13	3	617	2254
1:15 PM	19	94	70	1	58	77	13	2	10	82	12	0	7	62	21	4	532	2105
1:30 PM	21	101	78	1	57	89	14	0	19	76	19	2	7	71	12	3	570	2029
1:45 PM	22	96	74	0	68	77	11	1	13	66	19	0	4	71	12	1	535	1981
2:00 PM	19	87	46	2	35	78	15	2	8	73	11	0	9	68	13	2	468	1932
2:15 PM	17	64	52	1	56	70	18	0	17	56	21	0	10	60	14	0	456	
2:30 PM	11	83	65	3	54	82	14	2	23	63	20	0	9	79	13	1	522	
2:45 PM	11	61	64	2	40	78	12	0	16	62	20	0	10	89	19	2	486	
Peak Hour	**68**	**383**	**263**	**8**	**302**	**343**	**69**	**3**	**44**	**327**	**77**	**3**	**40**	**277**	**63**	**11**	**0.92**	

Truck

Study Name **WC10-2728_10 Broadway/W MacArthur Blvd**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	1	1	1	0	2	0	0	0	0	1	0	0	0	3	0	0
11:15 AM	0	1	1	0	1	1	0	0	1	2	0	0	0	0	0	0
11:30 AM	1	2	2	0	3	1	1	0	1	0	0	0	0	0	0	0
11:45 AM	0	3	0	0	0	2	0	0	2	2	0	0	0	1	1	0
12:00 PM	0	2	4	0	1	2	0	0	0	1	0	0	0	0	0	0
12:15 PM	0	1	1	0	0	2	0	0	0	2	0	0	0	0	0	0
12:30 PM	1	1	0	0	2	1	0	0	1	3	0	0	0	0	0	0
12:45 PM	0	1	0	0	3	0	0	0	0	3	1	0	1	3	0	0
1:00 PM	0	1	2	0	1	0	0	0	0	1	0	0	0	0	1	0
1:15 PM	0	1	2	0	1	5	0	0	0	2	0	0	0	2	1	0
1:30 PM	0	1	3	0	1	2	0	0	1	0	0	0	0	1	0	0
1:45 PM	0	2	1	0	2	1	0	0	0	1	0	0	0	3	0	0
2:00 PM	0	2	1	0	2	0	1	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0
2:30 PM	0	1	1	0	1	3	0	0	0	1	0	0	0	0	0	0
2:45 PM	1	1	0	0	1	0	0	0	1	0	0	0	0	2	1	0
Peak Hour	**0**	**4**	**7**	**0**	**6**	**7**	**0**	**0**	**1**	**6**	**1**	**0**	**1**	**6**	**2**	**0**

Pedal Bike (Road)

Study Name WC10-2728_10 Broadway/W MacArthur Blvd
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	1	0	0	0	3	0	0	0	2	0	0	0	1	0	0
11:15 AM	0	3	0	0	1	1	0	0	0	2	0	0	1	0	0	0
11:30 AM	0	2	0	0	0	2	0	0	0	4	0	0	0	0	0	0
11:45 AM	0	2	0	0	0	0	1	0	0	3	1	0	0	0	0	0
12:00 PM	0	4	0	0	0	2	0	0	0	3	0	0	2	0	0	0
12:15 PM	0	3	0	0	0	1	0	0	0	1	0	0	1	0	0	0
12:30 PM	0	0	1	0	2	1	2	0	0	3	0	0	1	2	0	0
12:45 PM	0	2	0	0	0	0	0	0	0	2	0	0	1	0	0	0
1:00 PM	0	3	0	0	0	1	0	0	0	0	1	0	1	2	0	0
1:15 PM	0	3	0	0	0	4	0	0	0	5	1	0	0	0	0	0
1:30 PM	0	3	0	0	0	1	0	0	0	4	4	0	0	4	1	0
1:45 PM	0	2	0	0	0	0	0	0	0	3	1	0	0	0	0	1
2:00 PM	0	1	0	0	0	1	0	0	0	0	2	0	1	3	0	0
2:15 PM	0	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	2	2	0	0	0	1	1	0	0	0	0	0
2:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
Peak Hour	**0**	**11**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**11**	**6**	**0**	**2**	**6**	**1**	**0**

People

Study Name **WC10-2728_10 Broadway/W MacArthur Blvd**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound			
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW		
11:00 AM	14	31	1	0	0	0	5	5		
11:15 AM	7	13	0	2	0	0	5	6		
11:30 AM	14	17	0	0	0	0	8	3		
11:45 AM	19	16	0	0	0	0	14	7		
12:00 PM	11	10	0	1	1	1	1	5		
12:15 PM	9	12	0	0	0	0	6	1		
12:30 PM	14	9	0	0	1	0	8	5		
12:45 PM	17	1	2	0	2	0	5	2		
1:00 PM	19	3	0	0	0	0	6	3		
1:15 PM	11	5	0	0	0	0	6	4		
1:30 PM	15	1	0	0	0	0	12	4		
1:45 PM	14	4	0	0	0	0	1	1		
2:00 PM	10	15	0	0	0	0	7	5		
2:15 PM	9	4	0	0	0	0	12	5		
2:30 PM	17	2	0	0	0	0	11	6		
2:45 PM	10	11	0	0	1	0	7	5		
Peak Hour	**62**	**10**	**2**	**0**	**2**	**0**	**29**	**13**	**0**	**0**
	72		2		2		42			

Pedal Bike (Crosswalk)

Study Name **WC10-2728_10 Broadway/W MacArthur Blvd**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	1	0	0	0	0	0	0	0								
11:15 AM	0	0	0	0	0	0	0	0								
11:30 AM	0	0	0	0	0	0	0	0								
11:45 AM	0	0	0	0	0	0	0	0								
12:00 PM	0	0	0	0	0	0	0	0								
12:15 PM	0	0	0	0	0	0	0	0								
12:30 PM	0	0	0	0	0	0	0	0								
12:45 PM	0	0	0	0	0	0	0	0								
1:00 PM	0	1	0	0	0	0	0	0								
1:15 PM	0	1	0	0	0	0	0	0								
1:30 PM	0	0	0	0	0	0	0	0								
1:45 PM	1	0	0	0	0	0	0	0								
2:00 PM	0	1	0	0	0	0	0	0								
2:15 PM	0	0	0	0	1	0	0	0								
2:30 PM	0	0	0	0	0	0	0	0								
2:45 PM	0	0	0	0	0	0	0	0								
Peak Hour	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_10 Broadway/W MacArthur Blvd**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	16	73	33	1	62	93	22	0	20	57	14	0	7	68	11	1
11:15 AM	13	59	39	1	81	101	15	1	19	68	16	0	7	56	12	1
11:30 AM	12	61	52	1	71	104	26	1	14	48	23	0	10	69	13	0
11:45 AM	15	86	45	0	81	97	15	1	13	62	8	1	7	70	15	0
12:00 PM	24	94	67	2	77	93	13	1	11	82	21	0	8	65	15	3
12:15 PM	11	87	62	1	90	92	29	0	11	61	16	0	8	53	14	1
12:30 PM	13	109	60	3	72	97	23	0	17	82	20	0	8	70	13	0
12:45 PM	12	77	52	2	102	95	16	0	11	78	19	1	10	74	17	1
1:00 PM	16	116	63	4	85	83	26	1	4	93	28	0	18	72	13	3
1:15 PM	19	97	70	1	58	81	13	2	10	87	13	0	7	62	21	4
1:30 PM	21	104	78	1	57	90	14	0	19	80	23	2	7	75	13	3
1:45 PM	22	98	74	0	68	77	11	1	13	69	20	0	4	71	12	2
2:00 PM	19	88	46	2	35	79	15	2	8	73	13	0	10	71	13	2
2:15 PM	17	67	52	1	57	72	18	0	17	56	21	0	10	60	14	0
2:30 PM	11	83	65	3	56	84	14	2	23	64	21	0	9	79	13	1
2:45 PM	11	61	64	2	40	79	12	0	16	62	20	0	10	91	19	2
Peak Hour	**68**	**394**	**263**	**8**	**302**	**349**	**69**	**3**	**44**	**338**	**83**	**3**	**42**	**283**	**64**	**11**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-macarthur-s
Site Code : 10
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

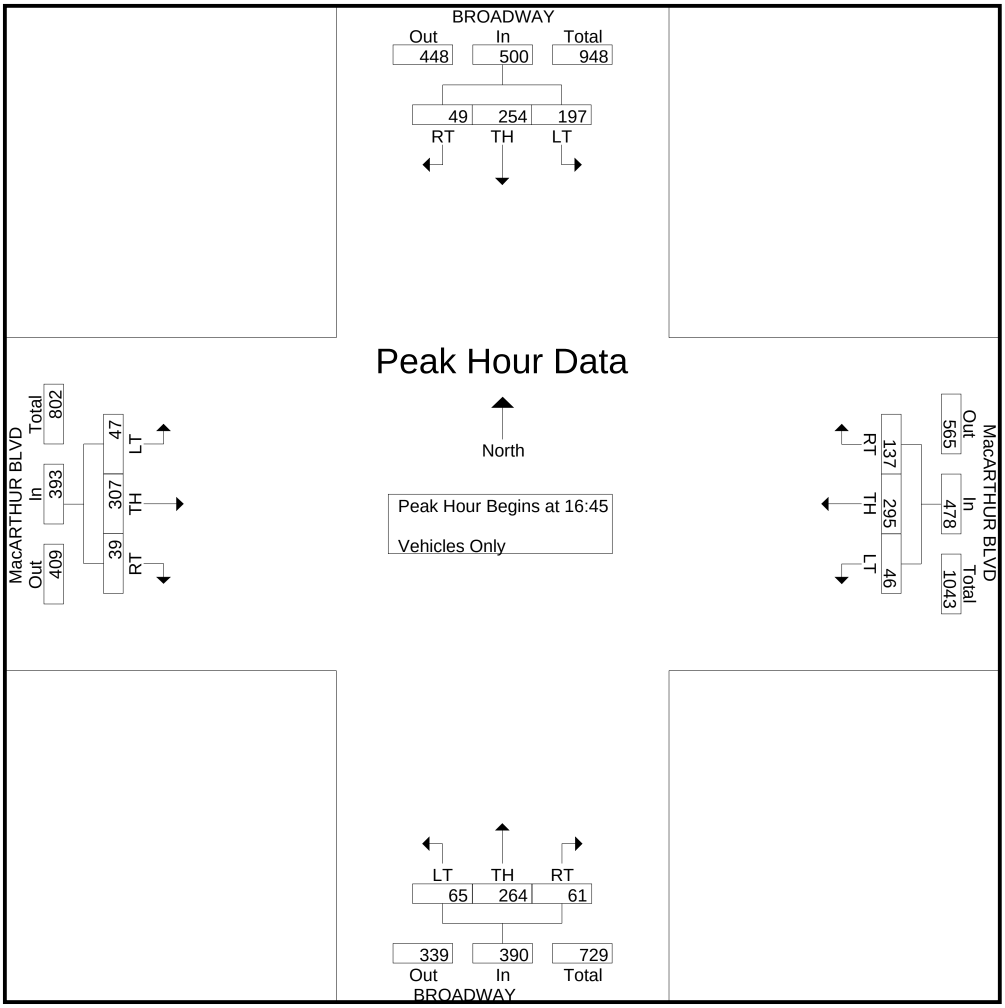
	BROADWAY Southbound				MacARTHUR BLVD Westbound				BROADWAY Northbound				MacARTHUR BLVD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	15	60	61	136	28	79	9	116	11	42	10	63	11	90	10	111	426
16:15	19	64	52	135	44	79	14	137	14	71	12	97	12	78	13	103	472
16:30	12	50	34	96	24	50	6	80	12	54	9	75	3	55	15	73	324
16:45	13	62	55	130	32	75	14	121	16	79	24	119	8	77	9	94	464
Total	59	236	202	497	128	283	43	454	53	246	55	354	34	300	47	381	1686
17:00	10	54	53	117	33	82	13	128	14	59	14	87	16	89	16	121	453
17:15	10	73	46	129	33	66	15	114	14	66	15	95	7	71	9	87	425
17:30	16	65	43	124	39	72	4	115	17	60	12	89	8	70	13	91	419
17:45	17	57	32	106	39	65	8	112	11	53	7	71	10	81	19	110	399
Total	53	249	174	476	144	285	40	469	56	238	48	342	41	311	57	409	1696
18:00	9	76	35	120	33	56	9	98	8	53	19	80	8	56	10	74	372
18:15	13	56	41	110	34	76	4	114	7	56	13	76	3	67	8	78	378
18:30	10	58	50	118	27	53	4	84	7	48	7	62	7	61	5	73	337
18:45	11	51	39	101	35	66	6	107	10	52	14	76	3	70	13	86	370
Total	43	241	165	449	129	251	23	403	32	209	53	294	21	254	36	311	1457
Grand Total	155	726	541	1422	401	819	106	1326	141	693	156	990	96	865	140	1101	4839
Apprch %	10.9	51.1	38		30.2	61.8	8		14.2	70	15.8		8.7	78.6	12.7		
Total %	3.2	15	11.2	29.4	8.3	16.9	2.2	27.4	2.9	14.3	3.2	20.5	2	17.9	2.9	22.8	

	BROADWAY Southbound				MacARTHUR BLVD Westbound				BROADWAY Northbound				MacARTHUR BLVD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	13	62	**55**	**130**	32	75	14	121	16	**79**	**24**	**119**	8	77	9	94	**464**
17:00	10	54	53	117	33	**82**	13	**128**	14	59	14	87	**16**	**89**	**16**	**121**	453
17:15	10	**73**	46	129	33	66	**15**	114	14	66	15	95	7	71	9	87	425
17:30	**16**	65	43	124	**39**	72	4	115	**17**	60	12	89	8	70	13	91	419
Total Volume	49	254	197	500	137	295	46	478	61	264	65	390	39	307	47	393	1761
% App. Total	9.8	50.8	39.4		28.7	61.7	9.6		15.6	67.7	16.7		9.9	78.1	12		
PHF	.766	.870	.895	.962	.878	.899	.767	.934	.897	.835	.677	.819	.609	.862	.734	.812	.949

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : broadway-macarthur-s
Site Code : 10
Start Date : 5/8/2010
Page No : 2



CITY OF OAKLAND

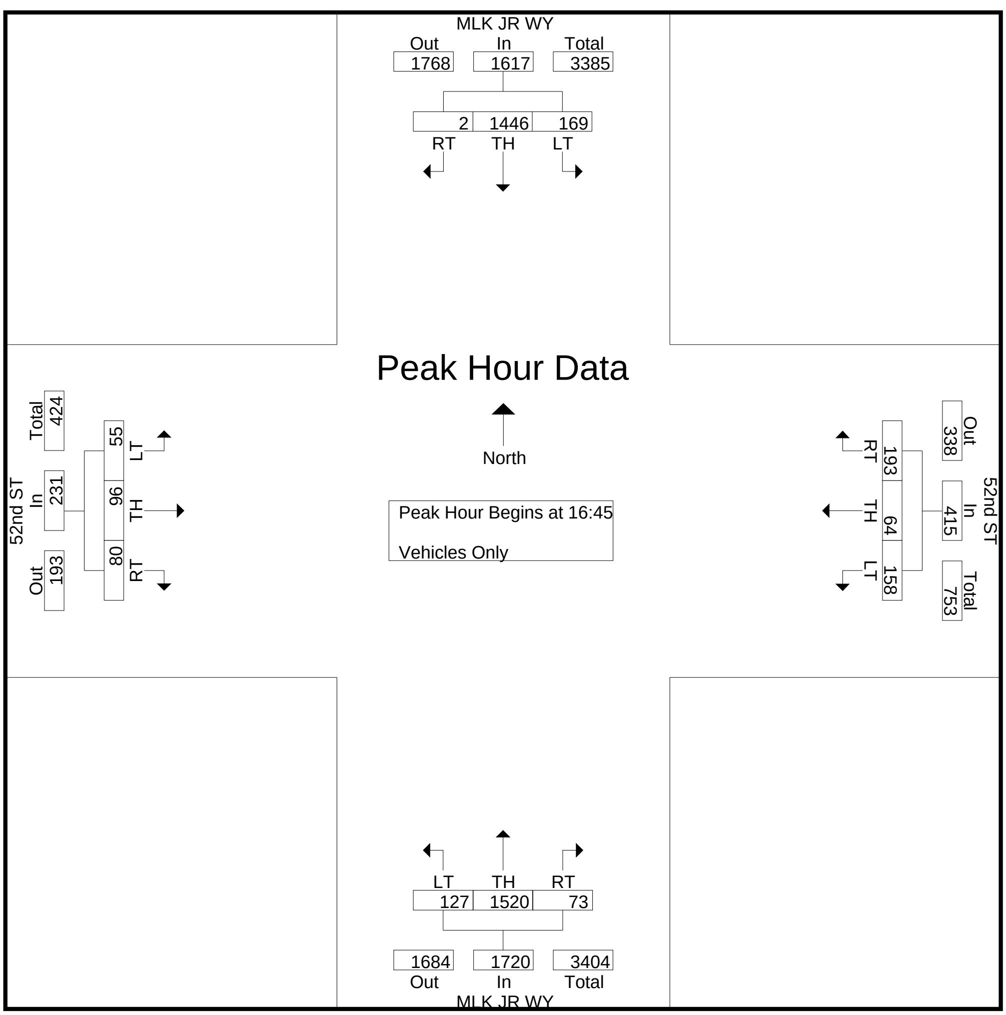
fp
Mietek 916-806-0250

File Name : mlk-52-p
Site Code : 11
Start Date : 5/12/2010
Page No : 1

Groups Printed- Vehicles Only

	MLK JR WY Southbound				52nd ST Westbound				MLK JR WY Northbound				52nd ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	307	28	335	43	12	32	87	13	337	35	385	16	10	7	33	840
16:15	0	304	33	337	46	22	35	103	17	314	35	366	13	14	11	38	844
16:30	1	360	38	399	45	11	36	92	18	322	33	373	23	25	4	52	916
16:45	0	326	43	369	56	14	38	108	22	379	29	430	20	29	12	61	968
Total	1	1297	142	1440	190	59	141	390	70	1352	132	1554	72	78	34	184	3568
17:00	1	350	33	384	50	14	40	104	10	329	30	369	25	23	16	64	921
17:15	1	384	46	431	44	11	47	102	12	405	30	447	17	25	13	55	1035
17:30	0	386	47	433	43	25	33	101	29	407	38	474	18	19	14	51	1059
17:45	3	322	40	365	44	12	21	77	20	381	34	435	23	12	19	54	931
Total	5	1442	166	1613	181	62	141	384	71	1522	132	1725	83	79	62	224	3946
Grand Total	6	2739	308	3053	371	121	282	774	141	2874	264	3279	155	157	96	408	7514
Apprch %	0.2	89.7	10.1		47.9	15.6	36.4		4.3	87.6	8.1		38	38.5	23.5		
Total %	0.1	36.5	4.1	40.6	4.9	1.6	3.8	10.3	1.9	38.2	3.5	43.6	2.1	2.1	1.3	5.4	

	MLK JR WY Southbound				52nd ST Westbound				MLK JR WY Northbound				52nd ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	0	326	43	369	**56**	14	38	**108**	22	379	29	430	20	**29**	12	61	968
17:00	**1**	350	33	384	50	14	40	104	10	329	30	369	**25**	23	**16**	**64**	921
17:15	1	384	46	431	44	11	**47**	102	12	405	30	447	17	25	13	55	1035
17:30	0	**386**	**47**	**433**	43	**25**	33	101	**29**	**407**	**38**	**474**	18	19	14	51	**1059**
Total Volume	2	1446	169	1617	193	64	158	415	73	1520	127	1720	80	96	55	231	3983
% App. Total	0.1	89.4	10.5		46.5	15.4	38.1		4.2	88.4	7.4		34.6	41.6	23.8		
PHF	.500	.937	.899	.934	.862	.640	.840	.961	.629	.934	.836	.907	.800	.828	.859	.902	.940



Car

Study Name **WC10-2728_11 MLK Way/52nd Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	MLK Way Southbound				52nd Street Westbound				MLK Way Northbound				52nd Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	2	189	18	1	24	21	10	0	13	248	0	2	6	17	7	0
11:15 AM	1	243	24	0	31	17	14	0	10	224	0	1	1	13	5	0
11:30 AM	0	229	21	1	31	19	12	0	15	233	0	0	11	10	9	1
11:45 AM	2	229	23	0	35	13	10	0	14	261	0	0	14	16	7	0
12:00 PM	1	216	23	0	32	19	10	0	23	250	0	0	8	11	5	0
12:15 PM	1	237	34	0	35	17	18	0	14	263	0	0	11	17	8	0
12:30 PM	2	211	26	0	29	15	6	0	17	277	0	1	13	15	10	0
12:45 PM	1	240	30	0	48	24	14	0	16	222	1	0	13	15	10	0
1:00 PM	1	261	26	0	35	28	8	0	22	288	0	0	3	10	10	0
1:15 PM	1	244	17	1	45	26	7	0	10	269	1	0	15	15	5	0
1:30 PM	1	262	31	0	33	25	12	0	28	256	1	2	9	11	9	0
1:45 PM	0	258	26	0	48	28	8	0	23	269	0	0	8	10	6	0
2:00 PM	2	265	22	0	35	26	11	0	14	234	0	0	7	24	9	0
2:15 PM	0	290	19	0	27	11	14	1	21	267	1	0	8	10	7	0
2:30 PM	1	245	23	0	41	28	25	0	30	263	1	0	9	13	5	0
2:45 PM	0	241	17	0	49	30	17	0	24	262	0	0	11	12	7	0

	MLK Way Southbound				52nd Street Westbound				MLK Way Northbound				52nd Street Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	2	191	18	1	24	21	10	0	13	250	0	2	6	17	7	0	562	2387
11:15 AM	1	246	24	0	31	17	15	0	11	229	0	1	1	13	5	0	594	2436
11:30 AM	0	231	21	1	31	19	12	0	15	236	0	0	12	10	9	1	598	2508
11:45 AM	2	235	23	0	35	13	10	0	14	264	0	0	14	16	7	0	633	2546
12:00 PM	1	218	23	0	34	19	12	0	23	256	0	0	8	12	5	0	611	2554
12:15 PM	1	240	34	0	35	17	18	0	14	270	0	0	12	17	8	0	666	2643
12:30 PM	2	217	26	0	29	15	6	0	17	285	0	1	13	15	10	0	636	2643
12:45 PM	1	241	30	0	48	24	15	0	16	227	1	0	13	15	10	0	641	2694
1:00 PM	1	266	26	0	35	28	9	0	22	289	0	0	3	11	10	0	700	2745
1:15 PM	1	249	17	1	45	26	7	0	10	274	1	0	15	15	5	0	666	2703
1:30 PM	1	266	31	0	33	26	12	0	28	258	1	2	9	11	9	0	687	2723
1:45 PM	0	262	26	0	48	28	8	0	23	273	0	0	8	10	6	0	692	2729
2:00 PM	2	271	22	0	35	26	11	0	14	236	0	0	8	24	9	0	658	2716
2:15 PM	0	293	20	0	27	12	15	1	21	271	1	0	8	10	7	0	686	
2:30 PM	1	249	23	0	41	28	25	0	30	268	1	0	9	13	5	0	693	
2:45 PM	0	243	17	0	49	30	18	0	24	266	0	0	11	14	7	0	679	
Peak Hour	**4**	**1022**	**104**	**1**	**161**	**104**	**43**	**0**	**76**	**1048**	**3**	**2**	**40**	**52**	**34**	**0**	**0.96**	

Truck

Study Name **WC10-2728_11 MLK Way/52nd Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0
11:15 AM	0	3	0	0	0	0	1	0	1	5	0	0	0	0	0	0
11:30 AM	0	2	0	0	0	0	0	0	0	3	0	0	1	0	0	0
11:45 AM	0	6	0	0	0	0	0	0	0	3	0	0	0	0	0	0
12:00 PM	0	2	0	0	2	0	2	0	0	6	0	0	0	1	0	0
12:15 PM	0	3	0	0	0	0	0	0	0	7	0	0	1	0	0	0
12:30 PM	0	6	0	0	0	0	0	0	0	8	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	1	0	0	5	0	0	0	0	0	0
1:00 PM	0	5	0	0	0	0	1	0	0	1	0	0	0	1	0	0
1:15 PM	0	5	0	0	0	0	0	0	0	5	0	0	0	0	0	0
1:30 PM	0	4	0	0	0	1	0	0	0	2	0	0	0	0	0	0
1:45 PM	0	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0
2:00 PM	0	6	0	0	0	0	0	0	0	2	0	0	1	0	0	0
2:15 PM	0	3	1	0	0	1	1	0	0	4	0	0	0	0	0	0
2:30 PM	0	4	0	0	0	0	0	0	0	5	0	0	0	0	0	0
2:45 PM	0	2	0	0	0	0	1	0	0	4	0	0	0	2	0	0
Peak Hour	**0**	**15**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**13**	**0**	**0**	**0**	**1**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_11 MLK Way/52nd Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	6	0	0	0	0	0	0	0	1	1	0
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	3	0	0	1	1	0	0	0	0	0	0	0	1	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
12:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
1:15 PM	0	1	0	0	0	0	0	0	1	4	0	0	0	0	0	0
1:30 PM	0	1	0	0	0	3	0	0	0	1	0	0	0	1	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0
2:00 PM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0
2:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**2**	**0**	**0**	**0**	**5**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**7**	**1**	**0**

People

Study Name WC10-2728_11 MLK Way/52nd Street
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	1	4	0	0	0	0	4
11:15 AM	0	3	0	0	1	2	0	3
11:30 AM	0	0	0	1	0	0	1	1
11:45 AM	3	7	1	4	3	1	1	5
12:00 PM	0	2	1	1	2	0	3	2
12:15 PM	4	3	0	1	0	1	0	1
12:30 PM	1	0	0	0	0	1	6	0
12:45 PM	5	3	0	3	0	1	3	2
1:00 PM	1	3	0	0	3	0	3	6
1:15 PM	1	1	2	0	1	2	3	2
1:30 PM	3	0	3	2	0	3	2	2
1:45 PM	1	5	3	1	1	0	5	2
2:00 PM	2	1	4	1	2	0	5	2
2:15 PM	2	2	0	0	1	2	2	4
2:30 PM	1	4	1	2	6	0	1	7
2:45 PM	0	2	2	0	3	3	2	1
Peak Hour	**10**	**7**	**5**	**5**	**4**	**6**	**11**	**12**
	17		10		10		23	

Pedal Bike (Crosswalk)

Study Name **WC10-2728_11 MLK Way/52nd Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	0	1	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	1	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	1
2:00 PM	1	0	0	0	0	0	1	0
2:15 PM	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0
2:45 PM	0	2	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

Totals

Study Name **WC10-2728_11 MLK Way/52nd Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	2	191	18	1	25	22	10	0	13	250	0	2	6	17	7	0
11:15 AM	1	246	24	0	31	18	15	0	11	229	0	1	1	13	5	0
11:30 AM	0	231	21	1	31	25	12	0	15	236	0	0	12	11	10	1
11:45 AM	2	236	23	0	36	13	10	0	14	264	0	0	14	16	7	0
12:00 PM	1	221	23	0	35	20	12	0	23	256	0	0	8	13	5	0
12:15 PM	1	240	34	0	35	17	18	0	14	271	0	0	12	17	8	0
12:30 PM	2	217	26	0	29	16	6	0	17	285	0	1	13	17	10	0
12:45 PM	1	241	30	0	48	26	15	0	16	227	1	0	13	19	10	0
1:00 PM	1	266	26	0	35	28	9	0	22	289	0	0	3	13	11	0
1:15 PM	1	250	17	1	45	26	7	0	11	278	1	0	15	15	5	0
1:30 PM	1	267	31	0	33	29	12	0	28	259	1	2	9	12	9	0
1:45 PM	0	262	26	0	48	28	8	0	23	274	0	0	8	11	7	0
2:00 PM	2	272	22	0	35	29	11	0	14	236	0	0	8	24	9	0
2:15 PM	0	293	20	0	27	12	15	1	21	273	1	0	8	10	7	0
2:30 PM	1	249	23	0	41	28	25	0	31	269	1	0	9	15	5	0
2:45 PM	0	244	17	0	49	31	18	0	24	266	0	0	11	14	8	0
Peak Hour	**4**	**1024**	**104**	**1**	**161**	**109**	**43**	**0**	**77**	**1053**	**3**	**2**	**40**	**59**	**35**	**0**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : mlk-52-s
Site Code : 11
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

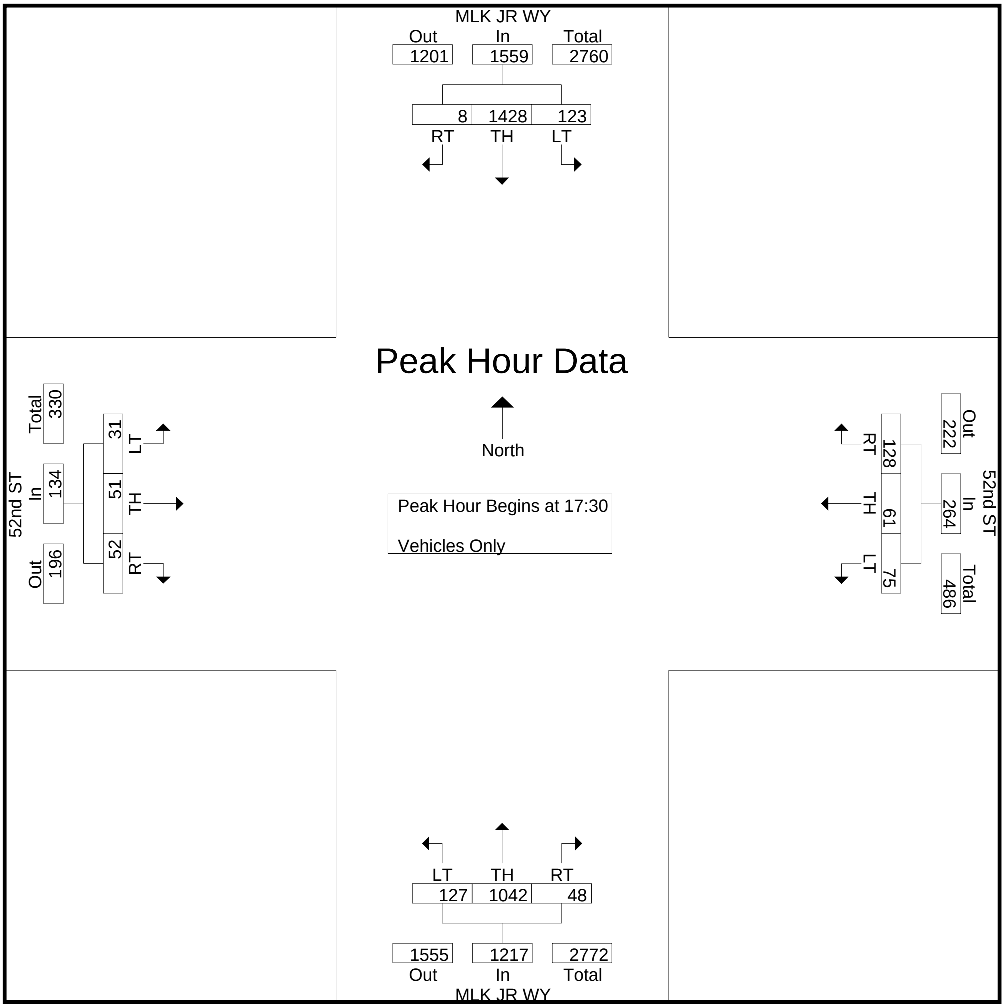
	MLK JR WY Southbound				52nd ST Westbound				MLK JR WY Northbound				52nd ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	296	28	324	31	19	21	71	17	275	29	321	10	18	11	39	755
16:15	3	313	24	340	36	20	17	73	15	264	32	311	9	17	6	32	756
16:30	1	345	36	382	30	15	16	61	12	298	40	350	6	19	14	39	832
16:45	1	316	39	356	29	17	14	60	12	280	30	322	19	11	6	36	774
Total	5	1270	127	1402	126	71	68	265	56	1117	131	1304	44	65	37	146	3117
17:00	1	333	29	363	28	10	17	55	17	248	28	293	12	9	3	24	735
17:15	0	351	23	374	26	12	22	60	12	241	24	277	17	11	6	34	745
17:30	2	319	30	351	25	11	12	48	13	288	35	336	12	14	7	33	768
17:45	2	384	23	409	32	14	31	77	12	246	31	289	15	17	14	46	821
Total	5	1387	105	1497	111	47	82	240	54	1023	118	1195	56	51	30	137	3069
18:00	3	360	31	394	32	20	19	71	9	266	31	306	10	11	6	27	798
18:15	1	365	39	405	39	16	13	68	14	242	30	286	15	9	4	28	787
18:30	2	288	42	332	32	11	21	64	10	199	30	239	8	12	11	31	666
18:45	1	325	19	345	27	20	24	71	16	238	39	293	8	10	10	28	737
Total	7	1338	131	1476	130	67	77	274	49	945	130	1124	41	42	31	114	2988
Grand Total	17	3995	363	4375	367	185	227	779	159	3085	379	3623	141	158	98	397	9174
Apprch %	0.4	91.3	8.3		47.1	23.7	29.1		4.4	85.2	10.5		35.5	39.8	24.7		
Total %	0.2	43.5	4	47.7	4	2	2.5	8.5	1.7	33.6	4.1	39.5	1.5	1.7	1.1	4.3	

	MLK JR WY Southbound				52nd ST Westbound				MLK JR WY Northbound				52nd ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:30																	
17:30	2	319	30	351	25	11	12	48	13	**288**	**35**	**336**	12	14	7	33	768
17:45	2	**384**	23	**409**	32	14	**31**	**77**	12	246	31	289	**15**	**17**	**14**	**46**	**821**
18:00	**3**	360	31	394	32	**20**	19	71	9	266	31	306	10	11	6	27	798
18:15	1	365	**39**	405	**39**	16	13	68	**14**	242	30	286	15	9	4	28	787
Total Volume	8	1428	123	1559	128	61	75	264	48	1042	127	1217	52	51	31	134	3174
% App. Total	0.5	91.6	7.9		48.5	23.1	28.4		3.9	85.6	10.4		38.8	38.1	23.1		
PHF	.667	.930	.788	.953	.821	.763	.605	.857	.857	.905	.907	.906	.867	.750	.554	.728	.967

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : mlk-52-s
Site Code : 11
Start Date : 5/15/2010
Page No : 2



CITY OF OAKLAND

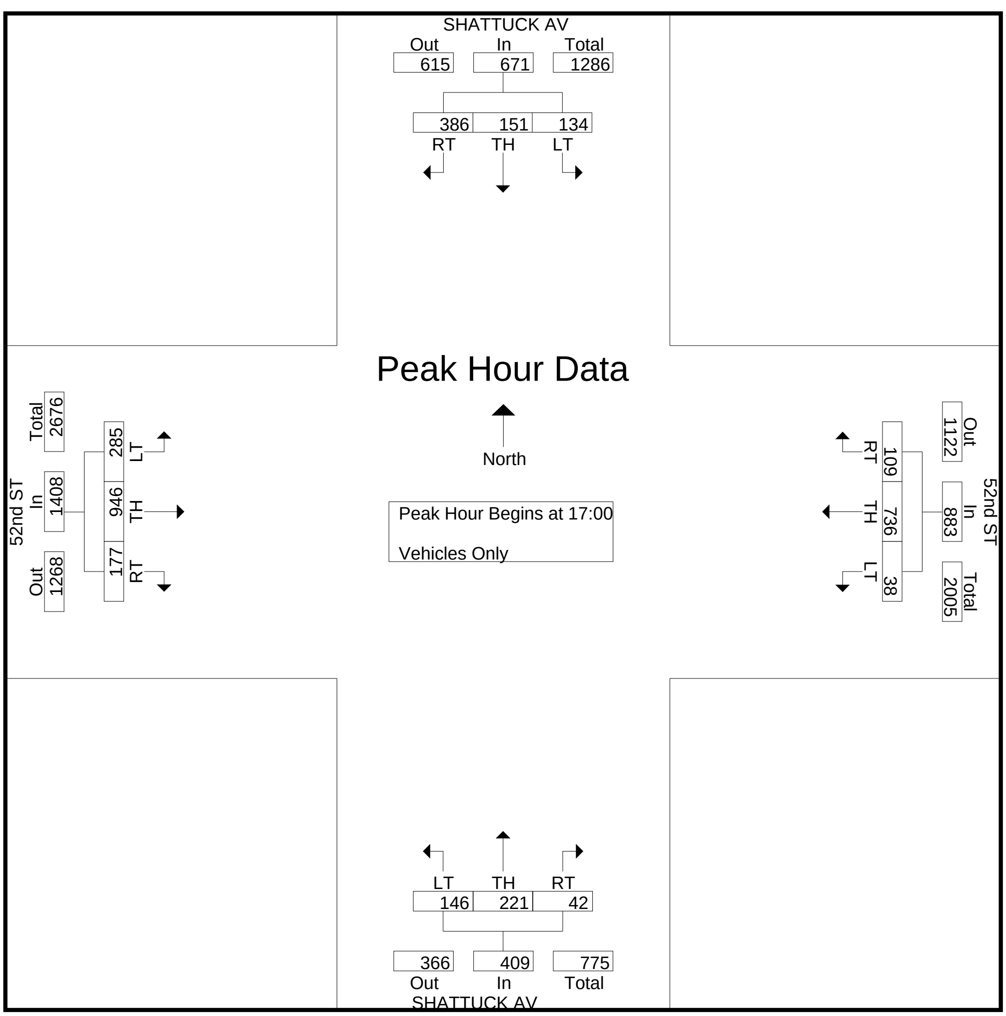
fp
Mietek 916-806-0250

File Name : shattuck-52-p
Site Code : 12
Start Date : 5/12/2010
Page No : 1

Groups Printed- Vehicles Only

	SHATTUCK AV Southbound				52nd ST Westbound				SHATTUCK AV Northbound				52nd ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	85	47	22	154	40	181	17	238	8	32	22	62	60	182	59	301	755
16:15	99	58	29	186	27	157	11	195	5	37	38	80	56	191	89	336	797
16:30	92	40	36	168	24	173	10	207	10	54	40	104	45	200	77	322	801
16:45	92	26	18	136	29	184	5	218	7	44	47	98	39	261	76	376	828
Total	368	171	105	644	120	695	43	858	30	167	147	344	200	834	301	1335	3181
17:00	93	29	38	160	21	193	8	222	8	58	48	114	48	225	72	345	841
17:15	101	45	36	182	24	189	14	227	13	67	37	117	36	238	78	352	878
17:30	81	32	22	135	30	186	9	225	10	52	34	96	50	262	55	367	823
17:45	111	45	38	194	34	168	7	209	11	44	27	82	43	221	80	344	829
Total	386	151	134	671	109	736	38	883	42	221	146	409	177	946	285	1408	3371
Grand Total	754	322	239	1315	229	1431	81	1741	72	388	293	753	377	1780	586	2743	6552
Apprch %	57.3	24.5	18.2		13.2	82.2	4.7		9.6	51.5	38.9		13.7	64.9	21.4		
Total %	11.5	4.9	3.6	20.1	3.5	21.8	1.2	26.6	1.1	5.9	4.5	11.5	5.8	27.2	8.9	41.9	

	SHATTUCK AV Southbound				52nd ST Westbound				SHATTUCK AV Northbound				52nd ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	93	29	**38**	160	21	**193**	8	222	8	58	**48**	114	48	225	72	345	841
17:15	101	**45**	36	182	24	189	**14**	**227**	**13**	**67**	37	**117**	36	238	78	352	**878**
17:30	81	32	22	135	30	186	9	225	10	52	34	96	**50**	**262**	55	**367**	823
17:45	**111**	45	38	**194**	**34**	168	7	209	11	44	27	82	43	221	**80**	344	829
Total Volume	386	151	134	671	109	736	38	883	42	221	146	409	177	946	285	1408	3371
% App. Total	57.5	22.5	20		12.3	83.4	4.3		10.3	54	35.7		12.6	67.2	20.2		
PHF	.869	.839	.882	.865	.801	.953	.679	.972	.808	.825	.760	.874	.885	.903	.891	.959	.960



Car

Study Name **WC10-2728_12 Shattuck Avenue/52nd Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Shattuck Avenue Southbound				52nd Street Westbound				Shattuck Avenue Northbound				52nd Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	55	21	24	0	24	130	8	0	9	44	39	0	52	141	51	9
11:15 AM	64	32	19	0	18	164	14	0	19	40	31	0	49	162	59	10
11:30 AM	58	28	27	0	32	160	11	0	14	37	43	0	42	145	47	7
11:45 AM	66	38	22	0	16	156	9	1	12	32	34	0	38	162	56	11
12:00 PM	70	31	18	0	26	178	9	1	17	41	49	0	40	166	56	15
12:15 PM	75	35	25	0	25	199	10	1	15	36	26	0	52	193	56	9
12:30 PM	71	42	27	0	40	184	14	2	9	56	46	0	54	164	63	8
12:45 PM	73	48	24	0	29	205	7	1	22	29	49	0	36	199	52	10
1:00 PM	68	34	22	0	26	183	6	2	12	36	46	1	47	168	67	17
1:15 PM	85	32	25	0	45	218	10	0	10	53	43	0	43	159	56	7
1:30 PM	50	37	27	0	34	217	14	1	22	39	48	0	57	169	59	13
1:45 PM	70	40	28	0	32	209	7	0	17	69	52	0	50	169	72	5
2:00 PM	84	31	32	0	37	188	8	2	13	43	33	0	44	172	67	15
2:15 PM	82	24	22	0	27	204	11	0	18	49	37	0	28	159	62	11
2:30 PM	95	30	31	0	33	192	12	1	11	44	54	0	57	146	59	9
2:45 PM	61	49	23	0	29	206	7	0	10	34	45	0	36	155	57	12

	Shattuck Avenue Southbound				52nd Street Westbound				Shattuck Avenue Northbound				52nd Street Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	55	21	25	0	26	133	8	0	9	44	39	0	52	144	52	9	617	2624
11:15 AM	67	33	20	0	18	166	14	0	19	40	31	0	49	163	60	10	690	2738
11:30 AM	59	28	27	0	32	160	11	0	14	37	45	0	46	146	48	7	660	2816
11:45 AM	66	38	22	0	16	157	9	1	12	32	35	0	39	163	56	11	657	2944
12:00 PM	70	32	18	0	26	185	9	1	17	43	49	0	41	169	56	15	731	3075
12:15 PM	75	35	25	0	27	204	10	1	16	37	26	0	52	195	56	9	768	3086
12:30 PM	72	43	27	0	40	186	14	2	9	56	47	0	54	167	63	8	788	3106
12:45 PM	74	48	24	0	29	207	7	1	22	29	49	0	36	200	52	10	788	3111
1:00 PM	68	34	22	0	26	185	6	2	12	36	46	1	47	172	68	17	742	3147
1:15 PM	85	32	25	0	45	218	10	0	10	53	43	0	45	159	56	7	788	3177
1:30 PM	50	37	27	0	34	219	14	1	22	39	49	0	58	170	60	13	793	3132
1:45 PM	71	40	28	0	32	209	7	0	17	69	52	0	51	170	73	5	824	3117
2:00 PM	85	31	32	0	37	189	8	2	13	43	33	0	44	173	67	15	772	3018
2:15 PM	83	24	22	0	27	209	11	0	18	49	37	0	28	161	62	12	743	
2:30 PM	95	30	31	0	33	194	12	1	11	45	54	0	57	146	60	9	778	
2:45 PM	62	49	23	0	29	206	7	0	10	34	45	0	36	155	57	12	725	
Peak Hour	**277**	**151**	**98**	**0**	**134**	**829**	**37**	**4**	**66**	**157**	**187**	**1**	**186**	**701**	**236**	**47**	**0.98**	

Truck

Study Name **WC10-2728_12 Shattuck Avenue/52nd Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	1	0	2	3	0	0	0	0	0	0	0	3	1	0
11:15 AM	3	1	1	0	0	2	0	0	0	0	0	0	0	1	1	0
11:30 AM	1	0	0	0	0	0	0	0	0	0	2	0	4	1	1	0
11:45 AM	0	0	0	0	0	1	0	0	0	0	1	0	1	1	0	0
12:00 PM	0	1	0	0	0	7	0	0	0	2	0	0	1	3	0	0
12:15 PM	0	0	0	0	2	5	0	0	1	1	0	0	0	2	0	0
12:30 PM	1	1	0	0	0	2	0	0	0	0	1	0	0	3	0	0
12:45 PM	1	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
1:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	4	1	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
1:30 PM	0	0	0	0	0	2	0	0	0	0	1	0	1	1	1	0
1:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0
2:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2:15 PM	1	0	0	0	0	5	0	0	0	0	0	0	0	2	0	1
2:30 PM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1	0
2:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**1**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	**6**	**2**	**0**

Pedal Bike (Road)

Study Name WC10-2728_12 Shattuck Avenue/52nd Street
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	5	0	0	0	0	0	0	0	2	0	0	0	0	0	0
11:15 AM	0	5	0	0	0	0	0	0	0	7	2	0	1	0	0	0
11:30 AM	2	2	0	0	0	3	0	0	0	2	0	0	0	1	0	0
11:45 AM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12:00 PM	0	2	0	0	0	1	0	0	1	1	0	0	0	0	0	0
12:15 PM	0	3	0	0	0	0	0	0	0	4	0	0	0	1	0	0
12:30 PM	1	0	2	0	0	1	0	0	0	1	0	0	0	1	0	0
12:45 PM	0	1	0	0	1	0	0	0	0	5	2	0	1	1	0	0
1:00 PM	0	4	0	0	0	0	0	0	0	5	0	0	0	3	0	0
1:15 PM	0	5	0	0	1	0	0	0	0	5	0	0	0	0	0	0
1:30 PM	0	1	0	0	2	0	0	0	0	2	0	0	1	1	0	0
1:45 PM	0	3	0	0	0	0	0	0	0	4	0	0	1	0	0	0
2:00 PM	0	5	0	0	1	5	0	0	0	0	0	0	0	0	0	0
2:15 PM	1	3	0	0	0	3	0	0	0	4	0	0	0	0	0	0
2:30 PM	0	6	2	0	0	0	0	0	0	4	0	0	0	1	0	0
2:45 PM	1	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0
Peak Hour	**0**	**11**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**17**	**2**	**0**	**2**	**5**	**0**	**0**

People

Study Name WC10-2728_12 Shattuck Avenue/52nd Street
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	1	0	1	0	2	0	3
11:15 AM	0	0	0	1	0	1	1	0
11:30 AM	5	1	4	4	3	2	7	1
11:45 AM	1	3	1	3	3	3	1	5
12:00 PM	0	3	5	4	1	1	1	1
12:15 PM	2	1	1	0	1	0	1	0
12:30 PM	3	1	1	2	2	2	4	0
12:45 PM	1	4	0	3	1	1	0	1
1:00 PM	0	6	1	0	0	0	6	2
1:15 PM	3	5	4	5	0	3	1	3
1:30 PM	0	1	0	1	0	0	1	3
1:45 PM	0	2	1	1	0	0	1	0
2:00 PM	1	0	4	2	0	2	0	0
2:15 PM	0	0	5	2	2	1	0	0
2:30 PM	0	0	1	3	1	1	0	0
2:45 PM	0	0	4	0	2	4	0	0
Peak Hour	**4**	**16**	**5**	**9**	**1**	**4**	**8**	**9**
	20		14		5		17	

Pedal Bike (Crosswalk)

Study Name **WC10-2728_12 Shattuck Avenue/52nd Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	1	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	1	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	3	0
12:15 PM	0	2	0	1	0	0	0	0
12:30 PM	0	0	0	0	0	0	1	0
12:45 PM	1	0	0	0	2	1	0	1
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	2	0	0	0	0	0	0
1:30 PM	0	1	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
2:00 PM	1	1	0	0	0	0	0	0
2:15 PM	0	0	0	2	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0
2:45 PM	0	0	2	0	0	0	0	0
Peak Hour	**1**	**3**	**0**	**0**	**2**	**1**	**0**	**1**

Totals

Study Name **WC10-2728_12 Shattuck Avenue/52nd Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	55	26	25	0	26	133	8	0	9	46	39	0	52	144	52	9
11:15 AM	67	38	20	0	18	166	14	0	19	47	33	0	50	163	60	10
11:30 AM	61	30	27	0	32	163	11	0	14	39	45	0	46	147	48	7
11:45 AM	66	40	22	0	16	157	9	1	12	33	35	0	39	163	56	11
12:00 PM	70	34	18	0	26	186	9	1	18	44	49	0	41	169	56	15
12:15 PM	75	38	25	0	27	204	10	1	16	41	26	0	52	196	56	9
12:30 PM	73	43	29	0	40	187	14	2	9	57	47	0	54	168	63	8
12:45 PM	74	49	24	0	30	207	7	1	22	34	51	0	37	201	52	10
1:00 PM	68	38	22	0	26	185	6	2	12	41	46	1	47	175	68	17
1:15 PM	85	37	25	0	46	218	10	0	10	58	43	0	45	159	56	7
1:30 PM	50	38	27	0	36	219	14	1	22	41	49	0	59	171	60	13
1:45 PM	71	43	28	0	32	209	7	0	17	73	52	0	52	170	73	5
2:00 PM	85	36	32	0	38	194	8	2	13	43	33	0	44	173	67	15
2:15 PM	84	27	22	0	27	212	11	0	18	53	37	0	28	161	62	12
2:30 PM	95	36	33	0	33	194	12	1	11	49	54	0	57	147	60	9
2:45 PM	63	51	23	0	30	206	7	0	10	34	45	0	36	155	59	12
Peak Hour	**277**	**162**	**98**	**0**	**138**	**829**	**37**	**4**	**66**	**174**	**189**	**1**	**188**	**706**	**236**	**47**

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MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : shattuck-52-s
Site Code : 12
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	SHATTUCK AV Southbound				**52nd ST Westbound**				**SHATTUCK AV Northbound**				**52nd ST Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	77	52	23	152	33	165	5	203	11	43	45	99	54	174	78	306	760
16:15	100	44	30	174	57	144	8	209	7	44	35	86	45	162	69	276	745
16:30	113	39	28	180	29	156	9	194	4	40	33	77	33	149	66	248	699
16:45	84	45	24	153	30	160	7	197	8	47	45	100	31	175	62	268	718
Total	374	180	105	659	149	625	29	803	30	174	158	362	163	660	275	1098	2922
17:00	94	47	25	166	54	124	11	189	11	46	35	92	31	148	66	245	692
17:15	93	42	27	162	28	123	5	156	10	39	30	79	34	159	73	266	663
17:30	91	36	29	156	27	131	7	165	11	60	43	114	29	144	83	256	691
17:45	113	44	29	186	48	108	6	162	9	37	34	80	37	136	75	248	676
Total	391	169	110	670	157	486	29	672	41	182	142	365	131	587	297	1015	2722
18:00	96	41	28	165	23	144	6	173	5	34	40	79	28	132	61	221	638
18:15	95	34	26	155	28	135	9	172	13	32	45	90	27	156	80	263	680
18:30	92	54	35	181	23	142	9	174	11	35	38	84	40	132	68	240	679
18:45	102	43	28	173	22	133	4	159	7	31	26	64	32	130	56	218	614
Total	385	172	117	674	96	554	28	678	36	132	149	317	127	550	265	942	2611
Grand Total	1150	521	332	2003	402	1665	86	2153	107	488	449	1044	421	1797	837	3055	8255
Apprch %	57.4	26	16.6		18.7	77.3	4		10.2	46.7	43		13.8	58.8	27.4		
Total %	13.9	6.3	4	24.3	4.9	20.2	1	26.1	1.3	5.9	5.4	12.6	5.1	21.8	10.1	37	

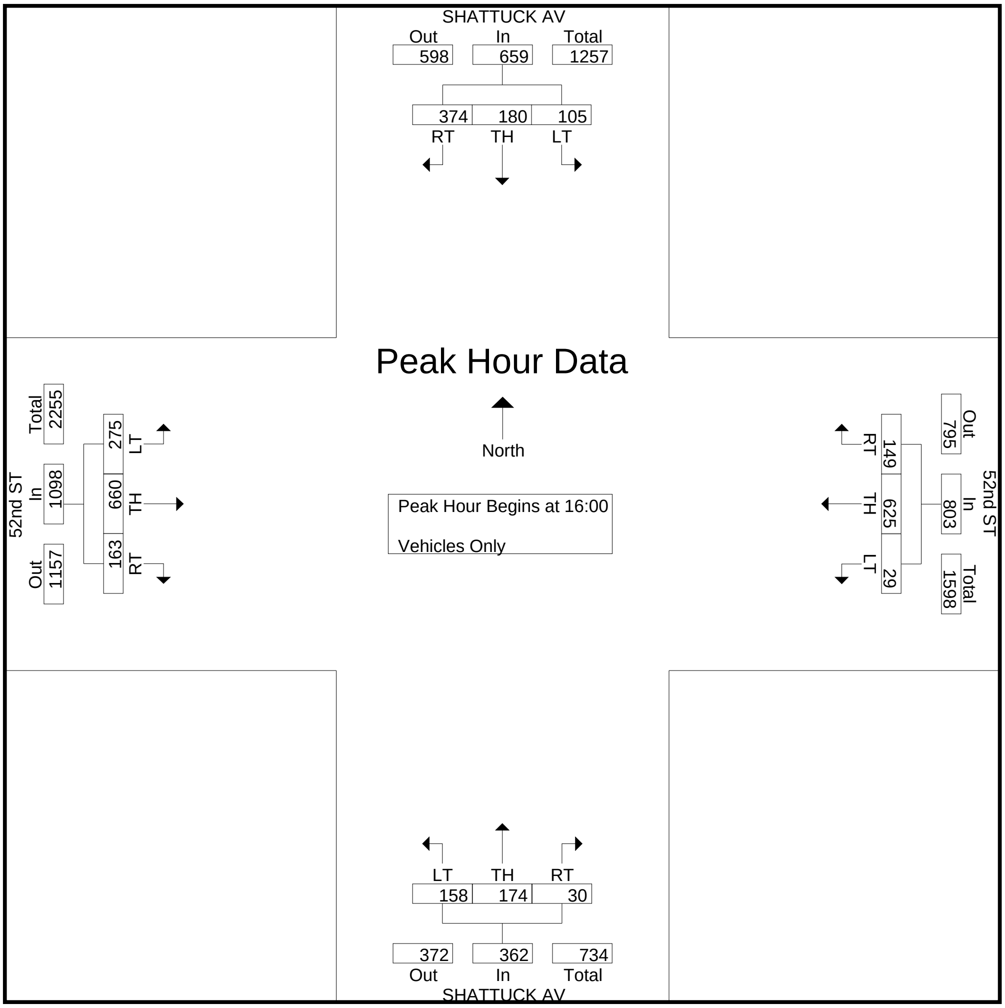
	SHATTUCK AV Southbound				**52nd ST Westbound**				**SHATTUCK AV Northbound**				**52nd ST Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	77	**52**	23	152	33	**165**	5	203	**11**	43	**45**	99	**54**	174	**78**	**306**	**760**
16:15	100	44	**30**	174	**57**	144	8	**209**	7	44	35	86	45	162	69	276	745
16:30	**113**	39	28	**180**	29	156	**9**	194	4	40	33	77	33	149	66	248	699
16:45	84	45	24	153	30	160	7	197	8	**47**	45	**100**	31	**175**	62	268	718
Total Volume	374	180	105	659	149	625	29	803	30	174	158	362	163	660	275	1098	2922
% App. Total	56.8	27.3	15.9		18.6	77.8	3.6		8.3	48.1	43.6		14.8	60.1	25		
PHF	.827	.865	.875	.915	.654	.947	.806	.961	.682	.926	.878	.905	.755	.943	.881	.897	.961

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : shattuck-52-s
Site Code : 12
Start Date : 5/15/2010
Page No : 2



MARKS TRAFFIC DATA

CITY OF OAKLAND

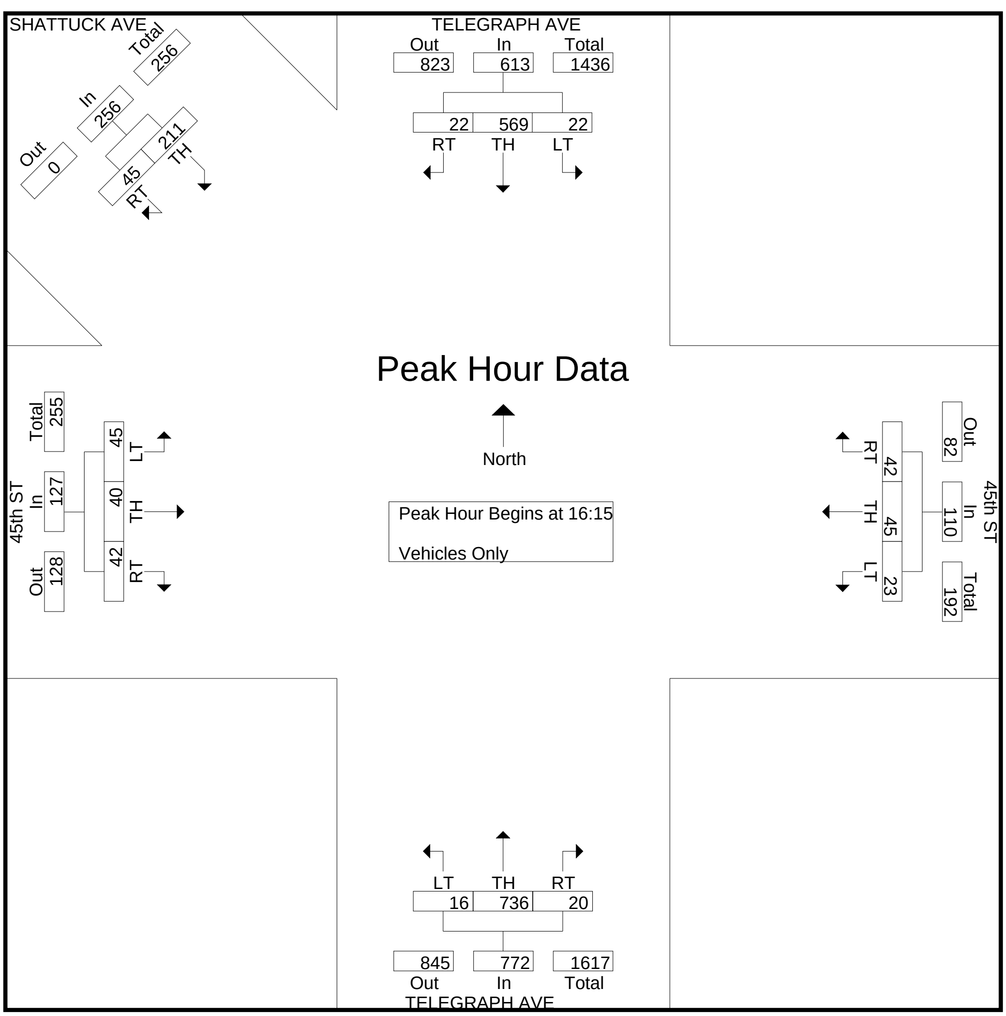
fp
Mietek 916-806-0250

File Name : telegraph-45-p
Site Code : 13
Start Date : 5/12/2010
Page No : 1

Groups Printed- Vehicles Only

	TELEGRAPH AVE Southbound				45th ST Westbound				TELEGRAPH AVE Northbound				45th ST Eastbound				SHATTUCK AVE Southeastbound			
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	App. Total	Int. Total
16:00	3	121	6	130	9	10	5	24	4	166	9	179	9	11	10	30	8	54	62	425
16:15	5	150	4	159	9	11	2	22	2	178	5	185	11	11	8	30	13	63	76	472
16:30	6	133	9	148	17	14	7	38	7	174	2	183	9	15	13	37	12	54	66	472
16:45	6	138	5	149	10	7	9	26	9	174	5	188	11	7	9	27	12	33	45	435
Total	20	542	24	586	45	42	23	110	22	692	21	735	40	44	40	124	45	204	249	1804
17:00	5	148	4	157	6	13	5	24	2	210	4	216	11	7	15	33	8	61	69	499
17:15	0	115	4	119	4	13	5	22	5	194	13	212	5	18	9	32	11	54	65	450
17:30	4	132	4	140	8	7	9	24	5	200	6	211	9	13	9	31	13	46	59	465
17:45	4	118	5	127	14	13	6	33	3	182	2	187	6	11	12	29	8	52	60	436
Total	13	513	17	543	32	46	25	103	15	786	25	826	31	49	45	125	40	213	253	1850
Grand Total	33	1055	41	1129	77	88	48	213	37	1478	46	1561	71	93	85	249	85	417	502	3654
Apprch %	2.9	93.4	3.6		36.2	41.3	22.5		2.4	94.7	2.9		28.5	37.3	34.1		16.9	83.1		
Total %	0.9	28.9	1.1	30.9	2.1	2.4	1.3	5.8	1	40.4	1.3	42.7	1.9	2.5	2.3	6.8	2.3	11.4	13.7	

	TELEGRAPH AVE Southbound				45th ST Westbound				TELEGRAPH AVE Northbound				45th ST Eastbound				SHATTUCK AVE Southeastbound			
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 16:15																				
16:15	5	**150**	4	**159**	9	11	2	22	2	178	**5**	185	**11**	11	8	30	**13**	**63**	**76**	472
16:30	**6**	133	**9**	148	**17**	**14**	7	**38**	7	174	2	183	9	**15**	13	**37**	12	54	66	472
16:45	6	138	5	149	10	7	**9**	26	**9**	174	5	188	11	7	9	27	12	33	45	435
17:00	5	148	4	157	6	13	5	24	2	**210**	4	**216**	11	7	**15**	33	8	61	69	**499**
Total Volume	22	569	22	613	42	45	23	110	20	736	16	772	42	40	45	127	45	211	256	1878
% App. Total	3.6	92.8	3.6		38.2	40.9	20.9		2.6	95.3	2.1		33.1	31.5	35.4		17.6	82.4		
PHF	.917	.948	.611	.964	.618	.804	.639	.724	.556	.876	.800	.894	.955	.667	.750	.858	.865	.837	.842	.941



Car

Study Name WC10-2728_13 Telegraph Ave/45th St/Shattuck Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Telegraph Avenue Southbound				45th Street Westbound				Telegraph Avenue Northbound				45th Street Eastbound				Shattuck Avenue Southeastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left
11:00 AM	2	107	6	4	6	5	4	0	5	128	5	0	3	4	11	0	11	49	0	0
11:15 AM	7	116	9	0	6	6	4	0	12	154	1	2	1	8	10	0	8	39	0	0
11:30 AM	1	140	5	2	4	12	2	0	12	139	3	0	6	6	11	0	12	46	0	0
11:45 AM	4	96	3	1	6	5	7	0	12	154	3	0	1	10	10	0	9	51	0	0
12:00 PM	7	125	10	3	4	9	2	0	10	167	2	0	1	7	18	0	9	36	0	0
12:15 PM	1	118	6	1	8	14	8	0	9	173	4	0	6	11	9	0	13	63	0	0
12:30 PM	6	135	9	1	8	11	2	0	9	164	3	1	2	8	9	0	13	58	0	0
12:45 PM	0	133	12	3	12	9	4	0	10	174	3	0	2	6	15	0	19	62	0	0
1:00 PM	2	125	6	0	12	9	8	0	5	164	6	1	8	10	13	0	19	49	0	0
1:15 PM	3	113	8	2	10	9	4	0	12	161	5	0	2	7	7	0	15	47	0	0
1:30 PM	5	139	11	4	11	10	9	0	8	184	5	2	1	7	12	0	19	61	0	0
1:45 PM	0	107	6	1	6	11	8	0	3	166	4	0	4	5	13	0	19	54	0	0
2:00 PM	2	111	10	2	8	8	3	0	10	142	3	1	6	7	8	0	13	54	0	0
2:15 PM	4	113	12	2	6	8	0	0	3	161	2	1	4	4	6	0	14	41	0	0
2:30 PM	2	127	3	0	5	5	4	0	8	163	5	0	3	5	5	0	12	57	0	0
2:45 PM	3	112	9	2	5	7	4	0	7	157	0	0	2	5	10	0	12	45	0	0

	Telegraph Avenue Southbound				45th Street Westbound				Telegraph Avenue Northbound				45th Street Eastbound				Shattuck Avenue Southeastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	15-Min Total	Hour Total
11:00 AM	2	111	6	4	6	5	4	0	5	131	5	0	3	4	11	0	12	49	0	0	358	1525
11:15 AM	7	118	9	0	6	6	4	0	13	154	1	2	1	8	10	0	8	39	0	0	386	1584
11:30 AM	1	142	5	2	4	12	2	0	12	140	3	0	6	6	11	0	12	48	0	0	406	1649
11:45 AM	4	97	3	1	6	5	7	0	12	156	3	0	1	10	10	0	9	51	0	0	375	1686
12:00 PM	7	127	10	3	4	9	2	0	10	171	2	0	1	7	18	0	9	37	0	0	417	1778
12:15 PM	1	120	6	1	8	14	8	0	9	176	4	0	6	11	9	0	13	65	0	0	451	1804
12:30 PM	6	135	9	1	8	11	2	0	9	167	3	1	2	8	9	0	13	59	0	0	443	1760
12:45 PM	0	136	12	3	12	9	4	0	10	174	3	0	2	6	15	0	19	62	0	0	467	1809
1:00 PM	2	126	6	0	12	9	8	0	5	168	6	1	8	10	14	0	19	49	0	0	443	1752
1:15 PM	3	114	8	2	10	9	4	0	12	162	5	0	2	7	7	0	15	47	0	0	407	1699
1:30 PM	5	141	11	4	11	10	9	0	8	186	5	2	1	7	12	0	19	61	0	0	492	1678
1:45 PM	0	109	6	1	6	11	8	0	3	167	4	0	4	5	13	0	19	54	0	0	410	1595
2:00 PM	2	112	10	2	8	8	3	0	10	143	3	1	6	7	8	0	13	54	0	0	390	1566
2:15 PM	4	116	12	2	6	8	0	0	3	163	2	1	4	4	6	0	14	41	0	0	386	
2:30 PM	2	127	3	0	5	5	4	0	8	166	5	0	3	5	5	0	12	59	0	0	409	
2:45 PM	3	113	9	2	5	7	4	0	7	157	0	0	2	5	10	0	12	45	0	0	381	
Peak Hour	**10**	**517**	**37**	**9**	**45**	**37**	**25**	**0**	**35**	**690**	**19**	**3**	**13**	**30**	**48**	**0**	**72**	**219**	**0**	**0**	**0.92**	

Truck

Study Name **WC10-2728_13 Telegraph Ave/45th St/Shattuck Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound				South-Eastbound Street Southeastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left
11:00 AM	0	4	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1	0	0	0
11:15 AM	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
11:45 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
12:15 PM	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0
12:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	1	0	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0	0
1:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_13 Telegraph Ave/45th St/Shattuck Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound				South-Eastbound Street Southeastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left
11:00 AM	0	1	0	0	0	0	1	0	1	3	0	0	0	3	1	0	1	5	0	0
11:15 AM	0	4	0	0	1	0	0	0	0	8	0	0	0	3	0	0	2	3	0	0
11:30 AM	0	8	0	0	0	1	0	0	0	9	0	0	0	0	1	0	0	5	0	0
11:45 AM	0	1	0	0	1	0	0	0	0	12	0	0	0	0	0	0	0	4	0	0
12:00 PM	0	6	0	0	0	2	3	0	0	10	0	0	0	2	0	0	1	6	0	0
12:15 PM	1	4	0	0	0	3	0	0	1	13	0	0	0	1	1	0	1	3	0	0
12:30 PM	0	7	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	4	0	0
12:45 PM	0	6	0	0	1	0	0	0	0	10	0	0	0	0	0	0	3	2	0	0
1:00 PM	0	6	0	0	0	0	0	0	0	7	0	0	1	0	2	0	0	7	0	0
1:15 PM	0	5	0	0	1	0	0	0	0	9	0	0	0	0	0	0	0	5	0	0
1:30 PM	0	2	0	0	2	0	0	0	0	9	0	0	0	1	0	0	0	5	0	1
1:45 PM	0	3	0	0	1	2	0	0	1	9	0	0	0	0	2	0	2	6	0	0
2:00 PM	0	6	0	0	1	0	2	0	0	4	0	0	0	0	0	0	1	5	0	0
2:15 PM	0	6	0	0	0	1	0	0	0	14	0	0	0	2	1	0	0	9	0	0
2:30 PM	2	6	0	0	0	0	0	0	3	10	0	0	0	2	0	0	0	6	0	0
2:45 PM	0	5	0	0	3	0	1	0	2	5	0	0	0	0	0	0	0	2	0	0
Peak Hour	**0**	**19**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**35**	**0**	**0**	**1**	**1**	**2**	**0**	**3**	**19**	**0**	**1**

People

Study Name **WC10-2728_13 Telegraph Ave/45th St/Shattuck Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound		South-Eastbound Stree Southeastbound					
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW				
11:00 AM	0	0	12	4	0	0	8	7	1	4				
11:15 AM	1	3	2	2	3	1	8	6	5	8				
11:30 AM	0	3	5	8	1	2	11	17	4	5				
11:45 AM	2	4	7	11	3	5	21	12	3	8				
12:00 PM	1	1	18	10	4	0	10	7	9	5				
12:15 PM	0	8	8	13	3	4	11	13	3	5				
12:30 PM	1	3	13	8	1	3	19	11	7	11				
12:45 PM	1	3	9	7	3	5	13	22	5	5				
1:00 PM	0	1	9	4	8	4	16	9	4	0				
1:15 PM	1	2	3	8	0	1	20	12	8	9				
1:30 PM	7	8	11	9	4	1	10	17	3	5				
1:45 PM	0	5	12	3	7	2	10	13	7	3				
2:00 PM	3	0	13	8	3	0	16	17	3	1				
2:15 PM	0	3	16	2	5	3	13	10	6	4				
2:30 PM	0	1	8	7	0	0	11	6	3	1				
2:45 PM	1	0	6	4	7	2	14	12	5	4				
Peak Hour	**9**	**14**	**32**	**28**	**15**	**11**	**59**	**60**	**20**	**19**	**0**	**0**	**0**	**0**
	23		60		26		119		39					

Pedal Bike (Crosswalk)

Study Name **WC10-2728_13 Telegraph Ave/45th St/Shattuck Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound		South-Eastbound Stree Southeastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	0	0	0	1	1	0	0
11:15 AM	0	0	0	0	0	0	1	0	0	0
11:30 AM	0	0	1	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	2	0	0	0	0	1	1	0	0
12:45 PM	0	0	0	0	0	0	3	1	0	0
1:00 PM	0	0	0	0	0	1	0	3	1	0
1:15 PM	0	1	1	0	0	0	0	0	0	0
1:30 PM	0	1	0	1	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	1	0	0
2:00 PM	0	0	1	0	0	0	1	0	0	1
2:15 PM	0	0	1	0	0	0	0	1	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	0	0	0	0	0	1
Peak Hour	**0**	**2**	**1**	**1**	**0**	**1**	**3**	**4**	**1**	**0**

Totals

Study Name **WC10-2728_13 Telegraph Ave/45th St/Shattuck Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound				South-Eastbound Street Southeastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left
11:00 AM	2	112	6	4	6	5	5	0	6	134	5	0	3	7	12	0	13	54	0	0
11:15 AM	7	122	9	0	7	6	4	0	13	162	1	2	1	11	10	0	10	42	0	0
11:30 AM	1	150	5	2	4	13	2	0	12	149	3	0	6	6	12	0	12	53	0	0
11:45 AM	4	98	3	1	7	5	7	0	12	168	3	0	1	10	10	0	9	55	0	0
12:00 PM	7	133	10	3	4	11	5	0	10	181	2	0	1	9	18	0	10	43	0	0
12:15 PM	2	124	6	1	8	17	8	0	10	189	4	0	6	12	10	0	14	68	0	0
12:30 PM	6	142	9	1	8	11	2	0	9	179	3	1	2	8	9	0	13	63	0	0
12:45 PM	0	142	12	3	13	9	4	0	10	184	3	0	2	6	15	0	22	64	0	0
1:00 PM	2	132	6	0	12	9	8	0	5	175	6	1	9	10	16	0	19	56	0	0
1:15 PM	3	119	8	2	11	9	4	0	12	171	5	0	2	7	7	0	15	52	0	0
1:30 PM	5	143	11	4	13	10	9	0	8	195	5	2	1	8	12	0	19	66	0	1
1:45 PM	0	112	6	1	7	13	8	0	4	176	4	0	4	5	15	0	21	60	0	0
2:00 PM	2	118	10	2	9	8	5	0	10	147	3	1	6	7	8	0	14	59	0	0
2:15 PM	4	122	12	2	6	9	0	0	3	177	2	1	4	6	7	0	14	50	0	0
2:30 PM	4	133	3	0	5	5	4	0	11	176	5	0	3	7	5	0	12	65	0	0
2:45 PM	3	118	9	2	8	7	5	0	9	162	0	0	2	5	10	0	12	47	0	0
Peak Hour	**10**	**536**	**37**	**9**	**49**	**37**	**25**	**0**	**35**	**725**	**19**	**3**	**14**	**31**	**50**	**0**	**75**	**238**	**0**	**1**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : telegraph-45-s
Site Code : 13
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	TELEGRAPH AVE Southbound				45th ST Westbound				TELEGRAPH AVE Northbound				45th ST Eastbound				SHATTUCK AVE Southeastbound			
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	App. Total	Int. Total
16:00	4	154	4	162	8	5	5	18	4	146	5	155	3	3	8	14	9	59	68	417
16:15	5	143	6	154	4	2	6	12	7	146	2	155	4	7	3	14	10	64	74	409
16:30	4	130	3	137	5	8	3	16	9	141	4	154	4	7	11	22	6	47	53	382
16:45	3	119	5	127	5	4	11	20	1	146	3	150	7	4	9	20	10	41	51	368
Total	16	546	18	580	22	19	25	66	21	579	14	614	18	21	31	70	35	211	246	1576
17:00	3	131	4	138	9	11	4	24	0	149	4	153	3	8	7	18	7	50	57	390
17:15	3	124	4	131	7	3	4	14	6	143	3	152	8	5	11	24	7	56	63	384
17:30	1	120	3	124	6	13	7	26	2	153	5	160	3	4	10	17	4	52	56	383
17:45	3	99	3	105	5	6	1	12	0	121	2	123	6	3	11	20	7	41	48	308
Total	10	474	14	498	27	33	16	76	8	566	14	588	20	20	39	79	25	199	224	1465
18:00	3	140	4	147	7	5	7	19	0	143	3	146	12	6	6	24	7	34	41	377
18:15	5	133	2	140	11	6	5	22	4	149	2	155	2	5	13	20	5	47	52	389
18:30	4	112	3	119	5	3	2	10	0	115	3	118	4	2	6	12	10	52	62	321
18:45	1	113	3	117	3	6	7	16	5	120	2	127	3	3	3	9	13	67	80	349
Total	13	498	12	523	26	20	21	67	9	527	10	546	21	16	28	65	35	200	235	1436
Grand Total	39	1518	44	1601	75	72	62	209	38	1672	38	1748	59	57	98	214	95	610	705	4477
Apprch %	2.4	94.8	2.7		35.9	34.4	29.7		2.2	95.7	2.2		27.6	26.6	45.8		13.5	86.5		
Total %	0.9	33.9	1	35.8	1.7	1.6	1.4	4.7	0.8	37.3	0.8	39	1.3	1.3	2.2	4.8	2.1	13.6	15.7	

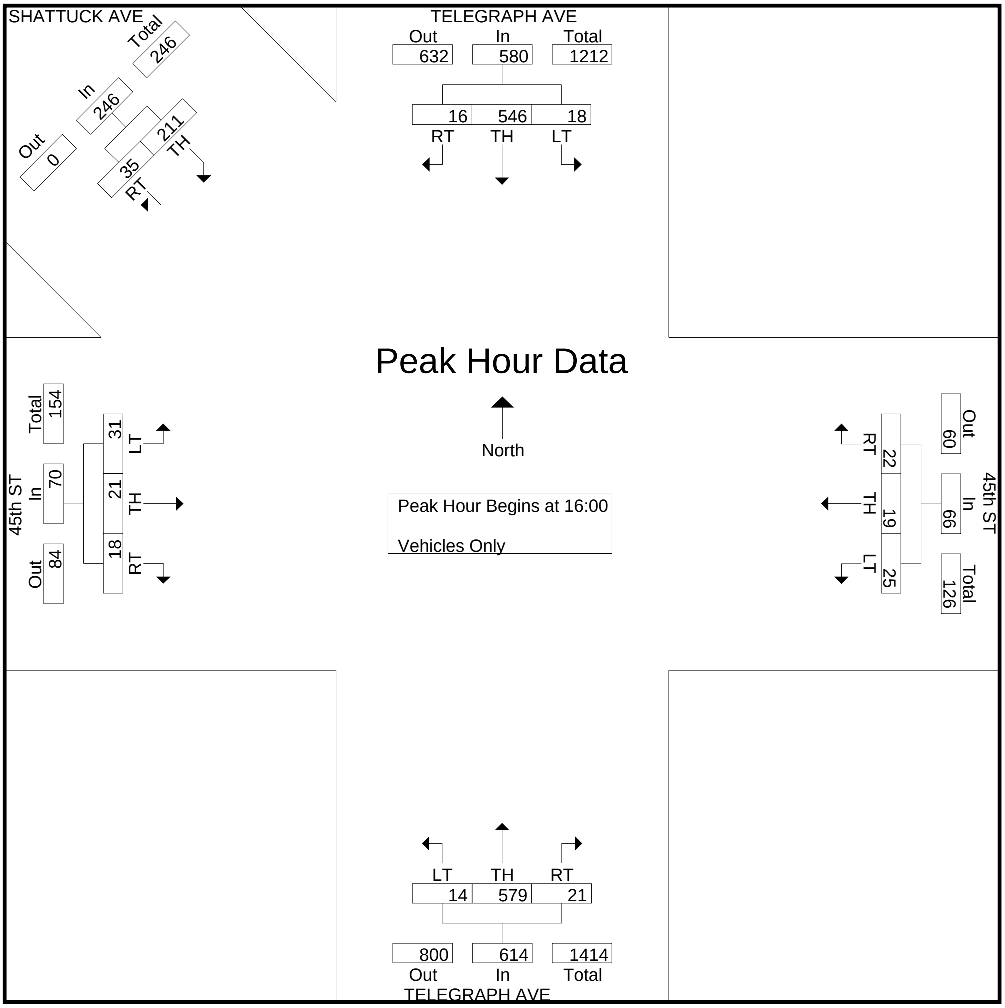
	TELEGRAPH AVE Southbound				45th ST Westbound				TELEGRAPH AVE Northbound				45th ST Eastbound				SHATTUCK AVE Southeastbound			
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 16:00																				
16:00	4	**154**	4	**162**	**8**	5	5	18	4	**146**	**5**	**155**	3	3	8	14	9	59	68	**417**
16:15	**5**	143	**6**	154	4	2	6	12	7	146	2	155	4	**7**	3	14	**10**	**64**	**74**	409
16:30	4	130	3	137	5	**8**	3	16	**9**	141	4	154	4	7	**11**	**22**	6	47	53	382
16:45	3	119	5	127	5	4	**11**	**20**	1	146	3	150	**7**	4	9	20	10	41	51	368
Total Volume	16	546	18	580	22	19	25	66	21	579	14	614	18	21	31	70	35	211	246	1576
% App. Total	2.8	94.1	3.1		33.3	28.8	37.9		3.4	94.3	2.3		25.7	30	44.3		14.2	85.8		
PHF	.800	.886	.750	.895	.688	.594	.568	.825	.583	.991	.700	.990	.643	.750	.705	.795	.875	.824	.831	.945

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : telegraph-45-s
Site Code : 13
Start Date : 5/15/2010
Page No : 2



CITY OF OAKLAND

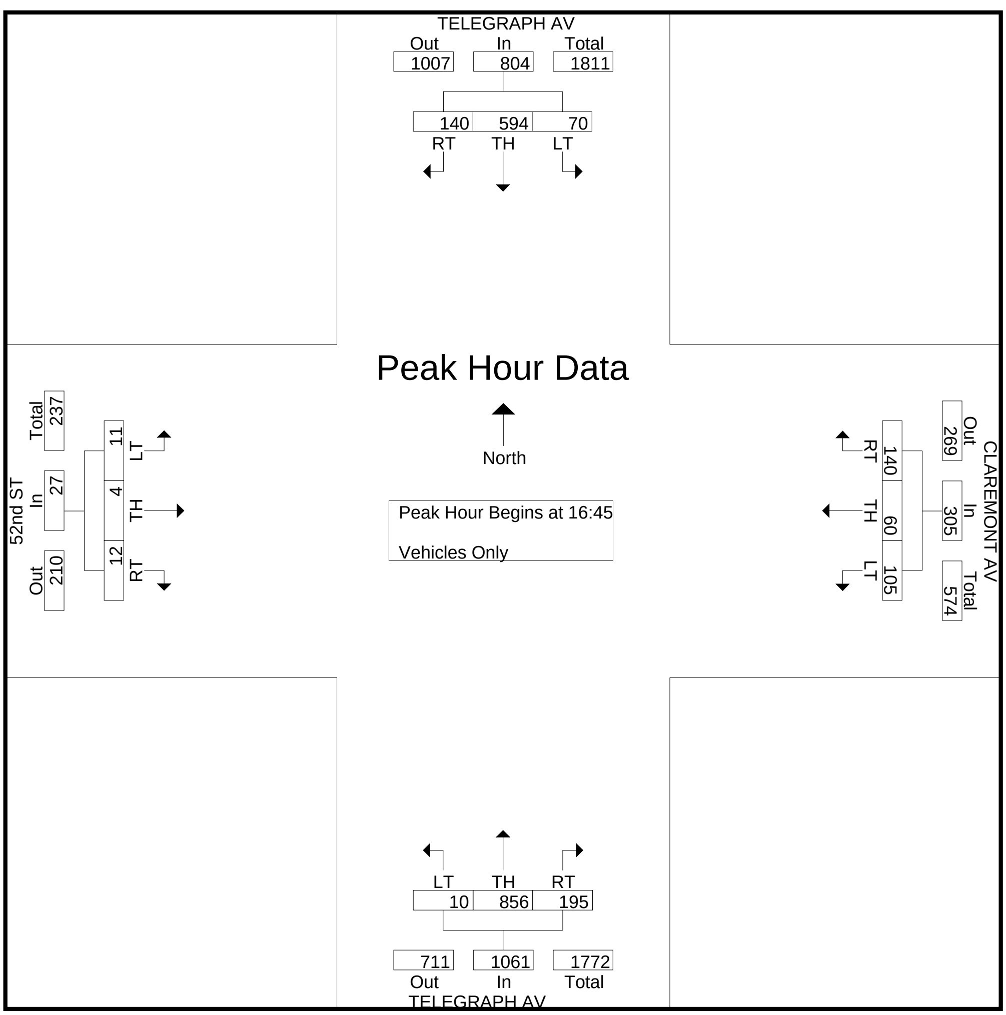
fp
Mietek 916-806-0250

File Name : telegraph-52-p
Site Code : 14
Start Date : 5/13/2010
Page No : 1

Groups Printed- Vehicles Only

	TELEGRAPH AV Southbound				CLAREMONT AV Westbound				TELEGRAPH AV Northbound				52nd ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	39	123	16	178	20	28	24	72	32	203	2	237	4	2	6	12	499
16:15	50	164	21	235	16	28	30	74	47	187	1	235	5	1	7	13	557
16:30	31	127	26	184	40	25	26	91	42	178	5	225	3	1	2	6	506
16:45	35	156	17	208	30	14	30	74	58	219	1	278	4	0	1	5	565
Total	155	570	80	805	106	95	110	311	179	787	9	975	16	4	16	36	2127
17:00	36	117	13	166	43	20	26	89	64	201	2	267	3	0	5	8	530
17:15	25	159	22	206	30	11	23	64	39	221	5	265	2	2	2	6	541
17:30	44	162	18	224	37	15	26	78	34	215	2	251	3	2	3	8	561
17:45	35	152	18	205	36	14	23	73	43	223	0	266	0	1	1	2	546
Total	140	590	71	801	146	60	98	304	180	860	9	1049	8	5	11	24	2178
Grand Total	295	1160	151	1606	252	155	208	615	359	1647	18	2024	24	9	27	60	4305
Apprch %	18.4	72.2	9.4		41	25.2	33.8		17.7	81.4	0.9		40	15	45		
Total %	6.9	26.9	3.5	37.3	5.9	3.6	4.8	14.3	8.3	38.3	0.4	47	0.6	0.2	0.6	1.4	

	TELEGRAPH AV Southbound				CLAREMONT AV Westbound				TELEGRAPH AV Northbound				52nd ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	35	156	17	208	30	14	**30**	74	58	219	1	**278**	**4**	0	1	5	**565**
17:00	36	117	13	166	**43**	**20**	26	**89**	**64**	201	2	267	3	0	**5**	**8**	530
17:15	25	159	**22**	206	30	11	23	64	39	**221**	**5**	265	2	**2**	2	6	541
17:30	**44**	**162**	18	**224**	37	15	26	78	34	215	2	251	3	2	3	8	561
Total Volume	140	594	70	804	140	60	105	305	195	856	10	1061	12	4	11	27	2197
% App. Total	17.4	73.9	8.7		45.9	19.7	34.4		18.4	80.7	0.9		44.4	14.8	40.7		
PHF	.795	.917	.795	.897	.814	.750	.875	.857	.762	.968	.500	.954	.750	.500	.550	.844	.972



Car

Study Name **WC10-2728_14 Telegraph Ave/52nd St/Claremont Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Telegraph Avenue Southbound				Claremont Avenue Westbound				Telegraph Avenue Northbound				52nd Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	57	132	14	1	31	9	17	0	31	137	2	0	3	1	2	0
11:15 AM	56	156	10	0	23	7	16	0	40	155	3	2	4	0	2	0
11:30 AM	62	97	14	0	29	15	26	0	32	140	3	0	6	3	2	0
11:45 AM	44	146	7	0	31	16	22	0	30	141	3	0	3	2	4	0
12:00 PM	62	130	17	0	31	26	23	0	34	157	3	1	5	0	4	0
12:15 PM	46	143	11	0	22	12	26	0	56	153	4	1	2	1	3	0
12:30 PM	63	154	15	0	35	16	20	0	31	172	1	1	6	2	4	0
12:45 PM	49	121	15	0	32	13	31	0	30	181	3	0	7	1	3	0
1:00 PM	44	114	18	0	34	10	19	0	25	167	3	0	4	0	4	0
1:15 PM	73	149	16	0	34	7	18	0	37	157	4	2	8	1	3	0
1:30 PM	70	121	14	0	25	21	33	0	33	184	1	0	5	2	3	0
1:45 PM	63	123	12	0	21	10	25	0	20	186	3	0	4	2	4	0
2:00 PM	55	125	18	0	25	10	21	0	24	172	3	0	5	1	3	0
2:15 PM	71	133	9	1	34	16	18	0	32	193	1	0	6	6	4	0
2:30 PM	57	129	17	0	34	13	17	0	23	163	3	1	4	2	6	0
2:45 PM	66	153	19	0	29	10	15	0	19	183	2	0	3	1	3	0

	Telegraph Avenue Southbound				Claremont Avenue Westbound				Telegraph Avenue Northbound				52nd Street Eastbound							
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total		
11:00 AM	58	134	14	1	31	9	18	0	31	142	2	0	3	1	2	0	446	1812		
11:15 AM	56	160	10	0	23	7	16	0	40	157	3	2	4	0	2	0	480	1866		
11:30 AM	62	97	14	0	29	15	26	0	32	143	3	0	6	3	2	0	432	1868		
11:45 AM	46	149	7	0	31	16	22	0	30	141	3	0	3	2	4	0	454	1963		
12:00 PM	62	131	17	0	31	30	23	0	34	159	3	1	5	0	4	0	500	1998		
12:15 PM	47	143	12	0	22	12	26	0	56	153	4	1	2	1	3	0	482	1950		
12:30 PM	65	155	15	0	35	16	20	0	31	176	1	1	6	2	4	0	527	1980		
12:45 PM	49	123	15	0	33	13	31	0	30	181	3	0	7	1	3	0	489	1971		
1:00 PM	45	116	18	0	34	10	19	0	26	173	3	0	4	0	4	0	452	1960		
1:15 PM	73	151	16	0	34	7	18	0	38	157	4	2	8	1	3	0	512	1978		
1:30 PM	71	123	14	0	25	21	33	0	33	187	1	0	5	2	3	0	518	1997		
1:45 PM	63	126	12	0	21	10	25	0	20	188	3	0	4	2	4	0	478	1953		
2:00 PM	55	129	18	0	26	10	21	0	24	175	3	0	5	1	3	0	470	1982		
2:15 PM	72	135	9	1	34	17	18	0	32	196	1	0	6	6	4	0	531			
2:30 PM	58	129	18	0	34	13	17	0	23	166	3	1	4	2	6	0	474			
2:45 PM	66	157	19	0	29	10	15	0	19	183	2	0	3	1	3	0	507			
Peak Hour	**238**	**513**	**63**	**0**	**126**	**51**	**101**	**0**	**127**	**698**	**11**	**2**	**24**	**4**	**13**	**0**	**0.95**		**0**	**0**

Truck

Study Name **WC10-2728_14 Telegraph Ave/52nd St/Claremont Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	1	2	0	0	0	0	1	0	0	5	0	0	0	0	0	0
11:15 AM	0	4	0	0	0	0	0	0	0	2	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
11:45 AM	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	1	0	0	0	4	0	0	0	2	0	0	0	0	0	0
12:15 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	2	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0
12:45 PM	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	1	2	0	0	0	0	0	0	1	6	0	0	0	0	0	0
1:15 PM	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0
1:30 PM	1	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0
1:45 PM	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0
2:00 PM	0	4	0	0	1	0	0	0	0	3	0	0	0	0	0	0
2:15 PM	1	2	0	0	0	1	0	0	0	3	0	0	0	0	0	0
2:30 PM	1	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0
2:45 PM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**2**	**8**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**9**	**0**	**0**	**0**	**0**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_14 Telegraph Ave/52nd St/Claremont Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	2	0	0	0	0	2	0	0	4	0	0	0	0	0	0
11:15 AM	0	7	0	0	0	0	0	0	0	2	0	0	0	0	0	0
11:30 AM	0	6	0	0	0	0	0	0	0	8	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0
12:00 PM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0
12:15 PM	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	7	0	0	1	0	2	0	0	0	0	0	0	0	0	0
1:00 PM	0	1	0	0	0	2	2	0	0	5	0	0	0	0	0	0
1:15 PM	0	6	5	0	1	0	0	0	0	6	0	0	0	0	0	0
1:30 PM	2	2	0	0	0	1	0	0	0	10	0	0	0	0	4	0
1:45 PM	2	8	0	0	0	0	0	0	0	10	0	0	0	0	0	0
2:00 PM	0	5	0	0	0	0	2	0	0	3	0	0	0	0	0	0
2:15 PM	0	1	0	0	0	0	0	0	0	6	0	0	0	0	0	0
2:30 PM	0	5	0	0	0	0	1	0	0	3	1	0	0	0	0	0
2:45 PM	0	3	0	0	1	0	2	0	0	4	0	0	0	0	0	0
Peak Hour	**2**	**16**	**5**	**0**	**2**	**3**	**4**	**0**	**0**	**21**	**0**	**0**	**0**	**0**	**4**	**0**

People

Study Name **WC10-2728_14 Telegraph Ave/52nd St/Claremont Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	2	3	5	2	0	0	7	7								
11:15 AM	0	1	2	2	0	0	12	10								
11:30 AM	8	2	1	5	0	0	10	2								
11:45 AM	1	1	3	9	0	0	4	4								
12:00 PM	3	3	5	2	0	0	7	2								
12:15 PM	4	4	4	1	0	0	7	6								
12:30 PM	2	4	5	1	0	0	4	3								
12:45 PM	6	3	2	2	0	0	19	11								
1:00 PM	4	8	4	2	0	0	20	17								
1:15 PM	1	2	2	3	0	0	21	11								
1:30 PM	6	2	7	2	0	0	16	12								
1:45 PM	3	0	5	6	0	0	4	12								
2:00 PM	4	7	2	2	0	0	10	14								
2:15 PM	7	4	2	0	0	0	5	4								
2:30 PM	4	1	8	2	0	0	10	2								
2:45 PM	0	3	3	1	0	0	20	15								
Peak Hour	**17**	**15**	**15**	**9**	**0**	**0**	**76**	**51**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	32		24		0		127									

Pedal Bike (Crosswalk)

Study Name **WC10-2728_14 Telegraph Ave/52nd St/Claremont Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	0	0	0	0	0	0	2	0								
11:15 AM	0	0	0	0	0	0	0	0								
11:30 AM	0	1	0	0	0	0	0	0								
11:45 AM	0	0	0	0	0	0	0	0								
12:00 PM	0	0	0	0	0	0	0	0								
12:15 PM	1	0	0	0	0	0	2	0								
12:30 PM	0	0	0	0	0	0	1	2								
12:45 PM	0	0	0	0	0	0	2	0								
1:00 PM	2	0	1	0	0	0	0	0								
1:15 PM	1	0	1	0	0	0	0	0								
1:30 PM	0	0	0	0	0	0	0	2								
1:45 PM	1	0	2	0	0	0	2	0								
2:00 PM	0	2	0	0	0	0	3	0								
2:15 PM	0	0	0	0	0	0	1	2								
2:30 PM	1	1	0	0	0	0	1	1								
2:45 PM	1	0	0	0	1	0	0	0								
Peak Hour	**3**	**0**	**2**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_14 Telegraph Ave/52nd St/Claremont Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	58	136	14	1	31	9	20	0	31	146	2	0	3	1	2	0
11:15 AM	56	167	10	0	23	7	16	0	40	159	3	2	4	0	2	0
11:30 AM	62	103	14	0	29	15	26	0	32	151	3	0	6	3	2	0
11:45 AM	46	149	7	0	31	17	23	0	30	143	3	0	3	2	4	0
12:00 PM	62	132	17	0	31	31	24	0	34	159	3	1	5	0	4	0
12:15 PM	49	149	12	0	22	12	26	0	56	153	4	1	2	1	3	0
12:30 PM	65	156	15	0	35	16	20	0	31	176	1	1	6	2	4	0
12:45 PM	49	130	15	0	34	13	33	0	30	181	3	0	7	1	3	0
1:00 PM	45	117	18	0	34	12	21	0	26	178	3	0	4	0	4	0
1:15 PM	73	157	21	0	35	7	18	0	38	163	4	2	8	1	3	0
1:30 PM	73	125	14	0	25	22	33	0	33	197	1	0	5	2	7	0
1:45 PM	65	134	12	0	21	10	25	0	20	198	3	0	4	2	4	0
2:00 PM	55	134	18	0	26	10	23	0	24	178	3	0	5	1	3	0
2:15 PM	72	136	9	1	34	17	18	0	32	202	1	0	6	6	4	0
2:30 PM	58	134	18	0	34	13	18	0	23	169	4	1	4	2	6	0
2:45 PM	66	160	19	0	30	10	17	0	19	187	2	0	3	1	3	0
Peak Hour	**240**	**529**	**68**	**0**	**128**	**54**	**105**	**0**	**127**	**719**	**11**	**2**	**24**	**4**	**17**	**0**

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : telegraph-52-s
Site Code : 14
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	TELEGRAPH AV Southbound				**CLAREMONT AV Westbound**				**TELEGRAPH AV Northbound**				**52nd ST Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	43	157	20	220	30	9	17	56	28	190	2	220	0	0	7	7	503
16:15	65	158	18	241	24	9	23	56	22	145	2	169	5	0	8	13	479
16:30	45	163	16	224	33	6	11	50	20	173	6	199	6	1	4	11	484
16:45	56	155	25	236	33	7	13	53	27	171	0	198	8	0	4	12	499
Total	209	633	79	921	120	31	64	215	97	679	10	786	19	1	23	43	1965
17:00	55	148	11	214	23	8	16	47	37	171	1	209	1	0	2	3	473
17:15	49	145	13	207	31	11	15	57	27	170	2	199	0	0	0	0	463
17:30	54	162	19	235	23	6	16	45	25	183	3	211	2	0	4	6	497
17:45	49	140	12	201	30	7	14	51	18	173	2	193	8	1	5	14	459
Total	207	595	55	857	107	32	61	200	107	697	8	812	11	1	11	23	1892
18:00	75	123	21	219	29	9	16	54	26	149	5	180	1	0	2	3	456
18:15	70	151	13	234	35	15	16	66	26	162	2	190	3	0	1	4	494
18:30	70	128	8	206	25	6	29	60	31	134	2	167	1	1	2	4	437
18:45	58	153	19	230	31	9	15	55	24	127	1	152	3	1	2	6	443
Total	273	555	61	889	120	39	76	235	107	572	10	689	8	2	7	17	1830
Grand Total	689	1783	195	2667	347	102	201	650	311	1948	28	2287	38	4	41	83	5687
Apprch %	25.8	66.9	7.3		53.4	15.7	30.9		13.6	85.2	1.2		45.8	4.8	49.4		
Total %	12.1	31.4	3.4	46.9	6.1	1.8	3.5	11.4	5.5	34.3	0.5	40.2	0.7	0.1	0.7	1.5	

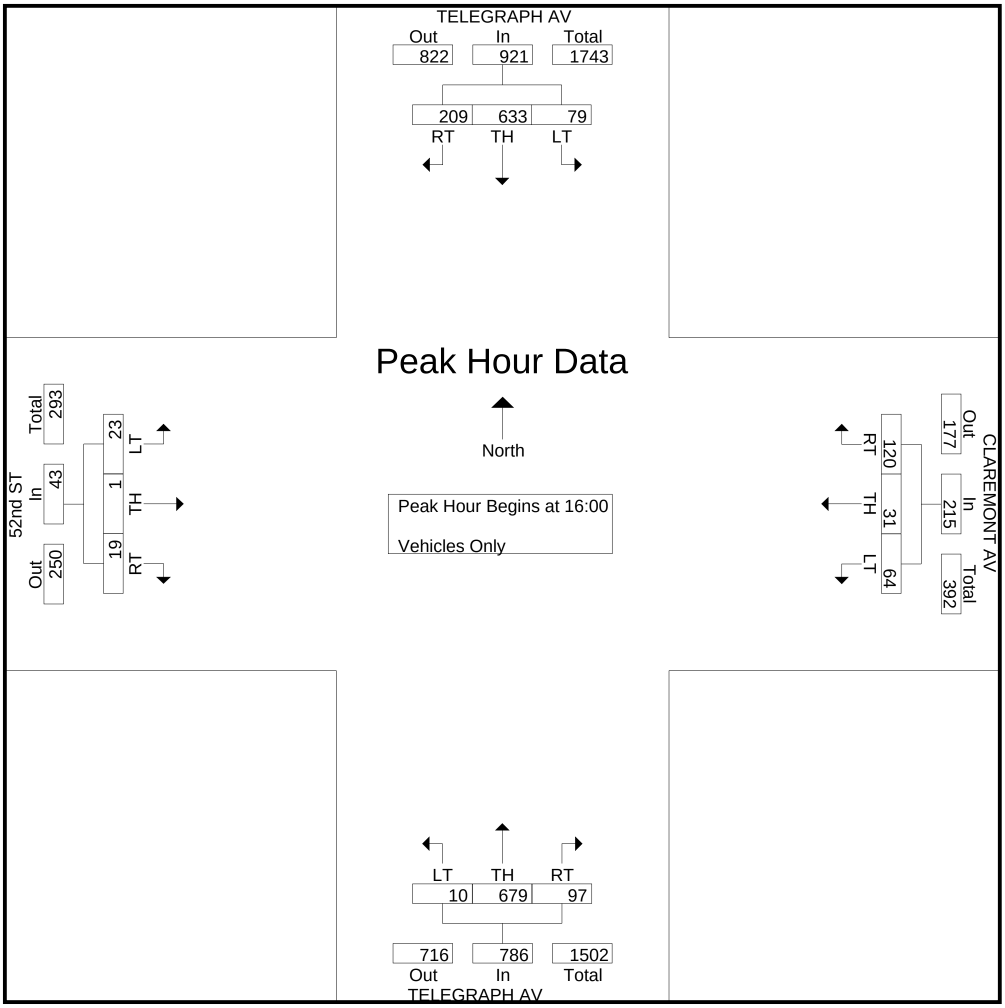
	TELEGRAPH AV Southbound				**CLAREMONT AV Westbound**				**TELEGRAPH AV Northbound**				**52nd ST Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	43	157	20	220	30	**9**	17	**56**	**28**	**190**	2	**220**	0	0	7	7	**503**
16:15	**65**	158	18	**241**	24	9	**23**	56	22	145	2	169	5	0	**8**	**13**	479
16:30	45	**163**	16	224	**33**	6	11	50	20	173	**6**	199	6	**1**	4	11	484
16:45	56	155	**25**	236	33	7	13	53	27	171	0	198	**8**	0	4	12	499
Total Volume	209	633	79	921	120	31	64	215	97	679	10	786	19	1	23	43	1965
% App. Total	22.7	68.7	8.6		55.8	14.4	29.8		12.3	86.4	1.3		44.2	2.3	53.5		
PHF	.804	.971	.790	.955	.909	.861	.696	.960	.866	.893	.417	.893	.594	.250	.719	.827	.977

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : telegraph-52-s
Site Code : 14
Start Date : 5/15/2010
Page No : 2



CITY OF OAKLAND

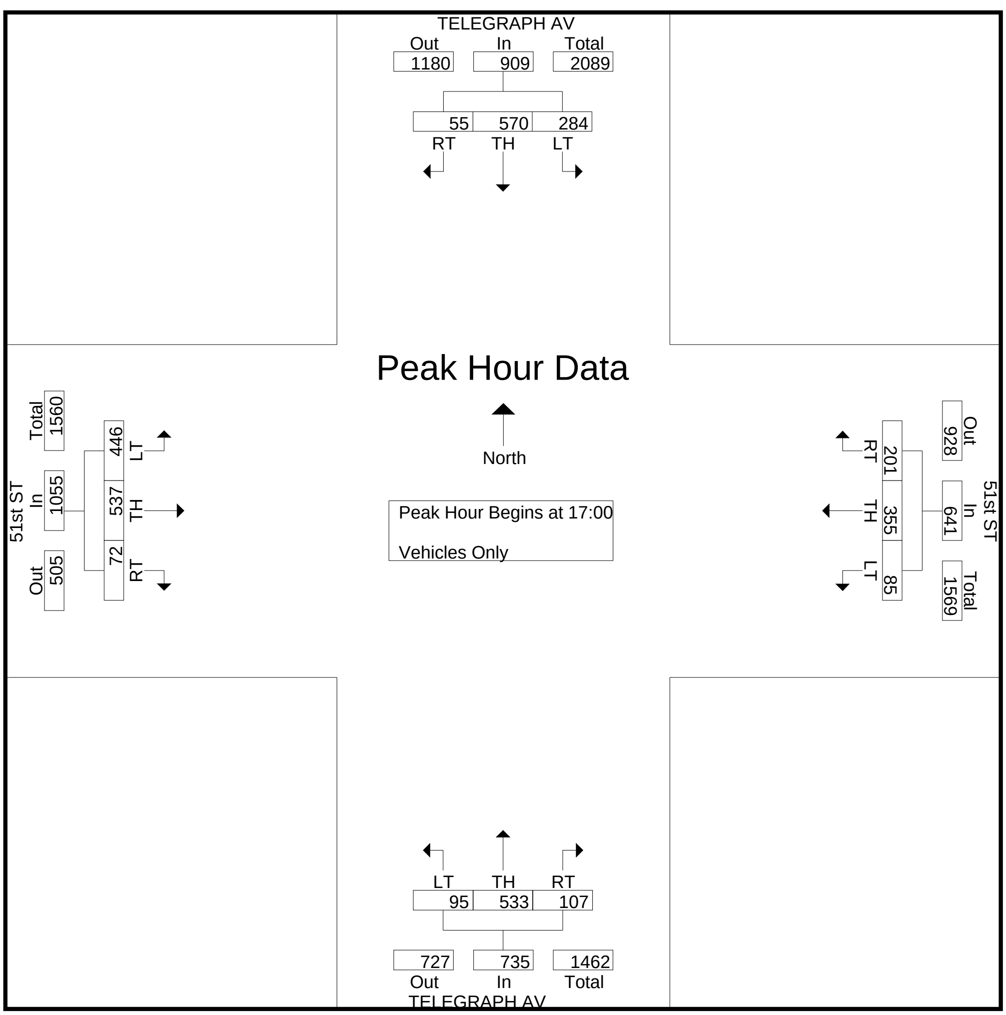
fp
Mietek 916-806-0250

File Name : telegraph-51-p
Site Code : 15
Start Date : 5/12/2010
Page No : 1

Groups Printed- Vehicles Only

	TELEGRAPH AV Southbound				51st ST Westbound				TELEGRAPH AV Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	17	152	84	253	41	106	20	167	30	106	26	162	20	116	87	223	805
16:15	10	146	67	223	40	101	20	161	29	95	23	147	22	132	94	248	779
16:30	8	135	64	207	46	103	21	170	24	131	32	187	15	122	98	235	799
16:45	8	133	72	213	40	87	21	148	21	141	16	178	22	144	101	267	806
Total	43	566	287	896	167	397	82	646	104	473	97	674	79	514	380	973	3189
17:00	18	149	77	244	38	92	21	151	25	129	24	178	18	131	114	263	836
17:15	11	147	63	221	55	83	16	154	31	123	20	174	20	140	108	268	817
17:30	18	159	72	249	53	91	26	170	25	117	28	170	16	126	123	265	854
17:45	8	115	72	195	55	89	22	166	26	164	23	213	18	140	101	259	833
Total	55	570	284	909	201	355	85	641	107	533	95	735	72	537	446	1055	3340
Grand Total	98	1136	571	1805	368	752	167	1287	211	1006	192	1409	151	1051	826	2028	6529
Apprch %	5.4	62.9	31.6		28.6	58.4	13		15	71.4	13.6		7.4	51.8	40.7		
Total %	1.5	17.4	8.7	27.6	5.6	11.5	2.6	19.7	3.2	15.4	2.9	21.6	2.3	16.1	12.7	31.1	

	TELEGRAPH AV Southbound				51st ST Westbound				TELEGRAPH AV Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	**18**	149	**77**	244	38	**92**	21	151	25	129	24	178	18	131	114	263	836
17:15	11	147	63	221	**55**	83	16	154	**31**	123	20	174	**20**	**140**	108	**268**	817
17:30	18	**159**	72	**249**	53	91	**26**	**170**	25	117	**28**	170	16	126	**123**	265	**854**
17:45	8	115	72	195	55	89	22	166	26	**164**	23	**213**	18	140	101	259	833
Total Volume	55	570	284	909	201	355	85	641	107	533	95	735	72	537	446	1055	3340
% App. Total	6.1	62.7	31.2		31.4	55.4	13.3		14.6	72.5	12.9		6.8	50.9	42.3		
PHF	.764	.896	.922	.913	.914	.965	.817	.943	.863	.813	.848	.863	.900	.959	.907	.984	.978



Car

Study Name **WC10-2728_15 Telegraph Ave/51st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Telegraph Avenue Southbound				51st Street Westbound				Telegraph Avenue Northbound				51st Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	5	99	37	0	28	103	24	0	11	72	15	0	16	106	56	0
11:15 AM	12	124	45	0	22	95	29	0	25	107	24	0	28	100	65	0
11:30 AM	7	92	36	0	48	113	28	2	39	75	28	0	26	99	52	0
11:45 AM	6	111	58	0	42	111	31	0	29	97	26	0	31	110	52	0
12:00 PM	7	105	39	0	41	118	28	0	27	103	24	1	29	102	54	1
12:15 PM	9	127	57	0	50	127	31	0	31	101	31	0	38	126	58	0
12:30 PM	15	110	44	0	42	134	38	0	35	100	22	0	35	96	74	1
12:45 PM	9	98	54	0	38	127	34	2	27	101	31	1	43	112	62	0
1:00 PM	4	103	31	0	44	118	29	0	32	111	28	0	23	104	63	0
1:15 PM	14	109	53	0	48	156	26	1	31	101	23	0	31	107	54	1
1:30 PM	11	85	43	0	53	152	29	0	33	96	30	2	31	120	66	0
1:45 PM	7	109	40	0	37	146	23	0	30	101	30	0	31	109	70	0
2:00 PM	10	95	49	0	33	126	20	0	23	106	30	0	22	107	77	1
2:15 PM	12	111	36	0	40	128	24	0	19	113	23	0	20	88	76	0
2:30 PM	8	103	37	0	31	127	18	0	23	98	20	0	23	83	70	0
2:45 PM	4	110	58	0	48	121	24	1	22	98	31	0	22	86	67	1

	Telegraph Avenue Southbound				51st Street Westbound				Telegraph Avenue Northbound				51st Street Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	5	103	37	0	29	107	25	0	11	74	15	0	17	106	58	0	587	2637
11:15 AM	12	126	47	0	22	96	30	0	26	108	24	0	28	102	66	0	687	2741
11:30 AM	7	92	36	0	49	113	28	2	39	77	28	0	28	99	52	0	650	2850
11:45 AM	6	112	60	0	42	111	32	0	30	98	26	0	31	111	54	0	713	2960
12:00 PM	7	106	39	0	43	122	28	0	27	104	25	1	30	102	56	1	691	2993
12:15 PM	9	130	58	0	50	130	31	0	31	102	31	0	38	128	58	0	796	3005
12:30 PM	15	113	45	0	44	135	38	0	37	102	22	0	35	99	74	1	760	2970
12:45 PM	9	101	55	0	38	129	34	2	27	101	31	1	43	113	62	0	746	2968
1:00 PM	4	105	31	0	46	119	29	0	32	115	28	0	23	106	65	0	703	2961
1:15 PM	14	110	54	0	48	156	26	1	32	104	23	0	31	107	54	1	761	2966
1:30 PM	12	86	43	0	55	152	30	0	33	97	30	2	31	121	66	0	758	2904
1:45 PM	7	112	41	0	37	146	23	0	30	102	30	0	31	109	71	0	739	2791
2:00 PM	10	99	49	0	34	128	20	0	23	107	30	0	22	108	77	1	708	2749
2:15 PM	12	112	37	0	41	131	24	0	19	114	23	0	20	89	77	0	699	
2:30 PM	8	103	37	0	32	128	18	0	23	100	20	0	23	83	70	0	645	
2:45 PM	4	111	61	0	48	121	24	1	22	98	31	0	22	86	67	1	697	
Peak Hour	**39**	**402**	**183**	**0**	**187**	**556**	**119**	**3**	**124**	**417**	**112**	**3**	**128**	**447**	**247**	**1**	**0.98**	

Truck

Study Name **WC10-2728_15 Telegraph Ave/51st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	4	0	0	1	4	1	0	0	2	0	0	1	0	2	0
11:15 AM	0	2	2	0	0	1	1	0	1	1	0	0	0	2	1	0
11:30 AM	0	0	0	0	1	0	0	0	0	2	0	0	2	0	0	0
11:45 AM	0	1	2	0	0	0	1	0	1	1	0	0	0	1	2	0
12:00 PM	0	1	0	0	2	4	0	0	0	1	1	0	1	0	2	0
12:15 PM	0	3	1	0	0	3	0	0	0	1	0	0	0	2	0	0
12:30 PM	0	3	1	0	2	1	0	0	2	2	0	0	0	3	0	0
12:45 PM	0	3	1	0	0	2	0	0	0	0	0	0	0	1	0	0
1:00 PM	0	2	0	0	2	1	0	0	0	4	0	0	0	2	2	0
1:15 PM	0	1	1	0	0	0	0	0	1	3	0	0	0	0	0	0
1:30 PM	1	1	0	0	2	0	1	0	0	1	0	0	0	1	0	0
1:45 PM	0	3	1	0	0	0	0	0	0	1	0	0	0	0	1	0
2:00 PM	0	4	0	0	1	2	0	0	0	1	0	0	0	1	0	0
2:15 PM	0	1	1	0	1	3	0	0	0	1	0	0	0	1	1	0
2:30 PM	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0
2:45 PM	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**1**	**7**	**2**	**0**	**4**	**3**	**1**	**0**	**1**	**8**	**0**	**0**	**0**	**4**	**2**	**0**

Pedal Bike (Road)

Study Name WC10-2728_15 Telegraph Ave/51st St
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	3	1	0	0	0	1	0	0	2	0	0	0	0	0	0
11:15 AM	0	4	0	0	1	1	0	0	0	2	0	0	0	0	0	0
11:30 AM	2	5	0	0	1	0	0	0	0	6	0	0	0	2	0	0
11:45 AM	0	3	0	0	0	4	0	0	0	6	0	0	0	1	0	0
12:00 PM	0	0	0	0	2	0	0	0	0	6	0	0	0	0	0	0
12:15 PM	0	1	0	0	0	0	1	0	0	3	0	0	0	0	1	0
12:30 PM	1	2	0	0	0	2	0	0	1	9	1	0	0	0	2	0
12:45 PM	0	7	0	0	0	0	0	0	0	7	0	0	0	0	1	0
1:00 PM	0	5	0	0	0	0	0	0	0	3	0	0	0	1	0	0
1:15 PM	0	6	1	0	0	1	0	0	0	4	0	0	0	0	0	0
1:30 PM	0	3	0	0	2	0	1	0	0	11	1	0	0	1	0	0
1:45 PM	1	6	1	0	1	0	0	0	0	8	0	0	0	0	0	0
2:00 PM	0	6	2	0	1	1	1	0	1	5	0	0	0	0	0	0
2:15 PM	0	5	0	0	0	4	0	0	1	5	0	0	0	1	0	0
2:30 PM	0	5	0	0	0	0	0	0	4	0	0	0	0	3	0	0
2:45 PM	0	6	0	0	0	0	0	0	1	1	1	0	0	0	1	0
Peak Hour	**0**	**21**	**1**	**0**	**2**	**1**	**1**	**0**	**0**	**25**	**1**	**0**	**0**	**2**	**1**	**0**

People

Study Name **WC10-2728_15 Telegraph Ave/51st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	3	4	10	16	7	15	8	8			
11:15 AM	2	1	5	13	6	6	11	15			
11:30 AM	4	6	12	11	20	9	14	8			
11:45 AM	4	4	18	16	19	16	11	3			
12:00 PM	0	2	19	13	14	29	12	7			
12:15 PM	0	4	14	13	10	24	6	14			
12:30 PM	1	4	15	16	16	14	10	9			
12:45 PM	1	4	17	13	20	16	32	11			
1:00 PM	3	4	22	20	15	18	15	13			
1:15 PM	0	1	8	17	23	31	22	12			
1:30 PM	4	8	26	16	19	20	15	10			
1:45 PM	3	3	9	13	8	29	12	31			
2:00 PM	6	2	19	2	5	8	18	16			
2:15 PM	0	2	14	8	8	11	9	5			
2:30 PM	4	0	13	6	6	5	13	8			
2:45 PM	1	1	6	2	5	4	13	13			
Peak Hour	**8**	**17**	**73**	**66**	**77**	**85**	**84**	**46**	**0**	**0**	**0**
	25		139		162		130				

Pedal Bike (Crosswalk)

Study Name **WC10-2728_15 Telegraph Ave/51st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	0	0	0	0	0	0	3	0								
11:15 AM	0	0	0	0	0	0	0	0								
11:30 AM	0	0	0	1	0	0	0	0								
11:45 AM	0	0	1	0	0	0	0	0								
12:00 PM	0	0	0	0	0	0	1	0								
12:15 PM	0	0	0	0	0	0	4	1								
12:30 PM	0	0	0	0	0	0	0	2								
12:45 PM	0	0	0	0	0	0	0	4								
1:00 PM	0	0	0	0	0	0	0	0								
1:15 PM	1	2	0	0	0	0	0	0								
1:30 PM	0	1	1	1	1	0	0	0								
1:45 PM	0	0	5	0	0	2	0	0								
2:00 PM	1	0	0	3	0	1	0	0								
2:15 PM	0	1	0	0	0	0	0	2								
2:30 PM	0	0	0	1	0	0	0	0								
2:45 PM	0	0	0	1	0	3	0	0								
Peak Hour	**1**	**3**	**1**	**1**	**1**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_15 Telegraph Ave/51st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	5	106	38	0	29	107	26	0	11	76	15	0	17	106	58	0
11:15 AM	12	130	47	0	23	97	30	0	26	110	24	0	28	102	66	0
11:30 AM	9	97	36	0	50	113	28	2	39	83	28	0	28	101	52	0
11:45 AM	6	115	60	0	42	115	32	0	30	104	26	0	31	112	54	0
12:00 PM	7	106	39	0	45	122	28	0	27	110	25	1	30	102	56	1
12:15 PM	9	131	58	0	50	130	32	0	31	105	31	0	38	128	59	0
12:30 PM	16	115	45	0	44	137	38	0	38	111	23	0	35	99	76	1
12:45 PM	9	108	55	0	38	129	34	2	27	108	31	1	43	113	63	0
1:00 PM	4	110	31	0	46	119	29	0	32	118	28	0	23	107	65	0
1:15 PM	14	116	55	0	48	157	26	1	32	108	23	0	31	107	54	1
1:30 PM	12	89	43	0	57	152	31	0	33	108	31	2	31	122	66	0
1:45 PM	8	118	42	0	38	146	23	0	30	110	30	0	31	109	71	0
2:00 PM	10	105	51	0	35	129	21	0	24	112	30	0	22	108	77	1
2:15 PM	12	117	37	0	41	135	24	0	20	119	23	0	20	90	77	0
2:30 PM	8	108	37	0	32	128	18	0	27	100	20	0	23	86	70	0
2:45 PM	4	117	61	0	48	121	24	1	23	99	32	0	22	86	68	1
Peak Hour	**39**	**423**	**184**	**0**	**189**	**557**	**120**	**3**	**124**	**442**	**113**	**3**	**128**	**449**	**248**	**1**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : telegraph-51-s
Site Code : 15
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

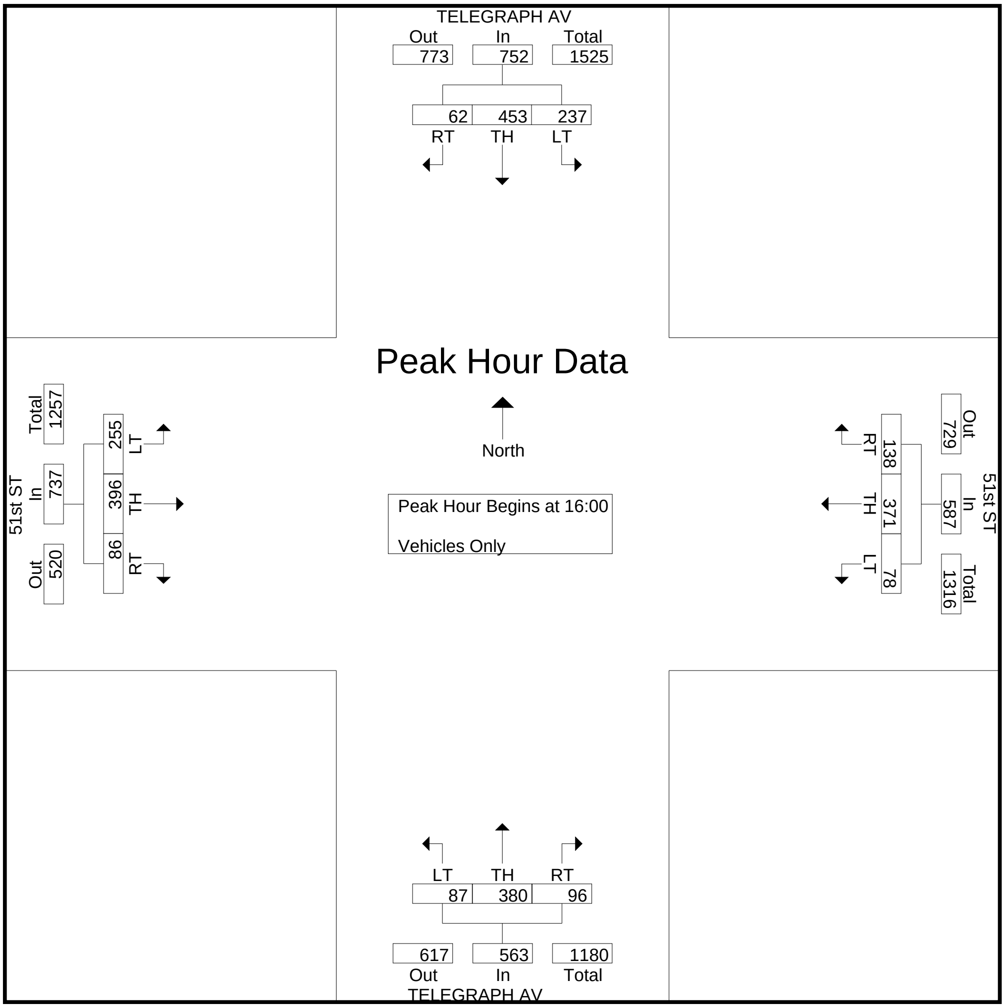
	TELEGRAPH AV Southbound				51st ST Westbound				TELEGRAPH AV Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	26	120	73	219	37	102	15	154	26	98	14	138	15	96	59	170	681
16:15	12	111	50	173	29	91	24	144	24	81	21	126	27	104	63	194	637
16:30	12	104	62	178	38	90	19	147	33	99	27	159	23	87	71	181	665
16:45	12	118	52	182	34	88	20	142	13	102	25	140	21	109	62	192	656
Total	62	453	237	752	138	371	78	587	96	380	87	563	86	396	255	737	2639
17:00	19	115	39	173	37	78	22	137	16	86	19	121	28	76	76	180	611
17:15	7	106	56	169	37	81	19	137	22	113	16	151	27	93	61	181	638
17:30	12	105	53	170	40	79	18	137	34	84	15	133	26	77	72	175	615
17:45	8	107	40	155	34	82	13	129	21	94	19	134	22	91	60	173	591
Total	46	433	188	667	148	320	72	540	93	377	69	539	103	337	269	709	2455
18:00	10	103	27	140	31	76	16	123	14	96	20	130	25	92	55	172	565
18:15	7	121	32	160	28	97	16	141	20	97	18	135	24	90	64	178	614
18:30	12	111	38	161	38	69	21	128	22	79	21	122	16	98	59	173	584
18:45	18	116	43	177	32	76	15	123	19	79	7	105	29	81	35	145	550
Total	47	451	140	638	129	318	68	515	75	351	66	492	94	361	213	668	2313
Grand Total	155	1337	565	2057	415	1009	218	1642	264	1108	222	1594	283	1094	737	2114	7407
Apprch %	7.5	65	27.5		25.3	61.4	13.3		16.6	69.5	13.9		13.4	51.8	34.9		
Total %	2.1	18.1	7.6	27.8	5.6	13.6	2.9	22.2	3.6	15	3	21.5	3.8	14.8	10	28.5	

	TELEGRAPH AV Southbound				51st ST Westbound				TELEGRAPH AV Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**26**	**120**	**73**	**219**	37	**102**	15	**154**	26	98	14	138	15	96	59	170	**681**
16:15	12	111	50	173	29	91	**24**	144	24	81	21	126	**27**	104	63	**194**	637
16:30	12	104	62	178	**38**	90	19	147	**33**	99	**27**	**159**	23	87	**71**	181	665
16:45	12	118	52	182	34	88	20	142	13	**102**	25	140	21	**109**	62	192	656
Total Volume	62	453	237	752	138	371	78	587	96	380	87	563	86	396	255	737	2639
% App. Total	8.2	60.2	31.5		23.5	63.2	13.3		17.1	67.5	15.5		11.7	53.7	34.6		
PHF	.596	.944	.812	.858	.908	.909	.813	.953	.727	.931	.806	.885	.796	.908	.898	.950	.969

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : telegraph-51-s
Site Code : 15
Start Date : 5/15/2010
Page No : 2



CITY OF OAKLAND

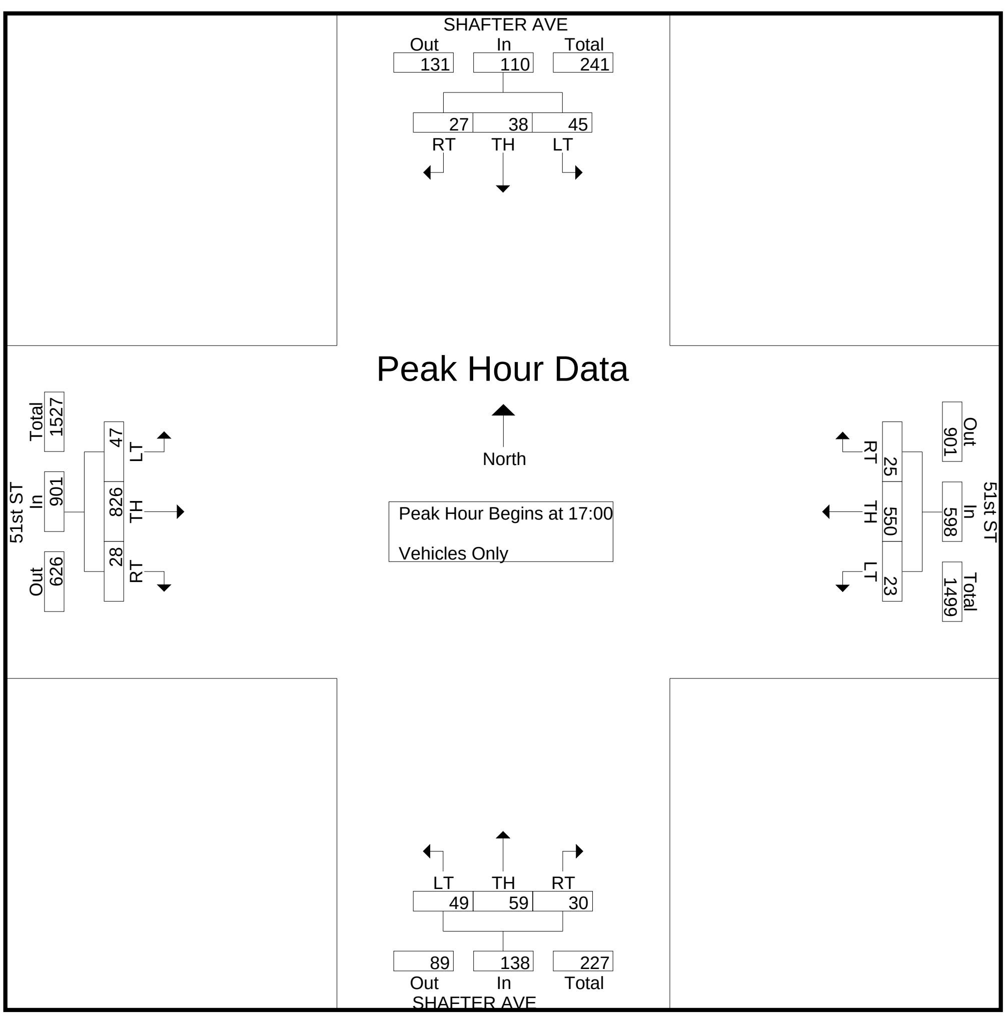
fp
Mietek 916-806-0250

File Name : shafter-51-p
Site Code : 16
Start Date : 5/12/2010
Page No : 1

Groups Printed- Vehicles Only

	SHAFTER AVE Southbound				51st ST Westbound				SHAFTER AVE Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	4	11	9	24	13	160	1	174	1	11	5	17	6	155	7	168	383
16:15	4	5	8	17	6	133	6	145	5	9	11	25	5	165	5	175	362
16:30	3	8	12	23	6	137	3	146	5	14	10	29	12	151	7	170	368
16:45	0	5	8	13	5	128	4	137	4	12	5	21	13	187	7	207	378
Total	11	29	37	77	30	558	14	602	15	46	31	92	36	658	26	720	1491
17:00	4	6	16	26	5	147	9	161	10	13	25	48	6	194	11	211	446
17:15	8	12	13	33	7	149	4	160	6	12	8	26	9	198	14	221	440
17:30	8	10	1	19	5	136	6	147	5	18	9	32	5	240	10	255	453
17:45	7	10	15	32	8	118	4	130	9	16	7	32	8	194	12	214	408
Total	27	38	45	110	25	550	23	598	30	59	49	138	28	826	47	901	1747
Grand Total	38	67	82	187	55	1108	37	1200	45	105	80	230	64	1484	73	1621	3238
Apprch %	20.3	35.8	43.9		4.6	92.3	3.1		19.6	45.7	34.8		3.9	91.5	4.5		
Total %	1.2	2.1	2.5	5.8	1.7	34.2	1.1	37.1	1.4	3.2	2.5	7.1	2	45.8	2.3	50.1	

	SHAFTER AVE Southbound				51st ST Westbound				SHAFTER AVE Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	4	6	**16**	26	5	147	**9**	**161**	**10**	13	**25**	**48**	6	194	11	211	446
17:15	**8**	**12**	13	**33**	7	**149**	4	160	6	12	8	26	**9**	198	**14**	221	440
17:30	8	10	1	19	5	136	6	147	5	**18**	9	32	5	**240**	10	**255**	**453**
17:45	7	10	15	32	**8**	118	4	130	9	16	7	32	8	194	12	214	408
Total Volume	27	38	45	110	25	550	23	598	30	59	49	138	28	826	47	901	1747
% App. Total	24.5	34.5	40.9		4.2	92	3.8		21.7	42.8	35.5		3.1	91.7	5.2		
PHF	.844	.792	.703	.833	.781	.923	.639	.929	.750	.819	.490	.719	.778	.860	.839	.883	.964



Car

Study Name **WC10-2728_16 Shafter Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Shafter Avenue Southbound				51st Street Westbound				Shafter Avenue Northbound				51st Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	3	12	2	0	9	137	1	0	5	3	9	0	12	124	3	0
11:15 AM	5	4	6	0	4	132	3	0	4	7	5	0	10	145	6	1
11:30 AM	7	5	4	0	10	166	3	1	3	7	11	0	5	122	7	0
11:45 AM	6	6	3	0	8	174	6	0	4	9	13	0	17	174	7	2
12:00 PM	4	5	7	0	4	162	5	1	3	12	3	0	9	135	4	1
12:15 PM	4	4	9	0	10	178	2	0	4	12	11	0	8	161	4	1
12:30 PM	3	6	9	0	3	185	4	0	0	8	11	0	6	169	8	2
12:45 PM	3	12	6	0	3	186	4	0	4	14	11	0	3	153	8	2
1:00 PM	3	10	10	0	15	179	1	0	9	10	3	0	11	148	8	2
1:15 PM	5	8	6	0	7	209	6	0	7	8	7	0	6	171	10	1
1:30 PM	2	5	9	0	9	200	7	0	2	9	12	0	7	155	9	3
1:45 PM	3	15	7	0	12	184	3	0	4	11	6	0	10	158	7	0
2:00 PM	4	11	9	0	6	173	7	0	5	7	5	0	5	148	12	0
2:15 PM	5	8	6	0	4	166	6	0	1	16	13	0	4	139	7	0
2:30 PM	4	6	7	0	6	165	3	0	2	12	6	0	1	120	5	0
2:45 PM	5	7	5	0	5	194	4	1	7	8	6	0	4	153	7	1

	Shafter Avenue Southbound				51st Street Westbound				Shafter Avenue Northbound				51st Street Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	3	12	2	0	9	141	1	0	5	3	9	0	12	126	3	0	326	1450
11:15 AM	5	4	6	0	4	133	3	0	4	7	5	0	10	148	6	1	336	1483
11:30 AM	7	5	4	0	10	168	3	1	3	7	11	0	5	123	7	0	354	1559
11:45 AM	6	6	4	0	8	175	6	0	4	9	13	0	17	177	7	2	434	1625
12:00 PM	4	5	7	0	4	166	5	1	3	12	3	0	9	135	4	1	359	1604
12:15 PM	4	4	9	0	11	179	2	0	4	12	11	0	8	163	4	1	412	1659
12:30 PM	4	6	9	0	3	187	4	0	0	8	11	0	6	172	8	2	420	1699
12:45 PM	3	12	6	0	3	187	4	0	4	14	11	0	3	156	8	2	413	1710
1:00 PM	3	10	10	0	15	181	1	0	9	10	3	0	11	151	8	2	414	1719
1:15 PM	5	8	6	0	7	209	6	0	7	8	7	0	6	172	10	1	452	1699
1:30 PM	2	5	9	0	9	202	7	0	2	9	12	0	7	155	9	3	431	1627
1:45 PM	3	15	8	0	12	184	3	0	4	11	6	0	10	159	7	0	422	1535
2:00 PM	4	11	9	0	6	174	7	0	5	7	5	0	5	149	12	0	394	1522
2:15 PM	5	8	6	0	4	170	6	0	1	16	13	0	4	140	7	0	380	
2:30 PM	4	6	7	0	6	167	3	0	2	12	6	0	1	120	5	0	339	
2:45 PM	5	8	5	0	5	194	4	1	7	8	6	0	4	154	7	1	409	
Peak Hour	**13**	**35**	**31**	**0**	**34**	**779**	**18**	**0**	**22**	**41**	**33**	**0**	**27**	**634**	**35**	**8**	**0.95**	

Truck

Study Name **WC10-2728_16 Shafter Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	2	0	0
11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
11:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
11:45 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	3	0	0
12:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0	0
12:30 PM	1	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
12:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
1:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
2:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2:15 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
2:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_16 Shafter Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0
11:15 AM	0	7	0	0	0	1	0	0	0	7	0	0	0	0	0	0
11:30 AM	0	2	0	0	1	1	0	0	0	4	1	0	0	2	0	0
11:45 AM	1	4	0	0	0	0	0	0	0	9	0	0	0	0	3	0
12:00 PM	0	8	0	0	0	4	0	0	0	8	0	0	0	0	0	0
12:15 PM	1	8	0	0	0	0	1	0	0	8	0	0	0	1	0	0
12:30 PM	0	17	0	0	1	1	0	0	0	4	2	0	2	0	2	0
12:45 PM	0	9	0	0	0	2	0	0	0	5	2	0	1	1	0	0
1:00 PM	0	5	0	0	2	0	0	0	1	5	0	0	0	0	1	0
1:15 PM	0	4	0	0	0	2	0	0	0	2	0	0	0	1	0	0
1:30 PM	0	9	0	0	0	0	0	0	0	7	0	0	0	1	6	0
1:45 PM	0	3	0	0	0	1	1	0	0	3	0	0	0	0	2	0
2:00 PM	1	3	0	0	0	1	0	0	0	4	1	0	0	1	1	0
2:15 PM	0	4	0	0	0	3	0	0	0	8	0	0	0	0	3	0
2:30 PM	0	4	0	0	0	2	0	0	0	9	1	0	0	3	2	0
2:45 PM	0	6	0	0	0	0	0	0	0	11	0	0	0	1	1	0
Peak Hour	**0**	**27**	**0**	**0**	**2**	**4**	**0**	**0**	**1**	**19**	**2**	**0**	**1**	**3**	**7**	**0**

People

Study Name **WC10-2728_16 Shafter Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound			
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW		
11:00 AM	1	1	3	3	0	4	2	2		
11:15 AM	0	3	6	1	2	0	0	8		
11:30 AM	2	0	4	1	2	2	3	0		
11:45 AM	1	6	0	0	5	2	0	2		
12:00 PM	1	3	2	1	2	1	0	4		
12:15 PM	5	0	2	0	1	3	6	6		
12:30 PM	4	1	0	2	3	3	0	3		
12:45 PM	1	2	2	1	2	6	2	0		
1:00 PM	0	0	1	1	0	0	1	2		
1:15 PM	4	0	0	2	1	0	3	2		
1:30 PM	0	0	1	2	5	2	0	0		
1:45 PM	2	1	2	1	2	1	0	0		
2:00 PM	0	2	0	1	0	1	0	0		
2:15 PM	1	2	3	1	2	4	0	4		
2:30 PM	2	0	0	1	0	0	2	0		
2:45 PM	0	0	3	0	1	1	2	1		
Peak Hour	**5**	**2**	**4**	**6**	**8**	**8**	**6**	**4**	**0**	**0**
	7		10		16		10			

Pedal Bike (Crosswalk)

Study Name **WC10-2728_16 Shafter Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	0	0	0	0	0	0	0	0								
11:15 AM	0	0	0	0	0	0	0	0								
11:30 AM	0	0	0	0	0	0	0	0								
11:45 AM	0	0	0	0	1	0	0	0								
12:00 PM	0	0	1	0	0	0	0	1								
12:15 PM	0	0	0	0	2	0	0	0								
12:30 PM	2	0	0	0	0	0	0	0								
12:45 PM	1	0	0	0	0	0	0	0								
1:00 PM	0	0	1	0	0	0	0	0								
1:15 PM	0	1	2	0	0	0	3	0								
1:30 PM	0	0	0	0	0	0	0	0								
1:45 PM	0	0	0	0	0	0	0	0								
2:00 PM	0	0	0	0	0	0	0	0								
2:15 PM	0	0	0	0	0	0	0	0								
2:30 PM	0	0	0	0	0	0	0	0								
2:45 PM	0	0	0	0	0	0	0	0								
Peak Hour	**1**	**1**	**3**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_16 Shafter Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	3	13	2	0	9	141	1	0	5	5	9	0	12	128	3	0
11:15 AM	5	11	6	0	4	134	3	0	4	14	5	0	10	148	6	1
11:30 AM	7	7	4	0	11	169	3	1	3	11	12	0	5	125	7	0
11:45 AM	7	10	4	0	8	175	6	0	4	18	13	0	17	177	10	2
12:00 PM	4	13	7	0	4	170	5	1	3	20	3	0	9	135	4	1
12:15 PM	5	12	9	0	11	179	3	0	4	20	11	0	8	164	4	1
12:30 PM	4	23	9	0	4	188	4	0	0	12	13	0	8	172	10	2
12:45 PM	3	21	6	0	3	189	4	0	4	19	13	0	4	157	8	2
1:00 PM	3	15	10	0	17	181	1	0	10	15	3	0	11	151	9	2
1:15 PM	5	12	6	0	7	211	6	0	7	10	7	0	6	173	10	1
1:30 PM	2	14	9	0	9	202	7	0	2	16	12	0	7	156	15	3
1:45 PM	3	18	8	0	12	185	4	0	4	14	6	0	10	159	9	0
2:00 PM	5	14	9	0	6	175	7	0	5	11	6	0	5	150	13	0
2:15 PM	5	12	6	0	4	173	6	0	1	24	13	0	4	140	10	0
2:30 PM	4	10	7	0	6	169	3	0	2	21	7	0	1	123	7	0
2:45 PM	5	14	5	0	5	194	4	1	7	19	6	0	4	155	8	1
Peak Hour	**13**	**62**	**31**	**0**	**36**	**783**	**18**	**0**	**23**	**60**	**35**	**0**	**28**	**637**	**42**	**8**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : shafter-51-s
Site Code : 16
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

	SHAFTER AVE Southbound				51st ST Westbound				SHAFTER AVE Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	4	5	9	18	7	155	3	165	6	11	4	21	8	139	8	155	359
16:15	5	12	7	24	6	143	4	153	4	6	11	21	8	157	14	179	377
16:30	3	9	8	20	7	162	3	172	4	3	4	11	10	154	6	170	373
16:45	7	6	6	19	1	139	2	142	3	7	9	19	7	158	3	168	348
Total	19	32	30	81	21	599	12	632	17	27	28	72	33	608	31	672	1457
17:00	4	10	5	19	6	132	4	142	4	7	6	17	3	141	5	149	327
17:15	1	6	5	12	2	130	3	135	6	7	6	19	6	144	8	158	324
17:30	7	8	4	19	5	153	2	160	3	11	3	17	7	124	9	140	336
17:45	6	11	3	20	6	125	3	134	2	9	3	14	6	128	2	136	304
Total	18	35	17	70	19	540	12	571	15	34	18	67	22	537	24	583	1291
18:00	6	10	10	26	5	108	4	117	2	7	8	17	9	129	6	144	304
18:15	2	5	3	10	6	118	2	126	1	12	9	22	4	124	7	135	293
18:30	5	7	8	20	6	109	0	115	6	5	3	14	5	127	5	137	286
18:45	3	3	1	7	1	119	0	120	0	6	7	13	3	116	4	123	263
Total	16	25	22	63	18	454	6	478	9	30	27	66	21	496	22	539	1146
Grand Total	53	92	69	214	58	1593	30	1681	41	91	73	205	76	1641	77	1794	3894
Apprch %	24.8	43	32.2		3.5	94.8	1.8		20	44.4	35.6		4.2	91.5	4.3		
Total %	1.4	2.4	1.8	5.5	1.5	40.9	0.8	43.2	1.1	2.3	1.9	5.3	2	42.1	2	46.1	

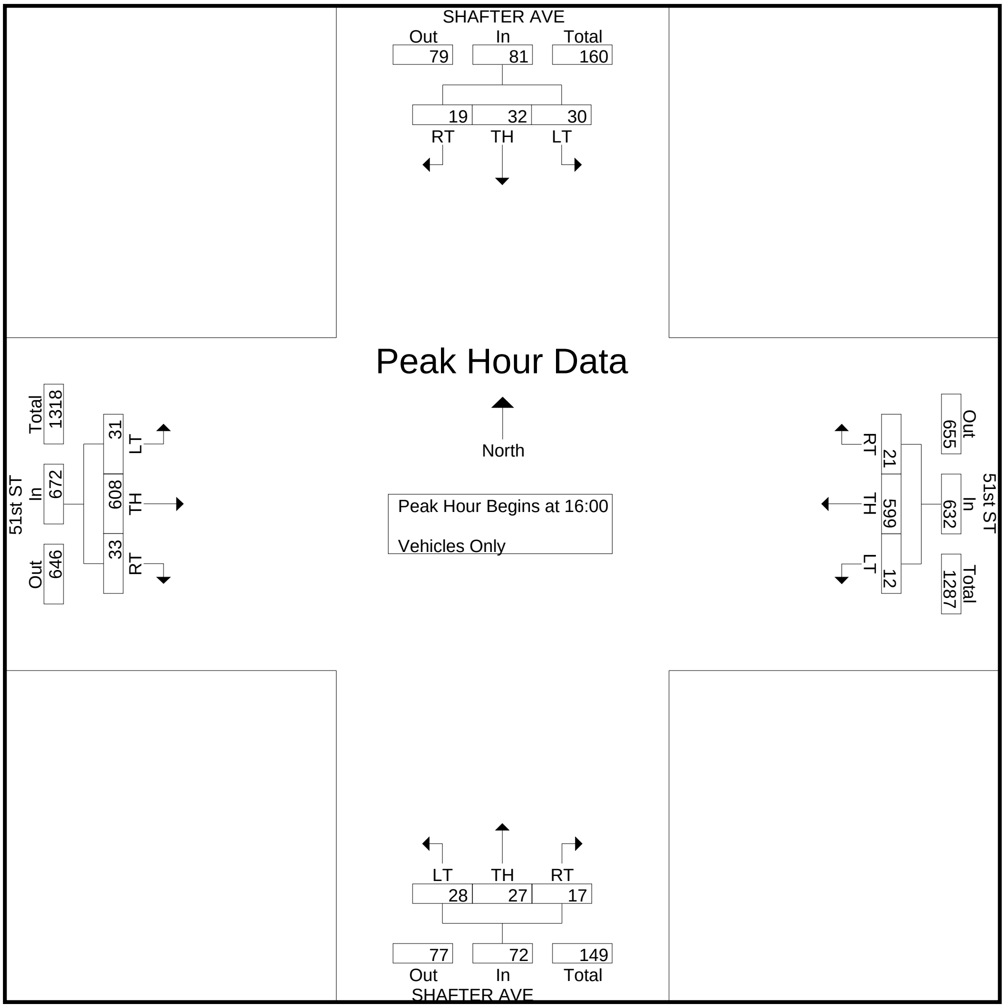
	SHAFTER AVE Southbound				51st ST Westbound				SHAFTER AVE Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	4	5	**9**	18	**7**	155	3	165	**6**	**11**	4	**21**	8	139	8	155	359
16:15	5	**12**	7	**24**	6	143	**4**	153	4	6	**11**	21	8	157	**14**	**179**	**377**
16:30	3	9	8	20	7	**162**	3	**172**	4	3	4	11	**10**	154	6	170	373
16:45	**7**	6	6	19	1	139	2	142	3	7	9	19	7	**158**	3	168	348
Total Volume	19	32	30	81	21	599	12	632	17	27	28	72	33	608	31	672	1457
% App. Total	23.5	39.5	37		3.3	94.8	1.9		23.6	37.5	38.9		4.9	90.5	4.6		
PHF	.679	.667	.833	.844	.750	.924	.750	.919	.708	.614	.636	.857	.825	.962	.554	.939	.966

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : shafter-51-s
Site Code : 16
Start Date : 5/8/2010
Page No : 2



MARKS TRAFFIC DATA

CITY OF OAKLAND

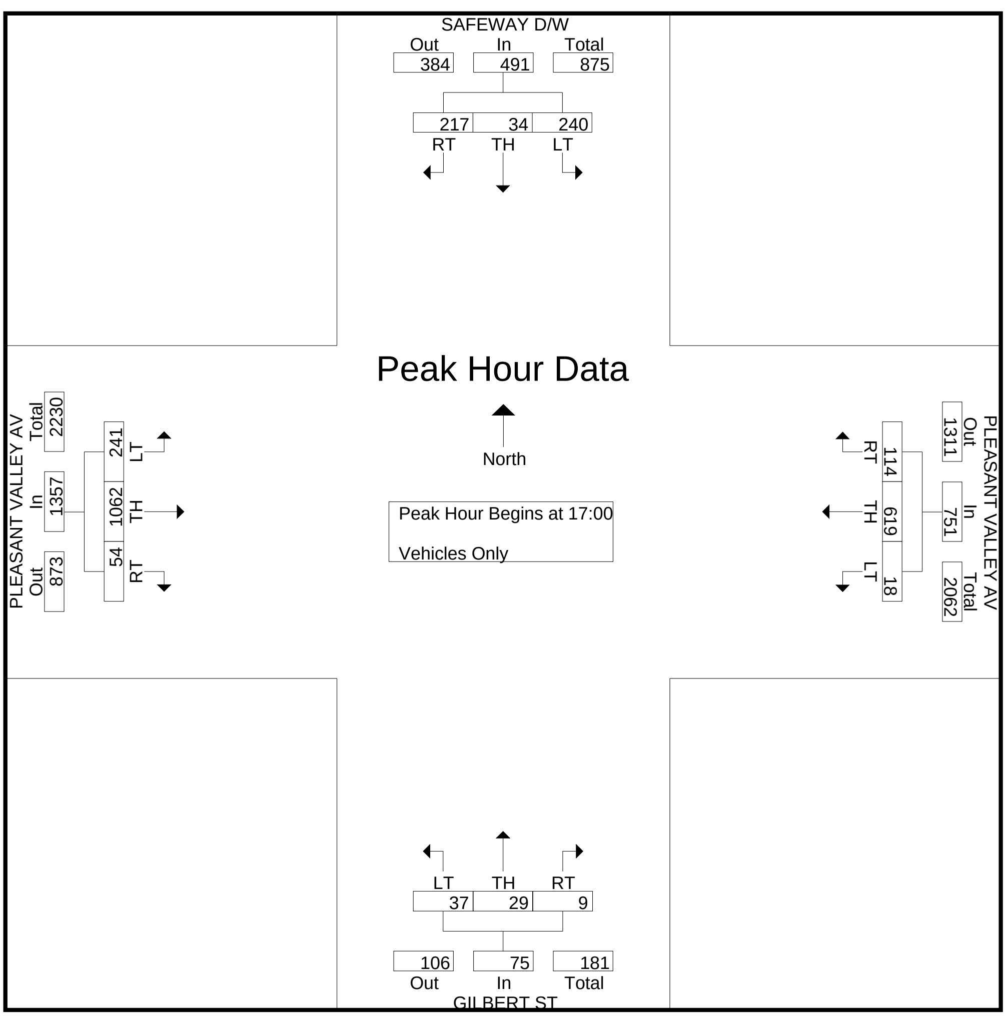
fp
Mietek 916-806-0250

File Name : gilbert-pleasant-p
Site Code : 17
Start Date : 5/11/2010
Page No : 1

Groups Printed- Vehicles Only

	SAFEWAY D/W Southbound				PLEASANT VALLEY AV Westbound				GILBERT ST Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	57	12	49	118	23	126	2	151	3	7	6	16	11	168	51	230	515
16:15	60	10	48	118	25	128	4	157	2	8	11	21	10	175	58	243	539
16:30	55	18	58	131	29	148	4	181	5	10	15	30	13	167	48	228	570
16:45	46	8	54	108	25	148	1	174	2	9	12	23	14	221	59	294	599
Total	218	48	209	475	102	550	11	663	12	34	44	90	48	731	216	995	2223
17:00	51	9	69	129	20	160	2	182	2	6	9	17	16	270	74	360	688
17:15	41	9	56	106	31	169	2	202	1	10	12	23	13	273	65	351	682
17:30	55	8	66	129	36	154	2	192	0	8	3	11	8	283	58	349	681
17:45	70	8	49	127	27	136	12	175	6	5	13	24	17	236	44	297	623
Total	217	34	240	491	114	619	18	751	9	29	37	75	54	1062	241	1357	2674
Grand Total	435	82	449	966	216	1169	29	1414	21	63	81	165	102	1793	457	2352	4897
Apprch %	45	8.5	46.5		15.3	82.7	2.1		12.7	38.2	49.1		4.3	76.2	19.4		
Total %	8.9	1.7	9.2	19.7	4.4	23.9	0.6	28.9	0.4	1.3	1.7	3.4	2.1	36.6	9.3	48	

	SAFEWAY D/W Southbound				PLEASANT VALLEY AV Westbound				GILBERT ST Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	51	**9**	**69**	**129**	20	160	2	182	2	6	9	17	16	270	**74**	**360**	**688**
17:15	41	9	56	106	31	**169**	2	**202**	1	**10**	12	23	13	273	65	351	682
17:30	55	8	66	129	**36**	154	2	192	0	8	3	11	8	**283**	58	349	681
17:45	**70**	8	49	127	27	136	**12**	175	**6**	5	**13**	**24**	**17**	236	44	297	623
Total Volume	217	34	240	491	114	619	18	751	9	29	37	75	54	1062	241	1357	2674
% App. Total	44.2	6.9	48.9		15.2	82.4	2.4		12	38.7	49.3		4	78.3	17.8		
PHF	.775	.944	.870	.952	.792	.916	.375	.929	.375	.725	.712	.781	.794	.938	.814	.942	.972



Car

Study Name **WC10-2728_17 Gilbert St/Project Driveway/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Project Driveway Southbound				Pleasant Valley Avenue Westbound				Gilbert St Northbound				Pleasant Valley Avenue Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	42	14	31	0	18	136	6	6	2	4	14	0	13	161	43	1
11:15 AM	46	5	22	0	22	136	4	3	2	8	13	0	15	161	47	0
11:30 AM	48	4	33	0	28	164	8	3	4	13	8	0	7	127	51	0
11:45 AM	69	11	47	0	20	161	2	4	3	6	15	0	23	150	54	0
12:00 PM	64	7	41	0	25	146	5	5	5	10	14	0	14	150	57	1
12:15 PM	57	5	50	0	28	132	10	0	1	6	15	0	15	183	59	3
12:30 PM	69	7	33	0	20	165	7	0	4	10	18	0	12	179	43	0
12:45 PM	67	9	26	0	31	164	9	0	6	9	16	0	18	170	60	3
1:00 PM	53	24	29	0	20	185	8	0	5	11	19	0	11	155	63	1
1:15 PM	73	14	30	0	24	211	7	4	4	5	15	0	14	166	61	0
1:30 PM	81	19	39	0	27	177	5	3	4	10	21	0	15	138	49	1
1:45 PM	77	4	39	1	34	167	6	2	0	6	18	0	11	190	47	0
2:00 PM	60	11	46	0	20	164	8	0	3	14	13	0	5	168	61	0
2:15 PM	62	9	48	0	30	172	1	0	3	5	6	0	16	122	58	0
2:30 PM	49	12	55	0	37	147	5	0	2	6	9	0	22	145	51	2
2:45 PM	67	12	52	0	24	184	4	5	7	6	14	0	14	182	53	2

	Project Driveway Southbound				Pleasant Valley Avenue Westbound				Gilbert St Northbound				Pleasant Valley Avenue Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	43	14	32	0	18	137	6	6	2	4	14	0	13	161	44	1	495	2050
11:15 AM	46	5	23	0	22	137	4	3	2	8	13	0	15	163	47	0	488	2104
11:30 AM	48	4	33	0	28	166	8	3	4	13	8	0	8	127	51	0	501	2183
11:45 AM	69	11	47	0	20	161	2	4	3	6	15	0	23	151	54	0	566	2252
12:00 PM	64	7	41	0	25	149	5	5	5	10	15	0	14	150	58	1	549	2277
12:15 PM	57	5	50	0	28	133	10	0	1	6	15	0	15	185	59	3	567	2316
12:30 PM	70	7	33	0	20	166	7	0	4	10	18	0	12	179	44	0	570	2380
12:45 PM	67	9	26	0	31	164	9	0	6	9	16	0	18	173	60	3	591	2403
1:00 PM	53	24	29	0	20	187	8	0	5	11	19	0	11	157	63	1	588	2418
1:15 PM	73	14	31	0	24	212	7	4	4	5	15	0	14	167	61	0	631	2406
1:30 PM	81	19	39	0	27	180	5	3	4	10	21	0	15	139	49	1	593	2310
1:45 PM	77	4	39	1	34	168	6	2	0	6	18	0	11	193	47	0	606	2262
2:00 PM	60	11	46	0	20	165	8	0	3	14	13	0	5	169	62	0	576	2285
2:15 PM	63	9	48	0	30	173	1	0	3	5	6	0	16	123	58	0	535	
2:30 PM	50	12	55	0	37	148	5	0	2	6	10	0	22	145	51	2	545	
2:45 PM	67	12	52	0	24	186	4	5	7	6	14	0	14	183	53	2	629	
Peak Hour	**274**	**66**	**125**	**0**	**102**	**743**	**29**	**7**	**19**	**35**	**71**	**0**	**58**	**636**	**233**	**5**	**0.95**	

Truck

Study Name WC10-2728_17 Gilbert St/Project Driveway/Pleasant Valley Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	1	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0
11:15 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0
11:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
12:00 PM	0	0	0	0	0	3	0	0	0	0	1	0	0	0	1	0
12:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
12:30 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
1:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
1:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0
1:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0
1:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
2:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0
2:15 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2:30 PM	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
2:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
Peak Hour	**0**	**0**	**1**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_17 Gilbert St/Project Driveway/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	1	0	0	0	2	0	0	0	0	0	0	1	1	1	0
11:15 AM	0	0	0	0	1	4	0	0	0	1	1	0	0	2	0	0
11:30 AM	0	1	0	0	1	0	0	0	0	1	0	0	0	8	0	0
11:45 AM	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0
12:00 PM	0	1	0	0	2	2	0	0	0	0	1	0	0	0	0	0
12:15 PM	0	0	1	0	1	2	0	0	0	1	0	0	0	0	0	0
12:30 PM	0	0	0	0	1	5	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0
1:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1:15 PM	0	1	0	0	3	0	0	0	0	1	0	0	1	1	0	0
1:30 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	2	0	0
1:45 PM	0	0	0	0	0	1	0	0	0	3	0	0	0	1	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	5	0	0
2:15 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0
2:30 PM	0	0	1	0	0	3	0	0	0	0	0	0	0	2	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0
Peak Hour	**0**	**4**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**3**	**4**	**0**	**0**

People

Study Name **WC10-2728_17 Gilbert St/Project Driveway/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	2	1	1	1	4	4	9	4			
11:15 AM	0	2	1	1	4	3	4	6			
11:30 AM	3	3	3	4	4	4	1	2			
11:45 AM	1	3	1	0	2	4	0	3			
12:00 PM	2	2	7	2	0	1	6	7			
12:15 PM	2	2	4	2	0	0	4	3			
12:30 PM	2	3	2	3	2	1	5	8			
12:45 PM	1	1	7	0	1	10	7	5			
1:00 PM	14	7	1	5	4	2	12	4			
1:15 PM	3	2	0	3	3	4	1	3			
1:30 PM	2	4	1	1	5	2	2	7			
1:45 PM	2	4	4	6	6	5	4	8			
2:00 PM	2	4	3	1	1	4	2	2			
2:15 PM	1	1	4	3	0	4	10	3			
2:30 PM	1	1	0	2	3	0	3	5			
2:45 PM	2	5	0	1	0	0	3	6			
Peak Hour	**20**	**14**	**9**	**9**	**13**	**18**	**22**	**19**	**0**	**0**	**0**
	34		18		31		41				

Pedal Bike (Crosswalk)

Study Name **WC10-2728_17 Gilbert St/Project Driveway/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	0	0	0	0	0	0	0	0								
11:15 AM	0	0	0	0	0	0	0	0								
11:30 AM	0	0	0	0	1	0	0	0								
11:45 AM	0	0	0	0	0	0	0	0								
12:00 PM	0	0	0	0	0	0	0	0								
12:15 PM	0	0	0	0	0	0	0	0								
12:30 PM	0	0	0	0	0	0	0	0								
12:45 PM	0	0	0	0	0	0	0	0								
1:00 PM	0	0	0	0	0	0	0	0								
1:15 PM	2	0	1	0	0	0	0	0								
1:30 PM	0	0	0	0	0	0	0	0								
1:45 PM	0	0	0	0	0	0	0	0								
2:00 PM	0	0	0	0	0	0	0	0								
2:15 PM	0	0	0	0	0	0	0	0								
2:30 PM	0	1	0	0	0	0	0	0								
2:45 PM	0	0	0	0	0	0	0	0								
Peak Hour	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_17 Gilbert St/Project Driveway/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	43	15	32	0	18	139	6	6	2	4	14	0	14	162	45	1
11:15 AM	46	5	23	0	23	141	4	3	2	9	14	0	15	165	47	0
11:30 AM	48	5	33	0	29	166	8	3	4	14	8	0	8	135	51	0
11:45 AM	70	11	47	0	20	161	2	4	3	7	15	0	23	153	54	0
12:00 PM	64	8	41	0	27	151	5	5	5	10	16	0	14	150	58	1
12:15 PM	57	5	51	0	29	135	10	0	1	7	15	0	15	185	59	3
12:30 PM	70	7	33	0	21	171	7	0	4	10	18	0	12	179	44	0
12:45 PM	67	9	26	0	31	164	9	0	6	12	16	0	19	173	60	3
1:00 PM	53	26	29	0	20	187	8	0	5	11	19	0	11	158	63	1
1:15 PM	73	15	31	0	27	212	7	4	4	6	15	0	15	168	61	0
1:30 PM	81	20	40	0	27	180	5	3	4	10	21	0	16	141	49	1
1:45 PM	77	4	39	1	34	169	6	2	0	9	18	0	11	194	47	0
2:00 PM	60	11	46	0	20	165	8	0	3	14	15	0	5	174	62	0
2:15 PM	63	9	49	0	30	175	1	0	3	5	6	0	16	124	58	0
2:30 PM	50	12	56	0	37	151	5	0	2	6	10	0	22	147	51	2
2:45 PM	67	12	52	0	24	186	4	5	7	6	14	0	16	184	53	2

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : gilbert-pleasant-s
Site Code : 17
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	SAFEWAY D/W Southbound				**PLEASANT VALLEY AV Westbound**				**GILBERT ST Northbound**				**PLEASANT VALLEY AV Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	66	16	68	150	17	139	1	157	1	9	11	21	4	172	67	243	571
16:15	59	10	55	124	17	145	3	165	0	7	12	19	11	154	55	220	528
16:30	56	16	60	132	33	142	7	182	3	8	9	20	13	130	66	209	543
16:45	45	10	73	128	31	127	5	163	0	12	9	21	13	160	60	233	545
Total	226	52	256	534	98	553	16	667	4	36	41	81	41	616	248	905	2187
17:00	57	10	53	120	25	124	5	154	0	9	5	14	13	140	57	210	498
17:15	56	6	55	117	30	123	3	156	3	5	11	19	17	147	56	220	512
17:30	41	7	50	98	26	111	3	140	2	7	11	20	14	158	48	220	478
17:45	57	7	47	111	15	109	3	127	2	4	14	20	13	161	64	238	496
Total	211	30	205	446	96	467	14	577	7	25	41	73	57	606	225	888	1984
18:00	58	10	54	122	22	118	6	146	3	7	5	15	12	131	48	191	474
18:15	53	5	39	97	18	109	2	129	1	6	7	14	10	133	50	193	433
18:30	53	11	43	107	17	97	2	116	1	3	8	12	10	119	31	160	395
18:45	51	7	29	87	17	105	2	124	2	6	7	15	10	138	42	190	416
Total	215	33	165	413	74	429	12	515	7	22	27	56	42	521	171	734	1718
Grand Total	652	115	626	1393	268	1449	42	1759	18	83	109	210	140	1743	644	2527	5889
Apprch %	46.8	8.3	44.9		15.2	82.4	2.4		8.6	39.5	51.9		5.5	69	25.5		
Total %	11.1	2	10.6	23.7	4.6	24.6	0.7	29.9	0.3	1.4	1.9	3.6	2.4	29.6	10.9	42.9	

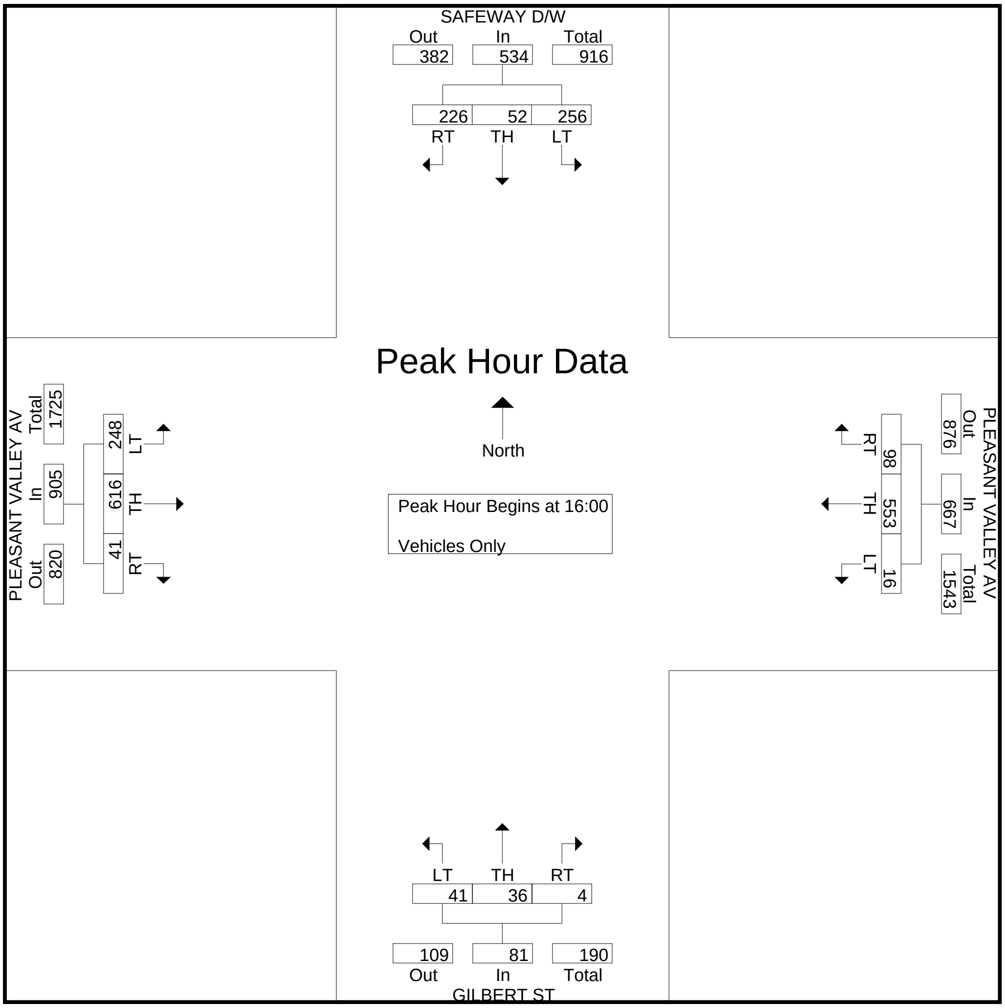
	SAFEWAY D/W Southbound				**PLEASANT VALLEY AV Westbound**				**GILBERT ST Northbound**				**PLEASANT VALLEY AV Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**66**	**16**	68	**150**	17	139	1	157	1	9	11	**21**	4	**172**	**67**	**243**	**571**
16:15	59	10	55	124	17	**145**	3	165	0	7	**12**	19	11	154	55	220	528
16:30	56	16	60	132	**33**	142	**7**	**182**	**3**	8	9	20	**13**	130	66	209	543
16:45	45	10	**73**	128	31	127	5	163	0	**12**	9	21	13	160	60	233	545
Total Volume	226	52	256	534	98	553	16	667	4	36	41	81	41	616	248	905	2187
% App. Total	42.3	9.7	47.9		14.7	82.9	2.4		4.9	44.4	50.6		4.5	68.1	27.4		
PHF	.856	.813	.877	.890	.742	.953	.571	.916	.333	.750	.854	.964	.788	.895	.925	.931	.958

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : gilbert-pleasant-s
Site Code : 17
Start Date : 5/15/2010
Page No : 2



MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

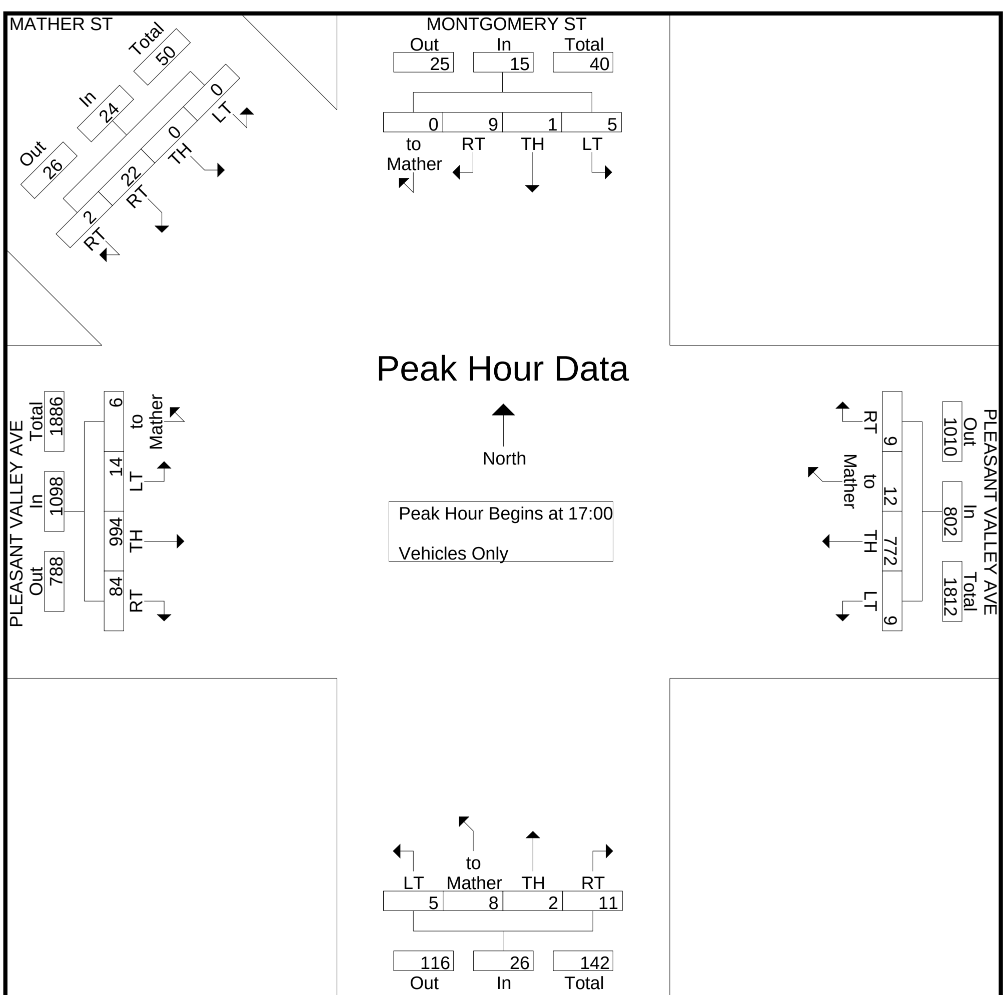
File Name : montgomery-pleasant-p
Site Code : 18
Start Date : 5/12/2010
Page No : 1

Groups Printed- Vehicles Only

	MONTGOMERY ST Southbound					PLEASANT VALLEY AVE Westbound					MONTGOMERY ST Northbound					PLEASANT VALLEY AVE Eastbound					MATHER ST Southeastbound					
Start Time	to Mather	RT	TH	LT	App. Total	RT	to Mather	TH	LT	App. Total	RT	TH	to Mather	LT	App. Total	RT	TH	LT	to Mather	App. Total	RT	RT	TH	LT	App. Total	Int. Total
16:00	0	2	0	0	2	2	3	196	3	204	1	0	1	2	4	6	195	4	0	205	0	6	0	0	6	421
16:15	0	3	0	1	4	2	4	207	5	218	3	1	1	2	7	6	222	3	0	231	0	2	0	0	2	462
16:30	0	4	0	2	6	0	0	168	2	170	3	0	0	1	4	8	239	5	0	252	0	3	0	0	3	435
16:45	0	3	1	1	5	1	5	169	4	179	1	0	0	0	1	6	246	2	0	254	1	6	0	0	7	446
Total	0	12	1	4	17	5	12	740	14	771	8	1	2	5	16	26	902	14	0	942	1	17	0	0	18	1764
17:00	0	2	0	0	2	3	1	209	4	217	3	0	3	1	7	9	267	0	1	277	0	2	0	0	2	505
17:15	0	0	1	0	1	4	6	200	2	212	1	1	3	0	5	6	285	6	0	297	0	8	0	0	8	523
17:30	0	5	0	0	5	1	3	187	3	194	5	1	1	2	9	11	236	4	2	253	1	7	0	0	8	469
17:45	0	2	0	5	7	1	2	176	0	179	2	0	1	2	5	58	206	4	3	271	1	5	0	0	6	468
Total	0	9	1	5	15	9	12	772	9	802	11	2	8	5	26	84	994	14	6	1098	2	22	0	0	24	1965
Grand Total	0	21	2	9	32	14	24	1512	23	1573	19	3	10	10	42	110	1896	28	6	2040	3	39	0	0	42	3729
Apprch %	0	65.6	6.2	28.1		0.9	1.5	96.1	1.5		45.2	7.1	23.8	23.8		5.4	92.9	1.4	0.3		7.1	92.9	0	0		
Total %	0	0.6	0.1	0.2	0.9	0.4	0.6	40.5	0.6	42.2	0.5	0.1	0.3	0.3	1.1	2.9	50.8	0.8	0.2	54.7	0.1	1	0	0	1.1	

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 17:00

	MONTGOMERY ST Southbound					PLEASANT VALLEY AVE Westbound					MONTGOMERY ST Northbound					PLEASANT VALLEY AVE Eastbound					MATHER ST Southeastbound					
Start Time	to Mather	RT	TH	LT	App. Total	RT	to Mather	TH	LT	App. Total	RT	TH	to Mather	LT	App. Total	RT	TH	LT	to Mather	App. Total	RT	RT	TH	LT	App. Total	Int. Total
17:00	0	2	0	0	2	3	1	**209**	**4**	**217**	3	0	**3**	1	7	9	267	0	1	277	0	2	0	0	2	505
17:15	0	0	**1**	0	1	**4**	**6**	200	2	212	1	**1**	3	0	5	6	**285**	**6**	0	**297**	0	**8**	0	0	**8**	**523**
17:30	0	**5**	0	0	5	1	3	187	3	194	**5**	1	1	**2**	**9**	11	236	4	2	253	**1**	7	0	0	8	469
17:45	0	2	0	**5**	**7**	1	2	176	0	179	2	0	1	2	5	**58**	206	4	**3**	271	1	5	0	0	6	468
Total Volume	0	9	1	5	15	9	12	772	9	802	11	2	8	5	26	84	994	14	6	1098	2	22	0	0	24	1965
% App. Total	0	60	6.7	33.3		1.1	1.5	96.3	1.1		42.3	7.7	30.8	19.2		7.7	90.5	1.3	0.5		8.3	91.7	0	0		
PHF	.000	.450	.250	.250	.536	.563	.500	.923	.563	.924	.550	.500	.667	.625	.722	.362	.872	.583	.500	.924	.500	.688	.000	.000	.750	.939



Car

Study Name **WC10-2728_18 Montgomery St/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Montgomery Street Southbound				Pleasant Valley Avenue Westbound				Montgomery Street Northbound				Pleasant Valley Avenue Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	5	1	2	0	2	161	12	0	10	5	5	0	30	169	1	3
11:15 AM	3	0	0	0	3	172	14	1	14	0	2	0	8	175	1	3
11:30 AM	6	0	0	0	7	192	9	1	18	4	8	0	5	158	4	2
11:45 AM	12	0	0	0	9	200	18	0	13	3	6	0	14	177	7	1
12:00 PM	10	2	2	0	9	166	12	0	17	3	7	0	19	169	3	2
12:15 PM	14	0	0	0	8	190	10	1	12	3	2	0	30	172	4	2
12:30 PM	7	3	0	0	4	174	6	0	9	1	3	0	69	143	6	4
12:45 PM	10	1	0	0	1	209	10	0	9	2	2	0	76	112	4	8
1:00 PM	10	0	1	0	2	220	8	1	14	0	9	0	63	107	4	8
1:15 PM	6	0	1	0	1	241	6	0	4	0	1	0	54	144	8	7
1:30 PM	8	1	0	0	5	199	5	0	10	0	1	0	37	166	7	3
1:45 PM	0	1	2	0	1	209	8	1	3	0	3	0	34	179	4	5
2:00 PM	8	0	2	0	2	191	12	0	8	2	3	0	16	202	3	2
2:15 PM	4	1	5	0	5	196	2	0	5	0	8	0	0	163	5	2
2:30 PM	5	0	6	0	2	196	2	0	10	1	0	0	4	204	3	1
2:45 PM	5	2	2	0	0	218	7	0	8	0	2	0	15	206	2	1

	Montgomery Street Southbound				Pleasant Valley Avenue Westbound				Montgomery Street Northbound				Pleasant Valley Avenue Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	5	1	2	0	2	161	12	0	10	5	5	0	31	169	1	3	407	1687
11:15 AM	3	0	0	0	3	173	14	1	14	0	2	0	8	176	1	3	398	1705
11:30 AM	6	0	0	0	7	198	9	1	18	4	8	0	5	158	4	2	420	1756
11:45 AM	12	0	0	0	9	200	18	0	13	3	7	0	14	178	7	1	462	1767
12:00 PM	10	2	2	0	9	170	12	0	17	3	7	0	19	169	3	2	425	1753
12:15 PM	14	0	0	0	8	190	10	1	12	3	2	0	30	173	4	2	449	1779
12:30 PM	7	3	0	0	4	175	6	0	9	1	3	0	69	144	6	4	431	1809
12:45 PM	10	1	0	0	1	209	10	0	9	2	2	0	76	116	4	8	448	1825
1:00 PM	10	0	1	0	2	222	8	1	14	0	9	0	63	109	4	8	451	1830
1:15 PM	6	0	1	0	1	244	6	0	5	0	1	0	54	146	8	7	479	1832
1:30 PM	8	1	0	0	5	203	5	0	10	0	1	0	37	167	7	3	447	1754
1:45 PM	0	1	2	0	1	209	8	1	3	0	3	0	34	182	4	5	453	1742
2:00 PM	8	0	2	0	2	192	13	0	8	2	3	0	16	202	3	2	453	1761
2:15 PM	4	1	5	0	5	198	2	0	6	0	9	0	0	164	5	2	401	
2:30 PM	5	0	6	0	2	197	2	0	10	1	0	0	4	204	3	1	435	
2:45 PM	5	2	2	0	0	220	7	0	9	0	2	0	15	207	2	1	472	
Peak Hour	**34**	**2**	**2**	**0**	**9**	**878**	**29**	**1**	**38**	**2**	**13**	**0**	**230**	**538**	**23**	**26**	**0.95**	

Truck

Study Name **WC10-2728_18 Montgomery St/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
11:30 AM	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
12:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
12:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
1:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
1:15 PM	0	0	0	0	0	3	0	0	1	0	0	0	0	2	0	0
1:30 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
2:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	2	0	0	1	0	1	0	0	1	0	0
2:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	2	0	0	1	0	0	0	0	1	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**9**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_18 Montgomery St/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0
11:15 AM	0	0	0	0	0	10	0	0	0	0	0	0	0	2	0	0
11:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	10	0	0
11:45 AM	0	0	0	0	0	0	0	0	2	0	0	0	1	2	0	0
12:00 PM	0	0	0	0	0	4	0	0	1	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	1	0	0
12:30 PM	0	0	0	0	0	4	0	0	0	0	0	0	1	2	0	0
12:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	1	1	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
1:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
1:45 PM	0	0	0	0	0	4	0	0	1	0	0	0	0	1	0	0
2:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	4	0	0
2:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	3	0	0
2:30 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	3	0	0
2:45 PM	1	0	0	0	0	7	0	0	0	0	0	0	0	2	0	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**1**

People

Study Name **WC10-2728_18 Montgomery St/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	8	3	0	0	13	3	3	0			
11:15 AM	1	13	0	0	20	3	2	2			
11:30 AM	1	12	0	0	11	7	0	5			
11:45 AM	0	38	0	1	2	4	0	4			
12:00 PM	8	28	0	0	6	6	0	4			
12:15 PM	4	21	0	0	14	10	3	9			
12:30 PM	8	21	0	0	14	17	6	5			
12:45 PM	18	11	0	0	5	15	0	4			
1:00 PM	20	1	1	0	24	18	16	12			
1:15 PM	16	15	0	0	9	32	1	12			
1:30 PM	6	10	0	0	8	24	1	9			
1:45 PM	16	8	0	0	6	10	2	4			
2:00 PM	17	4	0	1	1	4	1	2			
2:15 PM	14	2	0	0	1	13	1	3			
2:30 PM	13	5	0	0	4	17	3	8			
2:45 PM	12	1	0	0	3	11	4	1			
Peak Hour	**60**	**37**	**1**	**0**	**46**	**89**	**18**	**37**	**0**	**0**	**0**
	97		1		135		55				

Pedal Bike (Crosswalk)

Study Name **WC10-2728_18 Montgomery St/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	0	0	0	0	0	0	0	0								
11:15 AM	0	0	0	0	0	0	0	1								
11:30 AM	0	0	0	0	0	0	0	1								
11:45 AM	0	0	0	0	0	0	0	0								
12:00 PM	0	0	0	0	0	0	0	0								
12:15 PM	0	0	0	0	0	0	0	0								
12:30 PM	0	0	0	0	0	0	0	0								
12:45 PM	0	0	0	0	0	0	0	0								
1:00 PM	0	1	0	0	0	0	0	0								
1:15 PM	0	0	0	0	0	1	0	1								
1:30 PM	0	0	0	0	0	0	0	0								
1:45 PM	2	0	0	0	0	0	0	0								
2:00 PM	0	0	0	0	0	0	0	0								
2:15 PM	0	0	0	0	0	0	0	0								
2:30 PM	1	0	0	0	0	0	0	0								
2:45 PM	0	0	0	0	0	0	0	0								
Peak Hour	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_18 Montgomery St/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	5	1	2	0	2	164	12	0	10	5	5	0	31	170	1	3
11:15 AM	3	0	0	0	3	183	14	1	14	0	2	0	8	178	1	3
11:30 AM	6	0	0	0	7	199	9	1	18	4	8	0	5	168	4	2
11:45 AM	12	0	0	0	9	200	18	0	15	3	7	0	15	180	7	1
12:00 PM	10	2	2	0	9	174	12	0	18	3	7	0	19	169	3	2
12:15 PM	14	0	0	0	8	196	10	1	12	3	2	0	30	174	4	2
12:30 PM	7	3	0	0	4	179	6	0	9	1	3	0	70	146	6	4
12:45 PM	10	2	0	0	1	210	10	0	9	2	2	0	76	116	4	8
1:00 PM	10	0	1	0	2	226	8	1	14	0	9	0	64	110	4	8
1:15 PM	6	0	1	0	1	244	6	0	5	0	1	0	54	147	8	8
1:30 PM	8	1	0	0	5	204	5	0	10	0	1	0	37	170	7	3
1:45 PM	0	1	2	0	1	213	8	1	4	0	3	0	34	183	4	5
2:00 PM	8	0	2	0	2	195	13	0	8	2	3	0	16	206	3	2
2:15 PM	4	1	5	0	5	203	2	0	6	0	9	0	0	167	5	2
2:30 PM	5	0	6	0	2	204	2	0	10	1	0	0	4	207	3	1
2:45 PM	6	2	2	0	0	227	7	0	9	0	2	0	15	209	2	1

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : montgomery-pleasant-s
Site Code : 18
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	MONTGOMERY ST Southbound					PLEASANT VALLEY AVE Westbound					MONTGOMERY ST Northbound					PLEASANT VALLEY AVE Eastbound					MATHER ST Southeastbound					
Start Time	to Mather	RT	TH	LT	App. Total	RT	to Mather	TH	LT	App. Total	RT	TH	to Mather	LT	App. Total	RT	TH	LT	to Mather	App. Total	RT	RT	TH	LT	App. Total	Int. Total
16:00	0	2	0	0	2	0	1	178	1	180	6	0	0	3	9	8	225	5	2	240	0	4	0	0	4	435
16:15	0	0	0	0	0	0	3	177	4	184	3	0	1	1	5	10	198	3	1	212	0	2	0	0	2	403
16:30	0	0	0	3	3	2	2	183	5	192	4	0	0	3	7	7	186	0	0	193	1	6	0	0	7	402
16:45	0	2	0	0	2	1	5	160	7	173	4	0	2	4	10	5	224	6	3	238	2	5	0	0	7	430
Total	0	4	0	3	7	3	11	698	17	729	17	0	3	11	31	30	833	14	6	883	3	17	0	0	20	1670
17:00	0	2	1	0	3	1	0	159	5	165	2	0	3	2	7	1	189	5	0	195	2	8	0	0	10	380
17:15	0	1	0	1	2	3	1	150	2	156	3	1	0	2	6	4	196	4	1	205	2	3	0	0	5	374
17:30	0	7	0	1	8	1	4	127	4	136	4	0	1	1	6	4	198	4	2	208	0	5	0	1	6	364
17:45	0	2	2	0	4	0	4	132	2	138	0	1	2	1	4	4	193	3	0	200	1	5	0	0	6	352
Total	0	12	3	2	17	5	9	568	13	595	9	2	6	6	23	13	776	16	3	808	5	21	0	1	27	1470
18:00	0	3	0	0	3	0	2	133	4	139	4	0	1	3	8	3	183	3	2	191	3	7	0	0	10	351
18:15	0	0	1	1	2	0	6	137	2	145	2	0	3	0	5	5	167	4	4	180	2	4	0	2	8	340
18:30	0	0	0	0	0	2	3	115	3	123	3	0	1	1	5	3	161	2	1	167	2	3	0	1	6	301
18:45	0	4	0	1	5	2	1	110	4	117	3	0	1	3	7	3	170	0	1	174	1	6	0	0	7	310
Total	0	7	1	2	10	4	12	495	13	524	12	0	6	7	25	14	681	9	8	712	8	20	0	3	31	1302
Grand Total	0	23	4	7	34	12	32	1761	43	1848	38	2	15	24	79	57	2290	39	17	2403	16	58	0	4	78	4442
Apprch %	0	67.6	11.8	20.6		0.6	1.7	95.3	2.3		48.1	2.5	19	30.4		2.4	95.3	1.6	0.7		20.5	74.4	0	5.1		
Total %	0	0.5	0.1	0.2	0.8	0.3	0.7	39.6	1	41.6	0.9	0	0.3	0.5	1.8	1.3	51.6	0.9	0.4	54.1	0.4	1.3	0	0.1	1.8	

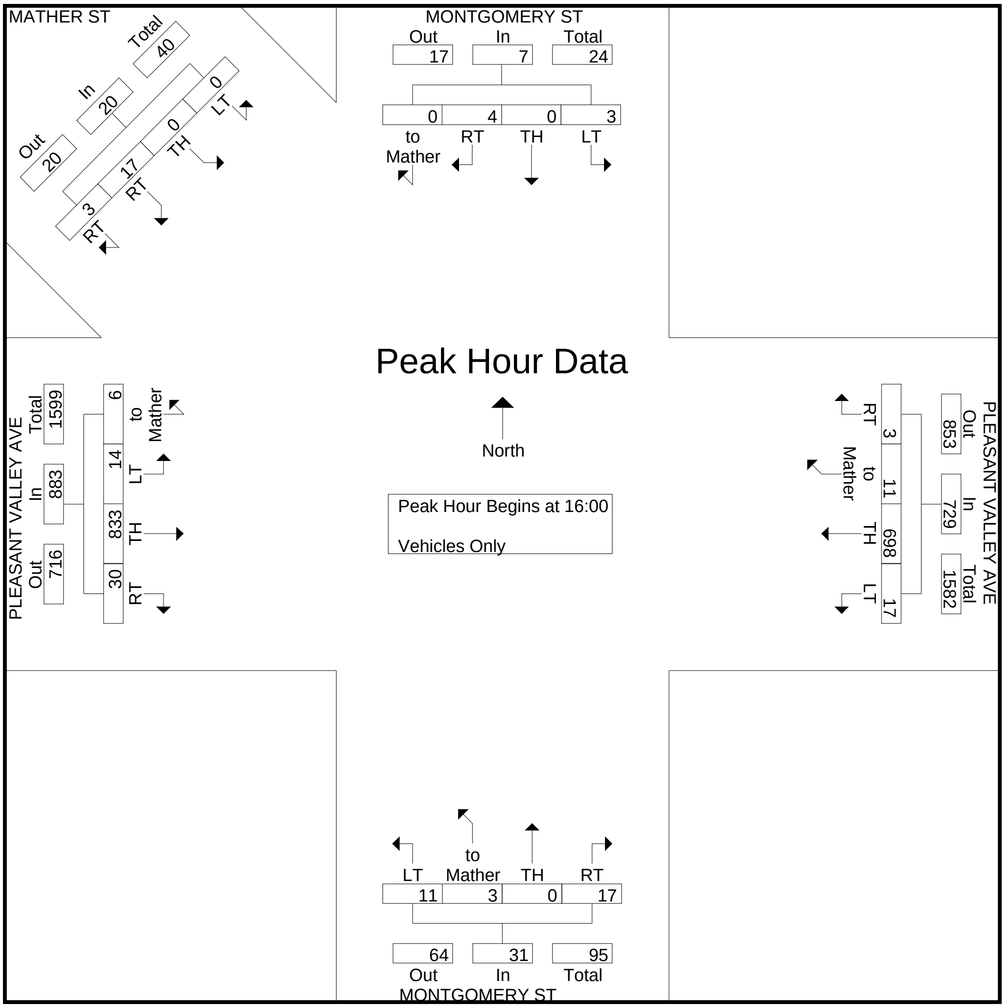
	MONTGOMERY ST Southbound					PLEASANT VALLEY AVE Westbound					MONTGOMERY ST Northbound					PLEASANT VALLEY AVE Eastbound					MATHER ST Southeastbound					
Start Time	to Mather	RT	TH	LT	App. Total	RT	to Mather	TH	LT	App. Total	RT	TH	to Mather	LT	App. Total	RT	TH	LT	to Mather	App. Total	RT	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 16:00																										
16:00	0	**2**	0	0	2	0	1	178	1	180	**6**	0	0	3	9	8	**225**	5	2	**240**	0	4	0	0	4	**435**
16:15	0	0	0	0	0	0	3	177	4	184	3	0	1	1	5	**10**	198	3	1	212	0	2	0	0	2	403
16:30	0	0	0	**3**	**3**	**2**	2	**183**	5	**192**	4	0	0	3	7	7	186	0	0	193	1	**6**	0	0	**7**	402
16:45	0	2	0	0	2	1	**5**	160	**7**	173	4	0	**2**	**4**	**10**	5	224	**6**	**3**	238	**2**	5	0	0	7	430
Total Volume	0	4	0	3	7	3	11	698	17	729	17	0	3	11	31	30	833	14	6	883	3	17	0	0	20	1670
% App. Total	0	57.1	0	42.9		0.4	1.5	95.7	2.3		54.8	0	9.7	35.5		3.4	94.3	1.6	0.7		15	85	0	0		
PHF	.000	.500	.000	.250	.583	.375	.550	.954	.607	.949	.708	.000	.375	.688	.775	.750	.926	.583	.500	.920	.375	.708	.000	.000	.714	.960

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : montgomery-pleasant-s
Site Code : 18
Start Date : 5/15/2010
Page No : 2



CITY OF OAKLAND

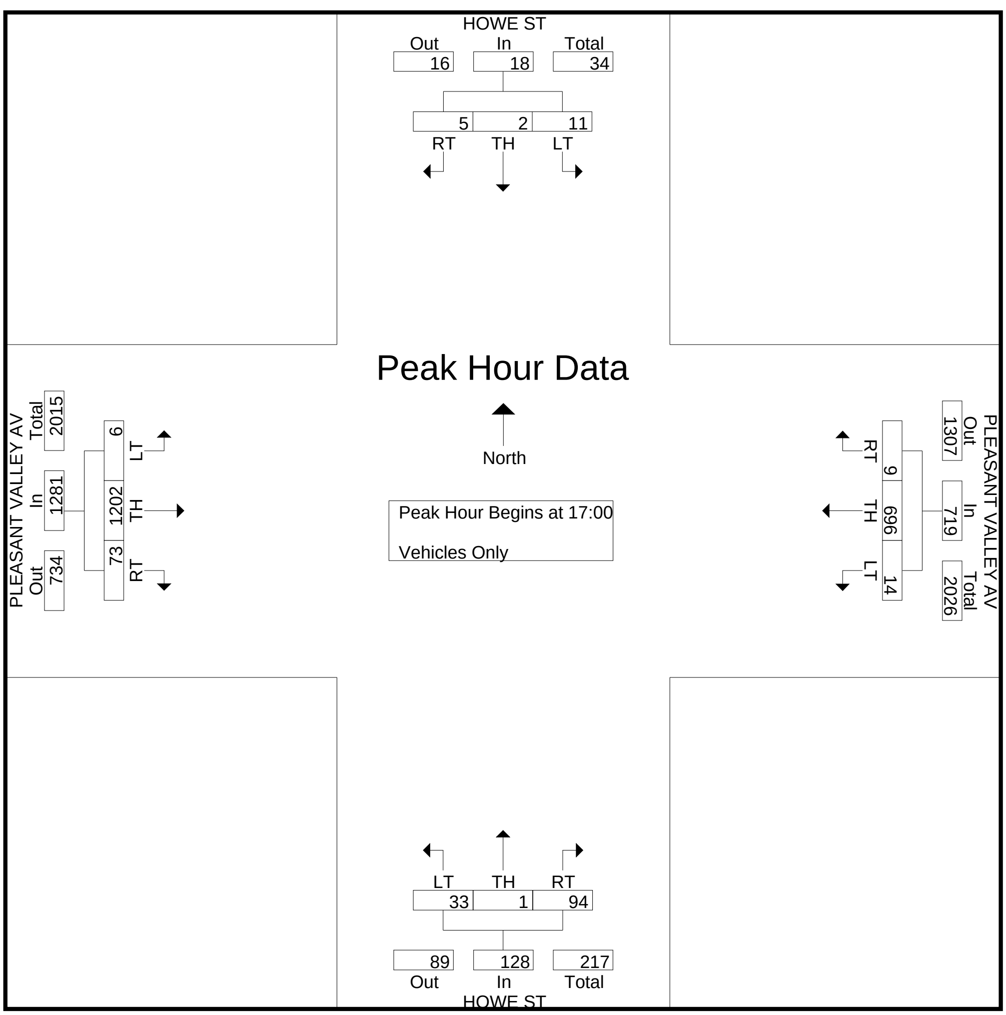
fp
Mietek 916-806-0250

File Name : howe-pleasant-p
Site Code : 19
Start Date : 5/11/2010
Page No : 1

Groups Printed- Vehicles Only

	HOWE ST Southbound				PLEASANT VALLEY AV Westbound				HOWE ST Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	3	3	5	11	2	166	9	177	18	0	10	28	15	194	3	212	428
16:15	2	0	6	8	1	152	6	159	13	0	5	18	12	229	1	242	427
16:30	4	0	2	6	2	165	7	174	12	0	17	29	10	206	1	217	426
16:45	5	1	2	8	2	148	4	154	19	0	14	33	10	239	2	251	446
Total	14	4	15	33	7	631	26	664	62	0	46	108	47	868	7	922	1727
17:00	1	0	4	5	2	168	4	174	20	0	9	29	15	328	0	343	551
17:15	1	1	2	4	2	182	5	189	20	1	14	35	18	306	2	326	554
17:30	2	1	0	3	0	186	2	188	31	0	3	34	17	301	3	321	546
17:45	1	0	5	6	5	160	3	168	23	0	7	30	23	267	1	291	495
Total	5	2	11	18	9	696	14	719	94	1	33	128	73	1202	6	1281	2146
Grand Total	19	6	26	51	16	1327	40	1383	156	1	79	236	120	2070	13	2203	3873
Apprch %	37.3	11.8	51		1.2	96	2.9		66.1	0.4	33.5		5.4	94	0.6		
Total %	0.5	0.2	0.7	1.3	0.4	34.3	1	35.7	4	0	2	6.1	3.1	53.4	0.3	56.9	

	HOWE ST Southbound				PLEASANT VALLEY AV Westbound				HOWE ST Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	1	0	4	5	2	168	4	174	20	0	9	29	15	**328**	0	**343**	551
17:15	1	**1**	2	4	2	182	**5**	**189**	20	**1**	**14**	**35**	18	306	2	326	**554**
17:30	**2**	1	0	3	0	**186**	2	188	**31**	0	3	34	17	301	**3**	321	546
17:45	1	0	**5**	**6**	**5**	160	3	168	23	0	7	30	**23**	267	1	291	495
Total Volume	5	2	11	18	9	696	14	719	94	1	33	128	73	1202	6	1281	2146
% App. Total	27.8	11.1	61.1		1.3	96.8	1.9		73.4	0.8	25.8		5.7	93.8	0.5		
PHF	.625	.500	.550	.750	.450	.935	.700	.951	.758	.250	.589	.914	.793	.916	.500	.934	.968



Car

Study Name **WC10-2728_19 Howe Street/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Howe Street Southbound				Pleasant Valley Ave Westbound				Howe Street Northbound				Pleasant Valley Ave Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	7	1	1	1	6	153	31	0	35	10	9	0	36	145	12	1
11:15 AM	9	3	0	0	11	175	32	0	48	5	20	0	35	141	6	0
11:30 AM	16	3	5	0	7	178	23	0	41	5	15	0	43	135	10	0
11:45 AM	14	2	2	0	8	171	20	0	46	11	18	0	34	136	7	2
12:00 PM	18	2	2	0	5	152	16	0	44	7	11	0	42	134	9	0
12:15 PM	12	3	2	0	3	186	30	0	47	7	19	0	41	124	11	0
12:30 PM	9	2	4	0	0	159	24	0	45	6	12	0	16	126	4	0
12:45 PM	6	4	5	0	7	205	15	0	37	7	11	1	15	98	3	1
1:00 PM	13	4	2	0	9	202	7	0	35	8	12	0	15	106	6	0
1:15 PM	13	5	3	0	8	217	15	0	17	3	15	0	18	129	5	1
1:30 PM	11	6	1	0	8	186	2	0	21	2	15	0	9	172	4	1
1:45 PM	12	2	3	0	14	194	5	0	23	5	8	0	25	148	8	0
2:00 PM	10	7	2	0	4	180	5	0	15	2	9	0	27	178	5	0
2:15 PM	8	8	9	0	6	187	11	0	17	1	7	0	22	170	3	0
2:30 PM	8	4	5	0	0	185	6	1	15	1	8	0	30	176	1	0
2:45 PM	9	2	4	0	5	207	15	0	14	0	7	0	28	182	3	0

	Howe Street Southbound				Pleasant Valley Ave Westbound				Howe Street Northbound				Pleasant Valley Ave Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	7	1	1	1	6	153	31	0	38	10	9	0	36	147	12	1	453	1901
11:15 AM	9	3	0	0	11	176	32	0	48	5	21	0	36	144	6	0	491	1895
11:30 AM	16	4	5	0	7	180	23	0	41	5	16	0	43	135	10	0	485	1891
11:45 AM	14	2	2	0	8	171	21	0	46	11	18	0	34	136	7	2	472	1814
12:00 PM	18	2	2	0	5	156	16	0	44	7	11	0	42	135	9	0	447	1762
12:15 PM	12	3	2	0	3	187	30	0	47	7	19	0	41	125	11	0	487	1738
12:30 PM	9	2	4	0	0	159	24	0	45	6	12	0	16	127	4	0	408	1707
12:45 PM	6	4	5	0	7	206	15	0	37	7	11	1	15	102	3	1	420	1743
1:00 PM	13	4	2	0	9	203	7	0	36	8	12	0	15	108	6	0	423	1774
1:15 PM	13	5	3	0	8	219	16	0	17	4	15	0	18	132	5	1	456	1798
1:30 PM	11	7	1	0	8	189	2	0	22	2	15	0	9	173	4	1	444	1793
1:45 PM	12	2	3	0	14	195	5	0	23	5	8	0	26	150	8	0	451	1790
2:00 PM	10	7	2	0	4	182	5	0	15	2	9	0	27	179	5	0	447	1819
2:15 PM	8	8	9	0	6	188	11	0	17	1	7	0	22	171	3	0	451	
2:30 PM	8	4	5	0	0	186	6	1	15	1	8	0	30	176	1	0	441	
2:45 PM	9	2	4	0	5	209	15	0	14	0	7	0	28	184	3	0	480	
Peak Hour	**43**	**20**	**11**	**0**	**32**	**817**	**40**	**0**	**112**	**21**	**53**	**1**	**57**	**515**	**18**	**3**	**0.96**	

Truck

Study Name **WC10-2728_19 Howe Street/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	0
11:15 AM	0	0	0	0	0	1	0	0	0	0	1	0	1	3	0	0
11:30 AM	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
12:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
12:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0
1:00 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0
1:15 PM	0	0	0	0	0	2	1	0	0	1	0	0	0	3	0	0
1:30 PM	0	1	0	0	0	3	0	0	1	0	0	0	0	1	0	0
1:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0
2:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
2:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**7**	**1**	**0**	**2**	**1**	**0**	**0**	**0**	**10**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_19 Howe Street/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	9	0	0	0	0	0	0	0	1	0	0
11:30 AM	1	0	0	0	0	0	1	0	0	0	0	0	1	8	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
12:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
12:15 PM	0	0	0	0	0	5	0	0	0	0	1	0	0	1	0	0
12:30 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	2	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
1:45 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	2	0	0
2:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	4	0	0
2:15 PM	0	0	0	0	0	3	0	0	1	0	0	0	1	2	0	0
2:30 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	4	0	0
2:45 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	1	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**3**	**0**	**0**

People

Study Name **WC10-2728_19 Howe Street/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	7	18	0	1	14	4	0	0			
11:15 AM	7	16	0	1	22	5	1	0			
11:30 AM	3	30	1	0	13	10	0	0			
11:45 AM	9	54	0	0	4	5	0	0			
12:00 PM	12	35	0	0	10	7	0	0			
12:15 PM	11	18	0	0	15	8	0	0			
12:30 PM	16	19	3	3	32	17	0	0			
12:45 PM	27	12	1	0	15	11	0	0			
1:00 PM	26	10	0	0	27	27	0	3			
1:15 PM	37	20	2	1	17	40	0	0			
1:30 PM	12	33	0	0	8	27	0	4			
1:45 PM	22	14	1	0	11	10	0	0			
2:00 PM	43	7	0	0	4	14	1	0			
2:15 PM	21	2	0	2	3	23	1	0			
2:30 PM	22	6	0	2	2	18	0	0			
2:45 PM	22	4	0	1	6	15	1	0			
Peak Hour	**102**	**75**	**3**	**1**	**67**	**105**	**0**	**7**	**0**	**0**	**0**
	177		4		172		7				

Pedal Bike (Crosswalk)

Study Name **WC10-2728_19 Howe Street/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	0	0	0	0	0	0	0	0								
11:15 AM	0	0	0	0	0	0	0	0								
11:30 AM	1	0	0	0	0	0	0	0								
11:45 AM	0	0	0	0	0	0	0	0								
12:00 PM	1	0	0	0	0	0	0	0								
12:15 PM	0	0	0	0	0	0	0	0								
12:30 PM	1	0	0	0	0	0	0	0								
12:45 PM	1	0	0	0	0	0	0	0								
1:00 PM	1	0	0	0	0	0	0	0								
1:15 PM	0	0	0	0	0	1	0	0								
1:30 PM	1	0	0	0	0	0	0	0								
1:45 PM	1	0	0	0	0	0	0	0								
2:00 PM	0	0	0	0	0	0	0	0								
2:15 PM	0	0	0	0	0	0	0	0								
2:30 PM	0	0	0	0	0	0	0	0								
2:45 PM	0	0	0	0	0	0	0	0								
Peak Hour	**3**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name WC10-2728_19 Howe Street/Pleasant Valley Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	7	1	1	1	6	156	31	0	38	10	9	0	36	147	12	1
11:15 AM	9	3	0	0	11	185	32	0	48	5	21	0	36	145	6	0
11:30 AM	17	4	5	0	7	180	24	0	41	5	16	0	44	143	10	0
11:45 AM	14	2	2	0	8	171	21	0	46	11	18	0	34	140	7	2
12:00 PM	18	2	2	0	5	160	16	0	44	7	11	0	42	136	9	0
12:15 PM	12	3	2	0	3	192	30	0	47	7	20	0	41	126	11	0
12:30 PM	9	2	4	0	0	161	24	0	45	6	13	0	16	129	4	0
12:45 PM	6	4	5	0	7	206	15	0	37	7	11	1	15	102	3	1
1:00 PM	13	4	2	0	9	203	7	0	37	8	12	0	15	109	6	0
1:15 PM	13	5	3	0	8	219	16	0	17	4	15	0	19	132	5	1
1:30 PM	11	7	1	0	8	190	2	0	22	2	15	0	9	175	4	1
1:45 PM	12	2	3	0	14	199	5	0	23	5	8	0	26	152	8	0
2:00 PM	10	7	2	0	4	185	5	0	15	2	9	0	27	183	5	0
2:15 PM	8	8	9	0	6	191	11	0	18	1	7	0	23	173	3	0
2:30 PM	8	4	5	0	0	193	6	1	15	1	8	0	30	180	1	0
2:45 PM	9	2	4	0	5	215	15	0	14	0	7	0	28	185	3	0
Peak Hour	**43**	**20**	**11**	**0**	**32**	**818**	**40**	**0**	**113**	**21**	**53**	**1**	**58**	**518**	**18**	**3**

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : howe-pleasant-s
Site Code : 19
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	HOWE ST Southbound				PLEASANT VALLEY AV Westbound				HOWE ST Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	7	0	1	8	3	159	5	167	10	2	19	31	21	209	2	232	438
16:15	3	0	3	6	2	177	2	181	13	1	10	24	15	172	1	188	399
16:30	6	0	2	8	1	178	4	183	15	3	6	24	17	183	0	200	415
16:45	4	1	3	8	1	160	10	171	10	1	7	18	9	208	0	217	414
Total	20	1	9	30	7	674	21	702	48	7	42	97	62	772	3	837	1666
17:00	3	0	3	6	4	147	6	157	13	0	6	19	14	177	1	192	374
17:15	3	0	0	3	4	145	5	154	11	0	4	15	8	190	0	198	370
17:30	0	0	0	0	0	129	3	132	11	0	6	17	15	187	0	202	351
17:45	0	0	3	3	9	123	8	140	15	0	3	18	13	178	0	191	352
Total	6	0	6	12	17	544	22	583	50	0	19	69	50	732	1	783	1447
18:00	3	0	2	5	1	131	3	135	7	1	8	16	21	163	1	185	341
18:15	3	0	0	3	0	130	3	133	4	0	12	16	5	163	0	168	320
18:30	0	0	1	1	2	116	6	124	9	0	6	15	8	157	1	166	306
18:45	1	1	1	3	0	112	1	113	9	0	6	15	12	151	1	164	295
Total	7	1	4	12	3	489	13	505	29	1	32	62	46	634	3	683	1262
Grand Total	33	2	19	54	27	1707	56	1790	127	8	93	228	158	2138	7	2303	4375
Apprch %	61.1	3.7	35.2		1.5	95.4	3.1		55.7	3.5	40.8		6.9	92.8	0.3		
Total %	0.8	0	0.4	1.2	0.6	39	1.3	40.9	2.9	0.2	2.1	5.2	3.6	48.9	0.2	52.6	

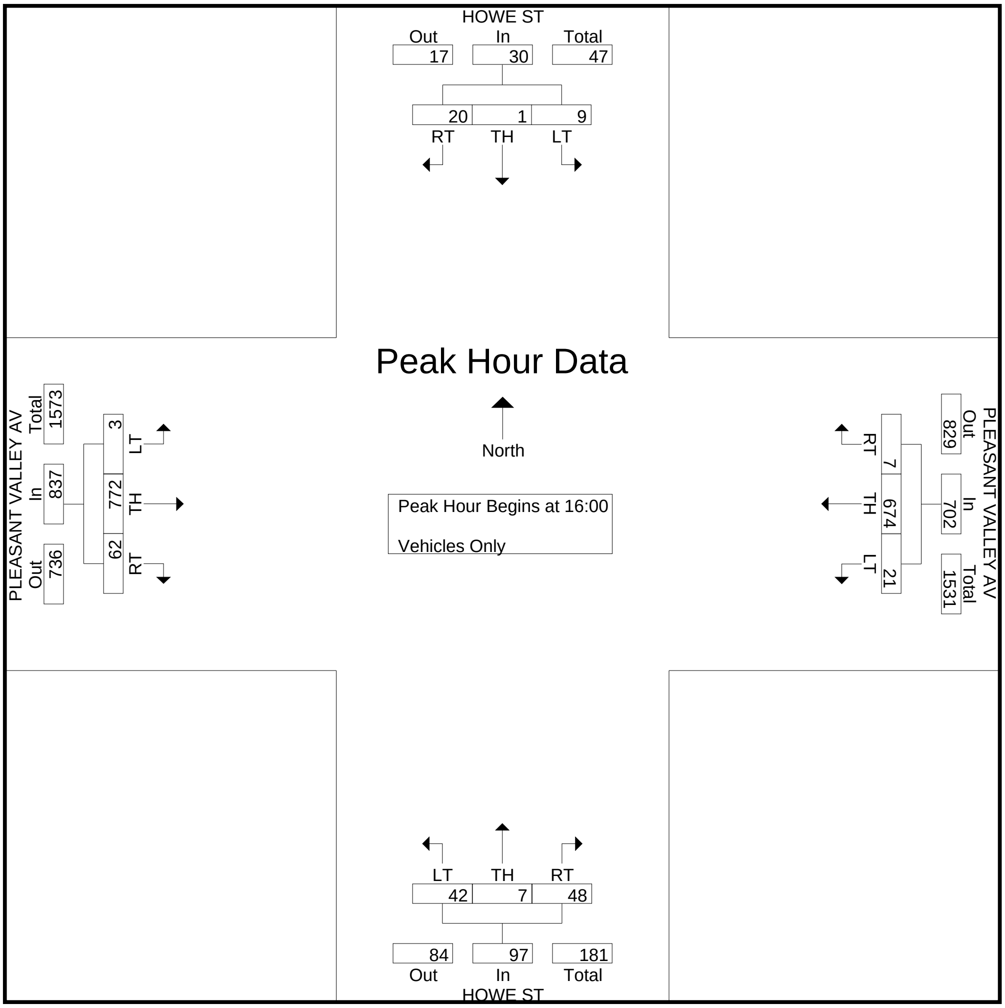
	HOWE ST Southbound				PLEASANT VALLEY AV Westbound				HOWE ST Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**7**	0	1	**8**	**3**	159	5	167	10	2	**19**	**31**	**21**	**209**	**2**	**232**	**438**
16:15	3	0	**3**	6	2	177	2	181	13	1	10	24	15	172	1	188	399
16:30	6	0	2	8	1	**178**	4	**183**	**15**	**3**	6	24	17	183	0	200	415
16:45	4	**1**	3	8	1	160	**10**	171	10	1	7	18	9	208	0	217	414
Total Volume	20	1	9	30	7	674	21	702	48	7	42	97	62	772	3	837	1666
% App. Total	66.7	3.3	30		1	96	3		49.5	7.2	43.3		7.4	92.2	0.4		
PHF	.714	.250	.750	.938	.583	.947	.525	.959	.800	.583	.553	.782	.738	.923	.375	.902	.951

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : howe-pleasant-s
Site Code : 19
Start Date : 5/15/2010
Page No : 2



CITY OF OAKLAND

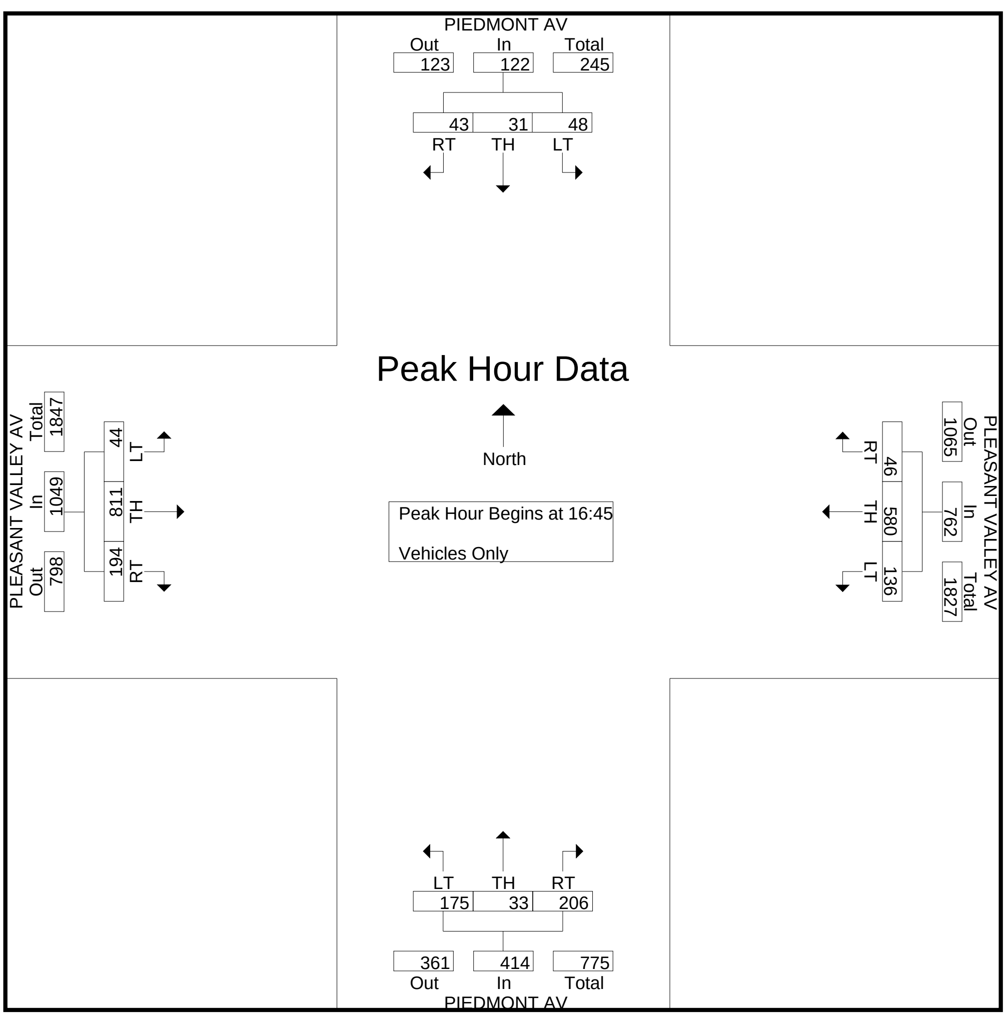
fp
Mietek 916-806-0250

File Name : piedmont-pleasant-p
Site Code : 20
Start Date : 5/12/2010
Page No : 1

Groups Printed- Vehicles Only

	PIEDMONT AV Southbound				PLEASANT VALLEY AV Westbound				PIEDMONT AV Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	6	9	9	24	8	144	29	181	53	10	44	107	36	161	10	207	519
16:15	7	8	6	21	18	155	30	203	44	6	42	92	46	175	8	229	545
16:30	16	10	17	43	10	111	26	147	51	10	46	107	42	181	8	231	528
16:45	10	6	9	25	9	126	53	188	49	10	46	105	51	194	11	256	574
Total	39	33	41	113	45	536	138	719	197	36	178	411	175	711	37	923	2166
17:00	12	7	11	30	13	153	23	189	45	8	45	98	49	215	4	268	585
17:15	10	7	9	26	12	168	26	206	65	6	38	109	46	217	20	283	624
17:30	11	11	19	41	12	133	34	179	47	9	46	102	48	185	9	242	564
17:45	4	6	2	12	3	135	33	171	58	6	40	104	36	182	8	226	513
Total	37	31	41	109	40	589	116	745	215	29	169	413	179	799	41	1019	2286
Grand Total	76	64	82	222	85	1125	254	1464	412	65	347	824	354	1510	78	1942	4452
Apprch %	34.2	28.8	36.9		5.8	76.8	17.3		50	7.9	42.1		18.2	77.8	4		
Total %	1.7	1.4	1.8	5	1.9	25.3	5.7	32.9	9.3	1.5	7.8	18.5	8	33.9	1.8	43.6	

	PIEDMONT AV Southbound				PLEASANT VALLEY AV Westbound				PIEDMONT AV Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	10	6	9	25	9	126	**53**	188	49	**10**	**46**	105	**51**	194	11	256	574
17:00	**12**	7	11	30	**13**	153	23	189	45	8	45	98	49	215	4	268	585
17:15	10	7	9	26	12	**168**	26	**206**	**65**	6	38	**109**	46	**217**	**20**	**283**	**624**
17:30	11	**11**	**19**	**41**	12	133	34	179	47	9	46	102	48	185	9	242	564
Total Volume	43	31	48	122	46	580	136	762	206	33	175	414	194	811	44	1049	2347
% App. Total	35.2	25.4	39.3		6	76.1	17.8		49.8	8	42.3		18.5	77.3	4.2		
PHF	.896	.705	.632	.744	.885	.863	.642	.925	.792	.825	.951	.950	.951	.934	.550	.927	.940



Car

Study Name **WC10-2728_20 Piedmont Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Piedmont Avenue Southbound				Pleasant Valley Avenue Westbound				Piedmont Avenue Northbound				Pleasant Valley Avenue Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	13	5	17	0	29	144	49	2	8	4	33	0	33	124	25	0
11:15 AM	17	1	9	0	30	165	38	0	7	1	34	0	36	134	22	0
11:30 AM	19	1	7	0	32	162	36	0	14	4	24	0	20	136	24	0
11:45 AM	22	1	10	0	20	155	29	0	17	9	24	0	16	138	21	0
12:00 PM	32	6	28	0	18	122	16	0	10	6	21	1	14	157	13	0
12:15 PM	30	2	13	0	19	165	19	1	11	4	19	0	12	132	21	0
12:30 PM	19	7	8	0	33	147	17	0	7	11	22	0	9	136	28	0
12:45 PM	34	1	20	0	32	167	24	1	22	15	20	0	13	94	35	0
1:00 PM	39	17	11	0	46	156	20	0	20	34	25	0	7	95	30	1
1:15 PM	40	18	14	0	26	174	25	0	21	33	25	0	16	117	19	0
1:30 PM	28	12	19	0	18	124	23	0	21	35	39	0	27	142	18	0
1:45 PM	29	20	12	0	18	139	32	0	20	33	51	0	40	106	22	0
2:00 PM	31	31	12	0	22	123	39	0	36	16	31	0	32	145	22	0
2:15 PM	22	26	15	0	16	133	30	0	43	29	48	0	34	135	21	0
2:30 PM	18	17	29	0	16	132	33	1	42	16	45	0	42	130	21	1
2:45 PM	44	36	25	0	17	142	40	0	30	14	38	0	29	153	22	0

	Piedmont Avenue Southbound				Pleasant Valley Avenue Westbound				Piedmont Avenue Northbound				Pleasant Valley Avenue Eastbound					
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	13	6	17	0	29	144	49	2	8	4	33	0	33	128	25	0	491	1936
11:15 AM	17	1	9	0	31	166	38	0	7	1	34	0	36	138	22	0	500	1895
11:30 AM	19	1	7	0	32	163	36	0	14	4	25	0	20	136	24	0	481	1845
11:45 AM	22	1	10	0	20	156	29	0	17	10	24	0	16	138	21	0	464	1810
12:00 PM	32	6	28	0	18	125	17	0	10	6	22	1	14	158	13	0	450	1829
12:15 PM	30	2	13	0	19	166	19	1	11	4	19	0	12	133	21	0	450	1884
12:30 PM	19	8	8	0	33	147	17	0	7	11	22	0	9	137	28	0	446	1968
12:45 PM	34	1	20	0	32	168	24	1	22	15	20	0	14	97	35	0	483	2034
1:00 PM	39	17	11	0	46	157	20	0	20	34	25	0	8	97	30	1	505	2078
1:15 PM	40	18	14	0	26	176	25	0	21	33	26	0	19	117	19	0	534	2115
1:30 PM	28	12	19	0	18	125	24	0	21	35	41	0	27	143	19	0	512	2135
1:45 PM	29	21	12	0	18	140	32	0	20	34	51	0	42	106	22	0	527	2168
2:00 PM	31	31	12	0	22	124	39	0	36	16	32	0	32	145	22	0	542	2233
2:15 PM	22	26	15	0	16	133	30	0	43	29	49	0	35	135	21	0	554	
2:30 PM	18	18	29	0	16	132	33	1	42	16	46	0	42	130	21	1	545	
2:45 PM	44	36	25	0	17	142	40	0	30	14	39	0	30	153	22	0	592	
Peak Hour	**141**	**48**	**64**	**0**	**122**	**626**	**93**	**1**	**84**	**117**	**112**	**0**	**68**	**454**	**103**	**1**	**0.95**	

Truck

Study Name WC10-2728_20 Piedmont Ave/Pleasant Valley Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0
11:15 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	4	0	0
11:30 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
11:45 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	3	1	0	0	0	1	0	0	1	0	0
12:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
12:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
12:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	3	0	0
1:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0
1:15 PM	0	0	0	0	0	2	0	0	0	0	1	0	3	0	0	0
1:30 PM	0	0	0	0	0	1	1	0	0	0	2	0	0	1	1	0
1:45 PM	0	1	0	0	0	1	0	0	0	1	0	0	2	0	0	0
2:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
2:30 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**0**	**3**	**0**	**5**	**6**	**1**	**0**

Pedal Bike (Road)

Study Name WC10-2728_20 Piedmont Ave/Pleasant Valley Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0
11:15 AM	0	0	0	0	0	10	1	0	0	1	0	0	1	1	0	0
11:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	8	0	0
11:45 AM	0	3	0	0	0	0	1	0	0	1	0	0	0	3	1	0
12:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
12:15 PM	0	0	0	0	0	3	1	0	0	2	1	0	0	0	0	0
12:30 PM	0	0	0	0	2	1	0	0	0	1	0	0	0	1	0	0
12:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
1:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
1:30 PM	0	0	0	0	2	1	0	0	0	0	0	0	0	2	0	0
1:45 PM	1	0	0	0	0	1	3	0	1	2	2	0	0	2	0	0
2:00 PM	0	0	2	0	0	0	0	0	2	0	1	0	1	5	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0
2:30 PM	1	0	1	0	0	1	0	0	0	0	0	0	0	4	0	0
2:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
Peak Hour	**0**	**1**	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**

People

Study Name **WC10-2728_20 Piedmont Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	7	27	11	65	14	3	19	4			
11:15 AM	1	10	66	27	16	5	26	8			
11:30 AM	11	21	131	62	28	8	26	31			
11:45 AM	12	24	263	69	15	4	57	34			
12:00 PM	14	29	280	39	7	2	37	44			
12:15 PM	28	35	302	72	9	7	60	57			
12:30 PM	6	20	228	82	8	16	54	18			
12:45 PM	9	7	177	90	14	9	77	34			
1:00 PM	14	11	153	127	16	22	50	32			
1:15 PM	22	14	175	129	21	37	40	46			
1:30 PM	13	12	83	132	37	15	34	18			
1:45 PM	15	15	99	115	7	9	19	25			
2:00 PM	20	11	41	127	3	15	32	24			
2:15 PM	12	7	56	67	20	17	24	17			
2:30 PM	26	9	44	105	7	6	30	15			
2:45 PM	35	7	23	81	11	28	38	13			
Peak Hour	**58**	**44**	**588**	**478**	**88**	**83**	**201**	**130**	**0**	**0**	**0**
	102		1066		171		331				

Pedal Bike (Crosswalk)

Study Name **WC10-2728_20 Piedmont Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	1	0	0	0	0	0	0	1								
11:15 AM	0	0	0	0	0	0	0	0								
11:30 AM	0	0	0	0	0	0	0	0								
11:45 AM	0	0	0	0	0	0	0	0								
12:00 PM	1	1	0	0	0	0	0	1								
12:15 PM	0	2	0	0	0	0	1	1								
12:30 PM	0	0	0	0	0	0	0	0								
12:45 PM	0	1	0	0	0	0	0	0								
1:00 PM	0	0	0	0	0	0	0	0								
1:15 PM	0	0	0	0	0	0	0	0								
1:30 PM	0	0	0	0	0	0	0	0								
1:45 PM	0	0	0	1	0	1	0	0								
2:00 PM	0	0	0	0	0	0	0	0								
2:15 PM	0	0	1	0	0	0	0	0								
2:30 PM	0	0	0	0	0	0	0	0								
2:45 PM	0	0	0	0	0	2	0	0								
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_20 Piedmont Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound				Westbound Street Westbound				Northbound Street Northbound				Eastbound Street Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
11:00 AM	13	6	17	0	29	145	49	2	9	4	33	0	33	129	25	0
11:15 AM	17	1	9	0	31	176	39	0	7	2	34	0	37	139	22	0
11:30 AM	19	1	7	0	32	164	36	0	14	4	25	0	20	144	24	0
11:45 AM	22	4	10	0	20	156	30	0	17	11	24	0	16	141	22	0
12:00 PM	33	6	28	0	18	125	17	0	10	6	22	1	14	159	13	0
12:15 PM	30	2	13	0	19	169	20	1	11	6	20	0	12	133	21	0
12:30 PM	19	8	8	0	35	148	17	0	7	12	22	0	9	138	28	0
12:45 PM	34	2	20	0	32	169	24	1	22	15	20	0	14	97	35	0
1:00 PM	39	17	11	0	46	158	20	0	20	34	25	0	8	98	30	1
1:15 PM	40	18	14	0	26	177	25	0	21	34	26	0	19	117	19	0
1:30 PM	28	12	19	0	20	126	24	0	21	35	41	0	27	145	19	0
1:45 PM	30	21	12	0	18	141	35	0	21	36	53	0	42	108	22	0
2:00 PM	31	31	14	0	22	124	39	0	38	16	33	0	33	150	22	0
2:15 PM	22	26	15	0	16	133	30	0	43	30	49	0	35	137	21	0
2:30 PM	19	18	30	0	16	133	33	1	42	16	46	0	42	134	21	1
2:45 PM	44	36	25	0	17	144	40	0	30	14	39	0	30	154	22	0
Peak Hour	**141**	**49**	**64**	**0**	**124**	**630**	**93**	**1**	**84**	**118**	**112**	**0**	**68**	**457**	**103**	**1**

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : piedmont-pleasant-s
Site Code : 20
Start Date : 5/8/2010
Page No : 1

Groups Printed- Vehicles Only

	PIEDMONT AV Southbound				PLEASANT VALLEY AV Westbound				PIEDMONT AV Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	16	19	15	50	17	102	33	152	39	20	36	95	36	131	17	184	481
16:15	10	12	13	35	19	111	41	171	38	16	40	94	54	149	14	217	517
16:30	16	22	8	46	9	119	44	172	30	18	42	90	48	150	9	207	515
16:45	13	9	16	38	9	111	42	162	32	21	44	97	57	129	12	198	495
Total	55	62	52	169	54	443	160	657	139	75	162	376	195	559	52	806	2008
17:00	7	18	22	47	18	96	30	144	24	16	56	96	39	138	13	190	477
17:15	12	5	13	30	11	90	31	132	40	16	45	101	57	168	5	230	493
17:30	12	11	13	36	10	99	37	146	27	17	42	86	45	139	8	192	460
17:45	6	5	21	32	8	113	40	161	38	17	39	94	62	116	10	188	475
Total	37	39	69	145	47	398	138	583	129	66	182	377	203	561	36	800	1905
18:00	5	15	5	25	2	87	43	132	30	13	37	80	60	131	10	201	438
18:15	10	10	2	22	3	91	46	140	22	7	44	73	58	113	9	180	415
18:30	4	14	5	23	6	69	40	115	37	9	33	79	58	120	7	185	402
18:45	4	15	6	25	4	86	33	123	33	5	51	89	50	107	5	162	399
Total	23	54	18	95	15	333	162	510	122	34	165	321	226	471	31	728	1654
Grand Total	115	155	139	409	116	1174	460	1750	390	175	509	1074	624	1591	119	2334	5567
Apprch %	28.1	37.9	34		6.6	67.1	26.3		36.3	16.3	47.4		26.7	68.2	5.1		
Total %	2.1	2.8	2.5	7.3	2.1	21.1	8.3	31.4	7	3.1	9.1	19.3	11.2	28.6	2.1	41.9	

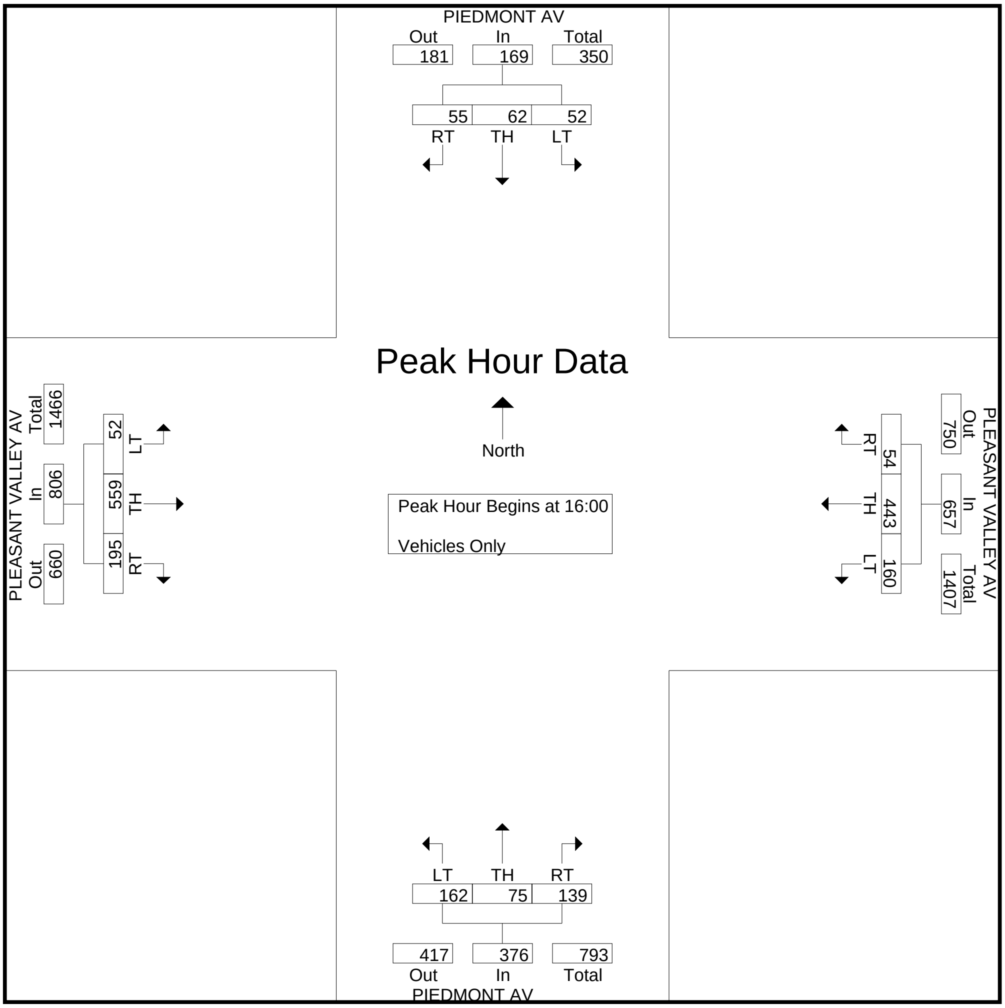
	PIEDMONT AV Southbound				PLEASANT VALLEY AV Westbound				PIEDMONT AV Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**16**	19	15	**50**	17	102	33	152	**39**	20	36	95	36	131	**17**	184	481
16:15	10	12	13	35	**19**	111	41	171	38	16	40	94	54	149	14	**217**	**517**
16:30	16	**22**	8	46	9	**119**	**44**	**172**	30	18	42	90	48	**150**	9	207	515
16:45	13	9	**16**	38	9	111	42	162	32	**21**	**44**	**97**	**57**	129	12	198	495
Total Volume	55	62	52	169	54	443	160	657	139	75	162	376	195	559	52	806	2008
% App. Total	32.5	36.7	30.8		8.2	67.4	24.4		37	19.9	43.1		24.2	69.4	6.5		
PHF	.859	.705	.813	.845	.711	.931	.909	.955	.891	.893	.920	.969	.855	.932	.765	.929	.971

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : piedmont-pleasant-s
Site Code : 20
Start Date : 5/8/2010
Page No : 2



CITY OF OAKLAND

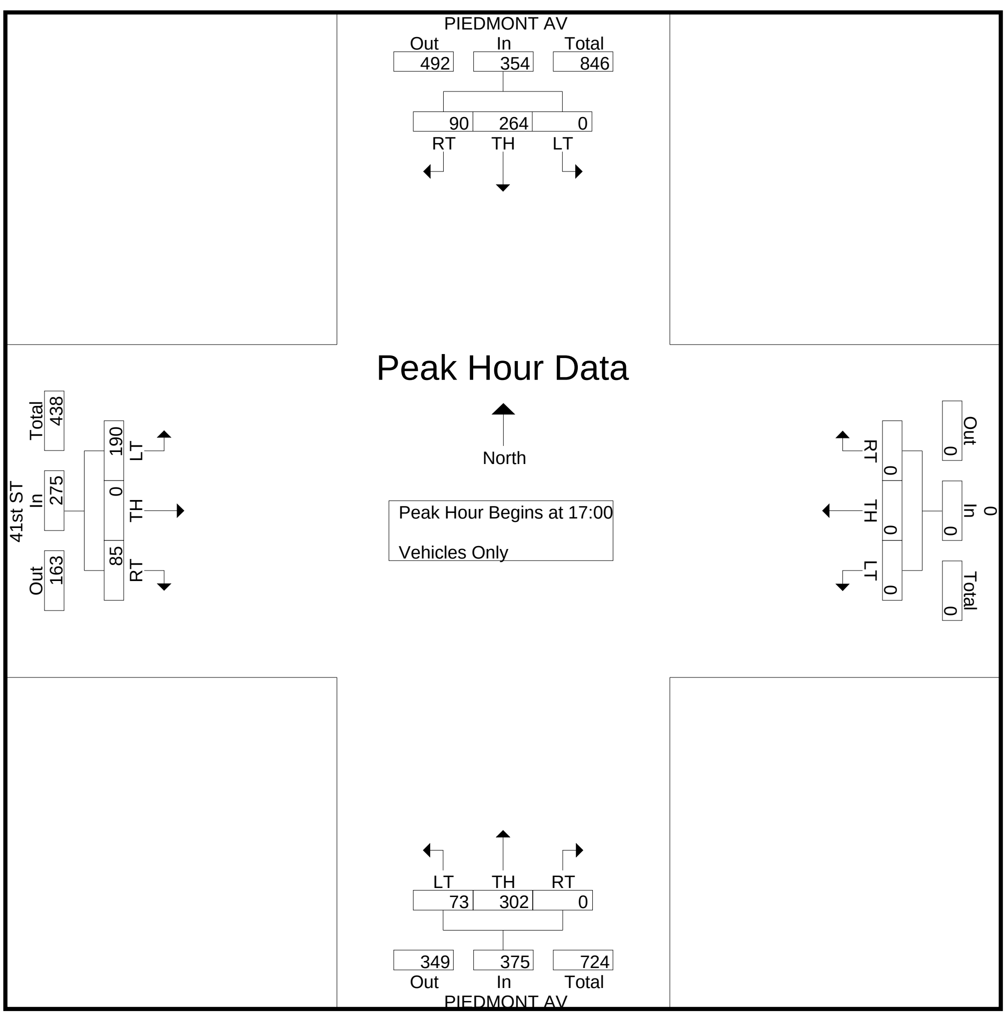
fp
Mietek 916-806-0250

File Name : piedmont-41-p
Site Code : 21
Start Date : 5/11/2010
Page No : 1

Groups Printed- Vehicles Only

	PIEDMONT AV Southbound				0 Westbound				PIEDMONT AV Northbound				41st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	22	51	0	73	0	0	0	0	0	82	17	99	20	0	33	53	225
16:15	19	62	0	81	0	0	0	0	0	66	17	83	21	0	33	54	218
16:30	19	49	0	68	0	0	0	0	0	88	18	106	22	0	45	67	241
16:45	19	61	0	80	0	0	0	0	0	83	20	103	21	0	44	65	248
Total	79	223	0	302	0	0	0	0	0	319	72	391	84	0	155	239	932
17:00	18	55	0	73	0	0	0	0	0	62	11	73	26	0	51	77	223
17:15	21	70	0	91	0	0	0	0	0	93	17	110	18	0	60	78	279
17:30	21	61	0	82	0	0	0	0	0	81	18	99	21	0	44	65	246
17:45	30	78	0	108	0	0	0	0	0	66	27	93	20	0	35	55	256
Total	90	264	0	354	0	0	0	0	0	302	73	375	85	0	190	275	1004
Grand Total	169	487	0	656	0	0	0	0	0	621	145	766	169	0	345	514	1936
Apprch %	25.8	74.2	0		0	0	0		0	81.1	18.9		32.9	0	67.1		
Total %	8.7	25.2	0	33.9	0	0	0	0	0	32.1	7.5	39.6	8.7	0	17.8	26.5	

	PIEDMONT AV Southbound				0 Westbound				PIEDMONT AV Northbound				41st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	18	55	0	73	0	0	0	0	0	62	11	73	**26**	0	51	77	223
17:15	21	70	0	91	0	0	0	0	0	**93**	17	**110**	18	0	**60**	**78**	**279**
17:30	21	61	0	82	0	0	0	0	0	81	18	99	21	0	44	65	246
17:45	**30**	**78**	0	**108**	0	0	0	0	0	66	**27**	93	20	0	35	55	256
Total Volume	90	264	0	354	0	0	0	0	0	302	73	375	85	0	190	275	1004
% App. Total	25.4	74.6	0		0	0	0		0	80.5	19.5		30.9	0	69.1		
PHF	.750	.846	.000	.819	.000	.000	.000	.000	.000	.812	.676	.852	.817	.000	.792	.881	.900



Car

Study Name **WC10-2728_21 Piedmont Ave/41st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Piedmont Avenue Southbound			Piedmont Avenue Northbound			41st Street Eastbound		
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn
11:00 AM	0	0	0	0	0	1	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0
1:00 PM	7	24	0	76	11	0	15	24	0
1:15 PM	17	50	0	71	21	0	19	26	0
1:30 PM	15	51	0	83	12	0	24	35	1
1:45 PM	28	55	0	99	18	0	26	39	0
2:00 PM	20	70	0	75	16	0	20	35	0
2:15 PM	13	61	0	76	16	0	21	32	0
2:30 PM	29	66	0	86	14	0	32	34	0
2:45 PM	21	96	0	86	20	0	23	29	0

	Piedmont Avenue Southbound			Piedmont Avenue Northbound			41st Street Eastbound				
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	15-Min Total	Hour Total
11:00 AM	0	0	0	0	0	1	0	0	0	1	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	157
12:30 PM	0	0	0	0	0	0	0	0	0	0	366
12:45 PM	0	0	0	0	0	0	0	0	0	0	589
1:00 PM	7	24	0	76	11	0	15	24	0	157	858
1:15 PM	18	52	0	72	21	0	19	27	0	209	941
1:30 PM	15	51	0	84	12	0	25	35	1	223	952
1:45 PM	28	58	0	99	18	0	27	39	0	269	993
2:00 PM	20	72	0	77	16	0	20	35	0	240	1000
2:15 PM	13	62	0	76	16	0	21	32	0	220	
2:30 PM	29	67	0	88	14	0	32	34	0	264	
2:45 PM	21	97	0	86	20	0	23	29	0	276	
Peak Hour	**68**	**185**	**0**	**331**	**62**	**0**	**86**	**125**	**1**	**0.80**	

Truck

Study Name **WC10-2728_21 Piedmont Ave/41st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Northbound Street Northbound			Eastbound Street Eastbound		
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn
11:00 AM	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	1	2	0	1	0	0	0	1	0
1:30 PM	0	0	0	1	0	0	1	0	0
1:45 PM	0	3	0	0	0	0	1	0	0
2:00 PM	0	2	0	2	0	0	0	0	0
2:15 PM	0	1	0	0	0	0	0	0	0
2:30 PM	0	1	0	2	0	0	0	0	0
2:45 PM	0	1	0	0	0	0	0	0	0

Pedal Bike (Road)

Study Name WC10-2728_21 Piedmont Ave/41st St
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound			Northbound Street Northbound			Eastbound Street Eastbound		
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn
11:00 AM	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	6	0	2	0	0	0	0	0
12:15 PM	1	3	0	1	2	0	1	0	0
12:30 PM	0	2	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	0	0	0
1:00 PM	1	3	0	0	0	0	1	1	0
1:15 PM	2	2	0	9	0	0	1	3	0
1:30 PM	0	5	0	9	0	0	1	1	0
1:45 PM	4	1	0	4	0	0	2	4	0
2:00 PM	1	1	0	2	1	0	0	0	0
2:15 PM	1	1	0	1	0	0	0	1	0
2:30 PM	0	0	0	1	0	0	0	1	0
2:45 PM	0	1	0	2	0	0	0	1	0
Peak Hour	**7**	**11**	**0**	**22**	**0**	**0**	**5**	**9**	**0**

People

Study Name **WC10-2728_21 Piedmont Ave/41st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	28	26	60	23	102	90
11:15 AM	29	29	53	22	121	129
11:30 AM	63	72	46	34	135	120
11:45 AM	34	73	28	37	136	77
12:00 PM	4	16	31	31	137	119
12:15 PM	5	19	26	32	172	110
12:30 PM	9	16	50	35	118	116
12:45 PM	11	21	50	40	134	116
1:00 PM	33	20	64	25	150	79
1:15 PM	34	26	53	35	141	62
1:30 PM	35	24	38	43	94	51
1:45 PM	21	19	27	63	62	80
2:00 PM	25	14	34	32	63	65
2:15 PM	9	23	32	38	49	42
2:30 PM	16	21	26	32	39	29
2:45 PM	36	16	30	32	64	31
Peak Hour	**123**	**89**	**182**	**166**	**447**	**272**
	212		348		719	

Pedal Bike (Crosswalk)

Study Name **WC10-2728_21 Piedmont Ave/41st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Northbound Street Northbound		Eastbound Street Eastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	1
12:00 PM	0	0	0	0	1	0
12:15 PM	0	0	0	0	0	0
12:30 PM	0	0	1	0	0	0
12:45 PM	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0
1:30 PM	0	2	0	1	0	0
1:45 PM	0	0	0	0	0	0
2:00 PM	0	0	0	1	0	0
2:15 PM	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0
Peak Hour	**0**	**2**	**0**	**1**	**0**	**0**

Totals

Study Name **WC10-2728_21 Piedmont Ave/41st St**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Northbound Street Northbound			Eastbound Street Eastbound		
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn
11:00 AM	0	0	0	0	0	1	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	6	0	2	0	0	0	0	0
12:15 PM	1	3	0	1	2	0	1	0	0
12:30 PM	0	2	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	0	0	0
1:00 PM	8	27	0	76	11	0	16	25	0
1:15 PM	20	54	0	81	21	0	20	30	0
1:30 PM	15	56	0	93	12	0	26	36	1
1:45 PM	32	59	0	103	18	0	29	43	0
2:00 PM	21	73	0	79	17	0	20	35	0
2:15 PM	14	63	0	77	16	0	21	33	0
2:30 PM	29	67	0	89	14	0	32	35	0
2:45 PM	21	98	0	88	20	0	23	30	0

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : piedmont-41-s
Site Code : 21
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	PIEDMONT AV Southbound				**0 Westbound**				**PIEDMONT AV Northbound**				**41st ST Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	21	68	0	89	0	0	0	0	0	76	14	90	15	0	37	52	231
16:15	24	75	0	99	0	0	0	0	0	85	15	100	16	0	40	56	255
16:30	23	60	0	83	0	0	0	0	0	66	12	78	13	0	36	49	210
16:45	36	70	0	106	0	0	0	0	0	76	18	94	14	0	33	47	247
Total	104	273	0	377	0	0	0	0	0	303	59	362	58	0	146	204	943
17:00	27	76	0	103	0	0	0	0	0	80	14	94	26	0	32	58	255
17:15	22	67	0	89	0	0	0	0	0	69	10	79	26	0	27	53	221
17:30	24	59	0	83	0	0	0	0	0	74	12	86	15	0	35	50	219
17:45	22	76	0	98	0	0	0	0	0	62	14	76	13	0	29	42	216
Total	95	278	0	373	0	0	0	0	0	285	50	335	80	0	123	203	911
18:00	22	68	0	90	0	0	0	0	0	54	14	68	22	0	36	58	216
18:15	11	72	0	83	0	0	0	0	0	67	9	76	21	0	28	49	208
18:30	17	73	0	90	0	0	0	0	0	75	19	94	13	0	32	45	229
18:45	29	48	0	77	0	0	0	0	0	75	15	90	27	0	28	55	222
Total	79	261	0	340	0	0	0	0	0	271	57	328	83	0	124	207	875
Grand Total	278	812	0	1090	0	0	0	0	0	859	166	1025	221	0	393	614	2729
Apprch %	25.5	74.5	0		0	0	0		0	83.8	16.2		36	0	64		
Total %	10.2	29.8	0	39.9	0	0	0	0	0	31.5	6.1	37.6	8.1	0	14.4	22.5	

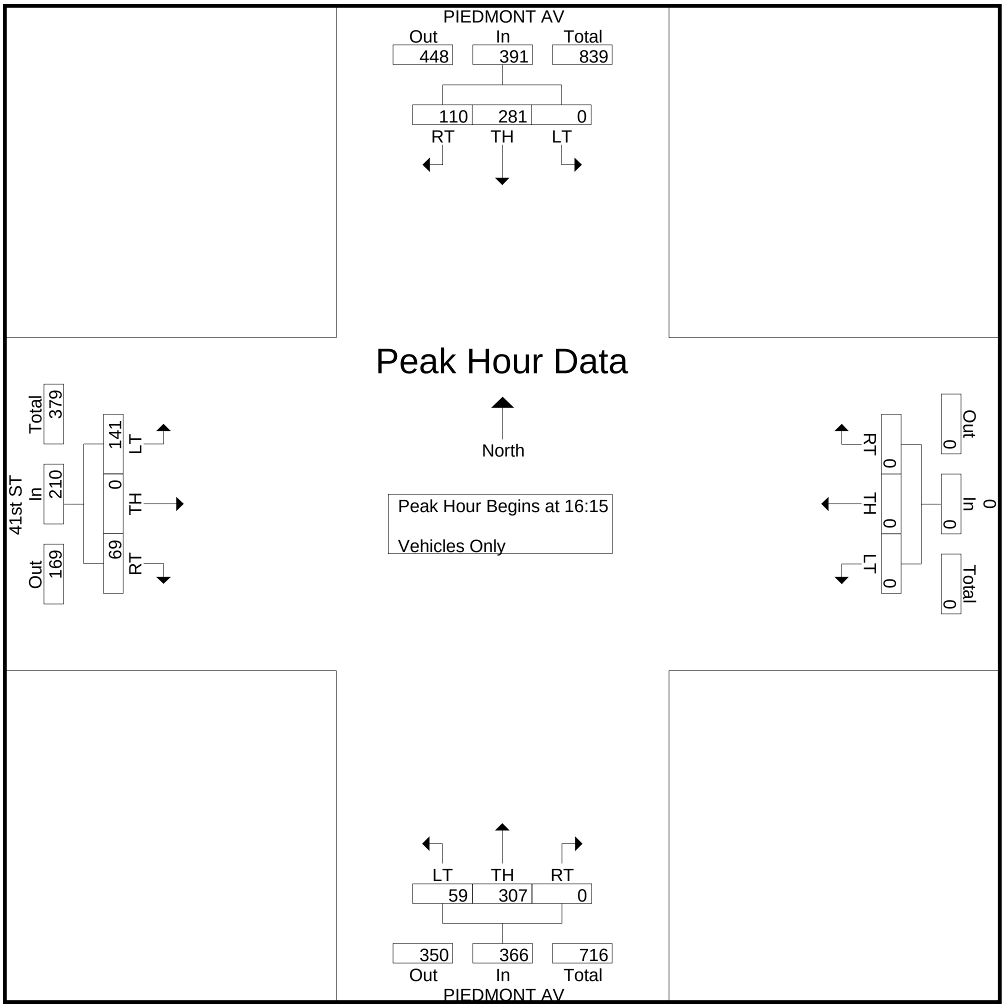
	PIEDMONT AV Southbound				**0 Westbound**				**PIEDMONT AV Northbound**				**41st ST Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:15																	
16:15	24	75	0	99	0	0	0	0	0	**85**	15	**100**	16	0	**40**	56	**255**
16:30	23	60	0	83	0	0	0	0	0	66	12	78	13	0	36	49	210
16:45	**36**	70	0	**106**	0	0	0	0	0	76	**18**	94	14	0	33	47	247
17:00	27	**76**	0	103	0	0	0	0	0	80	14	94	**26**	0	32	**58**	255
Total Volume	110	281	0	391	0	0	0	0	0	307	59	366	69	0	141	210	967
% App. Total	28.1	71.9	0		0	0	0		0	83.9	16.1		32.9	0	67.1		
PHF	.764	.924	.000	.922	.000	.000	.000	.000	.000	.903	.819	.915	.663	.000	.881	.905	.948

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : piedmont-41-s
Site Code : 21
Start Date : 5/15/2010
Page No : 2



MARKS TRAFFIC DATA

CITY OF OAKLAND

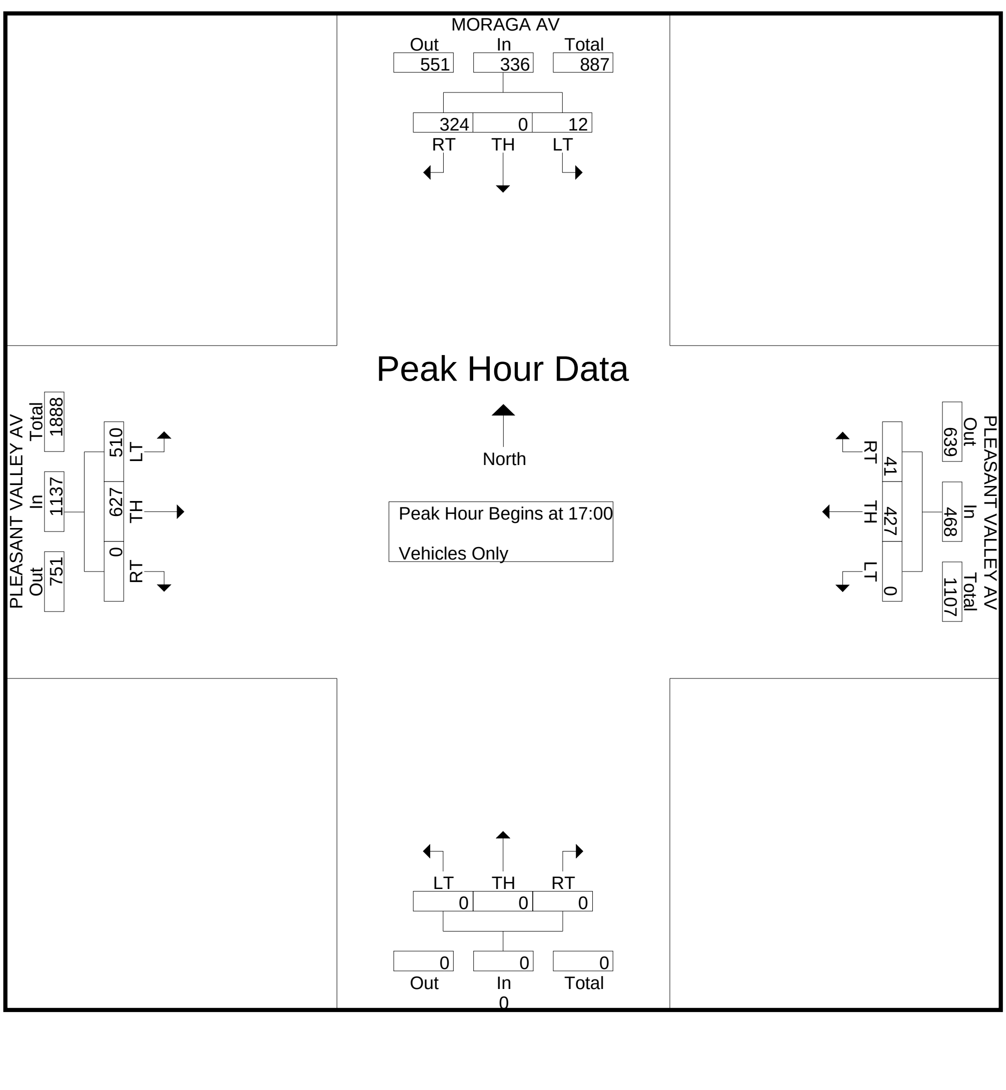
fp
Mietek 916-806-0250

File Name : moraga-pleasant-p
Site Code : 23
Start Date : 5/13/2010
Page No : 1

Groups Printed- Vehicles Only

	MORAGA AV Southbound				PLEASANT VALLEY AV Westbound				0 Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	63	0	5	68	9	93	0	102	0	0	0	0	0	109	99	208	378
16:15	57	0	2	59	2	111	0	113	0	0	0	0	0	118	87	205	377
16:30	55	0	1	56	9	101	0	110	0	0	0	0	0	133	108	241	407
16:45	63	0	7	70	4	105	0	109	0	0	0	0	0	162	88	250	429
Total	238	0	15	253	24	410	0	434	0	0	0	0	0	522	382	904	1591
17:00	76	0	5	81	6	102	0	108	0	0	0	0	0	152	120	272	461
17:15	82	0	2	84	5	102	0	107	0	0	0	0	0	157	133	290	481
17:30	69	0	1	70	10	110	0	120	0	0	0	0	0	164	146	310	500
17:45	97	0	4	101	20	113	0	133	0	0	0	0	0	154	111	265	499
Total	324	0	12	336	41	427	0	468	0	0	0	0	0	627	510	1137	1941
Grand Total	562	0	27	589	65	837	0	902	0	0	0	0	0	1149	892	2041	3532
Apprch %	95.4	0	4.6		7.2	92.8	0		0	0	0		0	56.3	43.7		
Total %	15.9	0	0.8	16.7	1.8	23.7	0	25.5	0	0	0	0	0	32.5	25.3	57.8	

	MORAGA AV Southbound				PLEASANT VALLEY AV Westbound				0 Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	76	0	**5**	81	6	102	0	108	0	0	0	0	0	152	120	272	461
17:15	82	0	2	84	5	102	0	107	0	0	0	0	0	157	133	290	481
17:30	69	0	1	70	10	110	0	120	0	0	0	0	0	**164**	**146**	**310**	**500**
17:45	**97**	0	4	**101**	**20**	**113**	0	**133**	0	0	0	0	0	154	111	265	499
Total Volume	324	0	12	336	41	427	0	468	0	0	0	0	0	627	510	1137	1941
% App. Total	96.4	0	3.6		8.8	91.2	0		0	0	0		0	55.1	44.9		
PHF	.835	.000	.600	.832	.513	.945	.000	.880	.000	.000	.000	.000	.000	.956	.873	.917	.971



Car

Study Name **WC10-2728_22 Moraga Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Pleasant Valley Avenue Southbound			Moraga Avenue Westbound			Pleasant Valley Avenue Northbound		
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn
11:00 AM	108	48	0	83	7	0	11	142	0
11:15 AM	87	38	0	83	3	0	12	157	0
11:30 AM	118	49	0	96	8	0	8	149	0
11:45 AM	128	50	0	92	5	0	6	132	0
12:00 PM	146	57	0	58	8	0	5	141	0
12:15 PM	128	48	0	57	7	0	15	147	0
12:30 PM	109	51	0	46	15	0	18	150	0
12:45 PM	102	46	5	62	15	0	11	171	0
1:00 PM	93	38	3	66	13	0	16	162	0
1:15 PM	104	60	0	94	7	0	15	113	0
1:30 PM	115	78	1	58	3	0	13	122	0
1:45 PM	94	51	2	63	9	0	8	115	0
2:00 PM	133	64	1	67	3	0	6	92	0
2:15 PM	119	82	1	67	4	0	9	108	0
2:30 PM	117	84	0	63	5	0	12	124	0
2:45 PM	150	55	0	82	8	0	10	110	0

	Pleasant Valley Avenue Southbound			Moraga Avenue Westbound			Pleasant Valley Avenue Northbound						
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	15-Min Total	Hour Total		
11:00 AM	109	49	0	83	7	0	11	142	0	401	1630		
11:15 AM	90	38	0	83	3	0	12	159	0	385	1648		
11:30 AM	118	49	0	96	8	0	8	149	0	428	1669		
11:45 AM	128	50	0	92	5	0	7	134	0	416	1631		
12:00 PM	147	57	0	58	8	0	5	144	0	419	1634		
12:15 PM	130	48	0	58	7	0	15	148	0	406	1608		
12:30 PM	110	51	0	46	15	0	18	150	0	390	1597		
12:45 PM	104	47	5	62	15	0	11	175	0	419	1600		
1:00 PM	95	38	3	66	13	0	16	162	0	393	1525		
1:15 PM	105	60	0	94	7	0	15	114	0	395	1498		
1:30 PM	116	78	1	59	3	0	13	123	0	393	1493		
1:45 PM	94	51	2	63	9	0	8	117	0	344	1505		
2:00 PM	133	64	1	67	3	0	6	92	0	366	1577		
2:15 PM	119	82	1	67	4	0	9	108	0	390			
2:30 PM	117	84	0	63	5	0	12	124	0	405			
2:45 PM	150	55	0	83	8	0	10	110	0	416			
Peak Hour	**420**	**223**	**9**	**281**	**38**	**0**	**55**	**574**	**0**	**0.95**		**0**	**0**

Truck

Study Name **WC10-2728_22 Moraga Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Westbound Street Westbound			Northbound Street Northbound									
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn							
11:00 AM	1	1	0	0	0	0	0	0	0							
11:15 AM	3	0	0	0	0	0	0	2	0							
11:30 AM	0	0	0	0	0	0	0	0	0							
11:45 AM	0	0	0	0	0	0	1	2	0							
12:00 PM	1	0	0	0	0	0	0	3	0							
12:15 PM	2	0	0	1	0	0	0	1	0							
12:30 PM	1	0	0	0	0	0	0	0	0							
12:45 PM	2	1	0	0	0	0	0	4	0							
1:00 PM	2	0	0	0	0	0	0	0	0							
1:15 PM	1	0	0	0	0	0	0	1	0							
1:30 PM	1	0	0	1	0	0	0	1	0							
1:45 PM	0	0	0	0	0	0	0	2	0							
2:00 PM	0	0	0	0	0	0	0	0	0							
2:15 PM	0	0	0	0	0	0	0	0	0							
2:30 PM	0	0	0	0	0	0	0	0	0							
2:45 PM	0	0	0	1	0	0	0	0	0							
Peak Hour	**6**	**1**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_22 Moraga Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Westbound Street Westbound			Northbound Street Northbound									
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn							
11:00 AM	1	0	0	0	0	0	0	3	0							
11:15 AM	2	0	0	1	0	0	0	6	0							
11:30 AM	7	0	0	0	0	0	0	4	0							
11:45 AM	3	0	0	0	0	0	0	5	0							
12:00 PM	0	0	0	0	1	0	0	1	0							
12:15 PM	3	0	0	0	0	0	0	6	0							
12:30 PM	1	0	0	1	0	0	0	0	0							
12:45 PM	1	0	0	0	0	0	0	2	0							
1:00 PM	3	0	0	0	1	0	0	3	0							
1:15 PM	0	0	0	0	0	0	0	1	0							
1:30 PM	1	0	0	0	0	0	0	3	0							
1:45 PM	5	1	0	2	0	0	0	2	0							
2:00 PM	4	3	0	0	0	0	0	4	0							
2:15 PM	4	0	0	0	0	0	0	3	0							
2:30 PM	4	1	0	0	0	0	1	3	0							
2:45 PM	3	0	0	0	0	0	0	2	0							
Peak Hour	**5**	**0**	**0**	**0**	**1**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

People

Study Name WC10-2728_22 Moraga Ave/Pleasant Valley Av
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound											
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW										
11:00 AM	9	0	0	0	0	0										
11:15 AM	5	0	0	0	0	0										
11:30 AM	10	0	0	0	0	0										
11:45 AM	11	2	0	0	0	0										
12:00 PM	1	0	8	3	0	0										
12:15 PM	0	0	0	5	1	0										
12:30 PM	6	0	6	5	0	0										
12:45 PM	0	0	1	4	0	0										
1:00 PM	2	0	5	0	0	0										
1:15 PM	0	0	0	5	0	0										
1:30 PM	0	0	0	7	0	0										
1:45 PM	0	0	3	0	0	0										
2:00 PM	2	2	0	1	0	0										
2:15 PM	0	1	0	5	0	0										
2:30 PM	1	4	0	5	1	0										
2:45 PM	2	0	2	2	0	0										
Peak Hour	**2**	**0**	**6**	**16**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	2		22		0											

Pedal Bike (Crosswalk)

Study Name **WC10-2728_22 Moraga Ave/Pleasant Valley Av**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound											
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW										
11:00 AM	0	0	0	0	0	0										
11:15 AM	0	0	0	0	0	0										
11:30 AM	0	0	0	0	0	0										
11:45 AM	0	0	0	0	0	0										
12:00 PM	0	0	0	0	0	0										
12:15 PM	0	0	0	0	0	0										
12:30 PM	0	0	0	0	0	0										
12:45 PM	0	0	0	0	0	0										
1:00 PM	0	0	0	0	0	0										
1:15 PM	0	0	0	0	0	0										
1:30 PM	0	0	0	0	0	0										
1:45 PM	0	0	0	0	0	0										
2:00 PM	0	1	0	0	0	0										
2:15 PM	0	0	0	0	0	0										
2:30 PM	0	0	0	0	0	0										
2:45 PM	0	0	0	0	0	0										
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_22 Moraga Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Westbound Street Westbound			Northbound Street Northbound									
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn							
11:00 AM	110	49	0	83	7	0	11	145	0							
11:15 AM	92	38	0	84	3	0	12	165	0							
11:30 AM	125	49	0	96	8	0	8	153	0							
11:45 AM	131	50	0	92	5	0	7	139	0							
12:00 PM	147	57	0	58	9	0	5	145	0							
12:15 PM	133	48	0	58	7	0	15	154	0							
12:30 PM	111	51	0	47	15	0	18	150	0							
12:45 PM	105	47	5	62	15	0	11	177	0							
1:00 PM	98	38	3	66	14	0	16	165	0							
1:15 PM	105	60	0	94	7	0	15	115	0							
1:30 PM	117	78	1	59	3	0	13	126	0							
1:45 PM	99	52	2	65	9	0	8	119	0							
2:00 PM	137	67	1	67	3	0	6	96	0							
2:15 PM	123	82	1	67	4	0	9	111	0							
2:30 PM	121	85	0	63	5	0	13	127	0							
2:45 PM	153	55	0	83	8	0	10	112	0							
Peak Hour	**425**	**223**	**9**	**281**	**39**	**0**	**55**	**583**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

CITY OF OAKLAND

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Mietek 916-806-0250

File Name : moraga-pleasant-s
Site Code : 23
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	MORAGA AV Southbound				PLEASANT VALLEY AV Westbound				0 Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	62	0	0	62	7	92	0	99	0	0	0	0	0	138	83	221	382
16:15	58	0	6	64	3	94	0	97	0	0	0	0	0	121	61	182	343
16:30	53	0	1	54	6	95	0	101	0	0	0	0	0	112	77	189	344
16:45	64	0	6	70	6	108	0	114	0	0	0	0	0	127	64	191	375
Total	237	0	13	250	22	389	0	411	0	0	0	0	0	498	285	783	1444
17:00	55	0	2	57	6	80	0	86	0	0	0	0	0	135	53	188	331
17:15	48	0	5	53	8	94	0	102	0	0	0	0	0	126	67	193	348
17:30	56	0	4	60	6	72	0	78	0	0	0	0	0	125	67	192	330
17:45	58	0	4	62	7	76	0	83	0	0	0	0	0	117	63	180	325
Total	217	0	15	232	27	322	0	349	0	0	0	0	0	503	250	753	1334
18:00	55	0	0	55	7	72	0	79	0	0	0	0	0	119	50	169	303
18:15	46	0	0	46	5	84	0	89	0	0	0	0	0	106	45	151	286
18:30	59	0	2	61	3	72	0	75	0	0	0	0	0	100	45	145	281
18:45	50	0	3	53	3	71	0	74	0	0	0	0	0	74	56	130	257
Total	210	0	5	215	18	299	0	317	0	0	0	0	0	399	196	595	1127
Grand Total	664	0	33	697	67	1010	0	1077	0	0	0	0	0	1400	731	2131	3905
Apprch %	95.3	0	4.7		6.2	93.8	0		0	0	0		0	65.7	34.3		
Total %	17	0	0.8	17.8	1.7	25.9	0	27.6	0	0	0	0	0	35.9	18.7	54.6	

	MORAGA AV Southbound				PLEASANT VALLEY AV Westbound				0 Northbound				PLEASANT VALLEY AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	62	0	0	62	**7**	92	0	99	0	0	0	0	0	**138**	**83**	**221**	**382**
16:15	58	0	**6**	64	3	94	0	97	0	0	0	0	0	121	61	182	343
16:30	53	0	1	54	6	95	0	101	0	0	0	0	0	112	77	189	344
16:45	**64**	0	6	**70**	6	**108**	0	**114**	0	0	0	0	0	127	64	191	375
Total Volume	237	0	13	250	22	389	0	411	0	0	0	0	0	498	285	783	1444
% App. Total	94.8	0	5.2		5.4	94.6	0		0	0	0		0	63.6	36.4		
PHF	.926	.000	.542	.893	.786	.900	.000	.901	.000	.000	.000	.000	.000	.902	.858	.886	.945

MARKS TRAFFIC DATA

CITY OF OAKLAND

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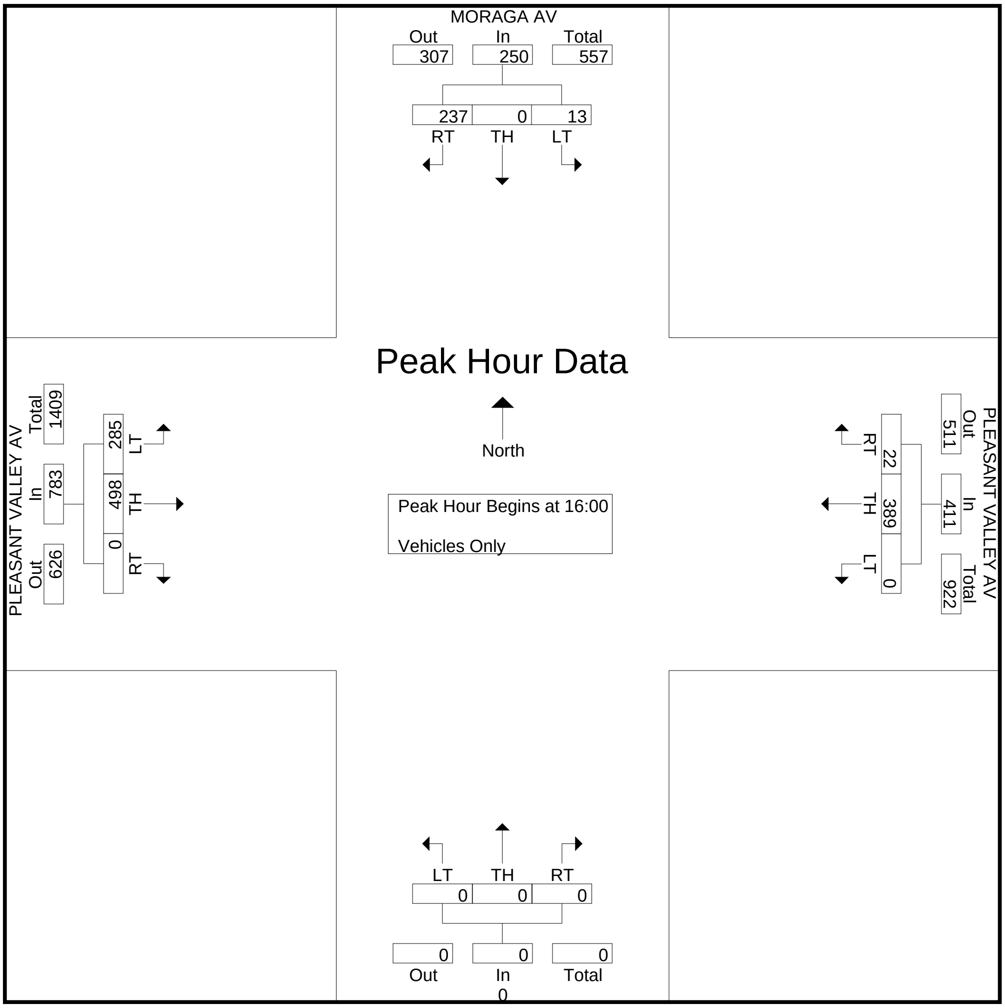
Mietek 916-806-0250

File Name : moraga-pleasant-s
Site Code : 23
Start Date : 5/15/2010
Page No : 2



CITY OF OAKLAND

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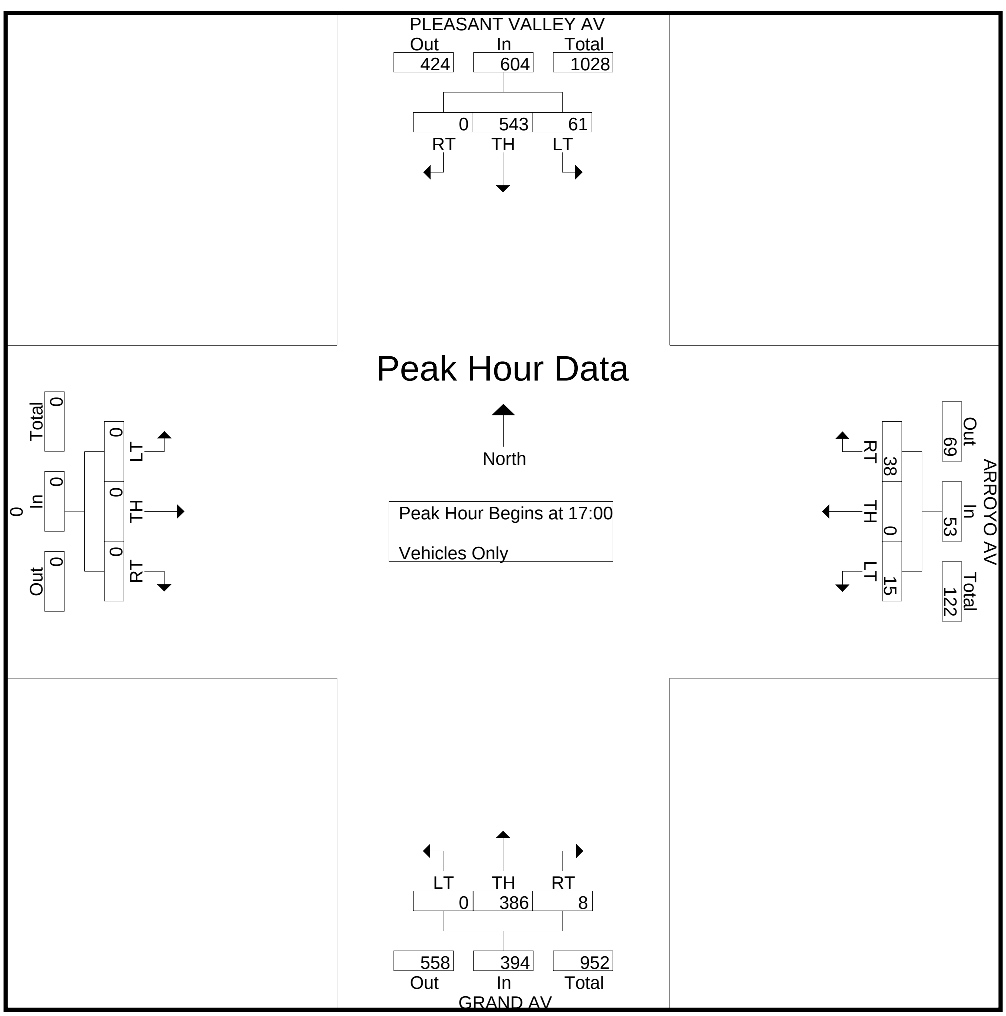
Mietek 916-806-0250

File Name : grand-arroyo-p
Site Code : 24
Start Date : 5/12/2010
Page No : 1

Groups Printed- Vehicles Only

	PLEASANT VALLEY AV Southbound				ARROYO AV Westbound				GRAND AV Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	117	20	137	8	0	0	8	5	81	0	86	0	0	0	0	231
16:15	0	101	13	114	6	0	3	9	3	74	0	77	0	0	0	0	200
16:30	0	120	3	123	12	0	6	18	5	87	0	92	0	0	0	0	233
16:45	0	112	8	120	5	0	2	7	6	95	0	101	0	0	0	0	228
Total	0	450	44	494	31	0	11	42	19	337	0	356	0	0	0	0	892
17:00	0	123	21	144	11	0	2	13	2	92	0	94	0	0	0	0	251
17:15	0	140	12	152	7	0	4	11	3	86	0	89	0	0	0	0	252
17:30	0	133	13	146	14	0	5	19	1	99	0	100	0	0	0	0	265
17:45	0	147	15	162	6	0	4	10	2	109	0	111	0	0	0	0	283
Total	0	543	61	604	38	0	15	53	8	386	0	394	0	0	0	0	1051
Grand Total	0	993	105	1098	69	0	26	95	27	723	0	750	0	0	0	0	1943
Apprch %	0	90.4	9.6		72.6	0	27.4		3.6	96.4	0		0	0	0		
Total %	0	51.1	5.4	56.5	3.6	0	1.3	4.9	1.4	37.2	0	38.6	0	0	0	0	

	PLEASANT VALLEY AV Southbound				ARROYO AV Westbound				GRAND AV Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	123	**21**	144	11	0	2	13	2	92	0	94	0	0	0	0	251
17:15	0	140	12	152	7	0	4	11	**3**	86	0	89	0	0	0	0	252
17:30	0	133	13	146	**14**	0	**5**	**19**	1	99	0	100	0	0	0	0	265
17:45	0	**147**	15	**162**	6	0	4	10	2	**109**	0	**111**	0	0	0	0	**283**
Total Volume	0	543	61	604	38	0	15	53	8	386	0	394	0	0	0	0	1051
% App. Total	0	89.9	10.1		71.7	0	28.3		2	98	0		0	0	0		
PHF	.000	.923	.726	.932	.679	.000	.750	.697	.667	.885	.000	.887	.000	.000	.000	.000	.928



Car

Study Name **WC10-2728_23 Grand Ave/Arroyo Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Pleasant Valley Avenue Southbound			Arroyo Avenue Westbound			Grand Avenue Northbound		
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn
11:00 AM	92	9	0	14	2	0	1	110	0
11:15 AM	86	3	0	13	8	0	2	123	0
11:30 AM	105	7	0	7	3	0	0	118	0
11:45 AM	105	8	0	12	4	0	1	107	0
12:00 PM	117	9	0	10	0	0	5	97	0
12:15 PM	106	8	0	6	5	0	7	118	0
12:30 PM	91	12	0	11	6	0	2	127	0
12:45 PM	105	10	0	12	9	0	8	131	0
1:00 PM	82	8	0	9	3	0	4	126	0
1:15 PM	97	15	0	10	5	0	1	116	0
1:30 PM	109	10	0	12	5	0	0	105	0
1:45 PM	93	6	0	16	6	0	6	92	0
2:00 PM	110	6	0	14	3	0	2	89	0
2:15 PM	109	13	0	7	3	0	2	95	0
2:30 PM	112	4	0	11	2	0	4	113	0
2:45 PM	143	14	0	6	3	0	3	94	0

	Pleasant Valley Avenue Southbound			Arroyo Avenue Westbound			Grand Avenue Northbound				
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	15-Min Total	Hour Total
11:00 AM	93	9	0	14	2	0	1	110	0	229	951
11:15 AM	89	3	0	13	8	0	2	125	0	240	963
11:30 AM	106	7	0	7	3	0	0	118	0	241	976
11:45 AM	105	8	0	12	4	0	1	111	0	241	985
12:00 PM	118	9	0	10	0	0	5	99	0	241	1025
12:15 PM	107	8	0	6	5	0	7	120	0	253	1018
12:30 PM	92	12	0	11	6	0	2	127	0	250	1011
12:45 PM	107	10	0	12	9	0	8	135	0	281	1004
1:00 PM	84	8	0	9	3	0	4	126	0	234	944
1:15 PM	97	15	0	11	5	0	1	117	0	246	934
1:30 PM	110	10	0	12	5	0	0	106	0	243	917
1:45 PM	93	6	0	16	6	0	6	94	0	221	920
2:00 PM	110	6	0	14	3	0	2	89	0	224	962
2:15 PM	109	13	0	7	3	0	2	95	0	229	
2:30 PM	112	4	0	11	2	0	4	113	0	246	
2:45 PM	143	14	0	6	3	0	3	94	0	263	
Peak Hour	**398**	**43**	**0**	**44**	**22**	**0**	**13**	**484**	**0**	**0.89**	

Truck

Study Name **WC10-2728_23 Grand Ave/Arroyo Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Westbound Street Westbound			Northbound Street Northbound									
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn							
11:00 AM	1	0	0	0	0	0	0	0	0							
11:15 AM	3	0	0	0	0	0	0	2	0							
11:30 AM	1	0	0	0	0	0	0	0	0							
11:45 AM	0	0	0	0	0	0	0	4	0							
12:00 PM	1	0	0	0	0	0	0	2	0							
12:15 PM	1	0	0	0	0	0	0	2	0							
12:30 PM	1	0	0	0	0	0	0	0	0							
12:45 PM	2	0	0	0	0	0	0	4	0							
1:00 PM	2	0	0	0	0	0	0	0	0							
1:15 PM	0	0	0	1	0	0	0	1	0							
1:30 PM	1	0	0	0	0	0	0	1	0							
1:45 PM	0	0	0	0	0	0	0	2	0							
2:00 PM	0	0	0	0	0	0	0	0	0							
2:15 PM	0	0	0	0	0	0	0	0	0							
2:30 PM	0	0	0	0	0	0	0	0	0							
2:45 PM	0	0	0	0	0	0	0	0	0							
Peak Hour	**5**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_23 Grand Ave/Arroyo Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Westbound Street Westbound			Northbound Street Northbound									
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn							
11:00 AM	1	0	0	0	0	0	0	2	0							
11:15 AM	1	1	0	2	0	0	0	3	0							
11:30 AM	6	0	0	0	0	0	0	2	0							
11:45 AM	1	2	0	0	0	0	0	4	0							
12:00 PM	0	0	0	0	0	0	0	1	0							
12:15 PM	2	1	0	0	0	0	0	7	0							
12:30 PM	1	0	0	1	0	0	0	0	0							
12:45 PM	1	0	0	0	0	0	0	2	0							
1:00 PM	1	1	0	0	0	0	0	4	0							
1:15 PM	1	0	0	0	0	0	0	1	0							
1:30 PM	2	0	0	0	0	0	0	3	0							
1:45 PM	4	0	0	1	0	0	0	3	0							
2:00 PM	3	2	0	0	1	0	0	3	0							
2:15 PM	2	0	0	0	0	0	0	2	0							
2:30 PM	5	0	0	0	0	0	0	4	0							
2:45 PM	1	1	0	1	1	0	0	0	0							
Peak Hour	**5**	**1**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

People

Study Name **WC10-2728_23 Grand Ave/Arroyo Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	0	1	0	0	0	0	0	2								
11:15 AM	0	0	0	0	0	0	2	1								
11:30 AM	0	0	0	0	0	0	4	2								
11:45 AM	0	0	0	0	0	0	2	4								
12:00 PM	0	0	0	0	0	0	0	3								
12:15 PM	0	0	0	0	0	0	4	1								
12:30 PM	0	0	0	0	0	0	4	1								
12:45 PM	0	0	0	0	0	0	5	2								
1:00 PM	0	0	0	0	0	0	2	2								
1:15 PM	0	1	0	0	0	0	4	1								
1:30 PM	0	0	0	0	0	0	4	2								
1:45 PM	0	0	0	0	0	0	3	1								
2:00 PM	0	0	0	0	0	0	3	0								
2:15 PM	1	0	0	0	0	0	5	1								
2:30 PM	0	0	0	0	0	0	8	3								
2:45 PM	0	0	2	3	0	0	3	4								
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**15**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Pedal Bike (Crosswalk)

Study Name **WC10-2728_23 Grand Ave/Arroyo Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound									
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW								
11:00 AM	0	0	0	0	0	0	0	0								
11:15 AM	0	0	0	0	0	0	0	0								
11:30 AM	0	0	0	0	0	0	0	0								
11:45 AM	0	0	0	0	0	0	0	0								
12:00 PM	0	0	0	0	0	0	0	0								
12:15 PM	0	0	1	0	0	0	0	0								
12:30 PM	0	0	0	0	0	0	1	0								
12:45 PM	0	0	0	0	0	0	0	0								
1:00 PM	0	0	0	0	0	0	0	0								
1:15 PM	0	0	0	0	0	0	0	0								
1:30 PM	0	0	0	0	0	0	0	0								
1:45 PM	0	0	0	0	0	0	0	0								
2:00 PM	0	0	0	0	0	0	0	0								
2:15 PM	0	0	0	0	0	0	1	0								
2:30 PM	0	0	0	0	0	0	0	0								
2:45 PM	0	0	1	0	0	0	0	1								
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_23 Grand Ave/Arroyo Ave/Pleasant Valley Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Westbound Street Westbound			Northbound Street Northbound		
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn
11:00 AM	94	9	0	14	2	0	1	112	0
11:15 AM	90	4	0	15	8	0	2	128	0
11:30 AM	112	7	0	7	3	0	0	120	0
11:45 AM	106	10	0	12	4	0	1	115	0
12:00 PM	118	9	0	10	0	0	5	100	0
12:15 PM	109	9	0	6	5	0	7	127	0
12:30 PM	93	12	0	12	6	0	2	127	0
12:45 PM	108	10	0	12	9	0	8	137	0
1:00 PM	85	9	0	9	3	0	4	130	0
1:15 PM	98	15	0	11	5	0	1	118	0
1:30 PM	112	10	0	12	5	0	0	109	0
1:45 PM	97	6	0	17	6	0	6	97	0
2:00 PM	113	8	0	14	4	0	2	92	0
2:15 PM	111	13	0	7	3	0	2	97	0
2:30 PM	117	4	0	11	2	0	4	117	0
2:45 PM	144	15	0	7	4	0	3	94	0

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

File Name : grand-arroyo-s
Site Code : 24
Start Date : 5/15/2010
Page No : 1

Groups Printed- Vehicles Only

	PLEASANT VALLEY RD Southbound				**ARROYO AVE Westbound**				**GRAND AVE Northbound**				**0 Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	103	11	114	7	0	2	9	4	77	0	81	0	0	0	0	204
16:15	0	109	9	118	7	0	3	10	3	95	0	98	0	0	0	0	226
16:30	0	116	9	125	10	0	2	12	1	83	0	84	0	0	0	0	221
16:45	0	110	18	128	16	0	2	18	7	79	0	86	0	0	0	0	232
Total	0	438	47	485	40	0	9	49	15	334	0	349	0	0	0	0	883
17:00	0	109	20	129	10	0	5	15	6	68	0	74	0	0	0	0	218
17:15	0	108	11	119	8	0	0	8	1	55	0	56	0	0	0	0	183
17:30	0	103	9	112	7	0	2	9	3	62	0	65	0	0	0	0	186
17:45	0	96	7	103	6	0	5	11	1	71	0	72	0	0	0	0	186
Total	0	416	47	463	31	0	12	43	11	256	0	267	0	0	0	0	773
18:00	0	83	9	92	7	0	1	8	3	58	0	61	0	0	0	0	161
18:15	0	76	9	85	6	0	2	8	6	54	0	60	0	0	0	0	153
18:30	0	77	14	91	8	0	1	9	4	58	0	62	0	0	0	0	162
18:45	0	75	11	86	9	0	3	12	3	47	0	50	0	0	0	0	148
Total	0	311	43	354	30	0	7	37	16	217	0	233	0	0	0	0	624
Grand Total	0	1165	137	1302	101	0	28	129	42	807	0	849	0	0	0	0	2280
Apprch %	0	89.5	10.5		78.3	0	21.7		4.9	95.1	0		0	0	0		
Total %	0	51.1	6	57.1	4.4	0	1.2	5.7	1.8	35.4	0	37.2	0	0	0	0	

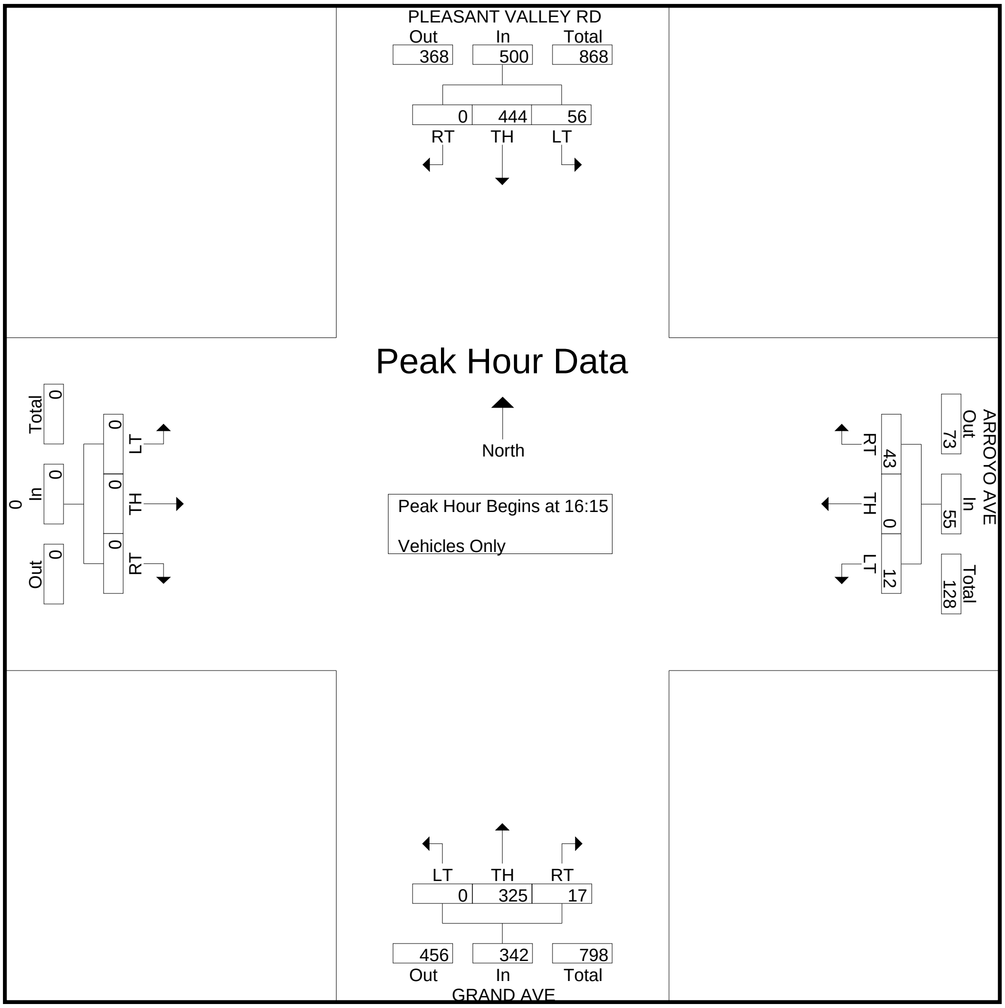
	PLEASANT VALLEY RD Southbound				**ARROYO AVE Westbound**				**GRAND AVE Northbound**				**0 Eastbound**				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:15																	
16:15	0	109	9	118	7	0	3	10	3	**95**	0	**98**	0	0	0	0	226
16:30	0	**116**	9	125	10	0	2	12	1	83	0	84	0	0	0	0	221
16:45	0	110	18	128	**16**	0	2	**18**	**7**	79	0	86	0	0	0	0	**232**
17:00	0	109	**20**	**129**	10	0	**5**	15	6	68	0	74	0	0	0	0	218
Total Volume	0	444	56	500	43	0	12	55	17	325	0	342	0	0	0	0	897
% App. Total	0	88.8	11.2		78.2	0	21.8		5	95	0		0	0	0		
PHF	.000	.957	.700	.969	.672	.000	.600	.764	.607	.855	.000	.872	.000	.000	.000	.000	.967

MARKS TRAFFIC DATA

CITY OF OAKLAND

fp
Mietek 916-806-0250

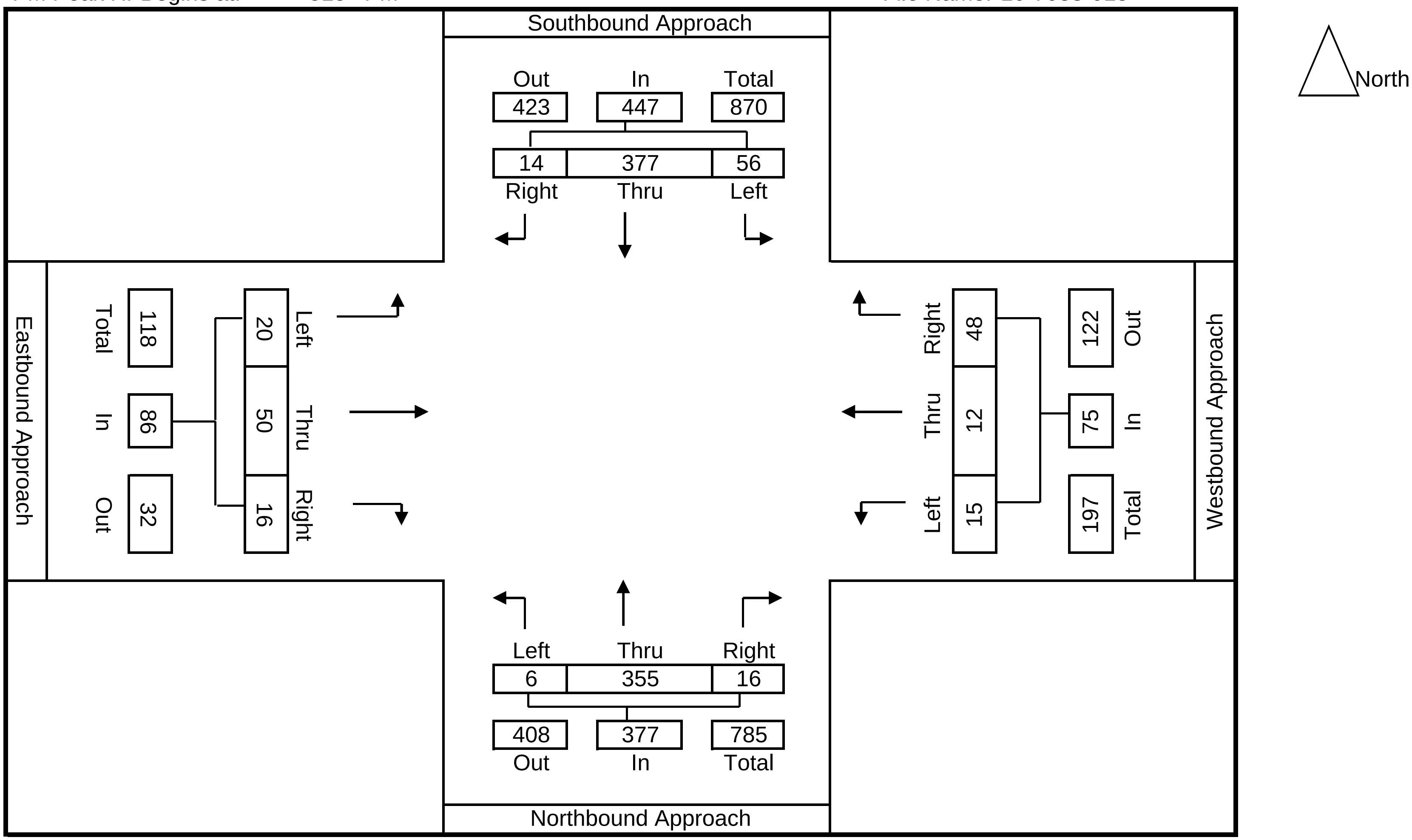
File Name : grand-arroyo-s
Site Code : 24
Start Date : 5/15/2010
Page No : 2



ALL TRAFFIC DATA, INC

North/South Street: College Ave
East/West Street: Manila Ave
PM Peak Hr Begins at: 515 PM

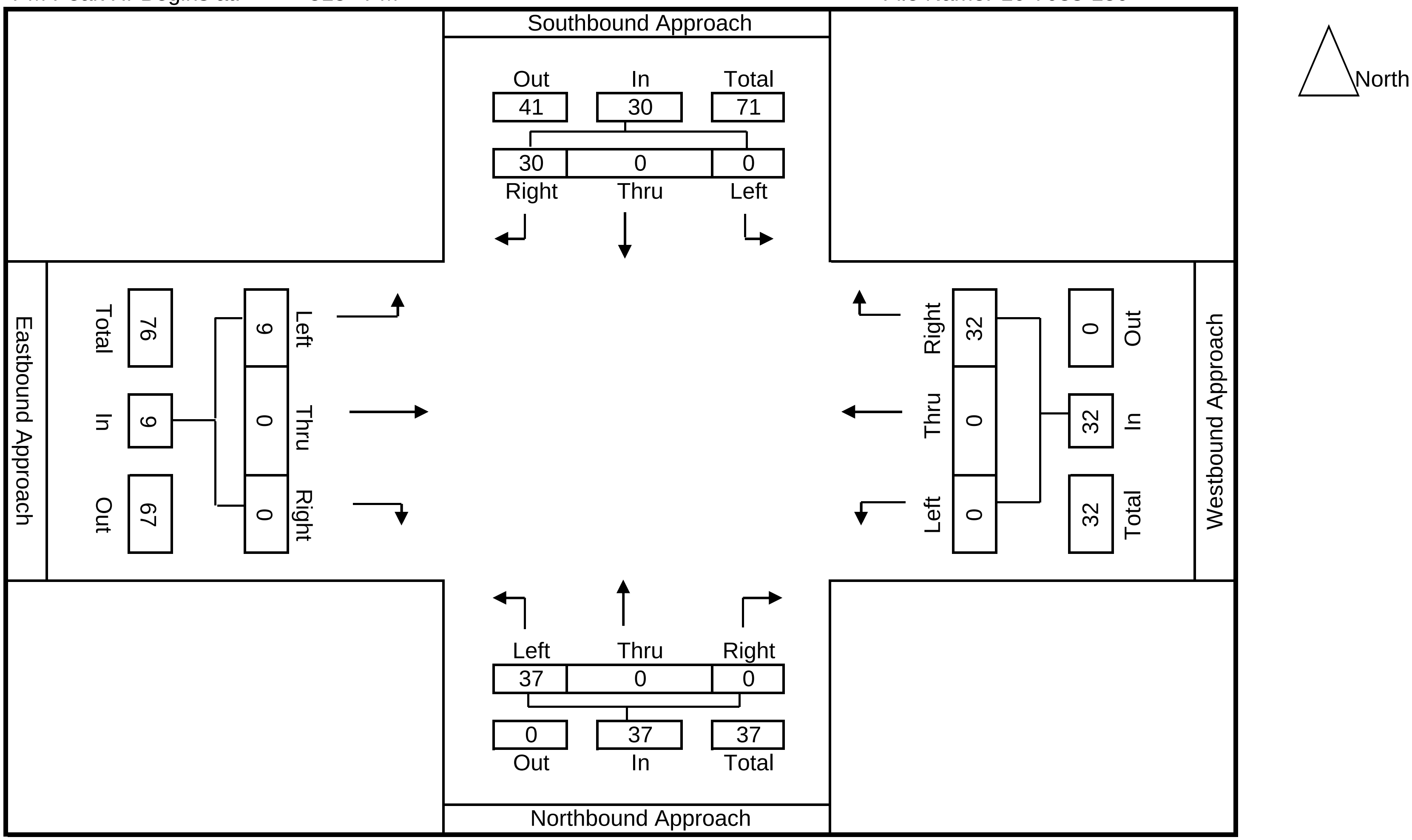
Date: 3/16/2010
City: City of Oakland
File Name: 10-7088-015



ALL TRAFFIC DATA, INC

North/South Street: College Ave (5th leg of loc 15)
East/West Street: Hudson St (entering only)
PM Peak Hr Begins at: 515 PM

Date: 3/16/2010
City: City of Oakland
File Name: 10-7088-150



Car

Study Name WC10-2728_24 Hudson Street/Manila Avenue/College Avenue
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	College Avenue Southbound					Manila Avenue Westbound					College Avenue Northbound					Hudson Street Northeastbound					Manila Avenue Southeastbound				
Start Time	Hard Right	Bear Right	Thru	Left	U-Turn	Right	Bear Right	Bear Left	Left	U-Turn	Right	Thru	Bear Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn
11:00 AM	2	4	62	11	0	7	7	2	3	0	1	64	2	3	1	1	1	0	1	0	1	3	9	2	0
11:15 AM	8	2	61	9	0	8	6	2	4	0	2	69	4	1	0	2	4	2	0	0	0	3	1	2	0
11:30 AM	8	4	52	2	0	6	1	7	2	0	3	81	4	1	0	1	1	3	2	0	2	10	4	5	1
11:45 AM	3	4	73	10	0	8	3	2	4	0	5	66	2	2	0	1	3	4	1	0	0	3	7	3	0
12:00 PM	6	4	86	5	0	12	2	3	2	0	1	73	7	2	0	5	1	5	0	0	1	9	2	3	0
12:15 PM	3	3	84	9	0	6	5	5	2	0	9	72	4	1	0	2	4	2	1	0	1	13	1	2	0
12:30 PM	7	7	70	5	0	17	7	1	1	0	1	72	5	3	0	3	3	3	4	0	4	11	2	4	0
12:45 PM	9	4	70	9	1	11	3	2	7	0	5	93	4	1	0	1	6	1	0	0	2	9	6	2	0
1:00 PM	4	5	80	7	0	12	5	1	4	0	3	89	7	0	0	3	6	4	2	0	1	3	8	1	0
1:15 PM	5	3	77	7	0	9	8	3	7	0	5	90	8	1	0	1	3	4	4	0	2	10	2	4	0
1:30 PM	7	2	84	7	0	9	10	2	2	0	3	87	7	1	0	0	5	3	3	0	3	11	4	3	0
1:45 PM	4	3	60	7	0	12	6	1	0	0	4	95	4	1	0	1	5	3	3	0	1	3	5	3	0
2:00 PM	4	5	66	5	0	9	2	3	8	0	7	86	5	0	0	2	3	5	0	0	2	5	4	2	1
2:15 PM	1	1	70	11	0	13	6	3	5	0	1	80	4	0	0	2	3	3	0	0	2	6	2	1	0
2:30 PM	4	1	85	6	0	6	6	1	2	0	6	75	3	1	1	5	5	2	0	0	1	8	2	1	0
2:45 PM	6	5	85	6	0	7	5	2	0	0	2	70	13	0	0	3	1	1	1	0	1	3	4	3	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

	College Avenue Southbound					Manila Avenue Westbound					College Avenue Northbound					Hudson Street Northeastbound					Manila Avenue Southeastbound						
Start Time	Hard Right	Bear Right	Thru	Left	U-Turn	Right	Bear Right	Bear Left	Left	U-Turn	Right	Thru	Bear Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn	15-Min Total	Hour Total
11:00 AM	2	4	64	12	0	7	7	2	3	0	1	69	2	3	1	1	1	0	1	0	1	3	9	2	0	195	802
11:15 AM	8	2	62	10	0	10	6	2	4	0	2	71	4	1	0	2	4	2	0	0	0	3	1	2	0	196	840
11:30 AM	8	4	54	2	0	6	2	7	2	0	3	83	5	1	0	1	1	3	2	0	2	10	4	5	1	206	877
11:45 AM	3	4	74	10	0	8	3	2	4	0	5	66	2	2	0	1	3	4	1	0	0	3	7	3	0	205	906
12:00 PM	6	4	87	5	0	12	2	3	2	0	1	75	8	2	0	5	1	5	0	0	1	9	2	3	0	233	952
12:15 PM	3	3	85	9	0	6	5	5	2	0	9	73	5	1	0	2	4	2	1	0	1	14	1	2	0	233	968
12:30 PM	7	7	71	5	0	17	7	1	1	0	1	76	5	3	0	3	3	3	4	0	4	11	2	4	0	235	990
12:45 PM	9	4	71	9	1	11	3	2	7	0	5	95	4	1	0	1	6	1	1	0	2	9	6	3	0	251	1012
1:00 PM	4	5	81	7	0	12	5	1	4	0	3	92	7	0	0	3	6	4	2	0	1	3	8	1	0	249	986
1:15 PM	5	3	78	7	0	9	8	3	7	0	5	91	8	1	0	1	3	4	4	0	2	10	2	4	0	255	966
1:30 PM	7	2	87	7	0	9	10	2	2	0	3	88	7	1	0	0	5	3	3	0	3	11	4	3	0	257	928
1:45 PM	4	3	62	7	0	12	6	1	0	0	4	96	4	2	0	1	5	3	3	0	1	3	5	3	0	225	896
2:00 PM	4	5	67	5	0	9	2	3	8	0	7	89	5	0	0	2	3	5	0	0	2	5	5	2	1	229	893
2:15 PM	1	1	71	12	0	13	6	3	5	0	1	81	4	0	0	2	3	3	0	0	2	6	2	1	0	217	
2:30 PM	4	1	87	6	0	6	6	1	2	0	6	76	3	1	1	5	5	2	0	0	1	9	2	1	0	225	
2:45 PM	6	5	86	6	0	7	6	2	0	0	2	72	13	0	0	3	1	1	1	0	1	3	4	3	0	222	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
Peak Hour	**25**	**14**	**317**	**30**	**1**	**41**	**26**	**8**	**20**	**0**	**16**	**366**	**26**	**3**	**0**	**5**	**20**	**12**	**10**	**0**	**8**	**33**	**20**	**11**	**0**	**0.98**	

Truck

Study Name WC10-2728_24 Hudson Street/Manila Avenue/College Avenue
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound					Westbound Street Westbound					Northbound Street Northbound					North-Eastbound Street Northeastbound					South-Eastbound Street Southeastbound				
Start Time	Hard Right	Bear Right	Thru	Left	U-Turn	Right	Bear Right	Bear Left	Left	U-Turn	Right	Thru	Bear Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn
11:00 AM	0	0	2	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	1	1	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	2	0	0	0	1	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	1	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0
12:30 PM	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	0
1:00 PM	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	2	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0
2:15 PM	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
2:45 PM	0	0	1	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_24 Hudson Street/Manila Avenue/College Avenue**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound					Westbound Street Westbound					Northbound Street Northbound					North-Eastbound Street Northeastbound					South-Eastbound Street Southeastbound				
Start Time	Hard Right	Bear Right	Thru	Left	U-Turn	Right	Bear Right	Bear Left	Left	U-Turn	Right	Thru	Bear Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn
11:00 AM	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1	0	0	1	0	2	0	0
11:15 AM	1	0	3	0	0	0	0	0	0	0	1	9	0	0	0	0	0	0	1	0	0	2	0	0	0
11:30 AM	0	0	8	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	1	1	0	0	1	0	1	0	0	1	7	0	0	0	0	1	0	0	0	0	0	0	0	0
12:00 PM	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	3	0	0	2	0	0	0	0	0	5	0	0	0	1	0	0	1	0	0	0	1	0	0
12:30 PM	1	0	4	0	0	0	0	0	0	0	0	5	0	0	0	0	0	1	1	0	0	0	1	0	0
12:45 PM	0	3	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0
1:00 PM	2	0	1	0	0	0	1	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	1	2	1	0	0	1	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	1	0
1:30 PM	1	1	7	0	0	0	1	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	1	1	0	0	0	3	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	4	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	2	0	0
2:15 PM	1	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
2:30 PM	0	3	4	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	1	1	6	2	0	0	0	0	0	0	1	5	1	0	0	0	1	0	0	0	0	1	2	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**3**	**5**	**10**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**1**	**16**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**

People

Study Name WC10-2728_24 Hudson Street/Manila Avenue/College Avenue
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		North-Eastbound Stree Northeastbound		South-Eastbound Stree Southeastbound												
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW											
11:00 AM	9	13	21	15	10	14	16	18	12	12											
11:15 AM	16	8	26	13	5	7	12	13	15	17											
11:30 AM	17	23	24	15	6	7	11	16	10	11											
11:45 AM	10	13	28	20	10	9	19	10	14	10											
12:00 PM	24	15	36	32	10	9	12	15	16	17											
12:15 PM	8	12	19	15	1	3	4	12	10	20											
12:30 PM	15	9	34	20	8	10	4	9	4	11											
12:45 PM	19	15	17	34	12	6	19	12	26	9											
1:00 PM	13	8	29	34	15	14	17	11	19	10											
1:15 PM	7	15	26	26	5	9	21	12	20	12											
1:30 PM	15	9	24	23	7	7	20	10	23	18											
1:45 PM	19	5	23	24	11	7	11	25	12	41											
2:00 PM	7	10	18	15	5	5	15	6	23	10											
2:15 PM	6	4	29	15	9	7	8	8	11	10											
2:30 PM	15	24	18	24	7	5	16	11	15	9											
2:45 PM	9	10	19	28	11	6	14	14	16	13											
3:00 PM	0	2	0	0	0	0	0	0	0	0											
Peak Hour	**54**	**47**	**96**	**117**	**39**	**36**	**77**	**45**	**88**	**49**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	101		213		75		122		137												

Pedal Bike (Crosswalk)

Study Name **WC10-2728_24 Hudson Street/Manila Avenue/College Avenue**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		North-Eastbound Street Northeastbound		South-Eastbound Street Southeastbound	
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW
11:00 AM	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	1	0
11:30 AM	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0
12:00 PM	1	1	0	0	1	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	1	0	1	1	0
12:45 PM	0	0	3	0	0	0	0	0	0	1
1:00 PM	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	1	0	0	0	0	0	0	1
1:30 PM	0	0	0	1	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0
2:00 PM	1	0	1	0	0	0	1	0	0	0
2:15 PM	1	0	1	0	1	0	0	0	0	0
2:30 PM	0	0	0	1	0	0	0	0	0	0
2:45 PM	0	0	1	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**2**

0 **0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **0**

Totals

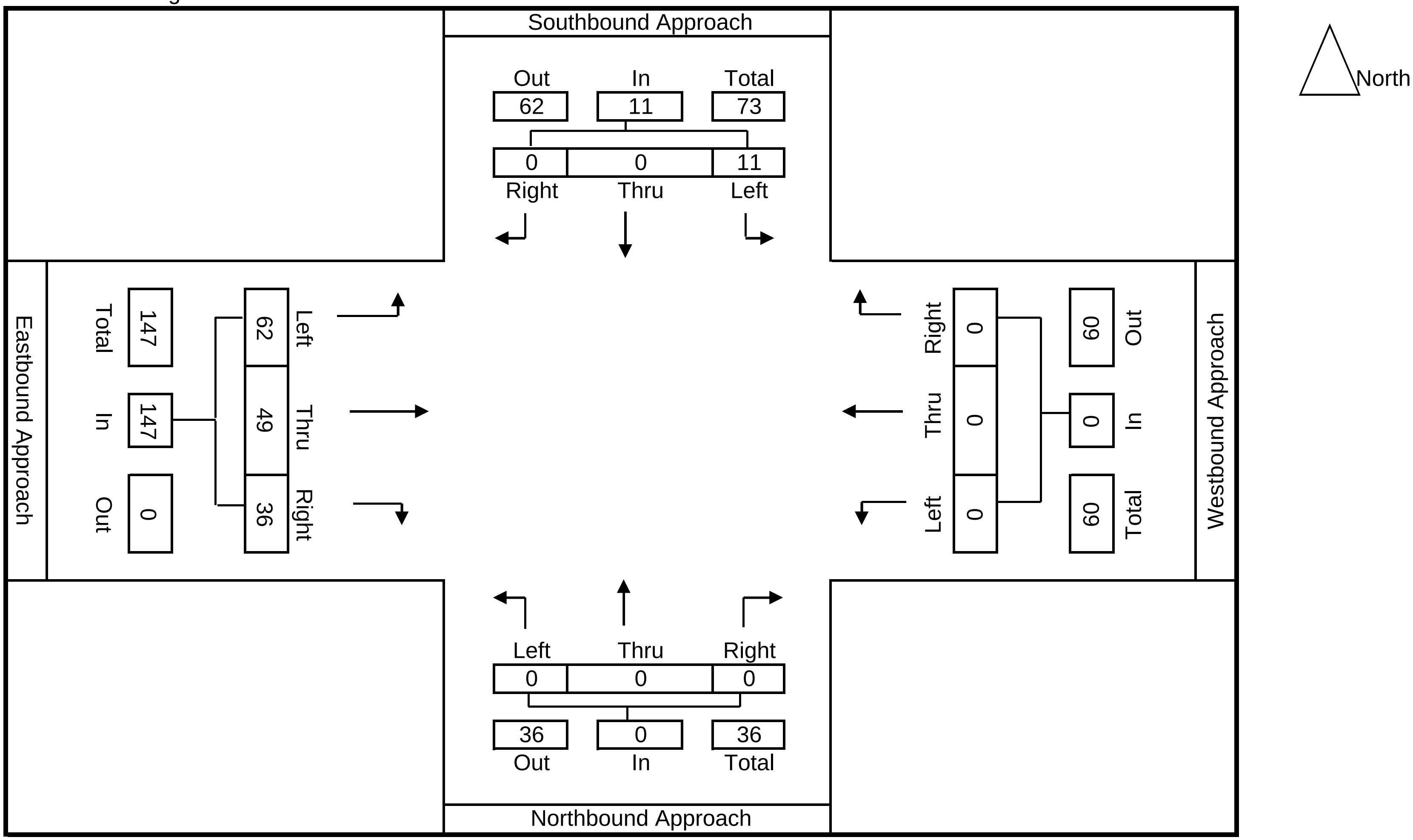
Study Name **WC10-2728_24 Hudson Street/Manila Avenue/College Avenue**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound					Westbound Street Westbound					Northbound Street Northbound					North-Eastbound Street Northeastbound					South-Eastbound Street Southeastbound				
Start Time	Hard Right	Bear Right	Thru	Left	U-Turn	Right	Bear Right	Bear Left	Left	U-Turn	Right	Thru	Bear Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn
11:00 AM	2	4	66	12	0	7	7	2	3	0	1	72	2	3	1	1	1	1	1	0	2	3	11	2	0
11:15 AM	9	2	65	10	0	10	6	2	4	0	3	80	4	1	0	2	4	2	1	0	0	5	1	2	0
11:30 AM	8	4	62	2	0	6	2	7	2	0	3	85	5	1	0	1	1	3	2	0	2	10	4	5	1
11:45 AM	3	5	75	10	0	9	3	3	4	0	6	73	2	2	0	1	4	4	1	0	0	3	7	3	0
12:00 PM	6	4	88	5	0	12	2	3	2	0	1	77	8	2	0	5	1	5	0	0	1	9	2	3	0
12:15 PM	3	3	88	9	0	8	5	5	2	0	9	78	5	1	0	3	4	2	2	0	1	14	2	2	0
12:30 PM	8	7	75	5	0	17	7	1	1	0	1	81	5	3	0	3	3	4	5	0	4	11	3	4	0
12:45 PM	9	7	71	9	1	12	3	2	7	0	5	96	4	1	0	1	7	1	2	0	2	9	6	3	0
1:00 PM	6	5	82	7	0	12	6	1	4	0	3	99	7	0	0	3	6	4	2	0	1	3	8	1	0
1:15 PM	5	4	80	8	0	9	9	3	7	0	5	97	8	1	0	1	3	4	4	0	2	10	2	5	0
1:30 PM	8	3	94	7	0	9	11	2	2	0	4	90	7	1	0	0	5	3	3	0	3	11	4	3	0
1:45 PM	4	4	63	7	0	12	9	2	0	0	4	102	4	2	0	1	5	3	3	0	1	3	5	3	0
2:00 PM	4	5	71	5	0	9	2	3	8	0	7	98	5	0	0	2	3	5	0	0	2	5	7	2	1
2:15 PM	2	1	74	12	0	13	6	3	5	0	1	82	4	0	0	2	3	3	0	0	2	7	2	1	0
2:30 PM	4	4	91	6	0	6	6	1	2	0	6	80	3	1	1	5	5	2	0	0	1	9	2	1	0
2:45 PM	7	6	92	8	0	7	6	2	0	0	3	77	14	0	0	3	2	1	1	0	1	4	6	3	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

ALL TRAFFIC DATA, INC

North/South Street: College Ave (5th leg of loc 15)
East/West Street: Hudson St (exiting only)
PM Peak Hr Begins at: 515 PM

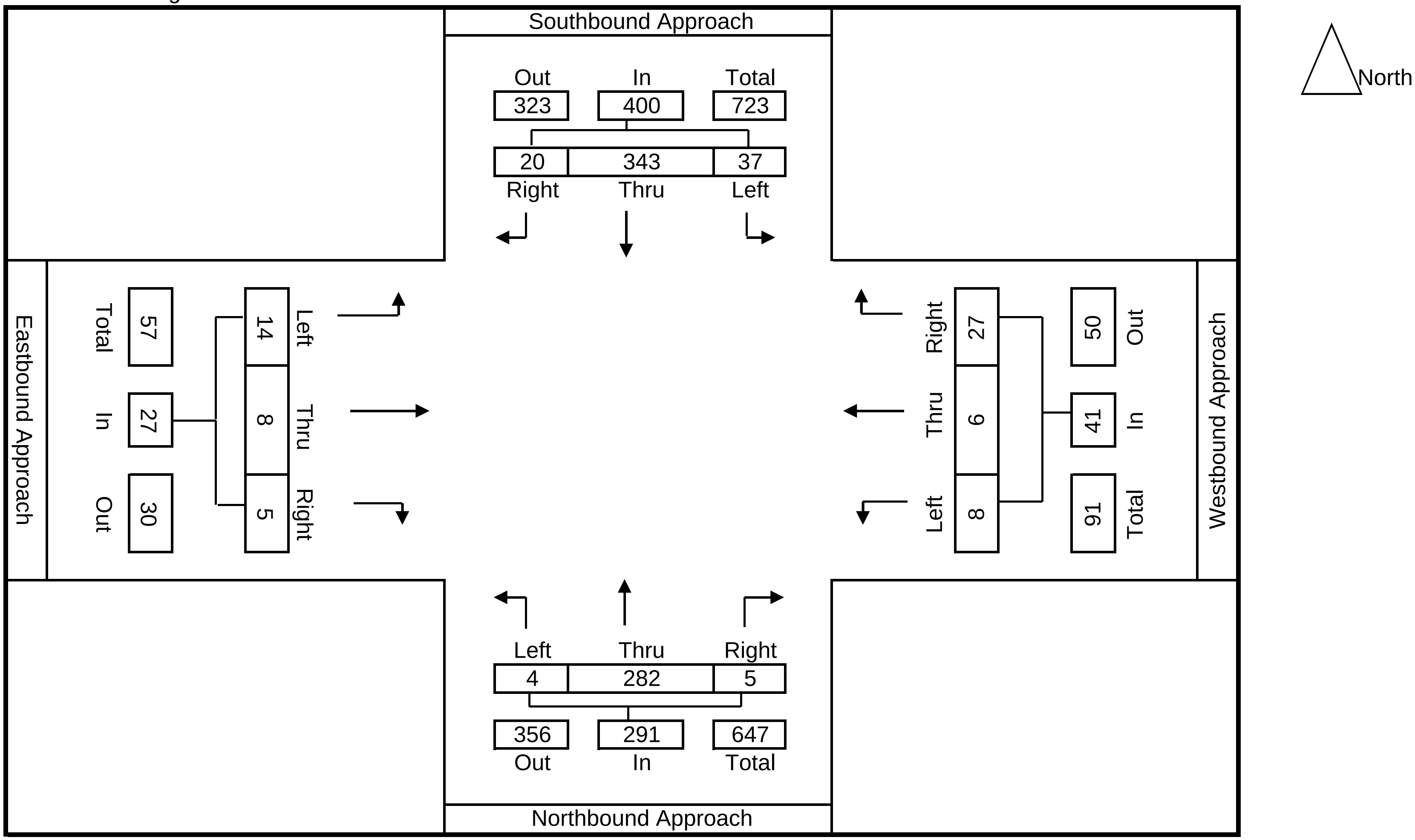
Date: 3/16/2010
City: City of Oakland
File Name: 10-7088-151



ALL TRAFFIC DATA, INC

North/South Street: College Ave
East/West Street: Manila Ave
PM Peak Hr Begins at: 515 PM

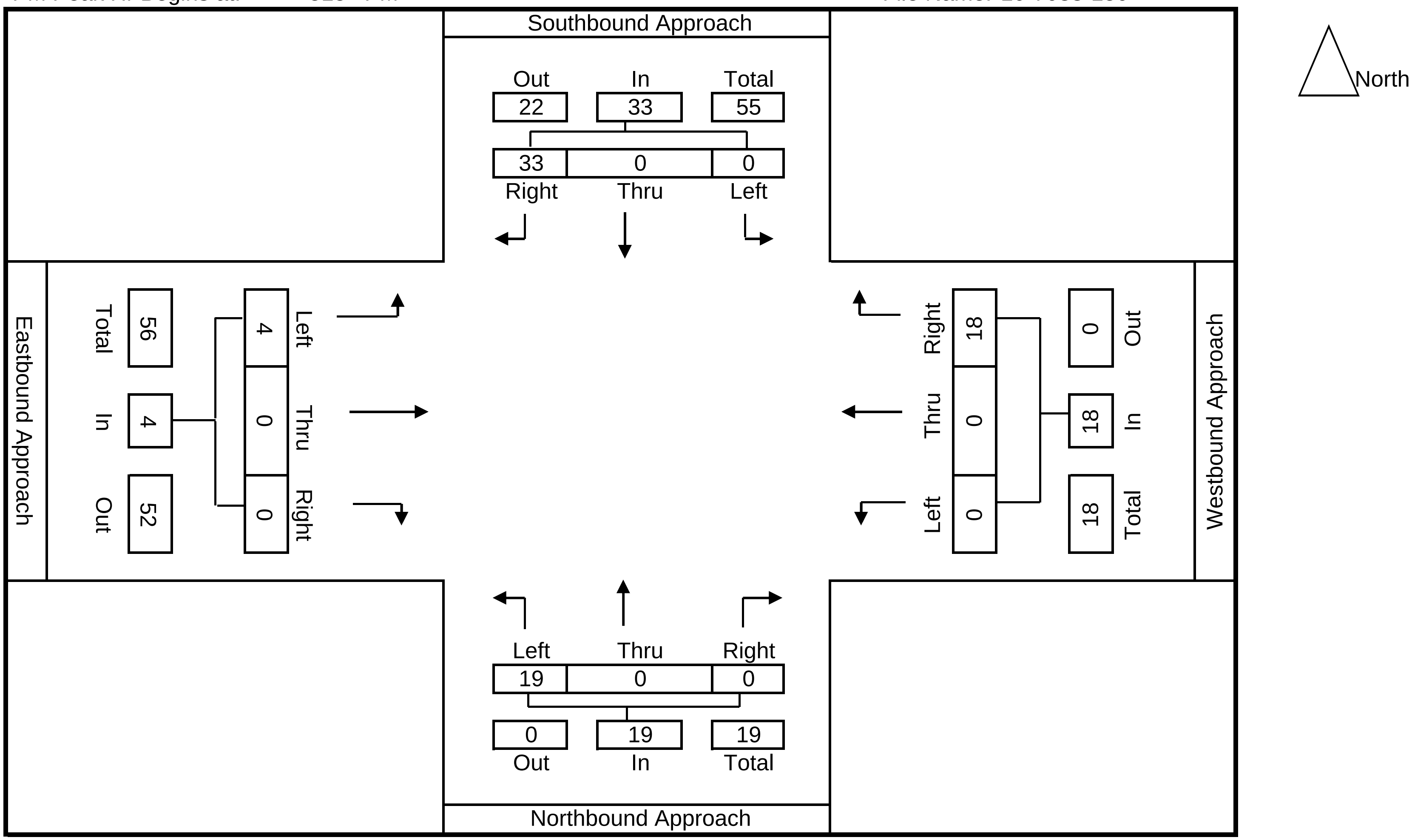
Date: 3/13/2010
City: City of Oakland
File Name: 10-7088-015



ALL TRAFFIC DATA, INC

North/South Street: College Ave (5th leg of loc 15)
East/West Street: Hudson St (entering only)
PM Peak Hr Begins at: 515 PM

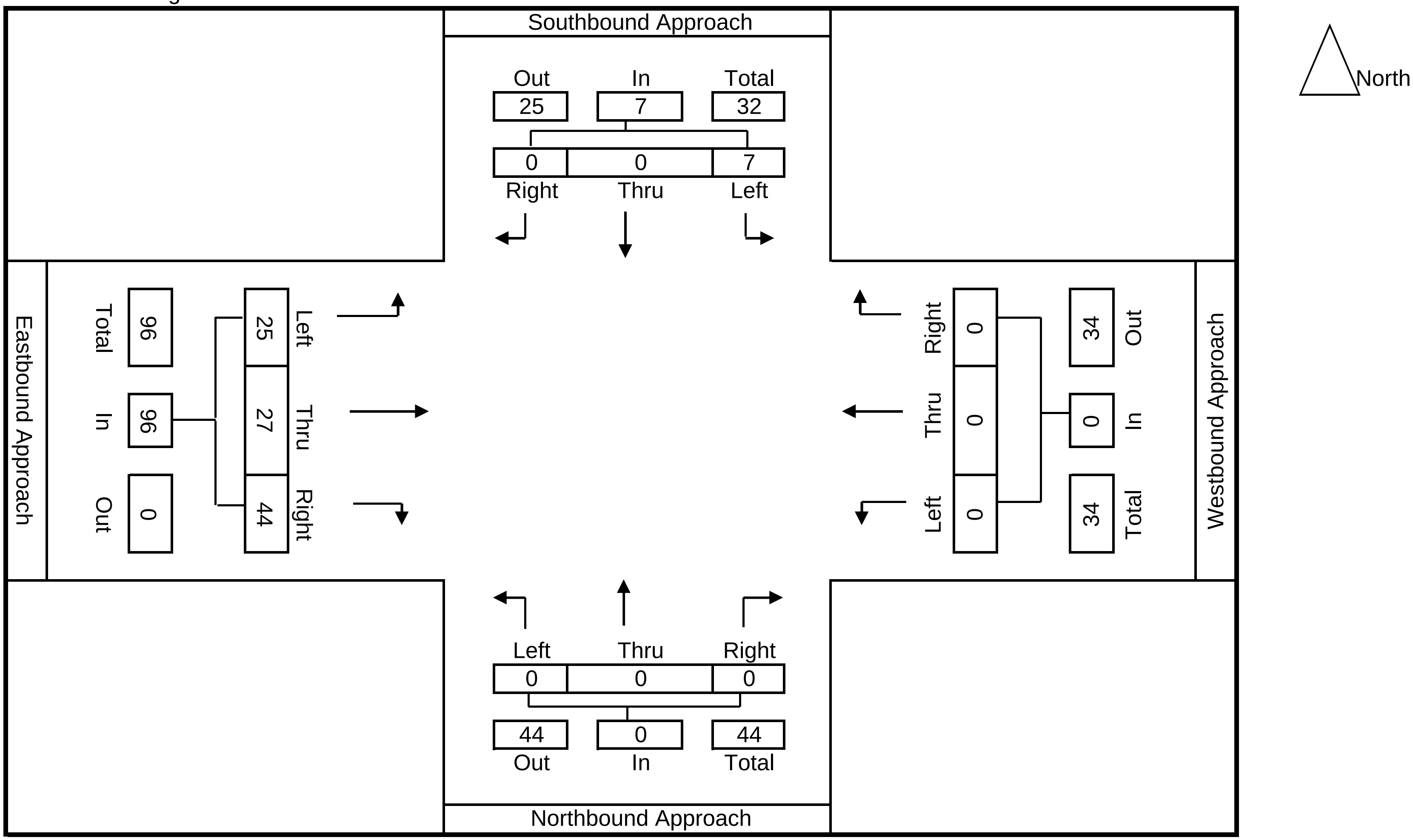
Date: 3/13/2010
City: City of Oakland
File Name: 10-7088-150



ALL TRAFFIC DATA, INC

North/South Street: College Ave (5th leg of loc 15)
East/West Street: Hudson St (exiting only)
PM Peak Hr Begins at: 515 PM

Date: 3/13/2010
City: City of Oakland
File Name: 10-7088-151



MARKS TRAFFIC DATA
mietekm@comcast.net
916.806.0250

CITY OF OAKLAND

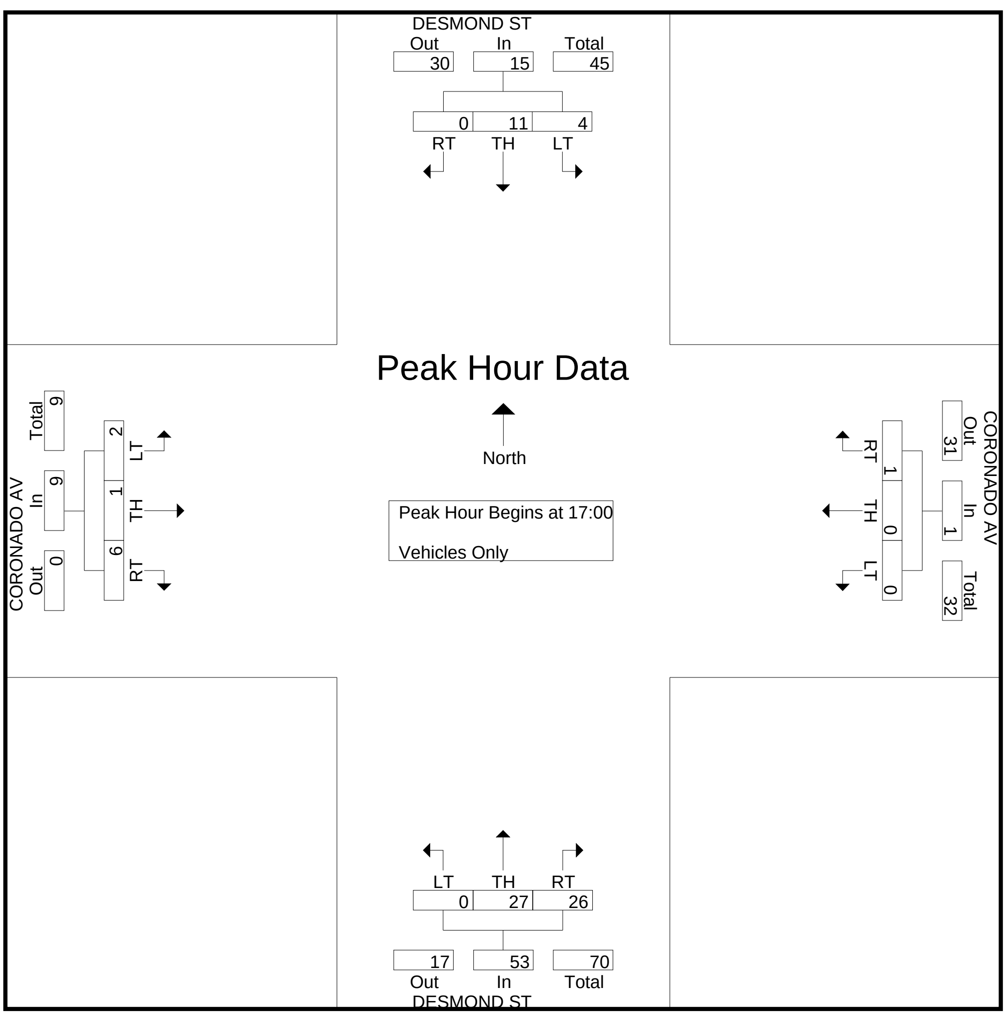
fp

File Name : desmond-coronado-p
Site Code : 6
Start Date : 11/16/2010
Page No : 1

Groups Printed- Vehicles Only

	DESMOND ST Southbound				CORONADO AV Westbound				DESMOND ST Northbound				CORONADO AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	3	1	4	0	0	0	0	3	5	0	8	0	2	1	3	15
16:15	0	2	2	4	0	0	0	0	4	2	0	6	0	0	0	0	10
16:30	0	1	0	1	0	0	0	0	1	1	0	2	2	1	1	4	7
16:45	0	4	2	6	0	0	0	0	0	5	0	5	0	0	2	2	13
Total	0	10	5	15	0	0	0	0	8	13	0	21	2	3	4	9	45
17:00	0	4	1	5	0	0	0	0	6	3	0	9	3	0	0	3	17
17:15	0	4	1	5	1	0	0	1	3	9	0	12	1	0	0	1	19
17:30	0	3	0	3	0	0	0	0	12	8	0	20	1	0	1	2	25
17:45	0	0	2	2	0	0	0	0	5	7	0	12	1	1	1	3	17
Total	0	11	4	15	1	0	0	1	26	27	0	53	6	1	2	9	78
Grand Total	0	21	9	30	1	0	0	1	34	40	0	74	8	4	6	18	123
Apprch %	0	70	30		100	0	0		45.9	54.1	0		44.4	22.2	33.3		
Total %	0	17.1	7.3	24.4	0.8	0	0	0.8	27.6	32.5	0	60.2	6.5	3.3	4.9	14.6	

	DESMOND ST Southbound				CORONADO AV Westbound				DESMOND ST Northbound				CORONADO AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	**4**	1	**5**	0	0	0	0	6	3	0	9	**3**	0	0	**3**	17
17:15	0	4	1	5	**1**	0	0	**1**	3	**9**	0	12	1	0	0	1	19
17:30	0	3	0	3	0	0	0	0	**12**	8	0	**20**	1	0	**1**	2	**25**
17:45	0	0	**2**	2	0	0	0	0	5	7	0	12	1	**1**	1	3	17
Total Volume	0	11	4	15	1	0	0	1	26	27	0	53	6	1	2	9	78
% App. Total	0	73.3	26.7		100	0	0		49.1	50.9	0		66.7	11.1	22.2		
PHF	.000	.688	.500	.750	.250	.000	.000	.250	.542	.750	.000	.663	.500	.250	.500	.750	.780



Car

Study Name WC10-2728_25 Desmond St/Coronado Ave
Start Date 10/27/2012
Start Time 11:00 AM
Site Code

	Desmond Street Southbound			Desmond Street Northbound			Coronado Avenue Eastbound		
Start Time	Thru	Left	U-Turn	Right	Thru	U-Turn	Right	Thru	Left
11:00 AM	0	2	0	3	1	0	1	3	0
11:15 AM	0	1	0	5	4	0	1	3	0
11:30 AM	3	1	0	3	4	0	0	0	1
11:45 AM	2	2	0	4	2	0	0	0	0
12:00 PM	2	2	0	2	4	0	0	3	0
12:15 PM	0	0	0	2	4	0	0	0	0
12:30 PM	3	1	0	3	7	0	0	0	0
12:45 PM	0	4	0	3	3	0	0	0	1
1:00 PM	5	1	1	5	4	0	0	0	1
1:15 PM	1	1	0	6	3	0	2	1	0
1:30 PM	0	2	1	2	2	0	0	0	1
1:45 PM	3	1	0	1	3	0	2	0	1
2:00 PM	3	1	0	3	4	0	0	0	0
2:15 PM	1	4	0	3	6	0	0	0	0
2:30 PM	2	3	0	4	4	0	0	0	0
2:45 PM	1	1	0	7	5	0	0	1	1

	Desmond Street Southbound			Desmond Street Northbound			Coronado Avenue Eastbound				
Start Time	Thru	Left	U-Turn	Right	Thru	U-Turn	Right	Thru	Left	15-Min Total	Hour Total
11:00 AM	0	2	0	3	1	0	1	3	0	10	46
11:15 AM	0	1	0	5	4	0	1	3	0	14	49
11:30 AM	3	1	0	3	4	0	0	0	1	12	41
11:45 AM	2	2	0	4	2	0	0	0	0	10	43
12:00 PM	2	2	0	2	4	0	0	3	0	13	44
12:15 PM	0	0	0	2	4	0	0	0	0	6	48
12:30 PM	3	1	0	3	7	0	0	0	0	14	57
12:45 PM	0	4	0	3	3	0	0	0	1	11	51
1:00 PM	5	1	1	5	4	0	0	0	1	17	52
1:15 PM	2	1	0	6	3	0	2	1	0	15	46
1:30 PM	0	2	1	2	2	0	0	0	1	8	45
1:45 PM	3	1	0	1	3	0	2	1	1	12	50
2:00 PM	3	1	0	3	4	0	0	0	0	11	54
2:15 PM	1	4	0	3	6	0	0	0	0	14	
2:30 PM	2	3	0	4	4	0	0	0	0	13	
2:45 PM	1	1	0	7	5	0	0	1	1	16	
Peak Hour	**7**	**8**	**2**	**16**	**12**	**0**	**2**	**1**	**3**	**0.75**	

0 0 0 0 0 0 0

Truck

Study Name **WC10-2728_25 Desmond St/Coronado Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Northbound Street Northbound			Eastbound Street Eastbound				
Start Time	Thru	Left	U-Turn	Right	Thru	U-Turn	Right	Thru	Left		
11:00 AM	0	0	0	0	0	0	0	0	0		
11:15 AM	0	0	0	0	0	0	0	0	0		
11:30 AM	0	0	0	0	0	0	0	0	0		
11:45 AM	0	0	0	0	0	0	0	0	0		
12:00 PM	0	0	0	0	0	0	0	0	0		
12:15 PM	0	0	0	0	0	0	0	0	0		
12:30 PM	0	0	0	0	0	0	0	0	0		
12:45 PM	0	0	0	0	0	0	0	0	0		
1:00 PM	0	0	0	0	0	0	0	0	0		
1:15 PM	1	0	0	0	0	0	0	0	0		
1:30 PM	0	0	0	0	0	0	0	0	0		
1:45 PM	0	0	0	0	0	0	0	1	0		
2:00 PM	0	0	0	0	0	0	0	0	0		
2:15 PM	0	0	0	0	0	0	0	0	0		
2:30 PM	0	0	0	0	0	0	0	0	0		
2:45 PM	0	0	0	0	0	0	0	0	0		
Peak Hour	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_25 Desmond St/Coronado Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Northbound Street Northbound			Eastbound Street Eastbound				
Start Time	Thru	Left	U-Turn	Right	Thru	U-Turn	Right	Thru	Left		
11:00 AM	0	0	0	0	0	0	0	0	0		
11:15 AM	0	0	0	0	0	0	0	0	0		
11:30 AM	0	2	0	0	0	0	0	0	0		
11:45 AM	0	0	0	0	0	0	0	0	0		
12:00 PM	0	0	0	0	0	0	0	0	0		
12:15 PM	0	1	0	0	0	0	0	0	0		
12:30 PM	0	0	0	1	0	0	0	0	0		
12:45 PM	0	1	0	0	0	0	0	0	0		
1:00 PM	0	0	0	0	0	0	0	0	0		
1:15 PM	0	0	0	0	0	0	0	0	0		
1:30 PM	0	0	0	0	0	0	0	0	0		
1:45 PM	0	0	0	0	1	0	0	0	0		
2:00 PM	0	0	0	1	0	0	0	0	0		
2:15 PM	0	0	0	0	1	0	0	0	0		
2:30 PM	3	0	0	0	0	0	0	0	0		
2:45 PM	1	0	0	0	0	0	0	0	0		
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

People

Study Name **WC10-2728_25 Desmond St/Coronado Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	1	1	3	6	0	2	2	2			
11:15 AM	1	0	1	1	1	1	0	0			
11:30 AM	1	1	0	0	0	0	0	0			
11:45 AM	2	1	2	1	0	0	0	0			
12:00 PM	2	0	1	0	0	0	3	0			
12:15 PM	0	0	0	0	0	0	0	1			
12:30 PM	0	0	0	0	0	0	0	1			
12:45 PM	0	0	1	1	0	0	0	0			
1:00 PM	1	0	0	3	0	1	0	0			
1:15 PM	2	2	1	0	0	0	0	0			
1:30 PM	1	0	0	0	0	0	0	1			
1:45 PM	0	0	0	0	0	0	0	0			
2:00 PM	2	1	0	0	0	0	0	0			
2:15 PM	0	0	3	4	0	0	0	0			
2:30 PM	0	0	0	0	0	0	0	0			
2:45 PM	0	0	1	0	0	0	0	1			
Peak Hour	**4**	**2**	**2**	**4**	**0**	**1**	**0**	**1**	**0**	**0**	**0**
	6		6		1		1				

Pedal Bike (Crosswalk)

Study Name **WC10-2728_25 Desmond St/Coronado Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	0	0	0	0	0	0	0	0			
11:15 AM	0	0	0	0	0	0	0	0			
11:30 AM	0	0	0	0	0	0	0	0			
11:45 AM	0	0	0	0	0	0	0	0			
12:00 PM	0	0	0	0	0	0	0	0			
12:15 PM	0	0	0	0	0	0	0	0			
12:30 PM	0	0	0	0	0	0	0	0			
12:45 PM	0	0	0	0	0	0	0	0			
1:00 PM	0	0	0	0	0	0	0	0			
1:15 PM	0	0	0	0	0	0	0	0			
1:30 PM	0	0	0	0	0	0	0	0			
1:45 PM	0	0	0	0	0	0	0	0			
2:00 PM	0	0	0	0	0	0	0	0			
2:15 PM	0	0	0	0	0	0	0	0			
2:30 PM	0	0	0	0	0	0	0	0			
2:45 PM	0	0	0	0	0	0	0	0			
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_25 Desmond St/Coronado Ave**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound			Northbound Street Northbound			Eastbound Street Eastbound		
Start Time	Thru	Left	U-Turn	Right	Thru	U-Turn	Right	Thru	Left
11:00 AM	0	2	0	3	1	0	1	3	0
11:15 AM	0	1	0	5	4	0	1	3	0
11:30 AM	3	3	0	3	4	0	0	0	1
11:45 AM	2	2	0	4	2	0	0	0	0
12:00 PM	2	2	0	2	4	0	0	3	0
12:15 PM	0	1	0	2	4	0	0	0	0
12:30 PM	3	1	0	4	7	0	0	0	0
12:45 PM	0	5	0	3	3	0	0	0	1
1:00 PM	5	1	1	5	4	0	0	0	1
1:15 PM	2	1	0	6	3	0	2	1	0
1:30 PM	0	2	1	2	2	0	0	0	1
1:45 PM	3	1	0	1	4	0	2	1	1
2:00 PM	3	1	0	4	4	0	0	0	0
2:15 PM	1	4	0	3	7	0	0	0	0
2:30 PM	5	3	0	4	4	0	0	0	0
2:45 PM	2	1	0	7	5	0	0	1	1

MARKS TRAFFIC DATA
mietekm@comcast.net
916.806.0250

CITY OF OAKLAND

fp

File Name : desmond-coronado-s
Site Code : 6
Start Date : 11/13/2010
Page No : 1

Groups Printed- Vehicles Only

	DESMOND ST Southbound				CORONADO AV Westbound				DESMOND ST Northbound				CORONADO AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	7	4	11	0	0	0	0	3	2	0	5	3	0	0	3	19
16:15	0	1	0	1	0	0	0	0	2	1	0	3	1	0	0	1	5
16:30	0	1	2	3	0	0	0	0	1	5	0	6	2	1	0	3	12
16:45	0	7	4	11	0	0	0	0	1	1	0	2	1	2	0	3	16
Total	0	16	10	26	0	0	0	0	7	9	0	16	7	3	0	10	52
17:00	0	1	2	3	0	0	0	0	2	0	0	2	2	0	0	2	7
17:15	0	3	2	5	0	0	0	0	3	7	0	10	2	1	2	5	20
17:30	0	1	0	1	0	0	0	0	2	2	0	4	0	0	0	0	5
17:45	0	3	2	5	0	0	0	0	4	2	0	6	2	2	0	4	15
Total	0	8	6	14	0	0	0	0	11	11	0	22	6	3	2	11	47
18:00	0	1	2	3	0	0	0	0	0	6	0	6	1	3	0	4	13
18:15	0	0	2	2	0	0	0	0	2	2	0	4	0	0	0	0	6
18:30	0	1	1	2	0	0	0	0	0	1	0	1	0	0	0	0	3
18:45	0	0	1	1	0	0	0	0	3	0	0	3	1	0	1	2	6
Total	0	2	6	8	0	0	0	0	5	9	0	14	2	3	1	6	28
Grand Total	0	26	22	48	0	0	0	0	23	29	0	52	15	9	3	27	127
Apprch %	0	54.2	45.8		0	0	0		44.2	55.8	0		55.6	33.3	11.1		
Total %	0	20.5	17.3	37.8	0	0	0	0	18.1	22.8	0	40.9	11.8	7.1	2.4	21.3	

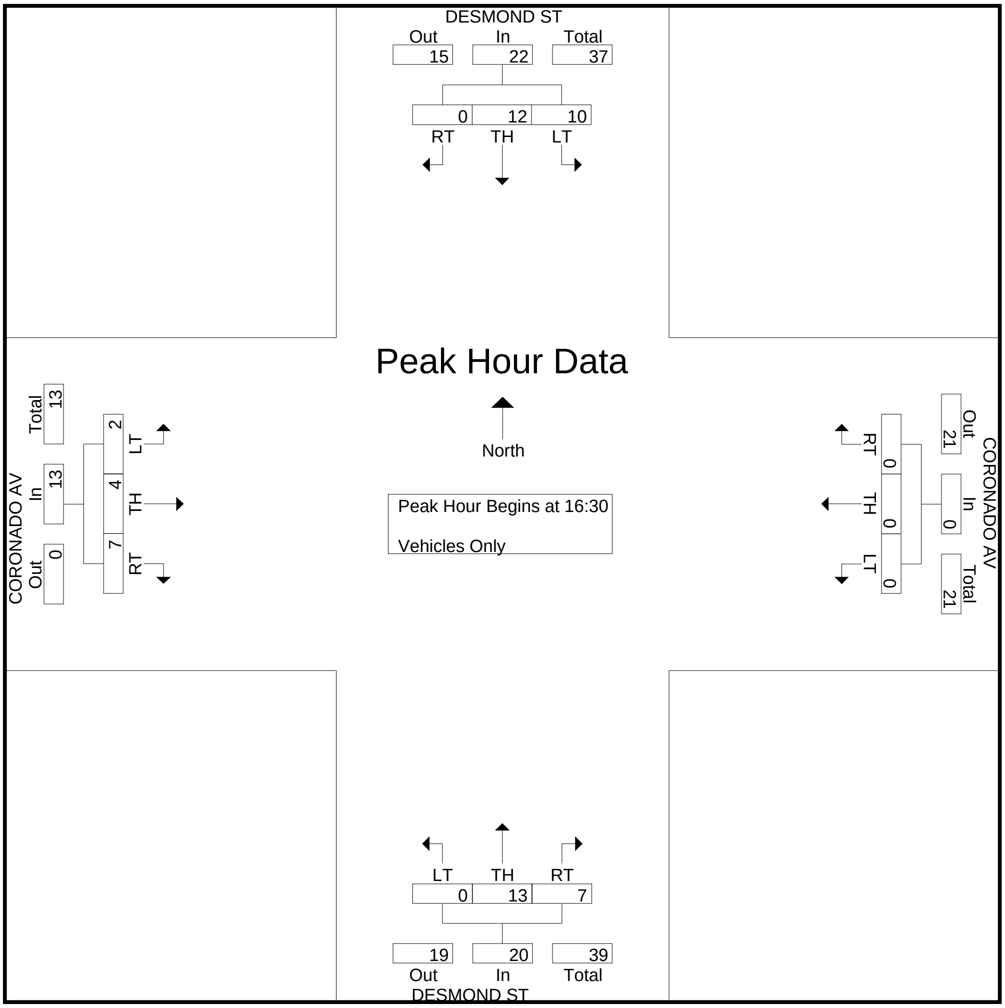
	DESMOND ST Southbound				CORONADO AV Westbound				DESMOND ST Northbound				CORONADO AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	0	1	2	3	0	0	0	0	1	5	0	6	**2**	1	0	3	12
16:45	0	**7**	**4**	**11**	0	0	0	0	1	1	0	2	1	**2**	0	3	16
17:00	0	1	2	3	0	0	0	0	2	0	0	2	2	0	0	2	7
17:15	0	3	2	5	0	0	0	0	**3**	**7**	0	**10**	2	1	**2**	**5**	**20**
Total Volume	0	12	10	22	0	0	0	0	7	13	0	20	7	4	2	13	55
% App. Total	0	54.5	45.5		0	0	0		35	65	0		53.8	30.8	15.4		
PHF	.000	.429	.625	.500	.000	.000	.000	.000	.583	.464	.000	.500	.875	.500	.250	.650	.688

MARKS TRAFFIC DATA
mietekm@comcast.net
916.806.0250

CITY OF OAKLAND

fp

File Name : desmond-coronado-s
Site Code : 6
Start Date : 11/13/2010
Page No : 2



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CITY OF OAKLAND

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File Name : coronado-51-p
Site Code : 7
Start Date : 11/16/2010
Page No : 1

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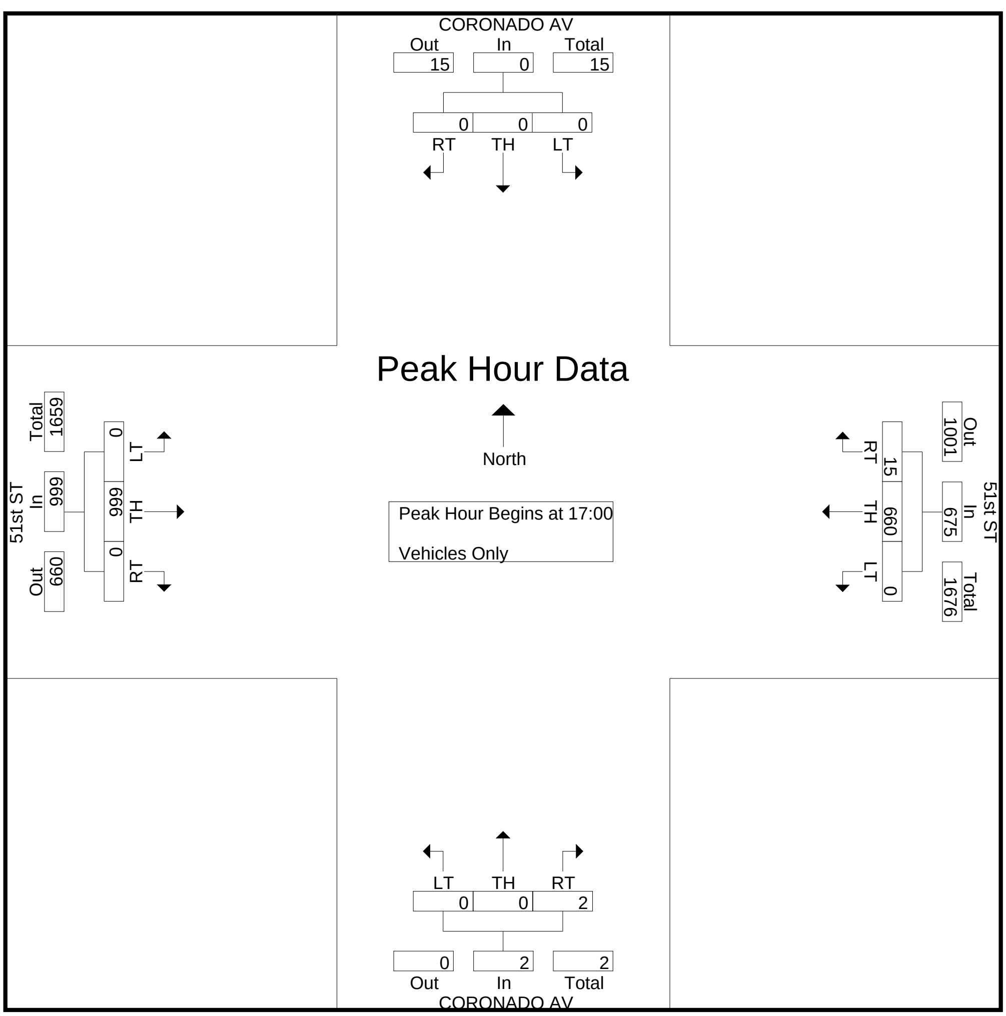
	CORONADO AV Southbound				51st ST Westbound				CORONADO AV Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	0	0	0	1	158	0	159	2	0	0	2	0	168	0	168	329
16:15	0	0	0	0	1	172	0	173	0	0	0	0	3	190	0	193	366
16:30	0	0	0	0	1	167	0	168	0	0	0	0	0	192	0	192	360
16:45	0	0	0	0	5	141	0	146	3	0	0	3	0	243	0	243	392
Total	0	0	0	0	8	638	0	646	5	0	0	5	3	793	0	796	1447
17:00	0	0	0	0	4	158	0	162	0	0	0	0	0	199	0	199	361
17:15	0	0	0	0	1	158	0	159	1	0	0	1	0	252	0	252	412
17:30	0	0	0	0	3	167	0	170	1	0	0	1	0	280	0	280	451
17:45	0	0	0	0	7	177	0	184	0	0	0	0	0	268	0	268	452
Total	0	0	0	0	15	660	0	675	2	0	0	2	0	999	0	999	1676
Grand Total	0	0	0	0	23	1298	0	1321	7	0	0	7	3	1792	0	1795	3123
Apprch %	0	0	0		1.7	98.3	0		100	0	0		0.2	99.8	0		
Total %	0	0	0	0	0.7	41.6	0	42.3	0.2	0	0	0.2	0.1	57.4	0	57.5	

	CORONADO AV Southbound				51st ST Westbound				CORONADO AV Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	0	0	0	4	158	0	162	0	0	0	0	0	199	0	199	361
17:15	0	0	0	0	1	158	0	159	**1**	0	0	**1**	0	252	0	252	412
17:30	0	0	0	0	3	167	0	170	1	0	0	1	0	**280**	0	**280**	451
17:45	0	0	0	0	**7**	**177**	0	**184**	0	0	0	0	0	268	0	268	**452**
Total Volume	0	0	0	0	15	660	0	675	2	0	0	2	0	999	0	999	1676
% App. Total	0	0	0		2.2	97.8	0		100	0	0		0	100	0		
PHF	.000	.000	.000	.000	.536	.932	.000	.917	.500	.000	.000	.500	.000	.892	.000	.892	.927



Car

Study Name **WC10-2728_26 Coronado Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	51st Street Westbound		Coronado Ave Northbound		51st Street Eastbound	
Start Time	Right	Thru	Right	U-Turn	Right	Thru
11:00 AM	2	144	0	0	1	128
11:15 AM	1	130	1	0	0	155
11:30 AM	1	177	1	0	0	120
11:45 AM	2	176	1	0	0	171
12:00 PM	2	181	0	0	1	140
12:15 PM	1	170	2	0	0	171
12:30 PM	0	183	4	0	1	173
12:45 PM	3	181	0	0	0	160
1:00 PM	1	198	1	0	0	164
1:15 PM	2	226	2	0	0	177
1:30 PM	2	199	0	0	0	167
1:45 PM	2	198	3	0	2	169
2:00 PM	0	171	1	0	2	162
2:15 PM	0	177	1	0	0	145
2:30 PM	1	172	0	0	0	130
2:45 PM	3	189	1	0	2	162
3:00 PM	0	0	0	0	0	4

	51st Street Westbound		Coronado Ave Northbound		51st Street Eastbound			
Start Time	Right	Thru	Right	U-Turn	Right	Thru	15-Min Total	Hour Total
11:00 AM	2	144	0	0	1	128	275	1211
11:15 AM	1	130	1	0	0	155	287	1260
11:30 AM	1	177	1	0	0	120	299	1317
11:45 AM	2	176	1	0	0	171	350	1379
12:00 PM	2	181	0	0	1	140	324	1373
12:15 PM	1	170	2	0	0	171	344	1413
12:30 PM	0	183	4	0	1	173	361	1476
12:45 PM	3	181	0	0	0	160	344	1483
1:00 PM	1	198	1	0	0	164	364	1513
1:15 PM	2	226	2	0	0	177	407	1485
1:30 PM	2	199	0	0	0	167	368	1401
1:45 PM	2	198	3	0	2	169	374	1336
2:00 PM	0	171	1	0	2	162	336	1319
2:15 PM	0	177	1	0	0	145	323	
2:30 PM	1	172	0	0	0	130	303	
2:45 PM	3	189	1	0	2	162	357	
3:00 PM	0	0	0	0	0	4	4	
Peak Hour	**8**	**804**	**3**	**0**	**0**	**668**	**0.91**	

Truck

Study Name **WC10-2728_26 Coronado Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound						
Start Time	Right	Thru	Right	U-Turn	Right	Thru					
11:00 AM	0	4	0	0	0	1					
11:15 AM	0	1	0	0	0	2					
11:30 AM	0	1	0	0	0	1					
11:45 AM	0	2	0	0	0	2					
12:00 PM	0	5	0	0	0	0					
12:15 PM	0	1	0	0	1	2					
12:30 PM	0	2	0	0	0	2					
12:45 PM	0	1	0	0	0	3					
1:00 PM	0	2	0	0	0	3					
1:15 PM	0	1	0	0	0	2					
1:30 PM	0	2	0	0	0	0					
1:45 PM	1	0	0	0	0	5					
2:00 PM	0	1	0	0	0	1					
2:15 PM	0	4	0	0	0	1					
2:30 PM	0	2	0	0	0	0					
2:45 PM	0	0	0	0	1	2					
3:00 PM	0	0	0	0	0	0					
Peak Hour	**0**	**6**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**

Pedal Bike (Road)

Study Name **WC10-2728_26 Coronado Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound						
Start Time	Right	Thru	Right	U-Turn	Right	Thru					
11:00 AM	0	0	0	0	0	2					
11:15 AM	0	4	0	0	0	0					
11:30 AM	0	0	0	0	0	1					
11:45 AM	0	0	0	0	0	1					
12:00 PM	0	3	0	0	0	0					
12:15 PM	0	2	0	0	0	0					
12:30 PM	0	3	0	0	0	2					
12:45 PM	0	0	0	0	0	1					
1:00 PM	0	1	0	0	0	0					
1:15 PM	0	1	0	0	0	2					
1:30 PM	0	0	0	0	0	0					
1:45 PM	0	2	0	0	0	0					
2:00 PM	0	1	0	0	0	3					
2:15 PM	0	4	0	0	0	1					
2:30 PM	0	0	0	0	0	3					
2:45 PM	0	0	0	0	0	4					
3:00 PM	0	0	0	0	0	0					
Peak Hour	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**

People

Study Name **WC10-2728_26 Coronado Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	1	2	0	0	0	5	0	0			
11:15 AM	2	1	0	0	1	1	0	0			
11:30 AM	1	1	0	0	0	2	0	0			
11:45 AM	1	1	0	1	4	0	0	0			
12:00 PM	2	5	1	0	1	0	0	2			
12:15 PM	6	1	0	0	1	2	0	0			
12:30 PM	3	0	0	0	3	0	0	0			
12:45 PM	6	2	0	2	0	3	0	0			
1:00 PM	1	0	0	2	1	2	0	0			
1:15 PM	2	0	0	0	0	1	0	0			
1:30 PM	1	1	0	0	0	1	0	0			
1:45 PM	0	3	0	0	1	0	0	2			
2:00 PM	0	0	1	0	1	4	0	0			
2:15 PM	0	1	0	0	0	0	0	0			
2:30 PM	2	0	0	0	0	0	0	0			
2:45 PM	4	1	2	0	2	1	0	0			
3:00 PM	0	0	0	0	0	0	0	0			
Peak Hour	**10**	**3**	**0**	**4**	**1**	**7**	**0**	**0**	**0**	**0**	**0**
	13		4		8		0				

Pedal Bike (Crosswalk)

Study Name **WC10-2728_26 Coronado Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Southbound Street Southbound		Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound				
Start Time	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW	Peds CCW	Peds CW			
11:00 AM	0	0	0	0	0	0	0	0			
11:15 AM	0	0	0	0	0	0	0	0			
11:30 AM	0	1	0	0	0	0	0	0			
11:45 AM	0	1	0	0	0	0	0	0			
12:00 PM	0	0	0	0	0	0	0	0			
12:15 PM	0	0	0	0	0	0	0	0			
12:30 PM	0	0	0	0	0	0	0	0			
12:45 PM	0	0	0	0	0	0	0	0			
1:00 PM	1	0	0	0	0	0	0	0			
1:15 PM	0	0	0	0	0	0	0	0			
1:30 PM	0	0	0	0	0	0	0	0			
1:45 PM	0	0	0	0	0	0	0	0			
2:00 PM	0	0	0	0	0	0	0	0			
2:15 PM	0	0	0	0	0	0	0	0			
2:30 PM	0	0	0	0	0	0	0	0			
2:45 PM	0	0	0	0	0	0	0	0			
3:00 PM	0	0	0	0	0	0	0	0			
Peak Hour	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Totals

Study Name **WC10-2728_26 Coronado Ave/51st Street**
Start Date **10/27/2012**
Start Time **11:00 AM**
Site Code

	Westbound Street Westbound		Northbound Street Northbound		Eastbound Street Eastbound						
Start Time	Right	Thru	Right	U-Turn	Right	Thru					
11:00 AM	2	148	0	0	1	131					
11:15 AM	1	135	1	0	0	157					
11:30 AM	1	178	1	0	0	122					
11:45 AM	2	178	1	0	0	174					
12:00 PM	2	189	0	0	1	140					
12:15 PM	1	173	2	0	1	173					
12:30 PM	0	188	4	0	1	177					
12:45 PM	3	182	0	0	0	164					
1:00 PM	1	201	1	0	0	167					
1:15 PM	2	228	2	0	0	181					
1:30 PM	2	201	0	0	0	167					
1:45 PM	3	200	3	0	2	174					
2:00 PM	0	173	1	0	2	166					
2:15 PM	0	185	1	0	0	147					
2:30 PM	1	174	0	0	0	133					
2:45 PM	3	189	1	0	3	168					
3:00 PM	0	0	0	0	0	4					
Peak Hour	**8**	**812**	**3**	**0**	**0**	**679**	**0**	**0**	**0**	**0**	**0**

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File Name : coronado-51-s
Site Code : 7
Start Date : 11/13/2010
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	CORONADO AV Southbound				51st ST Westbound				CORONADO AV Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	0	0	0	3	185	0	188	1	0	0	1	0	156	0	156	345
16:15	0	0	0	0	3	133	0	136	1	0	0	1	1	165	0	166	303
16:30	0	0	0	0	4	145	0	149	0	0	0	0	3	154	0	157	306
16:45	0	0	0	0	2	110	0	112	0	0	0	0	0	158	0	158	270
Total	0	0	0	0	12	573	0	585	2	0	0	2	4	633	0	637	1224
17:00	0	0	0	0	4	154	0	158	1	0	0	1	0	124	0	124	283
17:15	0	0	0	0	3	138	0	141	1	0	0	1	1	133	0	134	276
17:30	0	0	0	0	2	117	0	119	1	0	0	1	0	122	0	122	242
17:45	0	0	0	0	8	128	0	136	0	0	0	0	1	118	0	119	255
Total	0	0	0	0	17	537	0	554	3	0	0	3	2	497	0	499	1056
18:00	0	0	0	0	1	133	0	134	0	0	0	0	0	116	0	116	250
18:15	0	0	0	0	0	130	0	130	0	0	0	0	0	121	0	121	251
18:30	0	0	0	0	1	103	0	104	1	0	0	1	0	94	0	94	199
18:45	0	0	0	0	3	81	0	84	1	0	0	1	0	98	0	98	183
Total	0	0	0	0	5	447	0	452	2	0	0	2	0	429	0	429	883
Grand Total	0	0	0	0	34	1557	0	1591	7	0	0	7	6	1559	0	1565	3163
Apprch %	0	0	0		2.1	97.9	0		100	0	0		0.4	99.6	0		
Total %	0	0	0	0	1.1	49.2	0	50.3	0.2	0	0	0.2	0.2	49.3	0	49.5	

	CORONADO AV Southbound				51st ST Westbound				CORONADO AV Northbound				51st ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	0	0	0	0	3	**185**	0	**188**	**1**	0	0	**1**	0	156	0	156	**345**
16:15	0	0	0	0	3	133	0	136	1	0	0	1	1	**165**	0	**166**	303
16:30	0	0	0	0	**4**	145	0	149	0	0	0	0	**3**	154	0	157	306
16:45	0	0	0	0	2	110	0	112	0	0	0	0	0	158	0	158	270
Total Volume	0	0	0	0	12	573	0	585	2	0	0	2	4	633	0	637	1224
% App. Total	0	0	0		2.1	97.9	0		100	0	0		0.6	99.4	0		
PHF	.000	.000	.000	.000	.750	.774	.000	.778	.500	.000	.000	.500	.333	.959	.000	.959	.887

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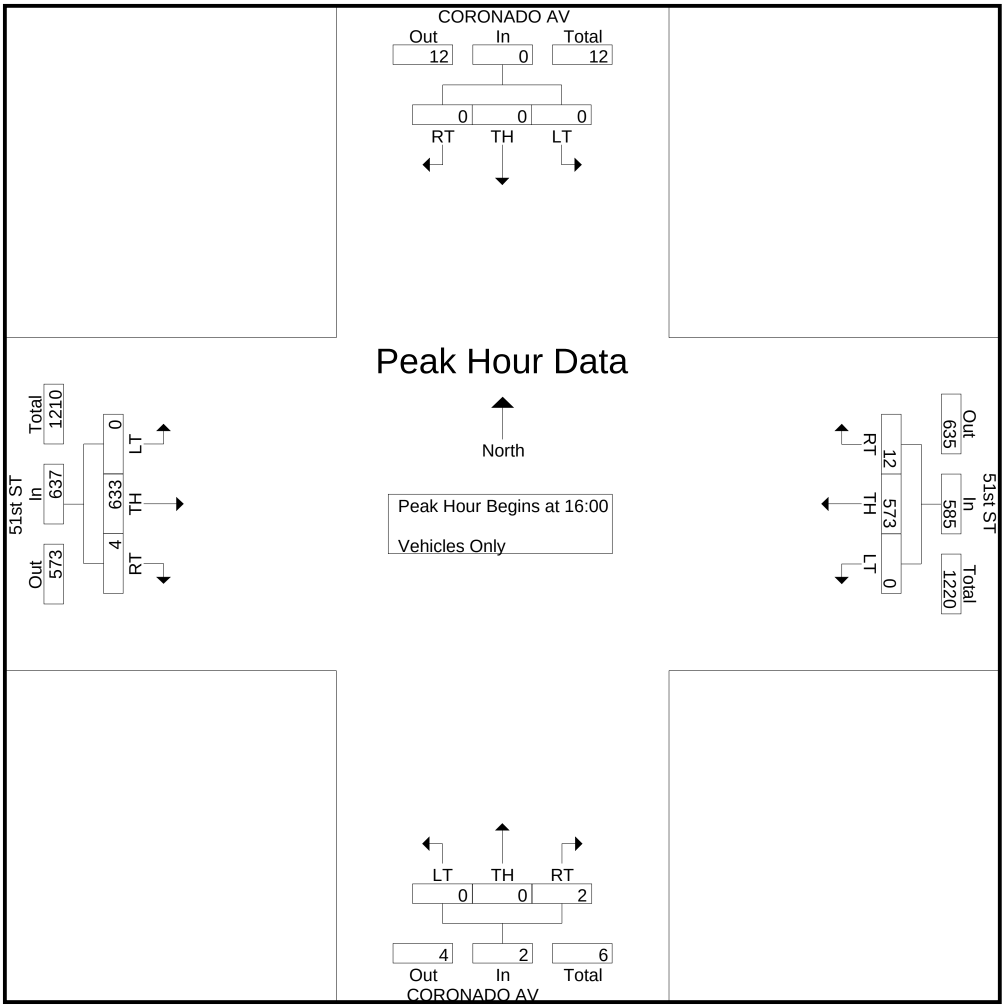
Site Code : 7
Start Date : 11/13/2010
Page No : 2



Appendix C

LOS Calculation Worksheets
Existing Conditions

FEHR & PEERS

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	78	11	55	14	16	9	13	8	814	10	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0				3.0			5.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.99				0.99			1.00			
Flpb, ped/bikes		1.00				1.00			1.00			
Frt		0.94				0.95			1.00			
Flt Protected		0.98				0.98			1.00			
Satd. Flow (prot)		1685				1722			3527			
Flt Permitted		0.84				0.88			0.95			
Satd. Flow (perm)		1454				1542			3358			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	81	11	57	15	17	9	14	8	848	10	4	4
RTOR Reduction (vph)	0	6	0	0	0	11	0	0	0	0	0	0
Lane Group Flow (vph)	0	158	0	0	0	29	0	0	870	0	0	0
Confl. Peds. (#/hr)	11		5		5		11	9				
Confl. Bikes (#/hr)							3			7	7	
Turn Type	Perm				Perm			Perm				Perm
Protected Phases		4				4			2			
Permitted Phases	4				4			2				6
Actuated Green, G (s)		10.8				10.8			33.4			
Effective Green, g (s)		10.8				10.8			33.4			
Actuated g/C Ratio		0.21				0.21			0.64			
Clearance Time (s)		3.0				3.0			5.0			
Vehicle Extension (s)		3.0				3.0			3.0			
Lane Grp Cap (vph)		301				319			2149			
v/s Ratio Prot												
v/s Ratio Perm		c0.11				0.02			c0.26			
v/c Ratio		0.53				0.09			0.40			
Uniform Delay, d1		18.4				16.7			4.6			
Progression Factor		1.00				1.00			1.00			
Incremental Delay, d2		1.7				0.1			0.6			
Delay (s)		20.1				16.9			5.1			
Level of Service		C				B			A			
Approach Delay (s)		20.1				16.9			5.1			
Approach LOS		C				B			A			

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	NWL
Lane Configurations				
Volume (vph)	44	343	23	0
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.0		
Lane Util. Factor		0.95		
Frpb, ped/bikes		1.00		
Flpb, ped/bikes		1.00		
Frt		0.99		
Flt Protected		0.99		
Satd. Flow (prot)		3484		
Flt Permitted		0.82		
Satd. Flow (perm)		2871		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	46	357	24	0
RTOR Reduction (vph)	0	3	0	0
Lane Group Flow (vph)	0	428	0	0
Confl. Peds. (#/hr)			9	
Confl. Bikes (#/hr)			1	
Turn Type	Perm			
Protected Phases		6		8
Permitted Phases	6			
Actuated Green, G (s)		33.4		
Effective Green, g (s)		33.4		
Actuated g/C Ratio		0.64		
Clearance Time (s)		5.0		
Vehicle Extension (s)		3.0		
Lane Grp Cap (vph)		1837		
v/s Ratio Prot				
v/s Ratio Perm		0.15		
v/c Ratio		0.23		
Uniform Delay, d1		4.0		
Progression Factor		1.00		
Incremental Delay, d2		0.1		
Delay (s)		4.0		
Level of Service		A		
Approach Delay (s)		4.0		0.0
Approach LOS		A		A

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	179	30	755	368	46	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1740		3306		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1740		3306		1711	3421
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	185	31	778	379	47	275
RTOR Reduction (vph)	12	0	79	0	0	0
Lane Group Flow (vph)	204	0	1078	0	47	275
Confl. Peds. (#/hr)		30		12	12	
Confl. Bikes (#/hr)		4		13		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	10.7		29.9		2.4	36.3
Effective Green, g (s)	10.7		29.9		2.4	36.3
Actuated g/C Ratio	0.19		0.54		0.04	0.66
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	339		1797		75	2258
v/s Ratio Prot	c0.12		c0.33		c0.03	0.08
v/s Ratio Perm						
v/c Ratio	0.60		0.60		0.63	0.12
Uniform Delay, d1	20.2		8.5		25.9	3.5
Progression Factor	1.00		0.90		1.00	1.00
Incremental Delay, d2	2.1		1.3		11.2	0.1
Delay (s)	22.3		9.0		37.0	3.6
Level of Service	C		A		D	A
Approach Delay (s)	22.3		9.0			8.5
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	386	352	1123	408	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3337	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3337	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	411	374	1195	434	40
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	0	411	374	1195	463	0
Confl. Peds. (#/hr)						77
Confl. Bikes (#/hr)						2
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		18.0	18.0	41.5	27.0	
Effective Green, g (s)		18.0	18.0	41.5	27.0	
Actuated g/C Ratio		0.33	0.33	0.75	0.49	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		527	541	2492	1638	
v/s Ratio Prot		c0.26	0.23	c0.36	0.14	
v/s Ratio Perm						
v/c Ratio		0.78	0.69	0.48	0.28	
Uniform Delay, d1		16.7	16.1	2.6	8.3	
Progression Factor		1.00	1.14	0.63	0.87	
Incremental Delay, d2		7.2	3.2	0.6	0.4	
Delay (s)		23.9	21.5	2.2	7.7	
Level of Service		C	C	A	A	
Approach Delay (s)	23.9			6.8	7.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	19	0	38	7	0	22	14	0	1434	1	11	783
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	20	0	40	7	0	23	0	0	1509	1	12	824
Pedestrians		26			58							12
Lane Width (ft)		12.0			12.0							10.0
Walking Speed (ft/s)		4.0			4.0							4.0
Percent Blockage		2			5							1
Right turn flare (veh)												
Median type									None			None
Median storage veh)												
Upstream signal (ft)									483			264
pX, platoon unblocked							0.00					
vC, conflicting volume	1412	2442	301	1906	2441	574	0	850			1569	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1412	2442	301	1906	2441	574	0	850			1569	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			2.2	
p0 queue free %	76	100	94	79	100	95	0	100			97	
cM capacity (veh/h)	83	28	680	35	28	436	0	767			397	

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	60	31	377	755	378	176	330	330
Volume Left	20	7	0	0	0	12	0	0
Volume Right	40	23	0	0	1	0	0	0
cSH	201	115	767	1700	1700	397	1700	1700
Volume to Capacity	0.30	0.27	0.00	0.44	0.22	0.03	0.19	0.19
Queue Length 95th (ft)	30	25	0	0	0	2	0	0
Control Delay (s)	30.4	47.4	0.0	0.0	0.0	1.4	0.0	0.0
Lane LOS	D	E				A		
Approach Delay (s)	30.4	47.4	0.0			0.3		
Approach LOS	D	E						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Sign Control	
Grade	
Peak Hour Factor	0.95
Hourly flow rate (vph)	0
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	

Direction, Lane #

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	162	0	1287	25	0	842	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	0	0	0	184	0	1462	28	0	957	0
Pedestrians					25							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								295			452	
pX, platoon unblocked												
vC, conflicting volume	1628	2473	239	1727	2444	512	957			1516		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1628	2473	239	1727	2444	512	957			1516		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	63	100			100		
cM capacity (veh/h)	42	29	762	55	30	496	714			428		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	184	488	488	488	28	273	273	273	137
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	184	0	0	0	28	0	0	0	0
cSH	496	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.29	0.29	0.29	0.02	0.16	0.16	0.16	0.08
Queue Length 95th (ft)	42	0	0	0	0	0	0	0	0
Control Delay (s)	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C								
Approach Delay (s)	16.5	0.0				0.0			
Approach LOS	C								

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	52	1260	202	0	842
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	63	1537	246	0	1027
Pedestrians	44					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	4					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			174			573
pX, platoon unblocked						
vC, conflicting volume	1960	551			1827	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1960	551			1827	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	86			100	
cM capacity (veh/h)	53	460			319	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	63	439	439	439	466	257	257	257	257
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	63	0	0	0	246	0	0	0	0
cSH	460	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.14	0.26	0.26	0.26	0.27	0.15	0.15	0.15	0.15
Queue Length 95th (ft)	12	0	0	0	0	0	0	0	0
Control Delay (s)	14.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	14.1	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	245	716	79	144	367	348	104	799	159	70	410	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.93			0.98			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.95	0.98
Satd. Flow (prot)	1770	3478		1770	3228			4905			1420	4381
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.95	0.98
Satd. Flow (perm)	1770	3478		1770	3228			4905			1420	4381
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	250	731	81	147	374	355	106	815	162	71	418	264
RTOR Reduction (vph)	0	7	0	0	154	0	0	23	0	0	0	0
Lane Group Flow (vph)	250	805	0	147	575	0	0	1061	0	0	247	506
Confl. Peds. (#/hr)			7			16			29			
Confl. Bikes (#/hr)			6			3			5			
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	18.5	36.5		11.5	29.5			27.5			18.5	18.5
Effective Green, g (s)	18.5	36.5		11.5	29.5			27.5			18.5	18.5
Actuated g/C Ratio	0.17	0.33		0.10	0.27			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	298	1154		185	866			1226			239	737
v/s Ratio Prot	c0.14	c0.23		0.08	0.18			c0.22			c0.17	0.12
v/s Ratio Perm												
v/c Ratio	0.84	0.70		0.79	0.66			0.87			1.03	0.92dl
Uniform Delay, d1	44.3	31.9		48.1	35.8			39.5			45.8	43.0
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.98	0.99
Incremental Delay, d2	18.3	3.5		20.5	4.0			8.3			65.5	4.9
Delay (s)	62.6	35.4		68.6	39.8			47.8			110.4	47.4
Level of Service	E	D		E	D			D			F	D
Approach Delay (s)		41.8			44.7			47.8				65.2
Approach LOS		D			D			D				E

Intersection Summary			
HCM Average Control Delay	49.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	103
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.97
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1435
Flt Permitted	1.00
Satd. Flow (perm)	1435
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	105
RTOR Reduction (vph)	42
Lane Group Flow (vph)	63
Confl. Peds. (#/hr)	6
Confl. Bikes (#/hr)	5
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	18.5
Effective Green, g (s)	18.5
Actuated g/C Ratio	0.17
Clearance Time (s)	4.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	241
v/s Ratio Prot	
v/s Ratio Perm	0.04
v/c Ratio	0.26
Uniform Delay, d1	39.8
Progression Factor	1.07
Incremental Delay, d2	2.4
Delay (s)	44.9
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	5	47	25	14	40	76	1153	19	17	443	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.98			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.94			0.93			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1674			1680			5048			5004	
Flt Permitted		0.85			0.91			0.87			0.89	
Satd. Flow (perm)		1454			1554			4385			4443	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	54	5	50	27	15	43	81	1227	20	18	471	34
RTOR Reduction (vph)	0	37	0	0	32	0	0	2	0	0	10	0
Lane Group Flow (vph)	0	72	0	0	53	0	0	1326	0	0	513	0
Confl. Peds. (#/hr)	11		28	28		11	30		18	18		30
Confl. Bikes (#/hr)			3			5			7			10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		382			408			2905			2943	
v/s Ratio Prot												
v/s Ratio Perm		c0.05			0.03			c0.30			0.12	
v/c Ratio		0.19			0.13			0.46			0.17	
Uniform Delay, d1		22.9			22.5			6.5			5.2	
Progression Factor		1.00			1.00			1.38			1.00	
Incremental Delay, d2		1.1			0.7			0.5			0.1	
Delay (s)		24.0			23.2			9.5			5.3	
Level of Service		C			C			A			A	
Approach Delay (s)		24.0			23.2			9.5			5.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	276	268	104	33	146	54	94	832	47	22	349	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95			0.91			0.91	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	
Frt	1.00	0.96			0.96			0.99			0.97	
Flt Protected	0.95	1.00			0.99			1.00			1.00	
Satd. Flow (prot)	1749	3365			3364			5004			4895	
Flt Permitted	0.60	1.00			0.88			0.83			0.87	
Satd. Flow (perm)	1103	3365			2983			4186			4293	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	279	271	105	33	147	55	95	840	47	22	353	81
RTOR Reduction (vph)	0	51	0	0	0	0	0	7	0	0	43	0
Lane Group Flow (vph)	279	325	0	0	235	0	0	975	0	0	414	0
Confl. Peds. (#/hr)	22		17	17		22	46		52	52		46
Confl. Bikes (#/hr)			7			3			14			10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	34.5	34.5			34.5			37.5			37.5	
Effective Green, g (s)	34.5	34.5			34.5			37.5			37.5	
Actuated g/C Ratio	0.43	0.43			0.43			0.47			0.47	
Clearance Time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Grp Cap (vph)	476	1451			1286			1962			2012	
v/s Ratio Prot		0.10										
v/s Ratio Perm	c0.25				0.08			c0.23			0.10	
v/c Ratio	0.59	0.22			0.18			0.50			0.21	
Uniform Delay, d1	17.3	14.3			14.0			14.7			12.5	
Progression Factor	1.00	1.00			1.00			1.00			2.12	
Incremental Delay, d2	5.2	0.4			0.3			0.9			0.2	
Delay (s)	22.5	14.7			14.4			15.6			26.8	
Level of Service	C	B			B			B			C	
Approach Delay (s)		18.0			14.4			15.6			26.8	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	128.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	17
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	17
RTOR Reduction (vph)	10
Lane Group Flow (vph)	7
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	34.5
Effective Green, g (s)	34.5
Actuated g/C Ratio	0.43
Clearance Time (s)	3.0
Lane Grp Cap (vph)	695
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.01
Uniform Delay, d1	13.0
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.0
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	456	56	91	347	268	116	528	88	228	336	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.94		1.00	1.00		1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1559	1770	4471		1770	3455		1770	3539	1415
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1559	1770	4471		1770	3455		1770	3539	1415
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	94	480	59	96	365	282	122	556	93	240	354	77
RTOR Reduction (vph)	0	0	41	0	128	0	0	13	0	0	0	57
Lane Group Flow (vph)	94	480	18	96	519	0	122	636	0	240	354	20
Confl. Peds. (#/hr)			1			96			1			78
Confl. Bikes (#/hr)			3			2			5			8
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases			4									2
Actuated Green, G (s)	9.1	29.8	29.8	9.1	29.8		17.1	26.0		17.1	26.0	26.0
Effective Green, g (s)	9.1	29.8	29.8	9.1	29.8		17.1	26.0		17.1	26.0	26.0
Actuated g/C Ratio	0.09	0.30	0.30	0.09	0.30		0.17	0.26		0.17	0.26	0.26
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	161	1055	465	161	1332		303	898		303	920	368
v/s Ratio Prot	0.05	c0.14		c0.05	0.12		0.07	c0.18		c0.14	0.10	
v/s Ratio Perm			0.01									0.01
v/c Ratio	0.58	0.45	0.04	0.60	0.39		0.40	0.71		0.79	0.38	0.05
Uniform Delay, d1	43.6	28.5	24.9	43.7	27.9		36.9	33.6		39.7	30.4	27.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.5	0.1	0.0	3.9	0.1		0.3	4.7		12.4	1.2	0.3
Delay (s)	47.1	28.6	24.9	47.6	27.9		37.2	38.2		52.1	31.6	28.1
Level of Service	D	C	C	D	C		D	D		D	C	C
Approach Delay (s)		31.0			30.5			38.1			38.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	79	83	141	62	181	132	1522	71	166	1442	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.97			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			0.98	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1756	1662			1757	1542	1770	5048		1770	5082	
Flt Permitted	0.47	1.00			0.59	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	865	1662			1075	1542	1770	5048		1770	5082	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	67	85	89	152	67	195	142	1637	76	178	1551	5
RTOR Reduction (vph)	0	42	0	0	0	150	0	4	0	0	0	0
Lane Group Flow (vph)	67	132	0	0	219	45	142	1709	0	178	1556	0
Confl. Peds. (#/hr)	12		48	48		12			3			11
Confl. Bikes (#/hr)			9			3			2			2
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	23.0	23.0			23.0	23.0	12.3	45.9		17.6	51.2	
Effective Green, g (s)	23.0	23.0			23.0	23.0	12.3	45.9		17.6	51.2	
Actuated g/C Ratio	0.23	0.23			0.23	0.23	0.12	0.46		0.18	0.51	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	199	382			247	355	218	2317		312	2602	
v/s Ratio Prot		0.08					0.08	c0.34		0.10	c0.31	
v/s Ratio Perm	0.08				c0.20	0.03						
v/c Ratio	0.34	0.34			0.89	0.13	0.65	0.74		0.57	0.60	
Uniform Delay, d1	32.1	32.2			37.2	30.5	41.8	22.1		37.7	17.2	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2			28.6	0.1	5.2	2.1		1.6	1.0	
Delay (s)	32.5	32.4			65.9	30.6	47.0	24.3		39.3	18.2	
Level of Service	C	C			E	C	D	C		D	B	
Approach Delay (s)		32.4			49.2			26.0			20.4	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	946	177	38	736	109	146	221	42	134	151	386
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.98		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4944		1768	4956		1770	1805		1748	1612	
Flt Permitted	0.95	1.00		0.23	1.00		0.12	1.00		0.59	1.00	
Satd. Flow (perm)	1770	4944		428	4956		232	1805		1087	1612	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	297	985	184	40	767	114	152	230	44	140	157	402
RTOR Reduction (vph)	0	32	0	0	20	0	0	6	0	0	85	0
Lane Group Flow (vph)	297	1137	0	40	861	0	152	268	0	140	474	0
Confl. Peds. (#/hr)			3	3		11	2		16	16		2
Confl. Bikes (#/hr)			2			5			25			34
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	22.4	52.1		25.7	25.7		42.9	42.9		28.1	28.1	
Effective Green, g (s)	22.4	52.1		25.7	25.7		42.9	42.9		28.1	28.1	
Actuated g/C Ratio	0.22	0.50		0.25	0.25		0.41	0.41		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	381	2477		106	1225		255	745		294	436	
v/s Ratio Prot	c0.17	0.23			c0.17		c0.06	0.15			c0.29	
v/s Ratio Perm				0.09			0.18			0.13		
v/c Ratio	0.78	0.46		0.38	0.70		0.60	0.36		0.48	1.09	
Uniform Delay, d1	38.5	16.8		32.5	35.7		23.8	21.1		31.8	38.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.7	0.1		2.2	1.9		3.7	1.4		5.4	68.3	
Delay (s)	48.2	17.0		34.8	37.5		27.5	22.4		37.2	106.3	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		23.3			37.4			24.2			92.5	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	40.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	49	31	25	46	32	25	786	15	17	513	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.96			1.00			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1752			1743			3515			3500	
Flt Permitted		0.82			0.88			0.93			0.92	
Satd. Flow (perm)		1460			1544			3268			3230	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	48	53	33	27	49	34	27	845	16	18	552	14
RTOR Reduction (vph)	0	22	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	112	0	0	110	0	0	887	0	0	584	0
Confl. Peds. (#/hr)	11		24	24		1			37	37		61
Confl. Bikes (#/hr)			1			2			56			47
Turn Type	Perm			Perm			Perm			custom		
Protected Phases		4			4			2				
Permitted Phases	4			4			2			6	6!	
Actuated Green, G (s)		10.2			10.2			60.8			60.8	
Effective Green, g (s)		10.2			10.2			60.8			60.8	
Actuated g/C Ratio		0.13			0.13			0.76			0.76	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		186			197			2484			2455	
v/s Ratio Prot												
v/s Ratio Perm		c0.08			0.07			c0.27			0.18	
v/c Ratio		0.60			0.56			0.36			0.24	
Uniform Delay, d1		33.0			32.8			3.2			2.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.7			1.9			0.4			0.2	
Delay (s)		36.7			34.7			3.6			3.0	
Level of Service		D			C			A			A	
Approach Delay (s)		36.7			34.7			3.6			3.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
! Phase conflict between lane groups.			
c Critical Lane Group			

Movement	SER	SER2
Lane Configurations		
Volume (vph)	204	45
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	219	48
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	262	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	60.8	
Effective Green, g (s)	60.8	
Actuated g/C Ratio	0.76	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1224	
v/s Ratio Prot	0.16	
v/s Ratio Perm		
v/c Ratio	0.21	
Uniform Delay, d1	2.8	
Progression Factor	1.00	
Incremental Delay, d2	0.4	
Delay (s)	3.2	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	5	10	128	60	146	11	967	202	71	771	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.97			0.98		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.95		1.00	0.90			0.97		1.00	0.98	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1716		1681	1539			3386		1770	3394	
Flt Permitted		0.98		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1716		1681	1539			3201		1770	3394	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	5	10	132	62	151	11	997	208	73	795	144
RTOR Reduction (vph)	0	10	0	0	81	0	0	12	0	0	10	0
Lane Group Flow (vph)	0	16	0	119	145	0	0	1204	0	73	929	0
Confl. Peds. (#/hr)			1			19	27		19	19		27
Confl. Bikes (#/hr)						5			48			54
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		3.9		13.7	13.7			56.9		7.5	68.9	
Effective Green, g (s)		3.9		13.7	13.7			56.9		7.5	68.9	
Actuated g/C Ratio		0.04		0.14	0.14			0.57		0.08	0.69	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		67		230	211			1821		133	2338	
v/s Ratio Prot		c0.01		0.07	c0.09					c0.04	0.27	
v/s Ratio Perm								c0.38				
v/c Ratio		0.24		0.52	0.69			0.66		0.55	0.40	
Uniform Delay, d1		46.6		40.1	41.1			14.9		44.6	6.7	
Progression Factor		1.00		1.00	1.00			0.89		1.00	1.00	
Incremental Delay, d2		0.7		0.8	7.2			1.3		2.5	0.5	
Delay (s)		47.3		40.9	48.3			14.6		47.1	7.2	
Level of Service		D		D	D			B		D	A	
Approach Delay (s)		47.3			45.7			14.6			10.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	446	537	72	85	355	201	95	533	107	284	570	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3450		1770	3289		1770	3398		1770	3466	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3450		1770	3289		1770	3398		1770	3466	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	455	548	73	87	362	205	97	544	109	290	582	56
RTOR Reduction (vph)	0	11	0	0	86	0	0	15	0	0	7	0
Lane Group Flow (vph)	455	610	0	87	481	0	97	638	0	290	631	0
Confl. Peds. (#/hr)			35			18			43			42
Confl. Bikes (#/hr)			9			12			41			42
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.0	24.9		7.8	20.7		5.0	38.3		12.0	45.3	
Effective Green, g (s)	12.0	24.9		7.8	20.7		5.0	38.3		12.0	45.3	
Actuated g/C Ratio	0.12	0.25		0.08	0.21		0.05	0.38		0.12	0.45	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	859		138	681		89	1301		212	1570	
v/s Ratio Prot	c0.13	c0.18		0.05	0.15		0.05	c0.19		c0.16	0.18	
v/s Ratio Perm												
v/c Ratio	1.10	0.71		0.63	0.71		1.09	0.49		1.37	0.40	
Uniform Delay, d1	44.0	34.3		44.7	36.8		47.5	23.4		44.0	18.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.16	0.71	
Incremental Delay, d2	75.7	2.3		6.7	2.7		121.9	1.3		191.3	0.7	
Delay (s)	119.7	36.6		51.4	39.6		169.4	24.8		242.5	13.7	
Level of Service	F	D		D	D		F	C		F	B	
Approach Delay (s)		71.7			41.2			43.5			85.2	
Approach LOS		E			D			D			F	

Intersection Summary			
HCM Average Control Delay	63.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	826	28	23	550	25	49	59	30	45	38	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1763	3518		1765	3512			1757			1744	
Flt Permitted	0.41	1.00		0.27	1.00			0.87			0.85	
Satd. Flow (perm)	757	3518		507	3512			1556			1509	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	49	860	29	24	573	26	51	61	31	47	40	28
RTOR Reduction (vph)	0	3	0	0	4	0	0	12	0	0	15	0
Lane Group Flow (vph)	49	886	0	24	595	0	0	131	0	0	100	0
Confl. Peds. (#/hr)	10		11	11		10	13		7	7		13
Confl. Bikes (#/hr)			8			3			21			25
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	430	1998		288	1994			480			466	
v/s Ratio Prot		c0.25			0.17							
v/s Ratio Perm	0.06			0.05				c0.08			0.07	
v/c Ratio	0.11	0.44		0.08	0.30			0.27			0.22	
Uniform Delay, d1	8.1	10.1		7.9	9.1			21.1			20.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.5	0.7		0.6	0.4			1.4			1.1	
Delay (s)	8.6	10.8		8.5	9.5			22.5			21.8	
Level of Service	A	B		A	A			C			C	
Approach Delay (s)		10.7			9.5			22.5			21.8	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	252	978	55	18	606	114	36	29	9	240	34	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00			0.98	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.99			1.00	0.85		0.98			0.93	
Flt Protected	0.95	1.00			1.00	1.00		0.98			0.98	
Satd. Flow (prot)	1770	3505			3534	1529		1772			3139	
Flt Permitted	0.95	1.00			0.92	1.00		0.73			0.82	
Satd. Flow (perm)	1770	3505			3241	1529		1328			2640	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	260	1008	57	19	625	118	37	30	9	247	35	224
RTOR Reduction (vph)	0	4	0	0	0	73	0	6	0	0	168	0
Lane Group Flow (vph)	260	1061	0	0	644	45	0	70	0	0	338	0
Confl. Peds. (#/hr)			15	15		12	52		13	13		52
Confl. Bikes (#/hr)			7			3			10			16
Turn Type	Prot			Perm		Perm	Perm			Perm		
Protected Phases	1	6			2			4			4	
Permitted Phases				2		2	4			4		
Actuated Green, G (s)	14.4	37.3			19.9	19.9		14.5			14.5	
Effective Green, g (s)	14.4	37.3			19.9	19.9		14.5			14.5	
Actuated g/C Ratio	0.25	0.65			0.34	0.34		0.25			0.25	
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	441	2262			1116	526		333			662	
v/s Ratio Prot	c0.15	0.30										
v/s Ratio Perm					c0.20	0.03		0.05			c0.13	
v/c Ratio	0.59	0.47			0.58	0.09		0.21			0.51	
Uniform Delay, d1	19.1	5.2			15.5	12.8		17.1			18.6	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	2.0	0.2			0.7	0.1		0.3			0.7	
Delay (s)	21.1	5.4			16.2	12.9		17.4			19.3	
Level of Service	C	A			B	B		B			B	
Approach Delay (s)		8.5			15.7			17.4			19.3	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	1117	94	9	748	9	5	2	11	5	1	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	17	1188	100	10	796	10	5	2	12	5	1	9
Pedestrians		9			1			13			7	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		881			649							
pX, platoon unblocked				0.93			0.93	0.93	0.93	0.93	0.93	
vC, conflicting volume	812			1301			1720	2117	658	1469	2162	419
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	812			1174			1624	2051	482	1354	2099	419
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			91	96	98	94	98	99
cM capacity (veh/h)	805			544			58	48	487	90	45	575

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	611	694	407	407	19	15
Volume Left	17	0	10	0	5	5
Volume Right	0	100	0	10	12	9
cSH	805	1700	544	1700	119	153
Volume to Capacity	0.02	0.41	0.02	0.24	0.16	0.10
Queue Length 95th (ft)	2	0	1	0	14	8
Control Delay (s)	0.6	0.0	0.5	0.0	40.8	31.0
Lane LOS	A		A		E	D
Approach Delay (s)	0.3		0.3		40.8	31.0
Approach LOS					E	D

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	1054	73	14	727	9	34	1	94	11	2	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	6	1087	75	14	749	9	35	1	97	11	2	5
Pedestrians		3						14			18	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1205			325							
pX, platoon unblocked	0.95						0.95	0.95		0.95	0.95	0.95
vC, conflicting volume	777			1176			1563	1956	595	1454	1989	400
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650			1176			1481	1897	595	1366	1932	252
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			53	98	78	84	96	99
cM capacity (veh/h)	869			583			75	61	442	73	58	695

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	549	619	389	384	133	19
Volume Left	6	0	14	0	35	11
Volume Right	0	75	0	9	97	5
cSH	869	1700	583	1700	189	94
Volume to Capacity	0.01	0.36	0.02	0.23	0.70	0.20
Queue Length 95th (ft)	1	0	2	0	110	17
Control Delay (s)	0.2	0.0	0.8	0.0	59.7	52.8
Lane LOS	A		A		F	F
Approach Delay (s)	0.1		0.4		59.7	52.8
Approach LOS					F	F

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	909	204	116	525	40	191	29	169	41	31	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.98			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.97			0.99			0.94			0.96	
Flt Protected		1.00			0.99			0.98			0.98	
Satd. Flow (prot)		3414			3470			1878			1717	
Flt Permitted		0.89			0.52			0.80			0.79	
Satd. Flow (perm)		3035			1816			1544			1377	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	988	222	126	571	43	208	32	184	45	34	37
RTOR Reduction (vph)	0	26	0	0	7	0	0	39	0	0	24	0
Lane Group Flow (vph)	0	1234	0	0	733	0	0	385	0	0	92	0
Confl. Peds. (#/hr)	16		7			16	24		33	33		24
Confl. Bikes (#/hr)			9			2			3			5
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		25.5			41.5			19.0			19.0	
Effective Green, g (s)		25.5			41.5			19.0			19.0	
Actuated g/C Ratio		0.36			0.59			0.27			0.27	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		1106			1384			419			374	
v/s Ratio Prot					c0.10							
v/s Ratio Perm		c0.41			0.22			c0.25			0.07	
v/c Ratio		1.12			0.53			0.92			0.25	
Uniform Delay, d1		22.2			8.5			24.7			19.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		64.7			1.5			27.5			1.6	
Delay (s)		86.9			9.9			52.3			21.5	
Level of Service		F			A			D			C	
Approach Delay (s)		86.9			9.9			52.3			21.5	
Approach LOS		F			A			D			C	

Intersection Summary			
HCM Average Control Delay	55.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	190	85	73	302	264	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.97		1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00		0.96	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1673		1694	1863	1863	1445
Flt Permitted	0.97		0.53	1.00	1.00	1.00
Satd. Flow (perm)	1673		952	1863	1863	1445
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	211	94	81	336	293	100
RTOR Reduction (vph)	29	0	0	0	0	49
Lane Group Flow (vph)	276	0	81	336	293	51
Confl. Peds. (#/hr)	74	57	68			68
Confl. Bikes (#/hr)		6				3
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	639		485	948	948	736
v/s Ratio Prot	c0.16			c0.18	0.16	
v/s Ratio Perm			0.09			0.04
v/c Ratio	0.43		0.17	0.35	0.31	0.07
Uniform Delay, d1	12.6		7.2	8.1	7.9	6.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1		0.7	1.0	0.8	0.2
Delay (s)	14.7		8.0	9.1	8.7	7.1
Level of Service	B		A	A	A	A
Approach Delay (s)	14.7			8.9	8.3	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	510	627	427	41	12	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.87	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3493		1592	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3493		1592	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	526	646	440	42	12	334
RTOR Reduction (vph)	0	0	11	0	232	0
Lane Group Flow (vph)	526	646	471	0	114	0
Confl. Peds. (#/hr)					3	
Confl. Bikes (#/hr)						6
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	819		485	
v/s Ratio Prot	c0.30	0.18	c0.13		c0.07	
v/s Ratio Perm						
v/c Ratio	0.95	0.31	0.57		0.23	
Uniform Delay, d1	21.5	6.5	21.7		16.7	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	27.9	0.4	2.9		1.1	
Delay (s)	49.4	6.8	24.6		17.8	
Level of Service	D	A	C		B	
Approach Delay (s)		26.0	24.6		17.8	
Approach LOS		C	C		B	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	15	38	386	8	61	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.90		1.00		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1659		1857		1770	1863
Flt Permitted	0.99		1.00		0.95	1.00
Satd. Flow (perm)	1659		1857		1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	16	41	415	9	66	584
RTOR Reduction (vph)	39	0	1	0	0	0
Lane Group Flow (vph)	18	0	423	0	66	584
Confl. Bikes (#/hr)				2		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	1.8		15.6		1.5	21.1
Effective Green, g (s)	1.8		15.6		1.5	21.1
Actuated g/C Ratio	0.06		0.49		0.05	0.66
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	94		908		83	1232
v/s Ratio Prot	c0.01		0.23		0.04	c0.31
v/s Ratio Perm						
v/c Ratio	0.19		0.47		0.80	0.47
Uniform Delay, d1	14.4		5.4		15.0	2.7
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0		0.4		39.3	0.3
Delay (s)	15.4		5.8		54.4	3.0
Level of Service	B		A		D	A
Approach Delay (s)	15.4		5.8			8.2
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	31.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	9	20	50	16	15	12	33	48	6	37	355	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.98			0.94					0.99	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.98			0.90					0.99	
Flt Protected			0.98			0.99					0.99	
Satd. Flow (prot)			1551			1376					1619	
Flt Permitted			0.89			0.96					0.91	
Satd. Flow (perm)			1408			1329					1481	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	10	22	55	18	16	13	36	53	7	41	390	18
RTOR Reduction (vph)	0	0	12	0	0	41	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	93	0	0	77	0	0	0	0	453	0
Confl. Peds. (#/hr)				53				31				115
Confl. Bikes (#/hr)												14
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			14.0			14.0					22.0	
Effective Green, g (s)			14.0			14.0					22.0	
Actuated g/C Ratio			0.23			0.23					0.37	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			329			310					543	
v/s Ratio Prot												
v/s Ratio Perm			c0.07			0.06					0.31	
v/c Ratio			0.28			0.25					0.84	
Uniform Delay, d1			18.9			18.7					17.3	
Progression Factor			1.00			1.00					1.00	
Incremental Delay, d2			2.1			1.9					14.1	
Delay (s)			21.0			20.6					31.5	
Level of Service			C			C					C	
Approach Delay (s)			21.0			20.6					31.5	
Approach LOS			C			C					C	

Intersection Summary			
HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	56	377	14	30	11	62	49	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.98				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.99				0.93		
Flt Protected		0.99				0.98		
Satd. Flow (prot)		1760				1494		
Flt Permitted		0.90				0.98		
Satd. Flow (perm)		1596				1494		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	62	414	15	33	12	68	54	40
RTOR Reduction (vph)	0	4	0	0	0	18	0	0
Lane Group Flow (vph)	0	520	0	0	0	156	0	0
Confl. Peds. (#/hr)			65	105				
Confl. Bikes (#/hr)			14	6				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		22.0				12.0		
Effective Green, g (s)		22.0				12.0		
Actuated g/C Ratio		0.37				0.20		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		585				299		
v/s Ratio Prot								
v/s Ratio Perm		c0.33				0.10		
v/c Ratio		0.89				0.52		
Uniform Delay, d1		17.9				21.4		
Progression Factor		1.00				1.00		
Incremental Delay, d2		18.1				6.4		
Delay (s)		36.0				27.9		
Level of Service		D				C		
Approach Delay (s)		36.0				27.9		
Approach LOS		D				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1	6	0	0	0	0	27	26	4	11	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	1	8	0	0	0	0	35	33	5	14	0
Pedestrians					7						5	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	5			9			17	15	12	73	19	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			9			17	15	12	73	19	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	96	97	99	98	100
cM capacity (veh/h)	1610			1611			981	874	1068	855	870	1074

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	68	19
Volume Left	3	0	5
Volume Right	8	33	0
cSH	1610	960	866
Volume to Capacity	0.00	0.07	0.02
Queue Length 95th (ft)	0	6	2
Control Delay (s)	1.6	9.0	9.3
Lane LOS	A	A	A
Approach Delay (s)	1.6	9.0	9.3
Approach LOS		A	A

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	999	0	0	660	15	0	0	2	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	1074	0	0	710	16	0	0	2	0	0	0
Pedestrians					1			8			1	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1258			636							
pX, platoon unblocked				0.93			0.93	0.93	0.93	0.93	0.93	
vC, conflicting volume	727			1082			1437	1809	546	1259	1801	364
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	727			937			1319	1719	361	1127	1710	364
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	872			671			106	82	587	147	83	633

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	716	358	473	253	2
Volume Left	0	0	0	0	0
Volume Right	0	0	0	16	2
cSH	1700	1700	1700	1700	587
Volume to Capacity	0.42	0.21	0.28	0.15	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	11.2
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.2
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1227	708	53	0	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1334	770	58	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		226	1304			
pX, platoon unblocked					0.85	
vC, conflicting volume	827				1465	414
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	827				1192	414
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	800				153	588

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	667	667	513	314	33
Volume Left	0	0	0	0	0
Volume Right	0	0	0	58	33
cSH	1700	1700	1700	1700	588
Volume to Capacity	0.39	0.39	0.30	0.18	0.06
Queue Length 95th (ft)	0	0	0	0	4
Control Delay (s)	0.0	0.0	0.0	0.0	11.5
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.5
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	35	4	27	19	2	10	6	10	14	507	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0			4.0		
Lane Util. Factor		1.00					1.00			0.95		
Frpb, ped/bikes		0.98					0.99			1.00		
Flpb, ped/bikes		1.00					0.99			1.00		
Frt		0.93					0.95			1.00		
Flt Protected		0.98					0.98			1.00		
Satd. Flow (prot)		1646					1701			3515		
Flt Permitted		0.89					0.90			0.94		
Satd. Flow (perm)		1494					1565			3300		
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	41	5	31	22	2	12	7	12	16	590	10	5
RTOR Reduction (vph)	0	16	0	0	0	0	9	0	0	1	0	0
Lane Group Flow (vph)	0	83	0	0	0	0	24	0	0	620	0	0
Confl. Peds. (#/hr)	8		17	12	17	12		8	9		17	9
Confl. Bikes (#/hr)			1	1							3	3
Turn Type	Perm					Perm			Perm			
Protected Phases		4					4			2		
Permitted Phases	4					4			2			
Actuated Green, G (s)		16.0					16.0			16.0		
Effective Green, g (s)		16.0					16.0			16.0		
Actuated g/C Ratio		0.27					0.27			0.27		
Clearance Time (s)		4.0					4.0			4.0		
Lane Grp Cap (vph)		398					417			880		
v/s Ratio Prot												
v/s Ratio Perm		c0.06					0.02			c0.19		
v/c Ratio		0.21					0.06			0.70		
Uniform Delay, d1		17.1					16.4			19.9		
Progression Factor		0.83					1.00			1.00		
Incremental Delay, d2		1.1					0.3			4.7		
Delay (s)		15.2					16.7			24.6		
Level of Service		B					B			C		
Approach Delay (s)		15.2					16.7			24.6		
Approach LOS		B					B			C		

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Volume (vph)	5	50	328	23	3	22	39	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0			4.0		
Lane Util. Factor			0.95			1.00		
Frpb, ped/bikes			1.00			0.97		
Flpb, ped/bikes			1.00			0.99		
Frt			0.99			0.92		
Flt Protected			0.99			0.98		
Satd. Flow (prot)			3470			1594		
Flt Permitted			0.73			0.98		
Satd. Flow (perm)			2556			1594		
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	6	58	381	27	3	26	45	3
RTOR Reduction (vph)	0	0	7	0	0	2	0	0
Lane Group Flow (vph)	0	0	465	0	0	75	0	0
Confl. Peds. (#/hr)	9	17		9	12	9	8	9
Confl. Bikes (#/hr)				1			1	1
Turn Type		Perm			Perm			
Protected Phases			6			8		
Permitted Phases		6			8			
Actuated Green, G (s)			16.0			16.0		
Effective Green, g (s)			16.0			16.0		
Actuated g/C Ratio			0.27			0.27		
Clearance Time (s)			4.0			4.0		
Lane Grp Cap (vph)			682			425		
v/s Ratio Prot								
v/s Ratio Perm			0.18			0.05		
v/c Ratio			0.68			0.18		
Uniform Delay, d1			19.7			16.9		
Progression Factor			1.00			1.00		
Incremental Delay, d2			5.4			0.9		
Delay (s)			25.2			17.8		
Level of Service			C			B		
Approach Delay (s)			25.2			17.8		
Approach LOS			C			B		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	219	39	494	236	33	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.96		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1736		3245		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1736		3245		1711	3421
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	235	42	531	254	35	383
RTOR Reduction (vph)	12	0	98	0	0	0
Lane Group Flow (vph)	265	0	687	0	35	383
Confl. Peds. (#/hr)		55		57	57	
Confl. Bikes (#/hr)		2		5		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	10.7		16.7		1.8	22.5
Effective Green, g (s)	10.7		16.7		1.8	22.5
Actuated g/C Ratio	0.26		0.41		0.04	0.55
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	451		1315		75	1868
v/s Ratio Prot	c0.15		c0.21		c0.02	0.11
v/s Ratio Perm						
v/c Ratio	0.59		0.52		0.47	0.21
Uniform Delay, d1	13.3		9.2		19.2	4.8
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.3		0.2		1.7	0.0
Delay (s)	14.6		9.4		20.9	4.8
Level of Service	B		A		C	A
Approach Delay (s)	14.6		9.4			6.1
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	41.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	369	380	747	488	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.98	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3265	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3265	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	388	400	786	514	96
RTOR Reduction (vph)	0	0	0	0	27	0
Lane Group Flow (vph)	0	388	400	786	583	0
Confl. Peds. (#/hr)	124		75			75
Confl. Bikes (#/hr)						1
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		21.0	21.0	33.0	26.0	
Effective Green, g (s)		21.0	21.0	33.0	26.0	
Actuated g/C Ratio		0.37	0.37	0.58	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		594	609	1912	1489	
v/s Ratio Prot		0.24	c0.24	c0.24	0.18	
v/s Ratio Perm						
v/c Ratio		0.65	0.66	0.41	0.39	
Uniform Delay, d1		15.0	15.0	6.6	10.3	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.5	5.5	0.1	0.8	
Delay (s)		20.5	20.5	6.8	11.0	
Level of Service		C	C	A	B	
Approach Delay (s)	20.5			11.4	11.0	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	17	0	45	7	0	17	20	0	1153	1	17	854
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	18	0	48	7	0	18	0	0	1227	1	18	909
Pedestrians		38			86				3			14
Lane Width (ft)		12.0			12.0				10.0			10.0
Walking Speed (ft/s)		4.0			4.0				4.0			4.0
Percent Blockage		3			7				0			1
Right turn flare (veh)												
Median type									None			None
Median storage veh)												
Upstream signal (ft)									483			264
pX, platoon unblocked							0.00					
vC, conflicting volume	1424	2296	344	1703	2296	509	0	947			1314	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1424	2296	344	1703	2296	509	0	947			1314	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			2.2	
p0 queue free %	77	100	92	84	100	96	0	100			96	
cM capacity (veh/h)	79	33	630	46	33	468	0	698			485	

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	66	26	307	613	308	245	454	227
Volume Left	18	7	0	0	0	18	0	0
Volume Right	48	18	0	0	1	0	0	0
cSH	217	126	698	1700	1700	485	1700	1700
Volume to Capacity	0.30	0.20	0.00	0.36	0.18	0.04	0.27	0.13
Queue Length 95th (ft)	31	18	0	0	0	3	0	0
Control Delay (s)	28.6	40.6	0.0	0.0	0.0	1.4	0.0	0.0
Lane LOS	D	E				A		
Approach Delay (s)	28.6	40.6	0.0			0.4		
Approach LOS	D	E						

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Sign Control	
Grade	
Peak Hour Factor	0.94
Hourly flow rate (vph)	0
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	

Direction, Lane #

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	153	0	1005	20	0	926	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	0	0	0	0	159	0	1047	21	0	965	2
Pedestrians		19			30			1			2	
Lane Width (ft)		0.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			3			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								295			452	
pX, platoon unblocked												
vC, conflicting volume	1495	2082	262	1319	2063	381	986			1098		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1495	2082	262	1319	2063	381	986			1098		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	73	100			100		
cM capacity (veh/h)	61	51	736	110	53	601	697			616		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	159	349	349	349	21	276	276	276	140
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	159	0	0	0	21	0	0	0	2
cSH	601	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.27	0.21	0.21	0.21	0.01	0.16	0.16	0.16	0.08
Queue Length 95th (ft)	27	0	0	0	0	0	0	0	0
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	13.1	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	65	960	225	0	915
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	69	1021	239	0	973
Pedestrians	38					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	3					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			174			573
pX, platoon unblocked						
vC, conflicting volume	1422	413			1299	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1422	413			1299	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	88			100	
cM capacity (veh/h)	123	570			513	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	69	292	292	292	385	243	243	243	243
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	69	0	0	0	239	0	0	0	0
cSH	570	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.12	0.17	0.17	0.17	0.23	0.14	0.14	0.14	0.14
Queue Length 95th (ft)	10	0	0	0	0	0	0	0	0
Control Delay (s)	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	12.2	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	184	369	112	217	512	364	155	573	194	65	357	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.94			0.97			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (prot)	1770	3385		1770	3268			4776			1420	4398
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (perm)	1770	3385		1770	3268			4776			1420	4398
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	196	393	119	231	545	387	165	610	206	69	380	339
RTOR Reduction (vph)	0	26	0	0	81	0	0	44	0	0	0	0
Lane Group Flow (vph)	196	486	0	231	851	0	0	938	0	0	225	563
Confl. Peds. (#/hr)	20		23	23		20	22		66	20	66	
Confl. Bikes (#/hr)			1			2			1			
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	14.4	36.0		12.0	33.6			27.5			18.5	18.5
Effective Green, g (s)	14.4	36.0		12.0	33.6			27.5			18.5	18.5
Actuated g/C Ratio	0.13	0.33		0.11	0.31			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	232	1108		193	998			1194			239	740
v/s Ratio Prot	0.11	0.14		c0.13	c0.26			c0.20			c0.16	0.13
v/s Ratio Perm												
v/c Ratio	0.84	0.44		1.20	0.85			0.79			0.94	0.76
Uniform Delay, d1	46.7	29.1		49.0	35.9			38.5			45.2	43.6
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	23.5	1.3		127.9	9.2			5.2			44.8	7.2
Delay (s)	70.2	30.3		176.9	45.1			43.7			90.0	50.9
Level of Service	E	C		F	D			D			F	D
Approach Delay (s)		41.4			71.3			43.7				59.5
Approach LOS		D			E			D				E

Intersection Summary			
HCM Average Control Delay	55.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	163
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.94
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1389
Flt Permitted	1.00
Satd. Flow (perm)	1389
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	173
RTOR Reduction (vph)	62
Lane Group Flow (vph)	111
Confl. Peds. (#/hr)	22
Confl. Bikes (#/hr)	8
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	18.5
Effective Green, g (s)	18.5
Actuated g/C Ratio	0.17
Clearance Time (s)	4.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	234
v/s Ratio Prot	
v/s Ratio Perm	0.08
v/c Ratio	0.47
Uniform Delay, d1	41.3
Progression Factor	1.00
Incremental Delay, d2	6.7
Delay (s)	48.0
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	8	111	35	16	54	113	775	16	27	591	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.96			0.99			1.00			0.99	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.93			0.93			1.00			0.99	
Flt Protected		0.98			0.98			0.99			1.00	
Satd. Flow (prot)		1630			1664			5021			4969	
Flt Permitted		0.82			0.87			0.76			0.88	
Satd. Flow (perm)		1371			1476			3855			4384	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	112	9	123	39	18	60	126	861	18	30	657	68
RTOR Reduction (vph)	0	46	0	0	44	0	0	2	0	0	15	0
Lane Group Flow (vph)	0	198	0	0	73	0	0	1003	0	0	740	0
Confl. Peds. (#/hr)	15		89	89		15	36		45	45		36
Confl. Bikes (#/hr)			1			2			3			8
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		360			387			2554			2904	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.05			c0.26			0.17	
v/c Ratio		0.55			0.19			0.39			0.25	
Uniform Delay, d1		25.4			22.9			6.2			5.5	
Progression Factor		1.00			1.00			1.34			1.00	
Incremental Delay, d2		6.0			1.1			0.4			0.2	
Delay (s)		31.4			24.0			8.7			5.7	
Level of Service		C			C			A			A	
Approach Delay (s)		31.4			24.0			8.7			5.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	181	121	29	104	28	100	531	34	34	546	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95			0.91			0.91	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			0.99	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.94			0.97			0.99			0.97	
Flt Protected	0.95	1.00			0.99			0.99			1.00	
Satd. Flow (prot)	1770	3279			3379			4987			4862	
Flt Permitted	0.65	1.00			0.88			0.74			0.88	
Satd. Flow (perm)	1202	3279			2985			3711			4292	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	191	127	31	109	29	105	559	36	36	575	163
RTOR Reduction (vph)	0	72	0	0	0	0	0	7	0	0	60	0
Lane Group Flow (vph)	204	246	0	0	169	0	0	693	0	0	714	0
Confl. Peds. (#/hr)			31	31		48	46		59	59		46
Confl. Bikes (#/hr)			4			6			7			8
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	34.5	34.5			34.5			37.5			37.5	
Effective Green, g (s)	34.5	34.5			34.5			37.5			37.5	
Actuated g/C Ratio	0.43	0.43			0.43			0.47			0.47	
Clearance Time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Grp Cap (vph)	518	1414			1287			1740			2012	
v/s Ratio Prot		0.07										
v/s Ratio Perm	c0.17				0.06			c0.19			0.17	
v/c Ratio	0.39	0.17			0.13			0.40			0.35	
Uniform Delay, d1	15.6	14.0			13.7			13.9			13.5	
Progression Factor	1.00	1.00			1.00			1.00			1.89	
Incremental Delay, d2	2.2	0.3			0.2			0.7			0.5	
Delay (s)	17.8	14.3			13.9			14.6			26.1	
Level of Service	B	B			B			B			C	
Approach Delay (s)		15.7			13.9			14.6			26.1	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	143.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	57
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1531
Flt Permitted	1.00
Satd. Flow (perm)	1531
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	60
RTOR Reduction (vph)	34
Lane Group Flow (vph)	26
Confl. Peds. (#/hr)	48
Confl. Bikes (#/hr)	6
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	34.5
Effective Green, g (s)	34.5
Actuated g/C Ratio	0.43
Clearance Time (s)	3.0
Lane Grp Cap (vph)	660
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.04
Uniform Delay, d1	13.2
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	13.3
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	277	40	72	343	302	80	327	44	271	383	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.95		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1559	1770	4487		1770	3466		1770	3362	1476
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1559	1770	4487		1770	3466		1770	3362	1476
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	301	43	78	373	328	87	355	48	295	416	74
RTOR Reduction (vph)	0	0	30	0	149	0	0	10	0	0	0	54
Lane Group Flow (vph)	80	301	13	78	552	0	87	393	0	295	416	20
Confl. Peds. (#/hr)	72		2	2		72	42		2	2		42
Confl. Bikes (#/hr)			1			8			11			11
Parking (#/hr)											0	
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases			4									2
Actuated Green, G (s)	7.8	30.2	30.2	7.8	30.2		17.5	26.5		17.5	26.5	26.5
Effective Green, g (s)	7.8	30.2	30.2	7.8	30.2		17.5	26.5		17.5	26.5	26.5
Actuated g/C Ratio	0.08	0.30	0.30	0.08	0.30		0.18	0.26		0.18	0.26	0.26
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	138	1069	471	138	1355		310	918		310	891	391
v/s Ratio Prot	c0.05	0.09		0.04	c0.12		0.05	0.11		c0.17	c0.12	
v/s Ratio Perm			0.01									0.01
v/c Ratio	0.58	0.28	0.03	0.57	0.41		0.28	0.43		0.95	0.47	0.05
Uniform Delay, d1	44.5	26.6	24.6	44.5	27.8		35.8	30.5		40.8	30.8	27.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.6	0.1	0.0	3.1	0.1		0.2	1.5		37.9	1.8	0.2
Delay (s)	48.2	26.7	24.6	47.6	27.8		36.0	31.9		78.7	32.6	27.6
Level of Service	D	C	C	D	C		D	C		E	C	C
Approach Delay (s)		30.5			29.8			32.6			49.5	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	52	40	43	104	161	5	1048	76	105	1022	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1751	1718			1832	1532	1770	5025		1770	5081	
Flt Permitted	0.59	1.00			0.87	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1079	1718			1611	1532	1770	5025		1770	5081	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	35	54	42	45	108	168	5	1092	79	109	1065	4
RTOR Reduction (vph)	0	36	0	0	0	143	0	7	0	0	0	0
Lane Group Flow (vph)	35	60	0	0	153	25	5	1164	0	109	1069	0
Confl. Peds. (#/hr)	17		10	10		17	23		10	10		23
Confl. Bikes (#/hr)			7			5			5			3
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	11.8	11.8			11.8	11.8	1.1	42.3		12.4	53.6	
Effective Green, g (s)	11.8	11.8			11.8	11.8	1.1	42.3		12.4	53.6	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.01	0.53		0.16	0.67	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	159	253			238	226	24	2657		274	3404	
v/s Ratio Prot		0.04					0.00	c0.23		c0.06	0.21	
v/s Ratio Perm	0.03				c0.09	0.02						
v/c Ratio	0.22	0.24			0.64	0.11	0.21	0.44		0.40	0.31	
Uniform Delay, d1	30.0	30.1			32.1	29.5	39.0	11.6		30.4	5.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			4.4	0.1	1.6	0.5		0.3	0.2	
Delay (s)	30.3	30.3			36.5	29.6	40.6	12.1		30.8	5.8	
Level of Service	C	C			D	C	D	B		C	A	
Approach Delay (s)		30.3			32.9			12.2			8.1	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	283	701	186	41	829	134	188	157	66	98	151	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.96		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4890		1765	4938		1768	1761		1750	1637	
Flt Permitted	0.95	1.00		0.30	1.00		0.16	1.00		0.62	1.00	
Satd. Flow (perm)	1770	4890		563	4938		304	1761		1136	1637	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	289	715	190	42	846	137	192	160	67	100	154	283
RTOR Reduction (vph)	0	61	0	0	24	0	0	13	0	0	66	0
Lane Group Flow (vph)	289	844	0	42	959	0	192	214	0	100	371	0
Confl. Peds. (#/hr)	20		5	5		20	17		14	14		17
Confl. Bikes (#/hr)			8			4			18			11
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	20.7	52.9		28.2	28.2		38.1	38.1		20.5	20.5	
Effective Green, g (s)	20.7	52.9		28.2	28.2		38.1	38.1		20.5	20.5	
Actuated g/C Ratio	0.21	0.53		0.28	0.28		0.38	0.38		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	366	2587		159	1393		315	671		233	336	
v/s Ratio Prot	c0.16	0.17			c0.19		c0.08	0.12			c0.23	
v/s Ratio Perm				0.07			0.15			0.09		
v/c Ratio	0.79	0.33		0.26	0.69		0.61	0.32		0.43	1.10	
Uniform Delay, d1	37.6	13.4		27.9	32.0		23.8	21.8		34.6	39.8	
Progression Factor	1.00	1.00		1.21	1.17		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.8	0.1		0.7	1.1		3.3	1.3		5.7	80.1	
Delay (s)	48.4	13.5		34.5	38.5		27.2	23.1		40.3	119.9	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		21.9			38.4			24.9			105.1	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	41.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	30	13	25	37	45	22	690	35	46	517	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			0.99			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.98			0.94			0.99			1.00	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1764			1720			3484			3491	
Flt Permitted		0.73			0.91			0.93			0.84	
Satd. Flow (perm)		1316			1586			3241			2954	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	33	14	27	40	49	24	750	38	50	562	11
RTOR Reduction (vph)	0	12	0	0	43	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	87	0	0	73	0	0	810	0	0	623	0
Confl. Peds. (#/hr)	17		20	20					42	42		73
Confl. Bikes (#/hr)			2			2			37			26
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		9.2			9.2			61.8			61.8	
Effective Green, g (s)		9.2			9.2			61.8			61.8	
Actuated g/C Ratio		0.11			0.11			0.77			0.77	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		151			182			2504			2282	
v/s Ratio Prot												
v/s Ratio Perm		c0.07			0.05			c0.25			0.21	
v/c Ratio		0.58			0.40			4.75dl			0.27	
Uniform Delay, d1		33.6			32.8			2.8			2.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.3			0.5			0.3			0.3	
Delay (s)		36.9			33.4			3.1			2.9	
Level of Service		D			C			A			A	
Approach Delay (s)		36.9			33.4			3.1			2.9	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	219	72
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	238	78
RTOR Reduction (vph)	6	0
Lane Group Flow (vph)	310	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		20
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	61.8	
Effective Green, g (s)	61.8	
Actuated g/C Ratio	0.77	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1244	
v/s Ratio Prot	0.19	
v/s Ratio Perm		
v/c Ratio	0.25	
Uniform Delay, d1	2.6	
Progression Factor	1.00	
Incremental Delay, d2	0.5	
Delay (s)	3.0	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	4	24	101	51	126	13	698	127	63	513	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.95			0.96		1.00	0.88	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.92		1.00	0.90			0.94		1.00	0.95	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1689		1681	1515			3186		1770	2972	
Flt Permitted		0.98		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1689		1681	1515			3007		1770	2972	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.25	0.95	0.95	0.95
Adj. Flow (vph)	14	4	25	106	54	133	14	735	508	66	540	251
RTOR Reduction (vph)	0	24	0	0	84	0	0	78	0	0	36	0
Lane Group Flow (vph)	0	19	0	95	114	0	0	1179	0	66	755	0
Confl. Peds. (#/hr)	32					32	127		24	24		127
Confl. Bikes (#/hr)						6			23			20
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		4.1		11.9	11.9			58.8		7.2	70.5	
Effective Green, g (s)		4.1		11.9	11.9			58.8		7.2	70.5	
Actuated g/C Ratio		0.04		0.12	0.12			0.59		0.07	0.70	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		69		200	180			1768		127	2095	
v/s Ratio Prot		c0.01		0.06	c0.08					c0.04	0.25	
v/s Ratio Perm								c0.39				
v/c Ratio		0.28		0.47	0.64			0.67		0.52	0.36	
Uniform Delay, d1		46.5		41.1	42.0			14.0		44.7	5.8	
Progression Factor		1.00		1.00	1.00			0.73		1.00	1.00	
Incremental Delay, d2		0.8		0.6	5.3			1.9		1.5	0.5	
Delay (s)		47.3		41.8	47.3			12.1		46.2	6.3	
Level of Service		D		D	D			B		D	A	
Approach Delay (s)		47.3			45.5			12.1			9.4	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	248	447	128	122	556	187	115	417	124	183	402	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.95		1.00	0.99		1.00	0.95		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3245		1770	3363		1770	3253		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3245		1770	3363		1770	3253		1770	3432	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	253	456	131	124	567	191	117	426	127	187	410	40
RTOR Reduction (vph)	0	28	0	0	35	0	0	26	0	0	7	0
Lane Group Flow (vph)	253	559	0	124	723	0	117	527	0	187	443	0
Confl. Peds. (#/hr)	25		162	162		25	130		139	139		130
Confl. Bikes (#/hr)			3			5			27			25
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.8	23.9		9.9	23.0		5.0	37.4		11.8	44.2	
Effective Green, g (s)	10.8	23.9		9.9	23.0		5.0	37.4		11.8	44.2	
Actuated g/C Ratio	0.11	0.24		0.10	0.23		0.05	0.37		0.12	0.44	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	371	776		175	773		89	1217		209	1517	
v/s Ratio Prot	c0.07	0.17		0.07	c0.22		c0.07	c0.16		c0.11	0.13	
v/s Ratio Perm												
v/c Ratio	0.68	0.72		0.71	0.94		1.31	0.43		0.89	0.29	
Uniform Delay, d1	42.9	35.0		43.7	37.8		47.5	23.4		43.5	17.9	
Progression Factor	0.91	1.25		1.00	1.00		1.00	1.00		1.14	0.79	
Incremental Delay, d2	4.0	2.7		10.2	18.2		201.1	1.1		33.0	0.5	
Delay (s)	42.9	46.5		53.9	56.0		248.6	24.5		82.6	14.5	
Level of Service	D	D		D	E		F	C		F	B	
Approach Delay (s)		45.4			55.7			63.6			34.5	
Approach LOS		D			E			E			C	

Intersection Summary			
HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	634	27	18	779	34	33	41	22	31	35	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.97			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1767	3513		1760	3512			1755			1767	
Flt Permitted	0.29	1.00		0.36	1.00			0.90			0.88	
Satd. Flow (perm)	532	3513		664	3512			1598			1587	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	667	28	19	820	36	35	43	23	33	37	14
RTOR Reduction (vph)	0	4	0	0	4	0	0	13	0	0	9	0
Lane Group Flow (vph)	45	691	0	19	852	0	0	88	0	0	75	0
Confl. Peds. (#/hr)	7		16	16		7	10		10	10		10
Confl. Bikes (#/hr)			3			6			22			30
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	302	1995		377	1994			493			490	
v/s Ratio Prot		0.20			c0.24							
v/s Ratio Perm	0.08			0.03				c0.05			0.05	
v/c Ratio	0.15	0.35		0.05	0.43			0.18			0.15	
Uniform Delay, d1	8.3	9.4		7.8	10.0			20.5			20.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.0	0.5		0.3	0.7			0.8			0.7	
Delay (s)	9.3	9.9		8.0	10.7			21.3			21.0	
Level of Service	A	A		A	B			C			C	
Approach Delay (s)		9.9			10.6			21.3			21.0	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	238	636	58	36	743	102	71	35	19	125	66	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.94		1.00			0.98	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.99			1.00	0.85		0.98			0.91	
Flt Protected	0.95	1.00			1.00	1.00		0.97			0.99	
Satd. Flow (prot)	1770	3481			3529	1495		1756			3102	
Flt Permitted	0.95	1.00			0.90	1.00		0.52			0.83	
Satd. Flow (perm)	1770	3481			3193	1495		944			2608	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	251	669	61	38	782	107	75	37	20	132	69	288
RTOR Reduction (vph)	0	6	0	0	0	48	0	8	0	0	222	0
Lane Group Flow (vph)	251	724	0	0	820	59	0	124	0	0	267	0
Confl. Peds. (#/hr)	34		31	31		34	41		18	18		41
Confl. Bikes (#/hr)			4			2			5			4
Turn Type	Prot			Perm		Perm	Perm			Perm		
Protected Phases	1	6			2			4			4	
Permitted Phases				2		2	4			4		
Actuated Green, G (s)	14.6	41.3			23.7	23.7		14.0			14.0	
Effective Green, g (s)	14.6	41.3			23.7	23.7		14.0			14.0	
Actuated g/C Ratio	0.24	0.67			0.39	0.39		0.23			0.23	
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	422	2345			1234	578		216			596	
v/s Ratio Prot	c0.14	0.21										
v/s Ratio Perm					c0.26	0.04		c0.13			0.10	
v/c Ratio	0.59	0.31			0.66	0.10		0.57			0.45	
Uniform Delay, d1	20.7	4.1			15.5	12.0		21.0			20.3	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	2.3	0.1			1.4	0.1		3.6			0.5	
Delay (s)	23.0	4.2			16.9	12.1		24.6			20.9	
Level of Service	C	A			B	B		C			C	
Approach Delay (s)		9.0			16.3			24.6			20.9	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	61.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	49	728	40	30	878	9	13	2	38	2	2	34
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	52	766	42	32	924	9	14	2	40	2	2	36
Pedestrians		10			3			11			7	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked												
vC, conflicting volume	941			819			1474	1905	418	1529	1922	484
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	941			819			1474	1905	418	1529	1922	484
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			96			81	96	93	97	96	93
cM capacity (veh/h)	720			798			71	60	577	65	58	521

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	435	425	494	472	56	40
Volume Left	52	0	32	0	14	2
Volume Right	0	42	0	9	40	36
cSH	720	1700	798	1700	188	292
Volume to Capacity	0.07	0.25	0.04	0.28	0.30	0.14
Queue Length 95th (ft)	6	0	3	0	30	12
Control Delay (s)	2.1	0.0	1.1	0.0	32.1	19.3
Lane LOS	A		A		D	C
Approach Delay (s)	1.1		0.6		32.1	19.3
Approach LOS					D	C

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	695	57	40	817	32	54	21	62	11	20	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.95	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	22	724	59	42	851	33	56	22	65	11	21	45
Pedestrians		2			2			13			13	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.88						0.88	0.88		0.88	0.88	0.88
vC, conflicting volume	897			796			1376	1791	407	1447	1804	457
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	622			796			1164	1633	407	1244	1648	124
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			95			38	72	89	85	73	94
cM capacity (veh/h)	835			812			91	80	586	74	78	789

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	384	421	467	459	143	77
Volume Left	22	0	42	0	56	11
Volume Right	0	59	0	33	65	45
cSH	835	1700	812	1700	142	162
Volume to Capacity	0.03	0.25	0.05	0.27	1.00	0.48
Queue Length 95th (ft)	2	0	4	0	184	56
Control Delay (s)	0.8	0.0	1.5	0.0	137.8	46.0
Lane LOS	A		A		F	E
Approach Delay (s)	0.4		0.7		137.8	46.0
Approach LOS					F	E

Intersection Summary			
Average Delay	12.4		
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	404	258	94	636	122	112	117	134	64	48	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.95			0.98			0.95			0.92	
Flt Protected		0.99			0.99			0.98			0.99	
Satd. Flow (prot)		3270			3411			1937			1655	
Flt Permitted		0.71			0.66			0.82			0.85	
Satd. Flow (perm)		2338			2275			1614			1418	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	109	425	272	99	669	128	118	123	141	67	51	148
RTOR Reduction (vph)	0	117	0	0	24	0	0	39	0	0	82	0
Lane Group Flow (vph)	0	689	0	0	872	0	0	343	0	0	184	0
Confl. Peds. (#/hr)	23		18	18		23	37		28	28		37
Confl. Bikes (#/hr)			3			5			1			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		659			1261			558			490	
v/s Ratio Prot					c0.10							
v/s Ratio Perm		c0.29			0.23			c0.21			0.13	
v/c Ratio		1.05			0.69			0.62			0.38	
Uniform Delay, d1		19.8			11.1			15.0			13.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		47.5			3.1			5.0			2.2	
Delay (s)		67.2			14.2			20.0			15.7	
Level of Service		E			B			B			B	
Approach Delay (s)		67.2			14.2			20.0			15.7	
Approach LOS		E			B			B			B	

Intersection Summary			
HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	126	86	62	331	185	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.91		1.00	1.00	1.00	0.67
Flpb, ped/bikes	1.00		0.78	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1552		1379	1863	1863	1063
Flt Permitted	0.97		0.59	1.00	1.00	1.00
Satd. Flow (perm)	1552		861	1863	1863	1063
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	158	108	78	414	231	85
RTOR Reduction (vph)	45	0	0	0	0	42
Lane Group Flow (vph)	221	0	78	414	231	43
Confl. Peds. (#/hr)	92	156	315			315
Confl. Bikes (#/hr)		10				11
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	593		438	948	948	541
v/s Ratio Prot	c0.14			c0.22	0.12	
v/s Ratio Perm			0.09			0.04
v/c Ratio	0.37		0.18	0.44	0.24	0.08
Uniform Delay, d1	12.3		7.3	8.5	7.6	6.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8		0.9	1.5	0.6	0.3
Delay (s)	14.1		8.2	10.0	8.2	7.2
Level of Service	B		A	A	A	A
Approach Delay (s)	14.1			9.7	7.9	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	232	420	574	55	38	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.88	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	3539	3468		1611	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	3539	3468		1611	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	244	442	604	58	40	296
RTOR Reduction (vph)	0	0	11	0	206	0
Lane Group Flow (vph)	244	442	651	0	130	0
Confl. Peds. (#/hr)	22			22		2
Confl. Bikes (#/hr)				9		1
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	813		491	
v/s Ratio Prot	c0.14	0.12	c0.19		c0.08	
v/s Ratio Perm						
v/c Ratio	0.44	0.21	0.80		0.27	
Uniform Delay, d1	17.5	6.0	23.1		16.8	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	2.5	0.2	8.1		1.3	
Delay (s)	20.1	6.3	31.2		18.1	
Level of Service	C	A	C		B	
Approach Delay (s)		11.2	31.2		18.1	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	22	44	484	13	43	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.91		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1651		1855		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1651		1855		1770	1863
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	25	49	544	15	48	447
RTOR Reduction (vph)	45	0	2	0	0	0
Lane Group Flow (vph)	29	0	558	0	48	447
Confl. Peds. (#/hr)		1				
Confl. Bikes (#/hr)				10		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	3.2		17.7		1.5	23.2
Effective Green, g (s)	3.2		17.7		1.5	23.2
Actuated g/C Ratio	0.09		0.50		0.04	0.66
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	149		928		75	1221
v/s Ratio Prot	c0.02		c0.30		0.03	c0.24
v/s Ratio Perm						
v/c Ratio	0.20		0.60		0.64	0.37
Uniform Delay, d1	14.9		6.3		16.7	2.8
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.7		1.1		17.1	0.2
Delay (s)	15.6		7.4		33.8	3.0
Level of Service	B		A		C	A
Approach Delay (s)	15.6		7.4			5.9
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	35.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	12	20	5	20	8	26	41	3	26	366	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.98			0.63					0.99	
Flpb, ped/bikes			0.80			0.97					0.99	
Frt			0.99			0.90					0.99	
Flt Protected			0.98			0.99					1.00	
Satd. Flow (prot)			1253			904					1599	
Flt Permitted			0.87			0.95					0.96	
Satd. Flow (perm)			1118			864					1538	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	12	20	5	20	8	27	42	3	27	373	16
RTOR Reduction (vph)	0	0	4	0	0	32	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	43	0	0	65	0	0	0	0	417	0
Confl. Peds. (#/hr)	137	101		75	75		137	101	122	137		213
Confl. Bikes (#/hr)				1			3	3				21
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			261			202					641	
v/s Ratio Prot												
v/s Ratio Perm			0.04			c0.07					c0.27	
v/c Ratio			0.17			0.32					0.65	
Uniform Delay, d1			18.3			19.1					14.0	
Progression Factor			1.00			0.91					1.00	
Incremental Delay, d2			1.4			3.9					5.1	
Delay (s)			19.7			21.4					19.1	
Level of Service			B			C					B	
Approach Delay (s)			19.7			21.4					19.1	
Approach LOS			B			C					B	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	31	317	14	25	11	20	33	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.97				0.69		
Flpb, ped/bikes		0.99				0.74		
Frt		0.99				0.92		
Flt Protected		1.00				0.98		
Satd. Flow (prot)		1725				760		
Flt Permitted		0.95				0.98		
Satd. Flow (perm)		1646				760		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	32	323	14	26	11	20	34	8
RTOR Reduction (vph)	0	4	0	0	0	7	0	0
Lane Group Flow (vph)	0	391	0	0	0	66	0	0
Confl. Peds. (#/hr)	213		122	137	101	213	75	122
Confl. Bikes (#/hr)			10	17				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		686				114		
v/s Ratio Prot								
v/s Ratio Perm		0.24				0.09		
v/c Ratio		0.57				0.58		
Uniform Delay, d1		13.4				23.7		
Progression Factor		1.00				1.00		
Incremental Delay, d2		3.4				19.8		
Delay (s)		16.8				43.5		
Level of Service		B				D		
Approach Delay (s)		16.8				43.5		
Approach LOS		B				D		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	1	2	0	0	0	0	12	16	10	7	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	4	1	3	0	0	0	0	16	21	13	9	0
Pedestrians		1			6			1			6	
Lane Width (ft)		12.0			0.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	6			5			17	18	10	52	19	7
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	6			5			17	18	10	52	19	7
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	98	99	99	100
cM capacity (veh/h)	1607			1615			981	869	1071	905	868	1069

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	37	23
Volume Left	4	0	13
Volume Right	3	21	0
cSH	1607	974	889
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	3.6	8.8	9.2
Lane LOS	A	A	A
Approach Delay (s)	3.6	8.8	9.2
Approach LOS		A	A

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	668	0	0	804	8	0	0	3	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	734	0	0	884	9	0	0	3	0	0	0
Pedestrians					4			8			13	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1268			632							
pX, platoon unblocked												
vC, conflicting volume	905			742			1184	1647	379	1275	1643	459
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	905			742			1184	1647	379	1275	1643	459
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	100	100	100
cM capacity (veh/h)	747			855			143	98	613	122	98	549

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	489	245	589	303	3
Volume Left	0	0	0	0	0
Volume Right	0	0	0	9	3
cSH	1700	1700	1700	1700	613
Volume to Capacity	0.29	0.14	0.35	0.18	0.01
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	10.9
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.9
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	796	870	100	0	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	829	906	104	0	34
Pedestrians					42	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					4	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		217	1314			
pX, platoon unblocked					0.93	
vC, conflicting volume	1052				1415	547
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1052				1294	547
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	634				138	464

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	415	415	604	406	34
Volume Left	0	0	0	0	0
Volume Right	0	0	0	104	34
cSH	1700	1700	1700	1700	464
Volume to Capacity	0.24	0.24	0.36	0.24	0.07
Queue Length 95th (ft)	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	13.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.4
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	NBL	NBT	NBR	NBR2	SBL2	SBL
Lane Configurations												
Volume (vph)	18	1	26	10	5	0	2	383	2	4	1	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0		4.0				
Lane Util. Factor		1.00				1.00		0.95				
Frpb, ped/bikes		0.98				1.00		1.00				
Flpb, ped/bikes		1.00				0.99		1.00				
Frt		0.91				1.00		1.00				
Flt Protected		0.98				0.95		1.00				
Satd. Flow (prot)		1624				1753		3529				
Flt Permitted		0.93				0.72		0.95				
Satd. Flow (perm)		1540				1324		3366				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	20	1	29	11	6	0	2	426	2	4	1	24
RTOR Reduction (vph)	0	8	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	53	0	0	0	6	0	433	0	0	0	0
Confl. Peds. (#/hr)	11		9		9		9		2			2
Confl. Bikes (#/hr)									5	5		
Turn Type	Perm				Perm		Perm				Perm	Perm
Protected Phases		4				4		2				
Permitted Phases	4				4		2				6	6
Actuated Green, G (s)		16.0				16.0		16.0				
Effective Green, g (s)		16.0				16.0		16.0				
Actuated g/C Ratio		0.27				0.27		0.27				
Clearance Time (s)		4.0				4.0		4.0				
Lane Grp Cap (vph)		411				353		898				
v/s Ratio Prot												
v/s Ratio Perm		c0.03				0.00		c0.13				
v/c Ratio		0.13				0.02		0.48				
Uniform Delay, d1		16.7				16.2		18.5				
Progression Factor		0.87				1.00		1.00				
Incremental Delay, d2		0.6				0.1		1.9				
Delay (s)		15.1				16.3		20.4				
Level of Service		B				B		C				
Approach Delay (s)		15.1				16.3		20.4				
Approach LOS		B				B		C				

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR	NWL	NWR	NWR2
Lane Configurations					
Volume (vph)	294	14	2	13	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		
Lane Util. Factor	0.95		1.00		
Frpb, ped/bikes	1.00		1.00		
Flpb, ped/bikes	1.00		1.00		
Frt	0.99		0.87		
Flt Protected	1.00		1.00		
Satd. Flow (prot)	3498		1621		
Flt Permitted	0.91		1.00		
Satd. Flow (perm)	3192		1621		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	327	16	2	14	18
RTOR Reduction (vph)	5	0	13	0	0
Lane Group Flow (vph)	363	0	21	0	0
Confl. Peds. (#/hr)		9			
Confl. Bikes (#/hr)		1			
Turn Type					
Protected Phases	6		8		
Permitted Phases					
Actuated Green, G (s)	16.0		16.0		
Effective Green, g (s)	16.0		16.0		
Actuated g/C Ratio	0.27		0.27		
Clearance Time (s)	4.0		4.0		
Lane Grp Cap (vph)	851		432		
v/s Ratio Prot			c0.01		
v/s Ratio Perm	0.11				
v/c Ratio	0.43		0.05		
Uniform Delay, d1	18.2		16.3		
Progression Factor	1.00		1.00		
Incremental Delay, d2	1.6		0.2		
Delay (s)	19.8		16.6		
Level of Service	B		B		
Approach Delay (s)	19.8		16.6		
Approach LOS	B		B		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	162	22	420	161	22	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		0.99		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.96		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1751		3353		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1751		3353		1711	3421
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	174	24	452	173	24	314
RTOR Reduction (vph)	10	0	63	0	0	0
Lane Group Flow (vph)	188	0	562	0	24	314
Confl. Peds. (#/hr)		5		12		
Confl. Bikes (#/hr)		2		7		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	6.8		15.7		0.8	20.5
Effective Green, g (s)	6.8		15.7		0.8	20.5
Actuated g/C Ratio	0.19		0.44		0.02	0.58
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	337		1491		39	1987
v/s Ratio Prot	c0.11		c0.17		c0.01	0.09
v/s Ratio Perm						
v/c Ratio	0.56		0.38		0.62	0.16
Uniform Delay, d1	12.9		6.5		17.1	3.4
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.1		0.1		18.5	0.0
Delay (s)	14.0		6.6		35.6	3.4
Level of Service	B		A		D	A
Approach Delay (s)	14.0		6.6			5.7
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	35.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	346	331	581	415	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3361	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3361	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	376	360	632	451	42
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	0	376	360	632	481	0
Confl. Peds. (#/hr)						20
Confl. Bikes (#/hr)		3				4
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		21.0	21.0	33.0	26.0	
Effective Green, g (s)		21.0	21.0	33.0	26.0	
Actuated g/C Ratio		0.37	0.37	0.58	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		594	609	1912	1533	
v/s Ratio Prot		c0.23	0.22	c0.19	0.14	
v/s Ratio Perm						
v/c Ratio		0.63	0.59	0.33	0.31	
Uniform Delay, d1		14.8	14.5	6.2	9.8	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.1	4.2	0.1	0.5	
Delay (s)		19.9	18.7	6.4	10.4	
Level of Service		B	B	A	B	
Approach Delay (s)	19.9			10.8	10.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	13	0	27	0	0	17	18	0	882	0	20	741
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	14	0	29	0	0	18	0	0	938	0	21	788
Pedestrians		11			58							10
Lane Width (ft)		12.0			12.0							10.0
Walking Speed (ft/s)		4.0			4.0							4.0
Percent Blockage		1			5							1
Right turn flare (veh)												
Median type									None			None
Median storage veh)												
Upstream signal (ft)									483			264
pX, platoon unblocked							0.00					
vC, conflicting volume	1183	1838	274	1330	1838	381	0	799			996	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1183	1838	274	1330	1838	381	0	799			996	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			2.2	
p0 queue free %	89	100	96	100	100	97	0	100			97	
cM capacity (veh/h)	129	68	717	96	68	583	0	812			657	

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	43	18	235	469	235	179	315	315
Volume Left	14	0	0	0	0	21	0	0
Volume Right	29	18	0	0	0	0	0	0
cSH	289	583	812	1700	1700	657	1700	1700
Volume to Capacity	0.15	0.03	0.00	0.28	0.14	0.03	0.19	0.19
Queue Length 95th (ft)	13	2	0	0	0	3	0	0
Control Delay (s)	19.6	11.4	0.0	0.0	0.0	1.6	0.0	0.0
Lane LOS	C	B				A		
Approach Delay (s)	19.6	11.4	0.0			0.4		
Approach LOS	C	B						

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Sign Control	
Grade	
Peak Hour Factor	0.94
Hourly flow rate (vph)	0
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	

Direction, Lane #

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	141	0	759	31	0	786	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	0	0	0	0	144	0	774	32	0	802	0
Pedestrians					19							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								295			452	
pX, platoon unblocked												
vC, conflicting volume	1204	1627	201	994	1596	277	802			825		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1204	1627	201	994	1596	277	802			825		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	80	100			100		
cM capacity (veh/h)	110	99	807	194	104	709	817			788		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	144	258	258	258	32	229	229	229	115
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	144	0	0	0	32	0	0	0	0
cSH	709	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.20	0.15	0.15	0.15	0.02	0.13	0.13	0.13	0.07
Queue Length 95th (ft)	19	0	0	0	0	0	0	0	0
Control Delay (s)	11.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	11.4	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	30.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	40	750	164	0	786
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	43	806	176	0	845
Pedestrians	17					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			174			573
pX, platoon unblocked						
vC, conflicting volume	1123	307			1000	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1123	307			1000	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	94			100	
cM capacity (veh/h)	197	679			678	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	43	230	230	230	292	211	211	211	211
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	43	0	0	0	176	0	0	0	0
cSH	679	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.14	0.14	0.14	0.17	0.12	0.12	0.12	0.12
Queue Length 95th (ft)	5	0	0	0	0	0	0	0	0
Control Delay (s)	10.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	10.7	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	137	420	46	140	431	329	65	390	107	58	446	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.94			0.97			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	0.97
Satd. Flow (prot)	1770	3487		1770	3256			4860			1420	4368
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.95	0.97
Satd. Flow (perm)	1770	3487		1770	3256			4860			1420	4368
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	140	429	47	143	440	336	66	398	109	59	455	218
RTOR Reduction (vph)	0	7	0	0	122	0	0	35	0	0	0	0
Lane Group Flow (vph)	140	469	0	143	654	0	0	538	0	0	259	473
Confl. Peds. (#/hr)						22			31			
Confl. Bikes (#/hr)												
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	12.9	36.5		11.5	35.1			27.5			18.5	18.5
Effective Green, g (s)	12.9	36.5		11.5	35.1			27.5			18.5	18.5
Actuated g/C Ratio	0.12	0.33		0.10	0.32			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	208	1157		185	1039			1215			239	735
v/s Ratio Prot	0.08	0.13		c0.08	c0.20			c0.11			c0.18	0.11
v/s Ratio Perm												
v/c Ratio	0.67	0.41		0.77	0.63			0.44			1.08	0.97dl
Uniform Delay, d1	46.5	28.4		48.0	31.9			34.8			45.8	42.7
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	8.3	1.1		18.0	2.9			1.2			82.3	4.3
Delay (s)	54.8	29.4		66.0	34.8			36.0			128.0	47.0
Level of Service	D	C		E	C			D			F	D
Approach Delay (s)		35.2			39.7			36.0				72.6
Approach LOS		D			D			D				E

Intersection Summary			
HCM Average Control Delay	47.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	68
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.97
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1432
Flt Permitted	1.00
Satd. Flow (perm)	1432
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	69
RTOR Reduction (vph)	30
Lane Group Flow (vph)	39
Confl. Peds. (#/hr)	5
Confl. Bikes (#/hr)	8
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	18.5
Effective Green, g (s)	18.5
Actuated g/C Ratio	0.17
Clearance Time (s)	4.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	241
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.16
Uniform Delay, d1	39.1
Progression Factor	1.00
Incremental Delay, d2	1.4
Delay (s)	40.6
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	2	17	17	8	27	37	520	6	21	409	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.92			0.93			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1668			1686			5056			5046	
Flt Permitted		0.94			0.94			0.89			0.91	
Satd. Flow (perm)		1593			1603			4518			4583	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	11	2	18	18	8	28	39	542	6	22	426	12
RTOR Reduction (vph)	0	13	0	0	21	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	18	0	0	33	0	0	586	0	0	457	0
Confl. Peds. (#/hr)	7		6	6		7	9		16	16		9
Confl. Bikes (#/hr)			1			2			4			4
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		418			421			2993			3036	
v/s Ratio Prot												
v/s Ratio Perm		0.01			c0.02			c0.13			0.10	
v/c Ratio		0.04			0.08			0.20			0.15	
Uniform Delay, d1		22.0			22.2			5.2			5.1	
Progression Factor		1.00			1.00			1.34			1.00	
Incremental Delay, d2		0.2			0.4			0.1			0.1	
Delay (s)		22.2			22.6			7.2			5.2	
Level of Service		C			C			A			A	
Approach Delay (s)		22.2			22.6			7.2			5.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	178	119	15	92	20	62	341	20	19	357	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95			0.91			0.91	
Frpb, ped/bikes	1.00	0.99			1.00			1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	
Frt	1.00	0.94			0.98			0.99			0.97	
Flt Protected	0.95	1.00			0.99			0.99			1.00	
Satd. Flow (prot)	1753	3290			3419			4990			4876	
Flt Permitted	0.66	1.00			0.91			0.81			0.91	
Satd. Flow (perm)	1225	3290			3144			4070			4456	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	187	196	131	16	101	22	68	375	22	21	392	102
RTOR Reduction (vph)	0	75	0	0	0	0	0	7	0	0	53	0
Lane Group Flow (vph)	187	252	0	0	139	0	0	458	0	0	462	0
Confl. Peds. (#/hr)	15		14	14		15	45		42	42		45
Confl. Bikes (#/hr)			11			6			17			9
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	34.5	34.5			34.5			37.5			37.5	
Effective Green, g (s)	34.5	34.5			34.5			37.5			37.5	
Actuated g/C Ratio	0.43	0.43			0.43			0.47			0.47	
Clearance Time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Grp Cap (vph)	528	1419			1356			1908			2089	
v/s Ratio Prot		0.08										
v/s Ratio Perm	c0.15				0.04			c0.11			0.10	
v/c Ratio	0.35	0.18			0.10			0.24			0.22	
Uniform Delay, d1	15.3	14.0			13.5			12.7			12.6	
Progression Factor	1.00	1.00			1.00			1.00			2.21	
Incremental Delay, d2	1.9	0.3			0.2			0.3			0.2	
Delay (s)	17.1	14.3			13.7			13.0			28.1	
Level of Service	B	B			B			B			C	
Approach Delay (s)		15.3			13.7			13.0			28.1	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	21
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	23
RTOR Reduction (vph)	13
Lane Group Flow (vph)	10
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	34.5
Effective Green, g (s)	34.5
Actuated g/C Ratio	0.43
Clearance Time (s)	3.0
Lane Grp Cap (vph)	695
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.01
Uniform Delay, d1	13.0
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.1
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	300	34	43	283	128	55	246	53	202	236	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.97		1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1553	1770	4722		1770	3430		1770	3362	1497
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1553	1770	4722		1770	3430		1770	3362	1497
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	53	337	38	48	318	144	62	276	60	227	265	66
RTOR Reduction (vph)	0	0	25	0	73	0	0	18	0	0	0	49
Lane Group Flow (vph)	53	337	13	48	389	0	62	318	0	227	265	17
Confl. Peds. (#/hr)			3			50			5			34
Confl. Bikes (#/hr)			5			12			6			5
Parking (#/hr)											0	
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases			4									2
Actuated Green, G (s)	6.5	33.3	33.3	6.5	33.3		15.7	26.5		15.7	26.5	26.5
Effective Green, g (s)	6.5	33.3	33.3	6.5	33.3		15.7	26.5		15.7	26.5	26.5
Actuated g/C Ratio	0.06	0.33	0.33	0.06	0.33		0.16	0.26		0.16	0.26	0.26
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	115	1178	517	115	1572		278	909		278	891	397
v/s Ratio Prot	c0.03	c0.10		0.03	0.08		0.04	c0.09		c0.13	0.08	
v/s Ratio Perm			0.01									0.01
v/c Ratio	0.46	0.29	0.02	0.42	0.25		0.22	0.35		0.82	0.30	0.04
Uniform Delay, d1	45.1	24.6	22.4	44.9	24.2		36.8	29.8		40.8	29.3	27.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.0	0.0	0.9	0.0		0.1	1.1		15.9	0.9	0.2
Delay (s)	46.1	24.6	22.4	45.8	24.3		37.0	30.8		56.7	30.2	27.5
Level of Service	D	C	C	D	C		D	C		E	C	C
Approach Delay (s)		27.1			26.3			31.8			40.6	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	31.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	65	44	68	71	126	131	1117	56	127	1270	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1763	1723			1810	1541	1770	5041		1770	5082	
Flt Permitted	0.61	1.00			0.79	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1124	1723			1460	1541	1770	5041		1770	5082	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	39	69	47	72	76	134	139	1188	60	135	1351	5
RTOR Reduction (vph)	0	40	0	0	0	113	0	5	0	0	0	0
Lane Group Flow (vph)	39	76	0	0	148	21	139	1243	0	135	1356	0
Confl. Peds. (#/hr)	6		14	14		6			16			12
Confl. Bikes (#/hr)			10			7			2			6
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	12.3	12.3			12.3	12.3	7.8	41.7		12.5	46.4	
Effective Green, g (s)	12.3	12.3			12.3	12.3	7.8	41.7		12.5	46.4	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.10	0.52		0.16	0.58	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	173	265			224	237	173	2628		277	2948	
v/s Ratio Prot		0.04					c0.08	c0.25		0.08	c0.27	
v/s Ratio Perm	0.03				c0.10	0.01						
v/c Ratio	0.23	0.29			0.66	0.09	0.80	0.47		0.49	0.46	
Uniform Delay, d1	29.7	30.0			31.9	29.0	35.3	12.2		30.8	9.6	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2			5.6	0.1	21.8	0.6		0.5	0.5	
Delay (s)	29.9	30.2			37.4	29.1	57.2	12.8		31.3	10.1	
Level of Service	C	C			D	C	E	B		C	B	
Approach Delay (s)		30.1			33.5			17.2			12.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	275	660	163	29	625	149	158	174	30	105	180	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4900		1762	4899		1770	1811		1744	1633	
Flt Permitted	0.95	1.00		0.32	1.00		0.14	1.00		0.63	1.00	
Satd. Flow (perm)	1770	4900		590	4899		256	1811		1148	1633	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	286	688	170	30	651	155	165	181	31	109	188	390
RTOR Reduction (vph)	0	59	0	0	46	0	0	5	0	0	70	0
Lane Group Flow (vph)	286	799	0	30	760	0	165	207	0	109	508	0
Confl. Peds. (#/hr)			8	8		9	13		18	18		13
Confl. Bikes (#/hr)			2			4			18			13
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	20.6	48.5		23.9	23.9		42.5	42.5		25.1	25.1	
Effective Green, g (s)	20.6	48.5		23.9	23.9		42.5	42.5		25.1	25.1	
Actuated g/C Ratio	0.21	0.48		0.24	0.24		0.42	0.42		0.25	0.25	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	365	2377		141	1171		312	770		288	410	
v/s Ratio Prot	c0.16	0.16			c0.16		c0.07	0.11			c0.31	
v/s Ratio Perm				0.05			0.15			0.09		
v/c Ratio	0.78	0.34		0.21	0.65		0.53	0.27		0.38	1.24	
Uniform Delay, d1	37.6	15.8		30.5	34.3		21.7	18.7		31.0	37.5	
Progression Factor	1.00	1.00		1.11	1.08		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.5	0.1		0.7	1.2		1.6	0.9		3.8	127.2	
Delay (s)	48.1	15.9		34.6	38.4		23.3	19.5		34.7	164.6	
Level of Service	D	B		C	D		C	B		C	F	
Approach Delay (s)		24.0			38.2			21.2			144.0	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	54.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	21	18	25	19	22	14	579	21	18	546	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.96			0.99			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1734			1713			3492			3491	
Flt Permitted		0.88			0.89			0.94			0.93	
Satd. Flow (perm)		1556			1546			3284			3252	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	33	22	19	27	20	23	15	616	22	19	581	17
RTOR Reduction (vph)	0	17	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	57	0	0	70	0	0	652	0	0	617	0
Confl. Peds. (#/hr)	17		20	20		17	73		42	42		73
Confl. Bikes (#/hr)			4			1			35			39
Turn Type	Perm			Perm			Perm			custom		
Protected Phases		4			4			2				
Permitted Phases	4			4			2			6	6!	
Actuated Green, G (s)		7.1			7.1			63.9			63.9	
Effective Green, g (s)		7.1			7.1			63.9			63.9	
Actuated g/C Ratio		0.09			0.09			0.80			0.80	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		138			137			2623			2598	
v/s Ratio Prot												
v/s Ratio Perm		0.04			c0.05			c0.20			0.19	
v/c Ratio		0.41			0.51			0.25			0.24	
Uniform Delay, d1		34.5			34.8			2.0			2.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			1.3			0.2			0.2	
Delay (s)		35.2			36.1			2.2			2.2	
Level of Service		D			D			A			A	
Approach Delay (s)		35.2			36.1			2.2			2.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	211	35
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.94	0.94
Adj. Flow (vph)	224	37
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	258	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	63.9	
Effective Green, g (s)	63.9	
Actuated g/C Ratio	0.80	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1287	
v/s Ratio Prot	0.16	
v/s Ratio Perm		
v/c Ratio	0.20	
Uniform Delay, d1	1.9	
Progression Factor	1.00	
Incremental Delay, d2	0.4	
Delay (s)	2.3	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1	20	67	31	120	10	679	97	79	665	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.96			0.99		1.00	0.97	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.94		1.00	0.89			0.98		1.00	0.96	
Flt Protected		0.97		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1675		1681	1503			3433		1770	3314	
Flt Permitted		0.97		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1675		1681	1503			3238		1770	3314	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	23	1	20	68	32	122	10	693	99	81	679	213
RTOR Reduction (vph)	0	19	0	0	111	0	0	7	0	0	18	0
Lane Group Flow (vph)	0	25	0	61	50	0	0	795	0	81	874	0
Confl. Peds. (#/hr)						22	32		22			32
Confl. Bikes (#/hr)			5			4			14			31
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		4.3		8.8	8.8			61.0		7.9	73.4	
Effective Green, g (s)		4.3		8.8	8.8			61.0		7.9	73.4	
Actuated g/C Ratio		0.04		0.09	0.09			0.61		0.08	0.73	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		72		148	132			1975		140	2432	
v/s Ratio Prot		c0.01		c0.04	0.03					c0.05	0.26	
v/s Ratio Perm								c0.25				
v/c Ratio		0.35		0.41	0.38			0.40		0.58	0.36	
Uniform Delay, d1		46.5		43.2	43.0			10.1		44.4	4.8	
Progression Factor		1.00		1.00	1.00			0.58		1.00	1.00	
Incremental Delay, d2		1.1		0.7	0.7			0.5		3.6	0.4	
Delay (s)		47.5		43.8	43.7			6.4		48.0	5.2	
Level of Service		D		D	D			A		D	A	
Approach Delay (s)		47.5			43.7			6.4			8.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	259	396	86	78	371	141	87	386	96	237	453	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.96		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3405		1770	3245		1770	3384		1770	3465	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3405		1770	3245		1770	3384		1770	3465	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	267	408	89	80	382	145	90	398	99	244	467	64
RTOR Reduction (vph)	0	20	0	0	43	0	0	19	0	0	9	0
Lane Group Flow (vph)	267	477	0	80	484	0	90	478	0	244	522	0
Confl. Peds. (#/hr)			30			99			40			
Confl. Bikes (#/hr)			12			16			15			24
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	23.1		7.5	19.6		5.0	40.4		12.0	47.4	
Effective Green, g (s)	11.0	23.1		7.5	19.6		5.0	40.4		12.0	47.4	
Actuated g/C Ratio	0.11	0.23		0.08	0.20		0.05	0.40		0.12	0.47	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	378	787		133	636		89	1367		212	1642	
v/s Ratio Prot	c0.08	c0.14		0.05	c0.15		0.05	c0.14		c0.14	0.15	
v/s Ratio Perm												
v/c Ratio	0.71	0.61		0.60	0.76		1.01	0.35		1.15	0.32	
Uniform Delay, d1	42.9	34.4		44.8	38.0		47.5	20.7		44.0	16.3	
Progression Factor	0.88	1.23		1.00	1.00		1.00	1.00		1.18	0.76	
Incremental Delay, d2	4.7	0.9		5.2	4.8		98.5	0.7		107.3	0.5	
Delay (s)	42.6	43.2		50.0	42.8		146.0	21.4		159.0	12.8	
Level of Service	D	D		D	D		F	C		F	B	
Approach Delay (s)		43.0			43.7			40.5			58.8	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	47.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	608	33	12	599	21	28	27	17	30	32	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1766	3507		1768	3517			1746			1744	
Flt Permitted	0.39	1.00		0.38	1.00			0.89			0.90	
Satd. Flow (perm)	718	3507		699	3517			1588			1593	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	32	627	34	12	618	22	29	28	18	31	33	20
RTOR Reduction (vph)	0	5	0	0	3	0	0	12	0	0	14	0
Lane Group Flow (vph)	32	656	0	12	637	0	0	63	0	0	70	0
Confl. Peds. (#/hr)	5		3	3		5	4		20	20		4
Confl. Bikes (#/hr)			4			10			23			26
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	408	1992		397	1997			490			492	
v/s Ratio Prot		c0.19			0.18							
v/s Ratio Perm	0.04			0.02				0.04			c0.04	
v/c Ratio	0.08	0.33		0.03	0.32			0.13			0.14	
Uniform Delay, d1	7.9	9.3		7.7	9.2			20.2			20.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.4	0.4		0.1	0.4			0.5			0.6	
Delay (s)	8.3	9.7		7.8	9.7			20.7			20.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		9.7			9.6			20.7			20.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	663	44	16	607	98	45	36	4	256	52	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.96		1.00			0.98	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.99			1.00	0.85		0.99			0.93	
Flt Protected	0.95	1.00			1.00	1.00		0.97			0.98	
Satd. Flow (prot)	1770	3498			3534	1525		1788			3140	
Flt Permitted	0.95	1.00			0.93	1.00		0.65			0.81	
Satd. Flow (perm)	1770	3498			3299	1525		1192			2590	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	277	691	46	17	632	102	47	38	4	267	54	258
RTOR Reduction (vph)	0	5	0	0	0	64	0	2	0	0	175	0
Lane Group Flow (vph)	277	732	0	0	649	38	0	87	0	0	404	0
Confl. Peds. (#/hr)			18	18		10	60		11	11		60
Confl. Bikes (#/hr)			7			6			11			12
Turn Type	Prot			Perm		Perm	Perm			Perm		
Protected Phases	1	6			2			4			4	
Permitted Phases				2		2	4			4		
Actuated Green, G (s)	15.3	38.4			20.1	20.1		17.0			17.0	
Effective Green, g (s)	15.3	38.4			20.1	20.1		17.0			17.0	
Actuated g/C Ratio	0.25	0.63			0.33	0.33		0.28			0.28	
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	441	2188			1080	499		330			717	
v/s Ratio Prot	c0.16	0.21										
v/s Ratio Perm					c0.20	0.02		0.07			c0.16	
v/c Ratio	0.63	0.33			0.60	0.08		0.26			0.56	
Uniform Delay, d1	20.5	5.4			17.3	14.2		17.3			19.0	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	2.8	0.1			0.9	0.1		0.4			1.0	
Delay (s)	23.3	5.5			18.2	14.3		17.7			20.0	
Level of Service	C	A			B	B		B			C	
Approach Delay (s)		10.4			17.7			17.7			20.0	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	877	32	20	759	5	11	0	17	3	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	15	914	33	21	791	5	11	0	18	3	0	4
Pedestrians		9			3			10			6	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked												
vC, conflicting volume	802			957			1420	1813	486	1348	1827	413
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	802			957			1420	1813	486	1348	1827	413
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			87	100	97	97	100	99
cM capacity (veh/h)	813			708			90	73	521	100	71	581

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	471	490	416	401	29	7
Volume Left	15	0	21	0	11	3
Volume Right	0	33	0	5	18	4
cSH	813	1700	708	1700	181	190
Volume to Capacity	0.02	0.29	0.03	0.24	0.16	0.04
Queue Length 95th (ft)	1	0	2	0	14	3
Control Delay (s)	0.5	0.0	0.9	0.0	28.6	24.7
Lane LOS	A		A		D	C
Approach Delay (s)	0.3		0.5		28.6	24.7
Approach LOS					D	C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	827	67	21	723	7	42	0	48	9	1	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	871	71	22	761	7	44	0	51	9	1	20
Pedestrians		2			2			12			12	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	780			953			1371	1749	485	1315	1780	398
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	648			953			1274	1674	485	1214	1707	242
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			59	100	90	91	99	97
cM capacity (veh/h)	872			710			107	84	522	111	81	707

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	438	506	403	388	95	31
Volume Left	3	0	22	0	44	9
Volume Right	0	71	0	7	51	20
cSH	872	1700	710	1700	185	241
Volume to Capacity	0.00	0.30	0.03	0.23	0.51	0.13
Queue Length 95th (ft)	0	0	2	0	64	11
Control Delay (s)	0.1	0.0	1.0	0.0	43.1	22.1
Lane LOS	A		A		E	C
Approach Delay (s)	0.1		0.5		43.1	22.1
Approach LOS					E	C

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	613	214	160	504	54	184	75	139	52	62	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.99			0.95			0.95	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3350			3445			1923			1717	
Flt Permitted		0.84			0.56			0.78			0.84	
Satd. Flow (perm)		2830			1943			1531			1465	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	59	632	221	165	520	56	190	77	143	54	64	65
RTOR Reduction (vph)	0	56	0	0	11	0	0	35	0	0	36	0
Lane Group Flow (vph)	0	856	0	0	730	0	0	375	0	0	147	0
Confl. Peds. (#/hr)	21		16			21	34		25	25		34
Confl. Bikes (#/hr)			7			3			3			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		798			1155			529			506	
v/s Ratio Prot					c0.09							
v/s Ratio Perm		c0.30			0.21			c0.24			0.10	
v/c Ratio		1.07			0.63			0.71			0.29	
Uniform Delay, d1		19.8			10.6			15.6			13.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		53.2			2.6			7.8			1.5	
Delay (s)		72.9			13.3			23.4			14.5	
Level of Service		E			B			C			B	
Approach Delay (s)		72.9			13.3			23.4			14.5	
Approach LOS		E			B			C			B	

Intersection Summary			
HCM Average Control Delay	39.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	146	58	59	303	273	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.94		1.00	1.00	1.00	0.70
Flpb, ped/bikes	1.00		0.82	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1627		1454	1863	1863	1109
Flt Permitted	0.97		0.53	1.00	1.00	1.00
Satd. Flow (perm)	1627		812	1863	1863	1109
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	159	63	64	329	297	113
RTOR Reduction (vph)	26	0	0	0	0	55
Lane Group Flow (vph)	196	0	64	329	297	58
Confl. Peds. (#/hr)	84	142	286			286
Confl. Bikes (#/hr)		7				8
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	621		413	948	948	565
v/s Ratio Prot	c0.12			c0.18	0.16	
v/s Ratio Perm			0.08			0.05
v/c Ratio	0.32		0.15	0.35	0.31	0.10
Uniform Delay, d1	11.9		7.2	8.0	7.9	7.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3		0.8	1.0	0.9	0.4
Delay (s)	13.3		8.0	9.1	8.7	7.4
Level of Service	B		A	A	A	A
Approach Delay (s)	13.3			8.9	8.4	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	285	498	389	22	13	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.87	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3511		1593	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3511		1593	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	300	524	409	23	14	249
RTOR Reduction (vph)	0	0	6	0	173	0
Lane Group Flow (vph)	300	524	426	0	90	0
Confl. Peds. (#/hr)					3	
Confl. Bikes (#/hr)						8
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	823		485	
v/s Ratio Prot	c0.17	0.15	c0.12		c0.06	
v/s Ratio Perm						
v/c Ratio	0.54	0.25	0.52		0.19	
Uniform Delay, d1	18.2	6.2	21.3		16.4	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.8	0.3	2.3		0.8	
Delay (s)	22.0	6.5	23.7		17.2	
Level of Service	C	A	C		B	
Approach Delay (s)		12.1	23.7		17.2	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	9	40	334	15	47	438
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.97		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.89		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1599		1850		1770	1863
Flt Permitted	0.99		1.00		0.95	1.00
Satd. Flow (perm)	1599		1850		1770	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	42	352	16	49	461
RTOR Reduction (vph)	39	0	3	0	0	0
Lane Group Flow (vph)	12	0	365	0	49	461
Confl. Peds. (#/hr)		4				
Confl. Bikes (#/hr)				3		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	1.6		10.0		1.4	15.4
Effective Green, g (s)	1.6		10.0		1.4	15.4
Actuated g/C Ratio	0.06		0.38		0.05	0.59
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	98		712		95	1103
v/s Ratio Prot	c0.01		0.20		0.03	c0.25
v/s Ratio Perm						
v/c Ratio	0.12		0.51		0.52	0.42
Uniform Delay, d1	11.5		6.1		12.0	2.9
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.5		0.6		4.7	0.3
Delay (s)	12.1		6.8		16.6	3.1
Level of Service	B		A		B	A
Approach Delay (s)	12.1		6.8			4.4
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	26.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	4	14	8	5	8	6	18	27	4	19	282	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.99			0.98					1.00	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.98			0.90					1.00	
Flt Protected			0.97			0.99					1.00	
Satd. Flow (prot)			1549			1444					1636	
Flt Permitted			0.87			0.97					0.96	
Satd. Flow (perm)			1381			1411					1570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	15	9	5	9	6	19	29	4	20	303	5
RTOR Reduction (vph)	0	0	4	0	0	22	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	29	0	0	41	0	0	0	0	331	0
Confl. Peds. (#/hr)				29				1				82
Confl. Bikes (#/hr)				3								2
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			322			329					654	
v/s Ratio Prot												
v/s Ratio Perm			0.02			c0.03					0.21	
v/c Ratio			0.09			0.12					0.51	
Uniform Delay, d1			18.0			18.2					12.9	
Progression Factor			1.00			0.84					1.00	
Incremental Delay, d2			0.6			0.8					2.8	
Delay (s)			18.6			16.0					15.7	
Level of Service			B			B					B	
Approach Delay (s)			18.6			16.0					15.7	
Approach LOS			B			B					B	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	37	343	20	33	7	25	27	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.98				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.98				0.91		
Flt Protected		1.00				0.98		
Satd. Flow (prot)		1758				1473		
Flt Permitted		0.95				0.98		
Satd. Flow (perm)		1680				1473		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	369	22	35	8	27	29	47
RTOR Reduction (vph)	0	5	0	0	0	40	0	0
Lane Group Flow (vph)	0	461	0	0	0	71	0	0
Confl. Peds. (#/hr)			58	80				
Confl. Bikes (#/hr)			2	2				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		700				221		
v/s Ratio Prot								
v/s Ratio Perm		c0.27				0.05		
v/c Ratio		0.66				0.32		
Uniform Delay, d1		14.1				22.8		
Progression Factor		1.00				1.00		
Incremental Delay, d2		4.8				3.8		
Delay (s)		18.9				26.6		
Level of Service		B				C		
Approach Delay (s)		18.9				26.6		
Approach LOS		B				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	3	7	0	0	0	0	9	7	10	16	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	0	4	10	0	0	0	0	13	10	15	24	0
Pedestrians					3						4	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	4			15			21	14	13	33	19	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			15			21	14	13	33	19	4
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	98	97	100
cM capacity (veh/h)	1612			1603			968	878	1068	947	872	1076

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	15	24	38
Volume Left	0	0	15
Volume Right	10	10	0
cSH	1612	952	900
Volume to Capacity	0.00	0.02	0.04
Queue Length 95th (ft)	0	2	3
Control Delay (s)	0.0	8.9	9.2
Lane LOS		A	A
Approach Delay (s)	0.0	8.9	9.2
Approach LOS		A	A

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	633	4	0	573	12	0	0	2	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	711	4	0	644	13	0	0	2	0	0	0
Pedestrians					1			12				
Lane Width (ft)					12.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1268			632							
pX, platoon unblocked												
vC, conflicting volume	657			728			1047	1383	371	1009	1378	329
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	657			728			1047	1383	371	1009	1378	329
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	926			863			179	141	620	192	142	667

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	474	242	429	228	2
Volume Left	0	0	0	0	0
Volume Right	0	4	0	13	2
cSH	1700	1700	1700	1700	620
Volume to Capacity	0.28	0.14	0.25	0.13	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	10.8
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.8
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	923	667	107	0	54
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1003	725	116	0	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		217	1314			
pX, platoon unblocked					0.91	
vC, conflicting volume	841				1285	421
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	841				1118	421
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	90
cM capacity (veh/h)	790				183	581

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	502	502	483	358	59
Volume Left	0	0	0	0	0
Volume Right	0	0	0	116	59
cSH	1700	1700	1700	1700	581
Volume to Capacity	0.30	0.30	0.28	0.21	0.10
Queue Length 95th (ft)	0	0	0	0	8
Control Delay (s)	0.0	0.0	0.0	0.0	11.9
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.9
Approach LOS					B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix D

Signal Warrant Worksheets

FEHR & PEERS

FEHR & PEERS
TRANSPORTATION CONSULTANTS

Sheet No	1	of	1

Major Street	Broadway
Minor Street	Coronado Avenue
Project	Broadway-51st Center
Scenario	Existing
Peak Hour	Weekday PM

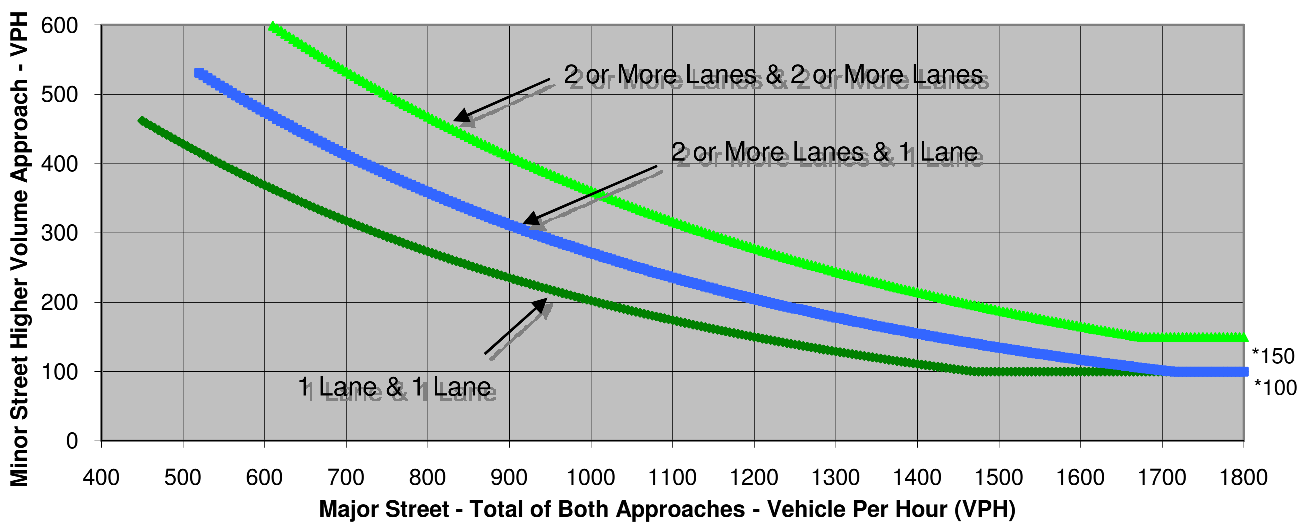
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	11	19	7
Through	1,434	783	0	0
Right	1	0	38	22
Total	1,435	794	57	29

Major Street Direction

x	North/South
	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Broadway	**Minor Street** Coronado Avenue	**Warrant Met**
Number of Approach Lanes	2	1	NO
Traffic Volume (VPH) *	2,229	57	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS TRANSPORTATION CONSULTANTS

Sheet No	1	of	1		

Major Street	Pleasant Valley Avenue
Minor Street	Montgomery Street

Project	Broadway-51st Center
Scenario	Existing
Peak Hour	Weekday PM

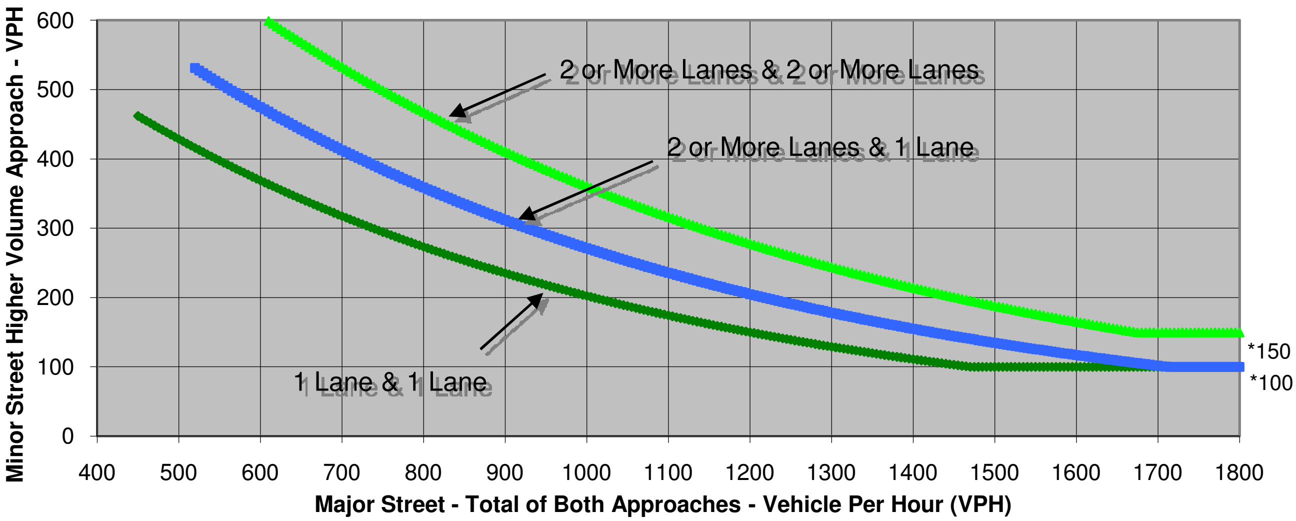
Turn Movement Volumes

	NB	SB	EB	WB
Left	5	5	16	9
Through	2	1	1,117	748
Right	11	8	94	9
Total	18	14	1,227	766

Major Street Direction

	North/South
x	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Pleasant Valley Avenue	**Minor Street** Montgomery Street	**Warrant Met**
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,993**	**18**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

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TRANSPORTATION CONSULTANTS

		Sheet No	1	of 1
Major Street	Pleasant Valley Avenue	Project	Broadway-51st Center	
Minor Street	Howe Street	Scenario	Existing	
		Peak Hour	Weekday PM	

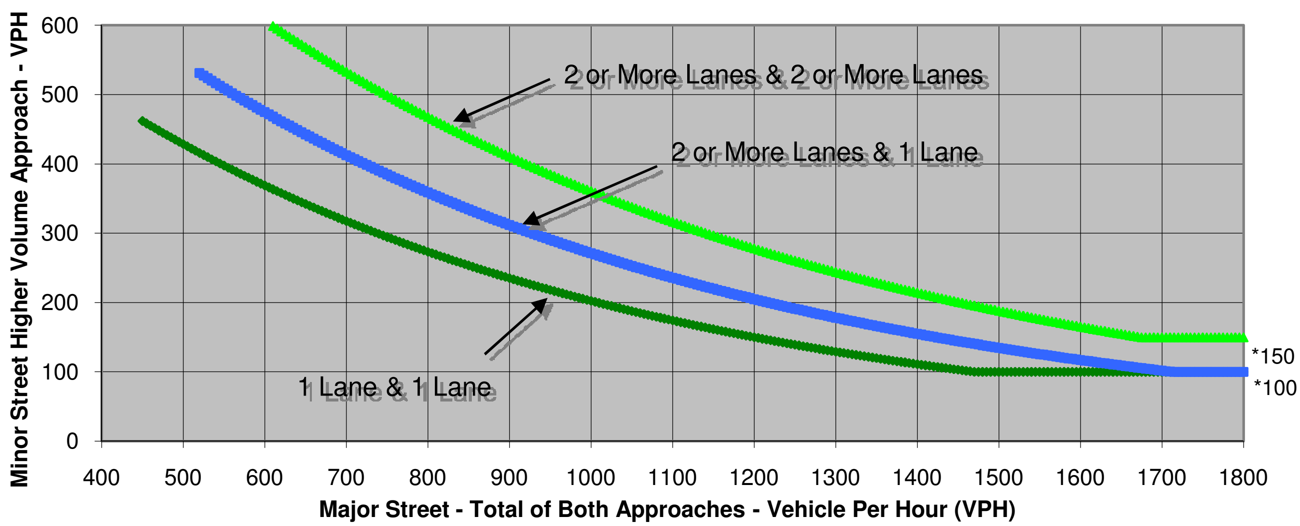
Turn Movement Volumes

	NB	SB	EB	WB
Left	34	11	6	14
Through	1	2	1,054	727
Right	94	5	73	9
Total	129	18	1,133	750

Major Street Direction

	North/South
x	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Pleasant Valley Avenue	**Minor Street** Howe Street	**Warrant Met**
Number of Approach Lanes	2	1	YES
Traffic Volume (VPH) *	1,883	129	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Sheet No	1	of	1

Major Street	Coronado Avenue
Minor Street	Desmond Street
Project	Broadway-51st Center
Scenario	Existing
Peak Hour	Weekday PM

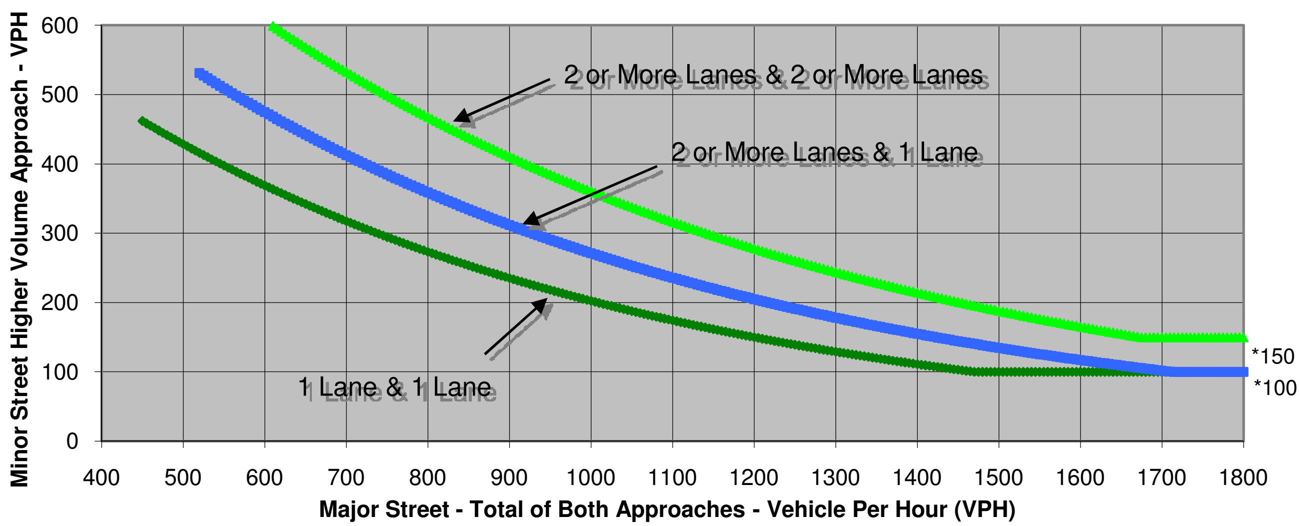
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	4	2	0
Through	27	11	1	0
Right	26	0	6	0
Total	53	15	9	0

Major Street Direction

	North/South
x	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Coronado Avenue	Minor Street Desmond Street	Warrant Met
Number of Approach Lanes	1	1	NO
Traffic Volume (VPH) *	9	53	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

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TRANSPORTATION CONSULTANTS

Sheet No 1 of 1

Major Street	51st Street
Minor Street	Coronado Avenue

Project	Broadway-51st Center
Scenario	Existing
Peak Hour	Weekday PM

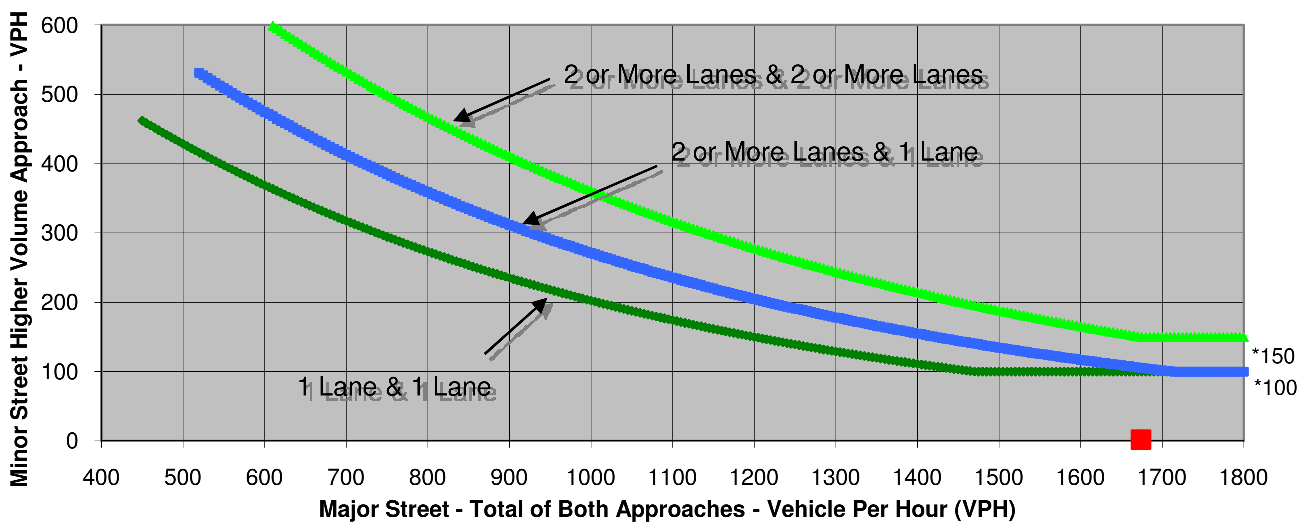
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	999	660
Right	2	0	0	15
Total	2	0	999	675

Major Street Direction

	North/South
x	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street 51st Street	Minor Street Coronado Avenue	Warrant Met
Number of Approach Lanes	2	1	NO
Traffic Volume (VPH) *	1,674	2	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Sheet No	1	of	1		

Major Street	Pleasant Valley Avenue
Minor Street	Project Driveway
Project	Broadway-51st Center
Scenario	Existing
Peak Hour	Weekday PM

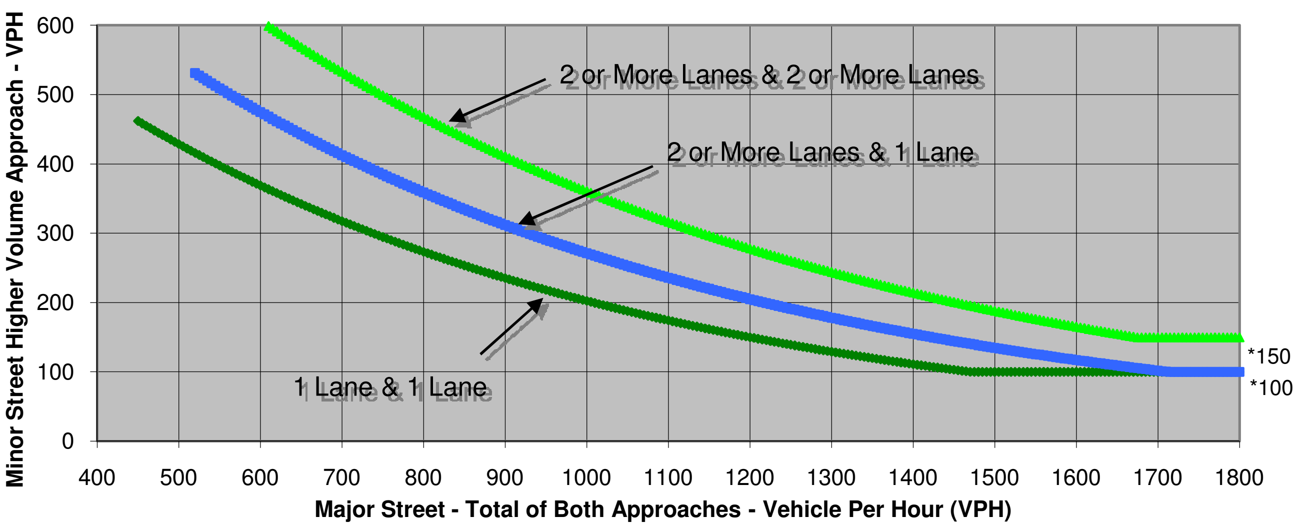
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	1,227	708
Right	0	30	0	53
Total	0	30	1,227	761

Major Street Direction

	North/South
x	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Pleasant Valley Avenue	Minor Street Project Driveway	Warrant Met
Number of Approach Lanes	2	1	NO
Traffic Volume (VPH) *	1,988	30	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Sheet No	1	of	1

Major Street	Broadway
Minor Street	Coronado Avenue
Project	Broadway-51st Center
Scenario	Existing
Peak Hour	Saturday

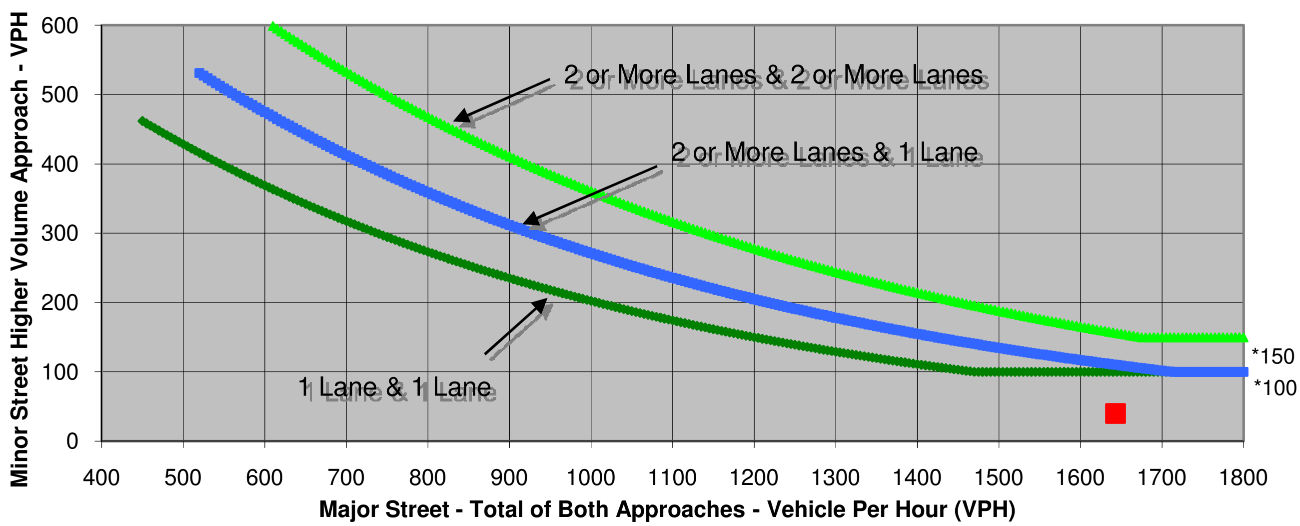
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	20	13	0
Through	882	741	0	0
Right	0	0	27	17
Total	882	761	40	17

Major Street Direction

x	North/South
	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Broadway	Minor Street Coronado Avenue	Warrant Met
Number of Approach Lanes	2	1	NO
Traffic Volume (VPH) *	1,643	40	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

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Sheet No	1	of	1

Major Street	Pleasant Valley Avenue
Minor Street	Montgomery Street
Project	Broadway-51st Center
Scenario	Existing
Peak Hour	Saturday

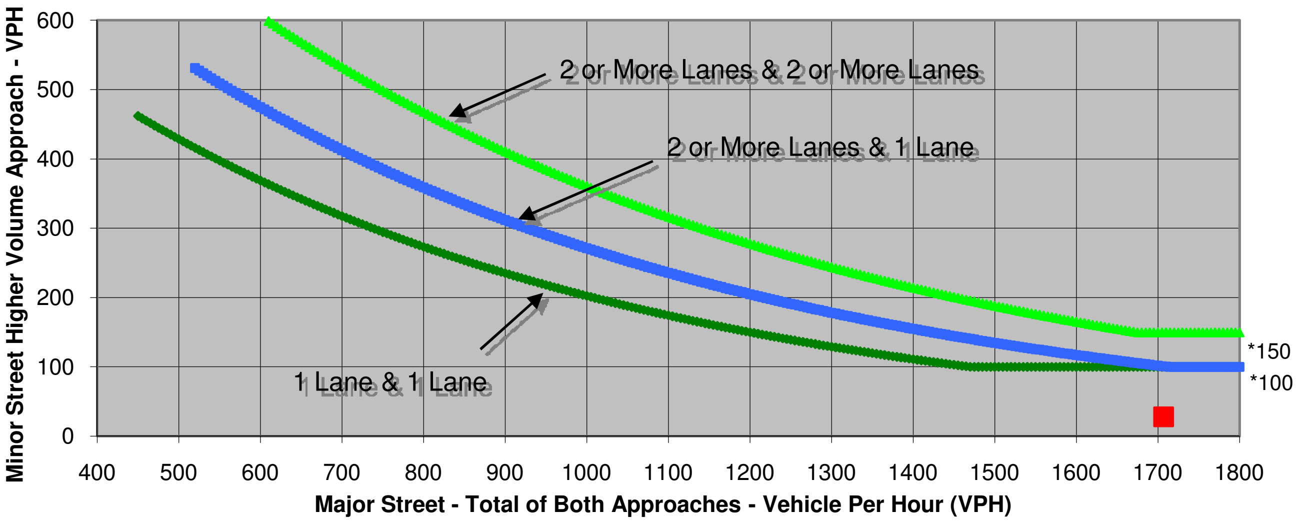
Turn Movement Volumes

	NB	SB	EB	WB
Left	11	3	14	20
Through	0	0	877	759
Right	17	4	32	5
Total	28	7	923	784

Major Street Direction

	North/South
x	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Pleasant Valley Avenue	Minor Street Montgomery Street	Warrant Met
Number of Approach Lanes	2	1	NO
Traffic Volume (VPH) *	1,707	28	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

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Sheet No	1	of	1	

Major Street	Pleasant Valley Avenue
Minor Street	Howe Street
Project	Broadway-51st Center
Scenario	Existing
Peak Hour	Saturday

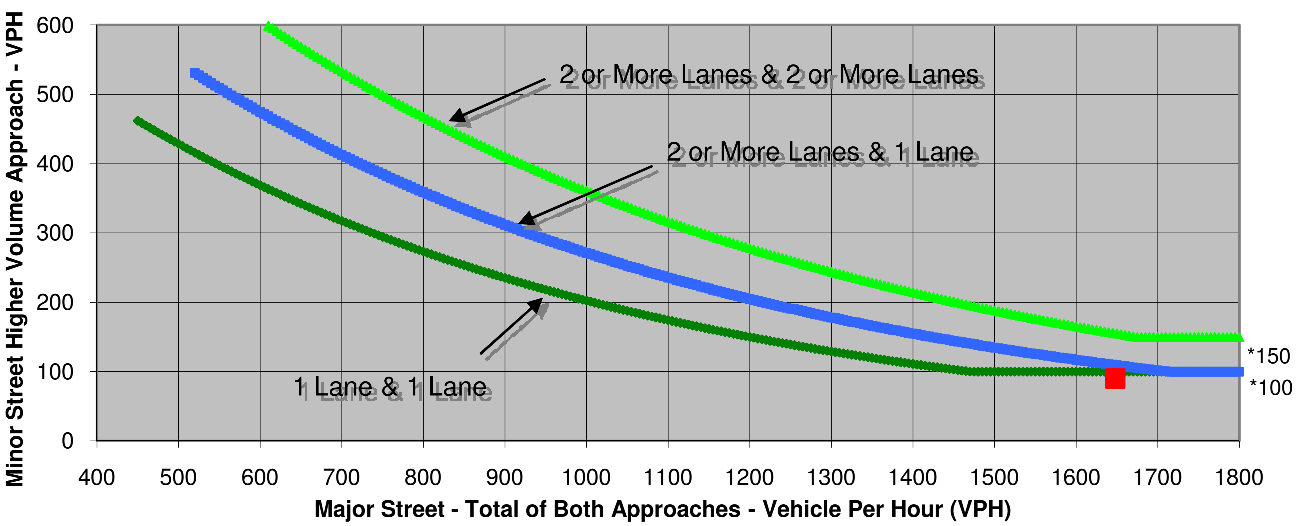
Turn Movement Volumes

	NB	SB	EB	WB
Left	42	9	3	21
Through	0	1	827	723
Right	48	19	67	7
Total	90	29	897	751

Major Street Direction

	North/South
x	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Pleasant Valley Avenue	Minor Street Howe Street	Warrant Met
Number of Approach Lanes	2	1	NO
Traffic Volume (VPH) *	1,648	90	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

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Sheet No	1	of	1	
Project	Broadway-51st Center			
Scenario	Existing			
Peak Hour	Saturday			

Major Street	Coronado Avenue
Minor Street	Desmond Street

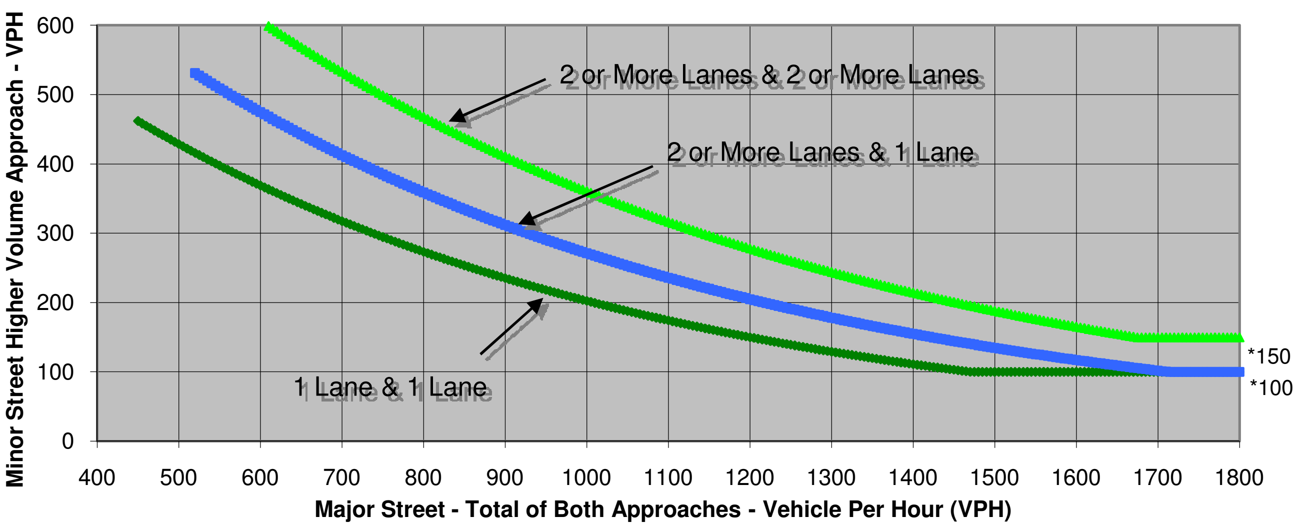
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	0	0
Through	9	16	3	0
Right	7	0	7	0
Total	16	26	10	0

Major Street Direction

	North/South
x	East/West

Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Coronado Avenue	**Minor Street** Desmond Street	**Warrant Met**
Number of Approach Lanes	1	1	NO
Traffic Volume (VPH) *	10	26	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Appendix E

Broadway Bicycle Lanes

APPENDIX E – BROADWAY BICYCLE LANES

City of Oakland is planning Class 2 bicycle lanes on Broadway between 38th Street and SR 24. The project would accommodate the bicycle lanes by generally eliminating one travel lane in each direction of Broadway. The segment between 38th Street and Broadway Terrace was approved by Oakland City Council in May 2012, is fully funded, and is currently under design.

The Broadway bicycle lane project was neither approved nor funded at the time that the Notice of Preparation (NOP) was published for the 51st & Broadway Safeway Redevelopment Project in 2009. Therefore, the DEIR did not include the Broadway bicycle lane project in the baseline future 2015 or 2035 analyses. Thus, this supplemental analysis has been conducted to address potential impacts of the proposed Project if bicycle lanes were installed on Broadway between 38th Street and Broadway Terrace by analyzing traffic operations at intersections along the affected segments of Broadway under No Project and Plus Project (i.e., the 51st & Broadway Safeway Redevelopment Project).

This analysis is based on the following assumptions:

- Under 2015 and 2035 with bicycle lanes and no Project conditions, the bicycle lane project would eliminate one through travel lane in each direction of Broadway except at the Broadway/College Avenue (intersection #3) and Broadway/51st Street/Pleasant Valley Ave (#7) intersections where the existing lane configurations would be maintained. No other roadway network modifications that would affect intersection operations, including signal timing optimization, are assumed.

- As described in the Project Roadway Modifications subsection of the DEIR Transportation, Circulation, and Parking chapter and shown on Figures 4.3-11A and 4.3-11B, the proposed Project, as part of Project improvements, would modify Broadway between just south of 51st Street/Pleasant Valley Avenue and College Avenue to provide Class 2 bicycle lanes on Broadway. Thus, this analysis assumes that these improvements would also be implemented under 2015 and 2035 with bicycle lanes plus Project conditions.

Tables E-1 and E-2 summarize intersection operations at the six study intersections along the affected segments of Broadway under 2015 and 2035 conditions with Broadway bicycle lanes under No Project and Plus Project conditions.

The DEIR identifies a significant and unavoidable impact at the Broadway/51st Street/Pleasant Valley Ave (#7) under both 2015 and 2035 conditions (Impacts Trans-4 and Trans-8, respectively). The DEIR did not identify any other significant impact at these six study intersections. In comparison as shown in Table E-1, the impact at this intersection under 2015 conditions would be eliminated with the installation of the bicycle lanes; however, the impact would continue to remain significant and unavoidable under 2035. The installation of the bicycle lanes on Broadway would not result in additional significant impacts that were not identified in the DEIR.

TABLE E-1
INTERSECTION LOS SUMMARY (BROADWAY BICYCLE LANES)
2015 CONDITIONS

#	Study Intersection	Traffic Control[1]	Peak Hour	2015 With Broadway Bicycle Lanes and No Project		2015 with Broadway Bicycle Lanes and Project		Significant Impact?
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	
2	Broadway/Broadway Terrace	Signal	PM	18.3	B	19.1	B	No
			SAT	10.2	B	8.7	A	No
3	Broadway/College Avenue	Signal	PM	10.1	B	10.0	B	No
			SAT	12.9	B	12.1	B	No
4	Broadway/Coronado Avenue/ North Project Driveway	SSSC/ Signal[3]	PM	1.5 **(43.6)**	A **(E)**	26.6	C	No
			SAT	1.0 (18.1)	A (C)	17.0	B	No
7	Broadway/51st Street/ Pleasant Valley Avenue	Signal	PM	52.4	D	54.7	D	No
			SAT	46.3	D	39.4	D	No
8	Broadway/45th Street	Signal	PM	12.5	B	8.3	A	No
			SAT	8.5	A	5.2	A	No
9	Broadway/40th Street/ 40th Street Way	Signal	PM	20.8	C	18.3	B	No
			SAT	21.2	C	16.2	B	No

Notes: **Bold** indicates intersection operating at unacceptable LOS E or LOS F

1. Signal = signalized intersection, SSSC = side-street stop controlled intersection
2. For side-street stop controlled intersections, delay is reported as: intersection average (worst minor street approach); for signalized intersection, the average intersection delay is reported; for signalized intersections operating with high delay, volume-to-capacity (v/c) ratio is also reported. LOS for both unsignalized and signalized intersections based on 2000 HCM.
3. Intersection is side-street stop-controlled under No Project conditions and signalized under Plus Project conditions.
4. The proposed Project would cause an impact at this intersection because it would degrade intersection operations from LOS D to LOS E.

Source: Fehr & Peers, 2012.

TABLE E-2
INTERSECTION LOS SUMMARY (BROADWAY BICYCLE LANES)
2035 CONDITIONS

#	Study Intersection	Traffic Control[1]	Peak Hour	2035 with Broadway Bicycle Lanes and No Project		2035 with Broadway Bicycle Lanes and Project		Significant Impact?
				Delay (Seconds)[2]	LOS	Delay (Seconds)[2]	LOS	
2	Broadway/Broadway Terrace	Signal	PM	**103.1 (v/c=1.13)**	**F**	**99.2 (v/c=1.12)**	**F**	No
			SAT	13.2	B	11.5	B	No
3	Broadway/College Avenue	Signal	PM	11.3	B	12.7	B	No
			SAT	13.6	B	11.9	B	No
4	Broadway/Coronado Avenue/ North Project Driveway	SSSC/ Signal[3]	PM	3.2 **(173.9)**	A **(F)**	43.9	D	No
			SAT	1.1 (25.9)	A (D)	15.7	B	No
7	Broadway/51st Street/ Pleasant Valley Avenue	Signal	PM	**131.6 (v/c=1.16)**	**F**	**136.4 (v/c=1.23)**	**F**	Yes[4, 5]
			SAT	**62.7**	**E**	47.1	D	No
8	Broadway/45th Street	Signal	PM	23.1	C	13.3	B	No
			SAT	9.5	A	6.5	A	No
9	Broadway/40th Street/ 40th Street Way	Signal	PM	31.1	C	30.0	C	No
			SAT	23.2	C	18.8	B	No

Notes: **Bold** indicates intersection operating at unacceptable LOS E or LOS F

1. Signal = signalized intersection, SSSC = side-street stop controlled intersection
2. For side-street stop controlled intersections, delay is reported as: intersection average (worst minor street approach); for signalized intersection, the average intersection delay is reported; for signalized intersections operating with high delay, volume-to-capacity (v/c) ratio is also reported. LOS for both unsignalized and signalized intersections based on 2000 HCM.
3. Intersection is side-street stop-controlled under No Project conditions and signalized under Plus Project conditions.
4. The proposed Project would cause an impact at this intersection because it would increase the intersection v/c ratio by more than 0.01 at an intersection already operating at LOS F.

Source: Fehr & Peers, 2012.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	190	30	790	380	50	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.94	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1739		1863	1485	1711	1801
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1739		1863	1485	1711	1801
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	196	31	814	392	52	278
RTOR Reduction (vph)	12	0	0	190	0	0
Lane Group Flow (vph)	215	0	814	202	52	278
Confl. Peds. (#/hr)		38		15	15	
Confl. Bikes (#/hr)		5		16		
Turn Type				Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	11.1		28.3	28.3	3.6	35.9
Effective Green, g (s)	11.1		28.3	28.3	3.6	35.9
Actuated g/C Ratio	0.20		0.51	0.51	0.07	0.65
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0		2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	351		959	764	112	1176
v/s Ratio Prot	c0.12		c0.44		c0.03	0.15
v/s Ratio Perm				0.14		
v/c Ratio	0.61		0.85	0.26	0.46	0.24
Uniform Delay, d1	20.0		11.5	7.5	24.8	3.9
Progression Factor	1.00		1.05	2.67	1.00	1.00
Incremental Delay, d2	2.2		8.3	0.7	1.1	0.5
Delay (s)	22.2		20.3	20.8	25.9	4.4
Level of Service	C		C	C	C	A
Approach Delay (s)	22.2		20.4			7.8
Approach LOS	C		C			A

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	400	380	1170	420	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3324	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3324	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	426	404	1245	447	43
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	0	426	404	1245	478	0
Confl. Peds. (#/hr)						97
Confl. Bikes (#/hr)						3
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		18.4	18.4	41.5	26.6	
Effective Green, g (s)		18.4	18.4	41.5	26.6	
Actuated g/C Ratio		0.33	0.33	0.75	0.48	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		539	553	2492	1608	
v/s Ratio Prot		c0.26	0.24	c0.38	0.14	
v/s Ratio Perm						
v/c Ratio		0.79	0.73	0.50	0.30	
Uniform Delay, d1		16.6	16.1	2.7	8.6	
Progression Factor		1.00	1.15	0.60	0.86	
Incremental Delay, d2		7.7	4.0	0.6	0.5	
Delay (s)		24.3	22.5	2.2	7.8	
Level of Service		C	C	A	A	
Approach Delay (s)	24.3			7.1	7.8	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	0	40	7	0	22	14	1510	1	11	810	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	21	0	42	7	0	23	15	1589	1	12	853	0
Pedestrians		33			73						15	
Lane Width (ft)		12.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		3			6						1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								483			264	
pX, platoon unblocked	0.84	0.84	0.95	0.84	0.84	0.81	0.95			0.81		
vC, conflicting volume	1771	2602	459	2184	2601	883	886			1664		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1237	2230	312	1730	2229	384	763			1348		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	100	93	80	100	95	98			97		
cM capacity (veh/h)	91	31	628	37	31	462	777			385		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	63	31	809	796	296	568
Volume Left	21	7	15	0	12	0
Volume Right	42	23	0	1	0	0
cSH	212	123	777	1700	385	1700
Volume to Capacity	0.30	0.25	0.02	0.47	0.03	0.33
Queue Length 95th (ft)	30	23	1	0	2	0
Control Delay (s)	29.1	43.6	0.5	0.0	1.1	0.0
Lane LOS	D	E	A		A	
Approach Delay (s)	29.1	43.6	0.3		0.4	
Approach LOS	D	E				

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	250	790	80	160	420	390	110	830	180	70	370	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.93			0.98			1.00	0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.95	0.98
Satd. Flow (prot)	1770	3481		1770	3223			4884			1420	4275
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.95	0.98
Satd. Flow (perm)	1770	3481		1770	3223			4884			1420	4275
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	255	806	82	163	429	398	112	847	184	71	378	327
RTOR Reduction (vph)	0	7	0	0	151	0	0	26	0	0	0	25
Lane Group Flow (vph)	255	881	0	163	676	0	0	1118	0	0	226	637
Confl. Peds. (#/hr)			9			20			37			
Confl. Bikes (#/hr)			8			4			6			
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	18.7	36.2		11.8	29.3			27.5			18.5	18.5
Effective Green, g (s)	18.7	36.2		11.8	29.3			27.5			18.5	18.5
Actuated g/C Ratio	0.17	0.33		0.11	0.27			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	301	1146		190	858			1221			239	719
v/s Ratio Prot	c0.14	c0.25		0.09	0.21			c0.23			c0.16	0.15
v/s Ratio Perm												
v/c Ratio	0.85	0.77		0.86	0.79			0.92			0.95	0.89
Uniform Delay, d1	44.3	33.1		48.3	37.5			40.1			45.3	44.7
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.99	0.98
Incremental Delay, d2	19.3	5.0		29.7	7.2			12.1			43.9	14.2
Delay (s)	63.5	38.1		78.0	44.7			52.2			88.7	58.3
Level of Service	E	D		E	D			D			F	E
Approach Delay (s)		43.8			50.2			52.2				66.0
Approach LOS		D			D			D				E

Intersection Summary			
HCM Average Control Delay	52.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	110
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	112
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	6
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	10	60	30	20	40	80	1140	20	20	500	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.98			0.99			1.00			0.99	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.94			0.94			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1672			1691			3511			3474	
Flt Permitted		0.84			0.89			0.87			0.89	
Satd. Flow (perm)		1444			1537			3051			3107	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	64	11	64	32	21	43	85	1213	21	21	532	43
RTOR Reduction (vph)	0	38	0	0	32	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	101	0	0	64	0	0	1318	0	0	589	0
Confl. Peds. (#/hr)	14		35	35		14	38		23	23		38
Confl. Bikes (#/hr)			4			6			9			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		379			403			2021			2058	
v/s Ratio Prot												
v/s Ratio Perm		c0.07			0.04			c0.43			0.19	
v/c Ratio		0.27			0.16			0.65			0.29	
Uniform Delay, d1		23.4			22.7			8.0			5.6	
Progression Factor		1.00			1.00			1.49			1.00	
Incremental Delay, d2		1.7			0.8			1.4			0.4	
Delay (s)		25.1			23.6			13.3			6.0	
Level of Service		C			C			B			A	
Approach Delay (s)		25.1			23.6			13.3			6.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	280	110	40	150	70	100	920	50	30	390	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		0.99	1.00			1.00	
Frt	1.00	0.96			0.96		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1746	3360			3336		1758	3500			3394	
Flt Permitted	0.58	1.00			0.87		0.37	1.00			0.86	
Satd. Flow (perm)	1058	3360			2910		677	3500			2926	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	303	283	111	40	152	71	101	929	51	30	394	91
RTOR Reduction (vph)	0	52	0	0	0	0	0	5	0	0	23	0
Lane Group Flow (vph)	303	342	0	0	263	0	101	975	0	0	493	0
Confl. Peds. (#/hr)	28		21	21		28	58		66	66		58
Confl. Bikes (#/hr)			9			4			18			13
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	456	1449			1255		378	1641			1097	
v/s Ratio Prot		0.10					0.02	c0.28				
v/s Ratio Perm	c0.29				0.09		0.11				0.17	
v/c Ratio	0.66	0.24			0.21		0.27	0.59			0.45	
Uniform Delay, d1	18.1	14.4			14.2		12.3	15.6			18.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.74	
Incremental Delay, d2	7.4	0.4			0.4		1.7	1.6			1.3	
Delay (s)	25.6	14.8			14.6		14.0	17.2			33.9	
Level of Service	C	B			B		B	B			C	
Approach Delay (s)		19.5			14.6			16.9			33.9	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	20
RTOR Reduction (vph)	13
Lane Group Flow (vph)	8
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.01
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.7
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	170	20	470	170	20	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1754		1863	1583	1711	1801
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1754		1863	1583	1711	1801
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	183	22	505	183	22	366
RTOR Reduction (vph)	9	0	0	183	0	0
Lane Group Flow (vph)	196	0	505	0	22	366
Confl. Peds. (#/hr)		6		15		
Confl. Bikes (#/hr)		3		9		
Turn Type				NA	Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	7.4		18.4	0.0	0.8	23.2
Effective Green, g (s)	7.4		18.4	0.0	0.8	23.2
Actuated g/C Ratio	0.19		0.48	0.00	0.02	0.60
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	336		888	0	35	1082
v/s Ratio Prot	c0.11		c0.27		0.01	c0.20
v/s Ratio Perm						
v/c Ratio	0.58		0.57	0.00	0.63	0.34
Uniform Delay, d1	14.2		7.3	19.3	18.8	3.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7		0.5	0.0	22.7	0.1
Delay (s)	15.9		7.8	19.3	41.4	3.9
Level of Service	B		A	B	D	A
Approach Delay (s)	15.9		10.8			6.1
Approach LOS	B		B			A

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	38.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	350	357	610	440	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.98	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3346	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3346	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	380	388	663	478	54
RTOR Reduction (vph)	0	0	0	0	15	0
Lane Group Flow (vph)	0	380	388	663	517	0
Confl. Peds. (#/hr)						26
Confl. Bikes (#/hr)		4				5
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		21.0	21.0	33.0	26.0	
Effective Green, g (s)		21.0	21.0	33.0	26.0	
Actuated g/C Ratio		0.37	0.37	0.58	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		594	609	1912	1526	
v/s Ratio Prot		c0.24	0.23	c0.20	0.15	
v/s Ratio Perm						
v/c Ratio		0.64	0.64	0.35	0.34	
Uniform Delay, d1		14.9	14.9	6.3	10.0	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.2	5.0	0.1	0.6	
Delay (s)		20.1	19.9	6.4	10.6	
Level of Service		C	B	A	B	
Approach Delay (s)	20.1			11.4	10.6	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	30	0	0	17	30	940	0	20	770	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	11	0	32	0	0	18	32	1000	0	21	819	0
Pedestrians		14			74						13	
Lane Width (ft)		12.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		1			6						1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								483			264	
pX, platoon unblocked	0.96	0.96	0.93	0.96	0.96	0.95	0.93			0.95		
vC, conflicting volume	1471	2014	424	1622	2014	587	833			1074		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1170	1738	232	1328	1738	464	672			976		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	95	100	100	96	96			97		
cM capacity (veh/h)	119	71	709	87	71	482	841			627		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	43	18	532	500	294	546
Volume Left	11	0	32	0	21	0
Volume Right	32	18	0	0	0	0
cSH	317	482	841	1700	627	1700
Volume to Capacity	0.13	0.04	0.04	0.29	0.03	0.32
Queue Length 95th (ft)	11	3	3	0	3	0
Control Delay (s)	18.1	12.8	1.0	0.0	1.2	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	18.1	12.8	0.5		0.4	
Approach LOS	C	B				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	150	480	50	150	450	370	70	390	120	60	410	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.93			0.97			1.00	0.98
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (prot)	1770	3489		1770	3233			4829			1420	4291
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (perm)	1770	3489		1770	3233			4829			1420	4291
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	153	490	51	153	459	378	71	398	122	61	418	255
RTOR Reduction (vph)	0	7	0	0	133	0	0	43	0	0	0	16
Lane Group Flow (vph)	153	534	0	153	704	0	0	548	0	0	241	548
Confl. Peds. (#/hr)						28			40			
Confl. Bikes (#/hr)												
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	13.3	36.4		11.6	34.7			27.5			18.5	18.5
Effective Green, g (s)	13.3	36.4		11.6	34.7			27.5			18.5	18.5
Actuated g/C Ratio	0.12	0.33		0.11	0.32			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	214	1155		187	1020			1207			239	722
v/s Ratio Prot	0.09	0.15		c0.09	c0.22			c0.11			c0.17	0.13
v/s Ratio Perm												
v/c Ratio	0.71	0.46		0.82	0.69			0.45			1.01	0.85dl
Uniform Delay, d1	46.5	29.1		48.2	32.9			34.9			45.8	43.6
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	10.8	1.3		23.4	3.8			1.2			60.4	7.4
Delay (s)	57.3	30.4		71.6	36.8			36.1			106.1	51.0
Level of Service	E	C		E	D			D			F	D
Approach Delay (s)		36.3			42.2			36.1				67.5
Approach LOS		D			D			D				E

Intersection Summary			
HCM Average Control Delay	46.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	70
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	71
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	6
Confl. Bikes (#/hr)	10
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	20	20	10	30	40	560	10	20	450	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.93			0.93			1.00			1.00	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1695			1688			3514			3517	
Flt Permitted		0.96			0.93			0.90			0.92	
Satd. Flow (perm)		1640			1593			3173			3253	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	10	21	21	10	31	42	583	10	21	469	10
RTOR Reduction (vph)	0	15	0	0	23	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	26	0	0	39	0	0	634	0	0	498	0
Confl. Peds. (#/hr)	9		8	8		9	12		20	20		12
Confl. Bikes (#/hr)			1			3			5			5
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		431			418			2102			2155	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.02			c0.20			0.15	
v/c Ratio		0.06			0.09			0.30			0.23	
Uniform Delay, d1		22.1			22.3			5.7			5.4	
Progression Factor		1.00			1.00			1.44			1.00	
Incremental Delay, d2		0.3			0.4			0.4			0.3	
Delay (s)		22.4			22.7			8.6			5.6	
Level of Service		C			C			A			A	
Approach Delay (s)		22.4			22.7			8.6			5.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	180	130	20	100	30	70	380	20	30	380	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		0.99	1.00			1.00	
Frt	1.00	0.94			0.97		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1751	3273			3387		1760	3503			3367	
Flt Permitted	0.65	1.00			0.90		0.33	1.00			0.91	
Satd. Flow (perm)	1193	3273			3068		612	3503			3067	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	198	198	143	22	110	33	77	418	22	33	418	121
RTOR Reduction (vph)	0	81	0	0	0	0	0	5	0	0	30	0
Lane Group Flow (vph)	198	260	0	0	165	0	77	435	0	0	542	0
Confl. Peds. (#/hr)	19		18	18		19	58		54	54		58
Confl. Bikes (#/hr)			14			8			22			12
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	514	1411			1323		351	1642			1150	
v/s Ratio Prot		0.08					0.01	c0.12				
v/s Ratio Perm	c0.17				0.05		0.09				c0.18	
v/c Ratio	0.39	0.18			0.12		0.22	0.27			0.47	
Uniform Delay, d1	15.5	14.1			13.7		12.3	12.9			19.0	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.82	
Incremental Delay, d2	2.2	0.3			0.2		1.4	0.4			1.4	
Delay (s)	17.7	14.3			13.9		13.7	13.3			35.8	
Level of Service	B	B			B		B	B			D	
Approach Delay (s)		15.6			13.9			13.3			35.8	
Approach LOS		B			B			B			D	

Intersection Summary			
HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	126.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	22
RTOR Reduction (vph)	14
Lane Group Flow (vph)	8
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.01
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.7
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	197	30	802	387	50	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	*1.00
Frpb, ped/bikes	0.99		1.00	0.94	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1741		1863	1485	1711	1801
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1741		1863	1485	1711	1801
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	201	31	818	395	51	288
RTOR Reduction (vph)	12	0	0	187	0	0
Lane Group Flow (vph)	220	0	818	208	51	288
Confl. Peds. (#/hr)		38		15	15	
Confl. Bikes (#/hr)		5		16		
Turn Type				Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	11.2		29.0	29.0	2.8	35.8
Effective Green, g (s)	11.2		29.0	29.0	2.8	35.8
Actuated g/C Ratio	0.20		0.53	0.53	0.05	0.65
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0		2.0	2.0	3.0	2.0
Lane Grp Cap (vph)	355		982	783	87	1172
v/s Ratio Prot	c0.13		c0.44		c0.03	0.16
v/s Ratio Perm				0.14		
v/c Ratio	0.62		0.83	0.27	0.59	0.25
Uniform Delay, d1	20.0		11.0	7.1	25.5	4.0
Progression Factor	1.00		1.21	3.09	1.00	1.00
Incremental Delay, d2	2.3		7.4	0.7	9.7	0.5
Delay (s)	22.2		20.6	22.8	35.2	4.5
Level of Service	C		C	C	D	A
Approach Delay (s)	22.2		21.3			9.1
Approach LOS	C		C			A

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	413	408	1189	438	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3328	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3328	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	421	416	1213	447	41
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	0	421	416	1213	477	0
Confl. Peds. (#/hr)						97
Confl. Bikes (#/hr)						3
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		18.3	18.3	41.5	26.7	
Effective Green, g (s)		18.3	18.3	41.5	26.7	
Actuated g/C Ratio		0.33	0.33	0.75	0.49	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		536	569	2492	1616	
v/s Ratio Prot		c0.26	0.24	c0.37	0.14	
v/s Ratio Perm						
v/c Ratio		0.79	0.73	0.49	0.29	
Uniform Delay, d1		16.6	16.2	2.6	8.5	
Progression Factor		1.00	1.13	0.80	0.72	
Incremental Delay, d2		7.4	3.4	0.5	0.4	
Delay (s)		24.0	21.7	2.6	6.6	
Level of Service		C	C	A	A	
Approach Delay (s)	24.0			7.4	6.6	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	40	96	0	281	0	1284	235	148	704	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.94			0.96		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.91		1.00	0.85			0.98		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1648		1770	1492			3208		1652	3539	
Flt Permitted		0.49		0.76	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		820		1418	1492			3208		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	0	41	98	0	287	0	1310	240	151	718	0
RTOR Reduction (vph)	0	34	0	0	118	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	27	0	98	169	0	0	1540	0	151	718	0
Confl. Peds. (#/hr)						38	33		73	73		33
Confl. Bikes (#/hr)			3			1			16			23
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		17.9		17.9	17.9			70.1		7.0	82.1	
Effective Green, g (s)		17.9		17.9	17.9			70.1		7.0	82.1	
Actuated g/C Ratio		0.16		0.16	0.16			0.64		0.06	0.75	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		133		231	243			2044		105	2641	
v/s Ratio Prot					c0.11			c0.48		c0.09	0.20	
v/s Ratio Perm		0.03		0.07								
v/c Ratio		0.20		0.42	0.70			0.75		1.44	0.27	
Uniform Delay, d1		39.9		41.4	43.5			13.9		51.5	4.4	
Progression Factor		1.06		1.00	1.00			0.26		1.04	1.03	
Incremental Delay, d2		0.7		1.3	8.3			0.9		238.5	0.2	
Delay (s)		43.0		42.7	51.8			4.5		292.3	4.8	
Level of Service		D		D	D			A		F	A	
Approach Delay (s)		43.0			49.5			4.5			54.7	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	841	80	183	475	393	110	848	201	357	370	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	11	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3485		1711	3248		1711	3288		3319	3256	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3485		1711	3248		1711	3288		3319	3256	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	286	858	82	187	485	401	112	865	205	364	378	145
RTOR Reduction (vph)	0	7	0	0	143	0	0	18	0	0	36	0
Lane Group Flow (vph)	286	933	0	187	743	0	112	1052	0	364	487	0
Confl. Peds. (#/hr)			9			20			37			8
Confl. Bikes (#/hr)			8			4			6			6
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	17.2	34.0		14.5	31.3		11.3	35.0		10.5	34.2	
Effective Green, g (s)	17.2	34.0		14.5	31.3		11.3	35.0		10.5	34.2	
Actuated g/C Ratio	0.16	0.31		0.13	0.28		0.10	0.32		0.10	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	277	1077		226	924		176	1046		317	1012	
v/s Ratio Prot	c0.16	c0.27		0.11	0.23		0.07	c0.32		c0.11	0.15	
v/s Ratio Perm												
v/c Ratio	1.03	0.87		0.83	0.80		0.64	1.01		1.15	0.48	
Uniform Delay, d1	46.4	35.9		46.5	36.5		47.4	37.5		49.8	30.7	
Progression Factor	1.00	1.00		0.80	0.44		0.97	0.91		0.92	0.87	
Incremental Delay, d2	62.7	7.5		18.3	4.3		6.5	27.4		96.5	1.6	
Delay (s)	109.1	43.3		55.6	20.3		52.5	61.6		142.5	28.4	
Level of Service	F	D		E	C		D	E		F	C	
Approach Delay (s)		58.7			26.5			60.7			75.2	
Approach LOS		E			C			E			E	

Intersection Summary			
HCM Average Control Delay	54.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	10	60	30	20	40	80	1173	20	20	534	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.98			0.98			1.00			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.94			0.94			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1664			1682			3509			3464	
Flt Permitted		0.74			0.84			0.86			0.89	
Satd. Flow (perm)		1254			1431			3011			3087	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	68	10	61	31	20	41	82	1197	20	20	545	48
RTOR Reduction (vph)	0	34	0	0	35	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	105	0	0	57	0	0	1298	0	0	610	0
Confl. Peds. (#/hr)	14		35	35		14	38		23	23		38
Confl. Bikes (#/hr)			4			6			9			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		13.3			13.3			90.7			90.7	
Effective Green, g (s)		13.3			13.3			90.7			90.7	
Actuated g/C Ratio		0.12			0.12			0.82			0.82	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		152			173			2483			2545	
v/s Ratio Prot												
v/s Ratio Perm		c0.08			0.04			c0.43			0.20	
v/c Ratio		0.69			0.33			0.52			0.24	
Uniform Delay, d1		46.4			44.3			3.0			2.1	
Progression Factor		1.00			1.00			1.00			0.42	
Incremental Delay, d2		12.3			1.1			0.8			0.2	
Delay (s)		58.6			45.4			3.8			1.1	
Level of Service		E			D			A			A	
Approach Delay (s)		58.6			45.4			3.8			1.1	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	280	110	40	150	72	100	928	50	32	399	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		0.99	1.00			1.00	
Frt	1.00	0.96			0.96		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1746	3360			3333		1759	3501			3384	
Flt Permitted	0.57	1.00			0.87		0.35	1.00			0.85	
Satd. Flow (perm)	1055	3360			2909		651	3501			2898	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	313	283	111	40	152	73	101	937	51	32	403	102
RTOR Reduction (vph)	0	52	0	0	0	0	0	5	0	0	26	0
Lane Group Flow (vph)	313	342	0	0	265	0	101	983	0	0	511	0
Confl. Peds. (#/hr)	28		21	21		28	58		66	66		58
Confl. Bikes (#/hr)			9			4			18			13
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	455	1449			1255		367	1641			1087	
v/s Ratio Prot		0.10					0.02	c0.28				
v/s Ratio Perm	c0.30				0.09		0.11				0.18	
v/c Ratio	0.69	0.24			0.21		0.28	0.60			0.47	
Uniform Delay, d1	18.4	14.4			14.2		12.4	15.7			19.0	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	8.2	0.4			0.4		1.9	1.6			1.5	
Delay (s)	26.6	14.8			14.6		14.2	17.3			20.4	
Level of Service	C	B			B		B	B			C	
Approach Delay (s)		20.0			14.6			17.0			20.4	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	20
RTOR Reduction (vph)	13
Lane Group Flow (vph)	8
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.01
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.7
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	173	20	472	170	20	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.94	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1749		1863	1486	1711	1801
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1749		1863	1486	1711	1801
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	177	20	482	173	20	348
RTOR Reduction (vph)	9	0	0	75	0	0
Lane Group Flow (vph)	188	0	482	98	20	348
Confl. Peds. (#/hr)		38		15	15	
Confl. Bikes (#/hr)		5		16		
Turn Type				Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	10.2		31.3	31.3	1.5	36.8
Effective Green, g (s)	10.2		31.3	31.3	1.5	36.8
Actuated g/C Ratio	0.19		0.57	0.57	0.03	0.67
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0		2.0	2.0	3.0	2.0
Lane Grp Cap (vph)	324		1060	846	47	1205
v/s Ratio Prot	c0.11		c0.26		0.01	c0.19
v/s Ratio Perm				0.07		
v/c Ratio	0.58		0.45	0.12	0.43	0.29
Uniform Delay, d1	20.4		6.9	5.5	26.3	3.7
Progression Factor	1.00		0.79	0.78	1.00	1.00
Incremental Delay, d2	1.7		1.3	0.3	6.1	0.6
Delay (s)	22.2		6.8	4.5	32.4	4.3
Level of Service	C		A	A	C	A
Approach Delay (s)	22.2		6.2			5.9
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	372	374	633	472	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3315	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3315	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	380	382	646	482	51
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	0	380	382	646	522	0
Confl. Peds. (#/hr)						97
Confl. Bikes (#/hr)						3
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		19.0	19.0	31.0	26.0	
Effective Green, g (s)		19.0	19.0	31.0	26.0	
Actuated g/C Ratio		0.35	0.35	0.56	0.47	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		557	591	1862	1567	
v/s Ratio Prot		c0.24	0.22	c0.20	0.16	
v/s Ratio Perm						
v/c Ratio		0.68	0.65	0.35	0.33	
Uniform Delay, d1		15.4	15.2	6.5	9.1	
Progression Factor		1.00	1.22	0.95	0.80	
Incremental Delay, d2		3.4	2.1	0.4	0.6	
Delay (s)		18.9	20.6	6.6	7.8	
Level of Service		B	C	A	A	
Approach Delay (s)	18.9			11.8	7.8	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	0	30	101	0	244	0	751	251	178	666	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.94			0.94		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.90		1.00	0.85			0.96		1.00	1.00	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1632		1770	1491			3079		1652	3539	
Flt Permitted		0.70		0.73	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		1152		1360	1491			3079		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	0	31	103	0	249	0	766	256	182	680	0
RTOR Reduction (vph)	0	26	0	0	211	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	15	0	103	38	0	0	999	0	182	680	0
Confl. Peds. (#/hr)						38	33		73	73		33
Confl. Bikes (#/hr)			3			1			16			23
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		16.6		16.6	16.6			63.4		15.0	83.4	
Effective Green, g (s)		16.6		16.6	16.6			63.4		15.0	83.4	
Actuated g/C Ratio		0.15		0.15	0.15			0.58		0.14	0.76	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		174		205	225			1775		225	2683	
v/s Ratio Prot					0.03			c0.32		c0.11	0.19	
v/s Ratio Perm		0.01		c0.08								
v/c Ratio		0.08		0.50	0.17			0.56		0.81	0.25	
Uniform Delay, d1		40.2		42.9	40.7			14.6		46.1	4.0	
Progression Factor		1.00		1.00	1.00			0.42		1.05	1.02	
Incremental Delay, d2		0.2		1.9	0.4			0.9		17.9	0.2	
Delay (s)		40.4		44.8	41.0			7.0		66.1	4.3	
Level of Service		D		D	D			A		E	A	
Approach Delay (s)		40.4			42.1			7.0			17.3	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	202	570	50	177	514	374	70	422	156	388	273	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	11	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.94		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3489		1711	3268		1711	3234		3319	3255	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3489		1711	3268		1711	3234		3319	3255	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	206	582	51	181	524	382	71	431	159	396	279	109
RTOR Reduction (vph)	0	6	0	0	124	0	0	34	0	0	34	0
Lane Group Flow (vph)	206	627	0	181	782	0	71	556	0	396	354	0
Confl. Peds. (#/hr)			9			20			37			8
Confl. Bikes (#/hr)			8			4			6			6
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	26.2		19.2	31.4		8.3	32.9		15.7	40.3	
Effective Green, g (s)	14.0	26.2		19.2	31.4		8.3	32.9		15.7	40.3	
Actuated g/C Ratio	0.13	0.24		0.17	0.29		0.08	0.30		0.14	0.37	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	831		299	933		129	967		474	1193	
v/s Ratio Prot	c0.12	0.18		0.11	c0.24		0.04	c0.17		c0.12	0.11	
v/s Ratio Perm												
v/c Ratio	0.92	0.75		0.61	0.84		0.55	0.58		0.84	0.30	
Uniform Delay, d1	47.4	38.9		41.9	36.9		49.1	32.6		45.9	24.8	
Progression Factor	1.00	1.00		0.78	0.69		0.94	0.95		0.94	0.89	
Incremental Delay, d2	37.4	3.9		2.8	5.4		4.9	2.5		11.9	0.6	
Delay (s)	84.8	42.8		35.5	30.8		50.9	33.4		54.9	22.7	
Level of Service	F	D		D	C		D	C		D	C	
Approach Delay (s)		53.1			31.6			35.3			39.0	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	39.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	10	20	20	10	30	40	616	10	20	491	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.98			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.95			0.93			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1684			1652			3509			3499	
Flt Permitted		0.82			0.90			0.89			0.92	
Satd. Flow (perm)		1411			1511			3143			3227	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	22	10	20	20	10	31	41	629	10	20	501	19
RTOR Reduction (vph)	0	19	0	0	29	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	33	0	0	32	0	0	680	0	0	539	0
Confl. Peds. (#/hr)	14		35	35		14	38		23	23		38
Confl. Bikes (#/hr)			4			6			9			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		6.9			6.9			97.1			97.1	
Effective Green, g (s)		6.9			6.9			97.1			97.1	
Actuated g/C Ratio		0.06			0.06			0.88			0.88	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		89			95			2774			2849	
v/s Ratio Prot												
v/s Ratio Perm		c0.02			0.02			c0.22			0.17	
v/c Ratio		0.37			0.34			0.25			0.19	
Uniform Delay, d1		49.5			49.4			1.0			0.9	
Progression Factor		1.00			1.00			1.00			0.31	
Incremental Delay, d2		2.6			2.1			0.2			0.1	
Delay (s)		52.1			51.5			1.2			0.4	
Level of Service		D			D			A			A	
Approach Delay (s)		52.1			51.5			1.2			0.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	198	180	130	20	100	33	70	395	20	32	391	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.98	1.00			1.00		0.99	1.00			1.00	
Frt	1.00	0.94			0.97		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1742	3274			3375		1759	3504			3356	
Flt Permitted	0.65	1.00			0.91		0.34	1.00			0.91	
Satd. Flow (perm)	1200	3274			3078		636	3504			3064	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	200	182	131	20	101	33	71	399	20	32	395	124
RTOR Reduction (vph)	0	75	0	0	0	0	0	4	0	0	34	0
Lane Group Flow (vph)	200	238	0	0	154	0	71	415	0	0	517	0
Confl. Peds. (#/hr)	28		21	21		28	58		66	66		58
Confl. Bikes (#/hr)			9			4			18			13
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	518	1412			1327		361	1643			1149	
v/s Ratio Prot		0.07					0.01	c0.12				
v/s Ratio Perm	c0.17				0.05		0.08				c0.17	
v/c Ratio	0.39	0.17			0.12		0.20	0.25			0.45	
Uniform Delay, d1	15.5	14.0			13.6		12.2	12.8			18.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.2	0.3			0.2		1.2	0.4			1.3	
Delay (s)	17.7	14.2			13.8		13.4	13.2			20.1	
Level of Service	B	B			B		B	B			C	
Approach Delay (s)		15.6			13.8			13.2			20.1	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	126.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	20
RTOR Reduction (vph)	13
Lane Group Flow (vph)	8
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.01
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.7
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	220	40	1250	450	50	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.93	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1732		1863	1466	1711	1801
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1732		1863	1466	1711	1801
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	227	41	1289	464	52	505
RTOR Reduction (vph)	13	0	0	210	0	0
Lane Group Flow (vph)	255	0	1289	254	52	505
Confl. Peds. (#/hr)		48		19	19	
Confl. Bikes (#/hr)		6		21		
Turn Type				Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	12.0		27.4	27.4	3.6	35.0
Effective Green, g (s)	12.0		27.4	27.4	3.6	35.0
Actuated g/C Ratio	0.22		0.50	0.50	0.07	0.64
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0		2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	378		928	730	112	1146
v/s Ratio Prot	c0.15		c0.69		0.03	c0.28
v/s Ratio Perm				0.17		
v/c Ratio	0.67		1.39	0.35	0.46	0.44
Uniform Delay, d1	19.7		13.8	8.4	24.8	5.1
Progression Factor	1.00		1.01	1.32	1.00	1.00
Incremental Delay, d2	3.7		179.6	0.9	1.1	1.2
Delay (s)	23.4		193.5	11.9	25.9	6.3
Level of Service	C		F	B	C	A
Approach Delay (s)	23.4		145.4			8.1
Approach LOS	C		F			A

Intersection Summary			
HCM Average Control Delay	103.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	450	470	1710	650	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3316	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3316	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	479	500	1819	691	64
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	0	479	500	1819	743	0
Confl. Peds. (#/hr)						123
Confl. Bikes (#/hr)						3
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		19.6	19.6	41.5	25.4	
Effective Green, g (s)		19.6	19.6	41.5	25.4	
Actuated g/C Ratio		0.36	0.36	0.75	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		574	589	2492	1531	
v/s Ratio Prot		0.30	c0.30	c0.55	0.22	
v/s Ratio Perm						
v/c Ratio		0.83	0.85	0.73	0.49	
Uniform Delay, d1		16.2	16.3	3.7	10.3	
Progression Factor		1.00	1.23	0.99	0.76	
Incremental Delay, d2		10.1	5.2	0.8	1.0	
Delay (s)		26.3	25.3	4.5	8.8	
Level of Service		C	C	A	A	
Approach Delay (s)	26.3			9.0	8.8	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	0	40	7	0	22	14	2140	1	11	1090	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	21	0	42	7	0	23	15	2253	1	12	1147	0
Pedestrians		42			93						19	
Lane Width (ft)		12.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		4			8						1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								483			264	
pX, platoon unblocked	0.82	0.82	0.87	0.82	0.82	0.75	0.87			0.75		
vC, conflicting volume	2410	3589	616	3015	3588	1239	1189			2347		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1542	2986	249	2282	2985	649	911			2128		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	56	100	93	43	100	92	98			93		
cM capacity (veh/h)	48	9	628	13	9	281	622			174		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	63	31	1141	1127	394	765
Volume Left	21	7	15	0	12	0
Volume Right	42	23	0	1	0	0
cSH	124	47	622	1700	174	1700
Volume to Capacity	0.51	0.65	0.02	0.66	0.07	0.45
Queue Length 95th (ft)	59	63	2	0	5	0
Control Delay (s)	60.5	173.9	0.9	0.0	3.1	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	60.5	173.9	0.5		1.0	
Approach LOS	F	F				

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	290	880	90	200	470	520	130	1280	240	70	450	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.92			0.98			1.00	0.98
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.95	0.99
Satd. Flow (prot)	1770	3480		1770	3181			4895			1420	4310
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.95	0.99
Satd. Flow (perm)	1770	3480		1770	3181			4895			1420	4310
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	296	898	92	204	480	531	133	1306	245	71	459	520
RTOR Reduction (vph)	0	7	0	0	164	0	0	22	0	0	0	18
Lane Group Flow (vph)	296	983	0	204	847	0	0	1662	0	0	291	863
Confl. Peds. (#/hr)			11			26			46			
Confl. Bikes (#/hr)			10			5			8			
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	19.8	36.0		12.0	28.2			27.5			18.5	18.5
Effective Green, g (s)	19.8	36.0		12.0	28.2			27.5			18.5	18.5
Actuated g/C Ratio	0.18	0.33		0.11	0.26			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	319	1139		193	815			1224			239	725
v/s Ratio Prot	c0.17	0.28		c0.12	c0.27			c0.34			c0.20	0.20
v/s Ratio Perm												
v/c Ratio	0.93	0.86		1.06	1.04			1.36			1.22	1.19
Uniform Delay, d1	44.4	34.7		49.0	40.9			41.2			45.8	45.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.05	1.05
Incremental Delay, d2	31.9	8.7		80.7	42.0			166.5			126.6	97.5
Delay (s)	76.3	43.4		129.7	82.9			207.8			174.9	145.4
Level of Service	E	D		F	F			F			F	F
Approach Delay (s)		51.0			90.8			207.8				152.7
Approach LOS		D			F			F				F

Intersection Summary			
HCM Average Control Delay	131.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	120
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	122
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	8
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	10	90	40	30	60	110	1620	30	30	710	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.98			0.99			1.00			0.99	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.93			0.94			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1654			1686			3511			3477	
Flt Permitted		0.83			0.89			0.82			0.79	
Satd. Flow (perm)		1409			1529			2871			2769	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	11	96	43	32	64	117	1723	32	32	755	53
RTOR Reduction (vph)	0	45	0	0	21	0	0	1	0	0	6	0
Lane Group Flow (vph)	0	147	0	0	118	0	0	1871	0	0	834	0
Confl. Peds. (#/hr)	18		45	45		18	48		29	29		48
Confl. Bikes (#/hr)			5			8			11			16
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		370			401			1902			1834	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.08			c0.65			0.30	
v/c Ratio		0.40			0.29			0.98			0.45	
Uniform Delay, d1		24.3			23.6			13.1			6.5	
Progression Factor		1.00			1.00			1.34			1.00	
Incremental Delay, d2		3.2			1.9			12.0			0.8	
Delay (s)		27.5			25.4			29.5			7.3	
Level of Service		C			C			C			A	
Approach Delay (s)		27.5			25.4			29.5			7.3	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	111.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	410	310	140	50	170	110	130	1280	70	50	540	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.95			0.95		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1743	3337			3290		1763	3498			3381	
Flt Permitted	0.52	1.00			0.85		0.24	1.00			0.68	
Satd. Flow (perm)	954	3337			2802		454	3498			2299	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	414	313	141	51	172	111	131	1293	71	51	545	131
RTOR Reduction (vph)	0	65	0	0	0	0	0	5	0	0	23	0
Lane Group Flow (vph)	414	389	0	0	334	0	131	1359	0	0	704	0
Confl. Peds. (#/hr)	35		27	27		35	74		83	83		74
Confl. Bikes (#/hr)			11			5			22			16
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	411	1439			1208		286	1640			862	
v/s Ratio Prot		0.12					0.03	c0.39				
v/s Ratio Perm	c0.43				0.12		0.19				0.31	
v/c Ratio	1.01	0.27			0.28		0.46	0.83			0.82	
Uniform Delay, d1	22.8	14.6			14.7		13.2	18.5			22.5	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.61	
Incremental Delay, d2	46.2	0.5			0.6		5.2	5.0			7.7	
Delay (s)	69.0	15.1			15.3		18.4	23.5			44.1	
Level of Service	E	B			B		B	C			D	
Approach Delay (s)		40.8			15.3			23.0			44.1	
Approach LOS		D			B			C			D	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	135.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	30
RTOR Reduction (vph)	19
Lane Group Flow (vph)	11
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.02
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	15.8
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	200	30	650	200	30	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1749		1863	1583	1711	1801
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1749		1863	1583	1711	1801
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	215	32	699	215	32	538
RTOR Reduction (vph)	11	0	0	215	0	0
Lane Group Flow (vph)	236	0	699	0	32	538
Confl. Peds. (#/hr)		8		19		
Confl. Bikes (#/hr)		3		11		
Turn Type				NA	Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	10.6		24.4	0.0	2.1	30.5
Effective Green, g (s)	10.6		24.4	0.0	2.1	30.5
Actuated g/C Ratio	0.22		0.50	0.00	0.04	0.62
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	378		926	0	73	1119
v/s Ratio Prot	c0.13		c0.38		0.02	c0.30
v/s Ratio Perm						
v/c Ratio	0.62		0.75	0.00	0.44	0.48
Uniform Delay, d1	17.4		9.9	24.6	22.9	5.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3		3.1	0.0	1.5	0.1
Delay (s)	19.8		13.1	24.6	24.5	5.1
Level of Service	B		B	C	C	A
Approach Delay (s)	19.8		15.8			6.2
Approach LOS	B		B			A

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	380	400	850	630	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3344	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3344	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	413	435	924	685	76
RTOR Reduction (vph)	0	0	0	0	15	0
Lane Group Flow (vph)	0	413	435	924	746	0
Confl. Peds. (#/hr)						32
Confl. Bikes (#/hr)		5				6
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		21.0	21.0	33.0	26.0	
Effective Green, g (s)		21.0	21.0	33.0	26.0	
Actuated g/C Ratio		0.37	0.37	0.58	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		594	609	1912	1525	
v/s Ratio Prot		0.26	c0.26	c0.28	0.22	
v/s Ratio Perm						
v/c Ratio		0.70	0.71	0.48	0.49	
Uniform Delay, d1		15.3	15.4	7.0	10.9	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		6.6	7.0	0.2	1.1	
Delay (s)		21.9	22.4	7.2	12.0	
Level of Service		C	C	A	B	
Approach Delay (s)	21.9			12.1	12.0	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	0	30	0	0	17	18	1210	0	20	990	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	0	32	0	0	18	19	1287	0	21	1053	0
Pedestrians		17			92						16	
Lane Width (ft)		12.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		1			8						1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								483			264	
pX, platoon unblocked	0.92	0.92	0.87	0.92	0.92	0.89	0.87			0.89		
vC, conflicting volume	1829	2530	544	2019	2530	752	1070			1379		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1183	1942	167	1388	1942	466	775			1173		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	81	100	96	100	100	96	97			96		
cM capacity (veh/h)	110	50	725	73	50	440	715			484		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	53	18	663	644	372	702
Volume Left	21	0	19	0	21	0
Volume Right	32	18	0	0	0	0
cSH	225	440	715	1700	484	1700
Volume to Capacity	0.24	0.04	0.03	0.38	0.04	0.41
Queue Length 95th (ft)	22	3	2	0	3	0
Control Delay (s)	25.9	13.5	0.7	0.0	1.4	0.0
Lane LOS	D	B	A		A	
Approach Delay (s)	25.9	13.5	0.4		0.5	
Approach LOS	D	B				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	170	520	60	190	520	470	90	550	170	60	470	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.93			0.97			1.00	0.98
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (prot)	1770	3485		1770	3205			4815			1420	4318
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (perm)	1770	3485		1770	3205			4815			1420	4318
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	173	531	61	194	531	480	92	561	173	61	480	418
RTOR Reduction (vph)	0	8	0	0	146	0	0	44	0	0	0	12
Lane Group Flow (vph)	173	584	0	194	865	0	0	783	0	0	272	757
Confl. Peds. (#/hr)						35			49			
Confl. Bikes (#/hr)												
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	13.9	36.0		12.0	34.1			27.5			18.5	18.5
Effective Green, g (s)	13.9	36.0		12.0	34.1			27.5			18.5	18.5
Actuated g/C Ratio	0.13	0.33		0.11	0.31			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	224	1141		193	994			1204			239	726
v/s Ratio Prot	0.10	0.17		c0.11	c0.27			c0.16			c0.19	0.18
v/s Ratio Perm												
v/c Ratio	0.77	0.51		1.01	0.87			0.65			1.14	1.04
Uniform Delay, d1	46.5	29.9		49.0	35.9			36.9			45.8	45.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	15.2	1.6		66.1	10.3			2.7			100.5	44.8
Delay (s)	61.7	31.5		115.1	46.2			39.7			146.3	90.6
Level of Service	E	C		F	D			D			F	F
Approach Delay (s)		38.4			57.3			39.7				105.1
Approach LOS		D			E			D				F

Intersection Summary			
HCM Average Control Delay	62.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	80
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	82
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	13
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	10	40	30	20	50	60	710	10	40	590	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.92			0.93			1.00			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1672			1690			3515			3505	
Flt Permitted		0.93			0.92			0.86			0.87	
Satd. Flow (perm)		1570			1577			3023			3070	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	21	10	42	31	21	52	62	740	10	42	615	21
RTOR Reduction (vph)	0	31	0	0	38	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	42	0	0	66	0	0	811	0	0	675	0
Confl. Peds. (#/hr)	11		9	9		11	14		25	25		14
Confl. Bikes (#/hr)			2			3			6			6
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		412			414			2003			2034	
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.04			c0.27			0.22	
v/c Ratio		0.10			0.16			0.40			0.33	
Uniform Delay, d1		22.4			22.7			6.2			5.8	
Progression Factor		1.00			1.00			1.39			1.00	
Incremental Delay, d2		0.5			0.8			0.6			0.4	
Delay (s)		22.9			23.5			9.2			6.3	
Level of Service		C			C			A			A	
Approach Delay (s)		22.9			23.5			9.2			6.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	210	170	30	110	50	90	530	30	50	480	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.98			0.99		1.00	1.00			0.98	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.93			0.96		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1748	3249			3339		1764	3498			3340	
Flt Permitted	0.62	1.00			0.87		0.23	1.00			0.86	
Satd. Flow (perm)	1142	3249			2922		425	3498			2883	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	264	231	187	33	121	55	99	582	33	55	527	176
RTOR Reduction (vph)	0	106	0	0	0	0	0	5	0	0	36	0
Lane Group Flow (vph)	264	312	0	0	209	0	99	610	0	0	722	0
Confl. Peds. (#/hr)	24		22	22		24	71		66	66		71
Confl. Bikes (#/hr)			17			9			27			14
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	492	1401			1260		275	1640			1081	
v/s Ratio Prot		0.10					0.02	c0.17				
v/s Ratio Perm	c0.23				0.07		0.15				c0.25	
v/c Ratio	0.54	0.22			0.17		0.36	0.37			0.67	
Uniform Delay, d1	16.8	14.3			13.9		13.1	13.7			20.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.74	
Incremental Delay, d2	4.2	0.4			0.3		3.6	0.6			3.2	
Delay (s)	21.0	14.7			14.2		16.7	14.3			39.4	
Level of Service	C	B			B		B	B			D	
Approach Delay (s)		17.1			14.2			14.6			39.4	
Approach LOS		B			B			B			D	

Intersection Summary			
HCM Average Control Delay	23.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	33
RTOR Reduction (vph)	21
Lane Group Flow (vph)	12
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.02
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	15.8
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	227	40	1262	457	50	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	*1.00
Frpb, ped/bikes	0.99		1.00	0.93	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1734		1863	1466	1711	1801
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1734		1863	1466	1711	1801
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	232	41	1288	466	51	512
RTOR Reduction (vph)	13	0	0	205	0	0
Lane Group Flow (vph)	260	0	1288	261	51	512
Confl. Peds. (#/hr)		48		19	19	
Confl. Bikes (#/hr)		6		21		
Turn Type				Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	12.3		28.2	28.2	2.5	34.7
Effective Green, g (s)	12.3		28.2	28.2	2.5	34.7
Actuated g/C Ratio	0.22		0.51	0.51	0.05	0.63
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0		2.0	2.0	3.0	2.0
Lane Grp Cap (vph)	388		955	752	78	1136
v/s Ratio Prot	c0.15		c0.69		0.03	c0.28
v/s Ratio Perm				0.18		
v/c Ratio	0.67		1.35	0.35	0.65	0.45
Uniform Delay, d1	19.5		13.4	7.9	25.8	5.2
Progression Factor	1.00		1.60	2.34	1.00	1.00
Incremental Delay, d2	3.4		161.8	0.9	18.0	1.3
Delay (s)	22.9		183.2	19.5	43.8	6.5
Level of Service	C		F	B	D	A
Approach Delay (s)	22.9		139.7			9.9
Approach LOS	C		F			A

Intersection Summary			
HCM Average Control Delay	99.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	463	498	1729	668	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3319	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3319	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	472	508	1764	682	61
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	0	472	508	1764	732	0
Confl. Peds. (#/hr)						123
Confl. Bikes (#/hr)						3
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		19.5	19.5	41.5	25.5	
Effective Green, g (s)		19.5	19.5	41.5	25.5	
Actuated g/C Ratio		0.35	0.35	0.75	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		571	607	2492	1539	
v/s Ratio Prot		0.29	c0.30	c0.53	0.22	
v/s Ratio Perm						
v/c Ratio		0.83	0.84	0.71	0.48	
Uniform Delay, d1		16.2	16.3	3.6	10.1	
Progression Factor		1.00	1.09	1.98	1.05	
Incremental Delay, d2		9.5	2.6	0.4	1.0	
Delay (s)		25.7	20.4	7.5	11.6	
Level of Service		C	C	A	B	
Approach Delay (s)	25.7			10.4	11.6	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	40	96	0	281	0	1914	235	148	984	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.93			0.96		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.91		1.00	0.85			0.98		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1649		1770	1471			3246		1652	3539	
Flt Permitted		0.54		0.76	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		906		1418	1471			3246		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	0	41	98	0	287	0	1953	240	151	1004	0
RTOR Reduction (vph)	0	34	0	0	101	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	27	0	98	186	0	0	2186	0	151	1004	0
Confl. Peds. (#/hr)						48	42		93	93		42
Confl. Bikes (#/hr)			3			2			21			29
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		18.9		18.9	18.9			69.1		7.0	81.1	
Effective Green, g (s)		18.9		18.9	18.9			69.1		7.0	81.1	
Actuated g/C Ratio		0.17		0.17	0.17			0.63		0.06	0.74	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		156		244	253			2039		105	2609	
v/s Ratio Prot					c0.13			c0.67		c0.09	0.28	
v/s Ratio Perm		0.03		0.07								
v/c Ratio		0.17		0.40	0.74			1.07		1.44	0.38	
Uniform Delay, d1		38.9		40.5	43.2			20.5		51.5	5.3	
Progression Factor		1.05		1.00	1.00			0.51		0.98	0.86	
Incremental Delay, d2		0.5		1.1	10.6			33.6		235.2	0.3	
Delay (s)		41.5		41.6	53.7			44.1		285.4	4.9	
Level of Service		D		D	D			D		F	A	
Approach Delay (s)		41.5			50.6			44.1			41.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	43.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	320	931	90	223	525	523	130	1298	261	437	530	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3483		1711	3209		1711	3299		3319	3286	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3483		1711	3209		1711	3299		3319	3286	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	327	950	92	228	536	534	133	1324	266	446	541	155
RTOR Reduction (vph)	0	7	0	0	149	0	0	15	0	0	24	0
Lane Group Flow (vph)	327	1035	0	228	921	0	133	1575	0	446	672	0
Confl. Peds. (#/hr)			11			26			46			10
Confl. Bikes (#/hr)			10			5			8			8
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.8	35.2		13.3	34.7		11.9	35.0		10.5	33.6	
Effective Green, g (s)	13.8	35.2		13.3	34.7		11.9	35.0		10.5	33.6	
Actuated g/C Ratio	0.13	0.32		0.12	0.32		0.11	0.32		0.10	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	222	1115		207	1012		185	1050		317	1004	
v/s Ratio Prot	c0.18	c0.30		0.13	0.29		0.08	c0.48		c0.13	0.20	
v/s Ratio Perm												
v/c Ratio	1.47	0.93		1.10	0.91		0.72	1.50		1.41	0.67	
Uniform Delay, d1	48.1	36.2		48.4	36.2		47.4	37.5		49.8	33.4	
Progression Factor	1.00	1.00		0.78	0.37		1.04	0.92		0.95	0.94	
Incremental Delay, d2	235.6	13.0		82.3	8.9		7.7	228.0		200.1	3.4	
Delay (s)	283.7	49.2		120.1	22.2		57.0	262.4		247.6	34.6	
Level of Service	F	D		F	C		E	F		F	C	
Approach Delay (s)		105.2			39.4			246.5			117.8	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM Average Control Delay	136.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	120.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	10	90	40	30	60	110	1653	30	30	744	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.97			0.98			1.00			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.93			0.94			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1644			1677			3509			3467	
Flt Permitted		0.69			0.83			0.80			0.81	
Satd. Flow (perm)		1163			1405			2822			2829	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	89	10	92	41	31	61	112	1687	31	31	759	58
RTOR Reduction (vph)	0	39	0	0	19	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	152	0	0	115	0	0	1829	0	0	845	0
Confl. Peds. (#/hr)	18		45	45		18	48		29	29		48
Confl. Bikes (#/hr)			5			8			11			16
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		17.5			17.5			86.5			86.5	
Effective Green, g (s)		17.5			17.5			86.5			86.5	
Actuated g/C Ratio		0.16			0.16			0.79			0.79	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		185			224			2219			2225	
v/s Ratio Prot												
v/s Ratio Perm		c0.13			0.08			c0.65			0.30	
v/c Ratio		0.82			0.51			0.82			0.38	
Uniform Delay, d1		44.8			42.3			7.1			3.6	
Progression Factor		1.00			1.00			1.00			0.31	
Incremental Delay, d2		24.6			2.0			3.6			0.3	
Delay (s)		69.4			44.3			10.8			1.4	
Level of Service		E			D			B			A	
Approach Delay (s)		69.4			44.3			10.8			1.4	
Approach LOS		E			D			B			A	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	111.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	420	310	140	50	170	112	130	1288	70	52	549	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.95			0.95		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1743	3337			3288		1764	3498			3374	
Flt Permitted	0.52	1.00			0.85		0.23	1.00			0.67	
Satd. Flow (perm)	951	3337			2801		433	3498			2263	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	424	313	141	51	172	113	131	1301	71	53	555	142
RTOR Reduction (vph)	0	65	0	0	0	0	0	5	0	0	25	0
Lane Group Flow (vph)	424	389	0	0	336	0	131	1367	0	0	725	0
Confl. Peds. (#/hr)	35		27	27		35	74		83	83		74
Confl. Bikes (#/hr)			11			5			22			16
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	410	1439			1208		278	1640			849	
v/s Ratio Prot		0.12					0.03	c0.39				
v/s Ratio Perm	c0.45				0.12		0.19				0.32	
v/c Ratio	1.03	0.27			0.28		0.47	0.83			0.85	
Uniform Delay, d1	22.8	14.6			14.7		13.3	18.5			23.0	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	53.5	0.5			0.6		5.6	5.1			10.7	
Delay (s)	76.3	15.1			15.3		19.0	23.7			33.7	
Level of Service	E	B			B		B	C			C	
Approach Delay (s)		44.7			15.3			23.3			33.7	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	135.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	30
RTOR Reduction (vph)	19
Lane Group Flow (vph)	11
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.02
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	15.8
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	214	30	665	208	30	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	0.93	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1750		1863	1477	1711	1801
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1750		1863	1477	1711	1801
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	218	31	679	212	31	531
RTOR Reduction (vph)	10	0	0	101	0	0
Lane Group Flow (vph)	239	0	679	111	31	531
Confl. Peds. (#/hr)		8		19	19	
Confl. Bikes (#/hr)		3		11		
Turn Type				Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	11.8		28.7	28.7	2.5	35.2
Effective Green, g (s)	11.8		28.7	28.7	2.5	35.2
Actuated g/C Ratio	0.21		0.52	0.52	0.05	0.64
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0		2.0	2.0	3.0	2.0
Lane Grp Cap (vph)	375		972	771	78	1153
v/s Ratio Prot	c0.14		c0.36		0.02	c0.29
v/s Ratio Perm				0.07		
v/c Ratio	0.64		0.70	0.14	0.40	0.46
Uniform Delay, d1	19.7		9.9	6.8	25.5	5.1
Progression Factor	1.00		0.91	0.71	1.00	1.00
Incremental Delay, d2	2.6		3.7	0.3	3.3	1.3
Delay (s)	22.3		12.7	5.1	28.8	6.4
Level of Service	C		B	A	C	A
Approach Delay (s)	22.3		10.9			7.6
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	402	416	873	662	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3348	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3348	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	410	424	891	676	71
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	0	410	424	891	735	0
Confl. Peds. (#/hr)						32
Confl. Bikes (#/hr)		5				6
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		20.2	20.2	31.0	24.8	
Effective Green, g (s)		20.2	20.2	31.0	24.8	
Actuated g/C Ratio		0.37	0.37	0.56	0.45	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		592	628	1862	1510	
v/s Ratio Prot		c0.25	0.25	c0.27	0.22	
v/s Ratio Perm						
v/c Ratio		0.69	0.68	0.48	0.49	
Uniform Delay, d1		14.8	14.6	7.2	10.6	
Progression Factor		1.00	1.17	0.99	0.77	
Incremental Delay, d2		3.5	2.2	0.7	1.0	
Delay (s)		18.3	19.3	7.7	9.2	
Level of Service		B	B	A	A	
Approach Delay (s)	18.3			11.5	9.2	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	30	101	0	244	0	1021	251	178	886	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.97			0.94		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.92		1.00	0.85			0.97		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1670		1770	1535			3111		1652	3539	
Flt Permitted		0.52		0.79	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		883		1478	1535			3111		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	0	31	103	0	249	0	1042	256	182	904	0
RTOR Reduction (vph)	0	26	0	0	212	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	25	0	103	37	0	0	1283	0	182	904	0
Confl. Peds. (#/hr)	16					16			92	92		17
Confl. Bikes (#/hr)									16			24
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		16.3		16.3	16.3			63.7		15.0	83.7	
Effective Green, g (s)		16.3		16.3	16.3			63.7		15.0	83.7	
Actuated g/C Ratio		0.15		0.15	0.15			0.58		0.14	0.76	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		131		219	227			1802		225	2693	
v/s Ratio Prot					0.02			c0.41		c0.11	0.26	
v/s Ratio Perm		0.03		c0.07								
v/c Ratio		0.19		0.47	0.16			0.71		0.81	0.34	
Uniform Delay, d1		41.0		42.9	40.9			16.6		46.1	4.2	
Progression Factor		1.01		1.00	1.00			0.51		0.97	0.78	
Incremental Delay, d2		0.7		1.6	0.3			0.9		17.0	0.3	
Delay (s)		42.0		44.5	41.2			9.4		61.9	3.6	
Level of Service		D		D	D			A		E	A	
Approach Delay (s)		42.0			42.2			9.4			13.4	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	222	610	60	217	584	474	90	582	206	448	433	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3492		1711	3234		1711	3232		3319	3292	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3492		1711	3234		1711	3232		3319	3292	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	227	622	61	221	596	484	92	594	210	457	442	119
RTOR Reduction (vph)	0	8	0	0	133	0	0	33	0	0	21	0
Lane Group Flow (vph)	227	676	0	221	947	0	92	771	0	457	540	0
Confl. Peds. (#/hr)						35			49			8
Confl. Bikes (#/hr)												13
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	27.5		20.5	34.0		8.9	30.2		15.8	37.1	
Effective Green, g (s)	14.0	27.5		20.5	34.0		8.9	30.2		15.8	37.1	
Actuated g/C Ratio	0.13	0.25		0.19	0.31		0.08	0.27		0.14	0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	873		319	1000		138	887		477	1110	
v/s Ratio Prot	c0.13	0.19		0.13	c0.29		0.05	c0.24		c0.14	0.16	
v/s Ratio Perm												
v/c Ratio	1.01	0.77		0.69	0.95		0.67	0.87		0.96	0.49	
Uniform Delay, d1	48.0	38.4		41.8	37.1		49.1	38.0		46.8	28.9	
Progression Factor	1.00	1.00		0.72	0.62		0.98	0.94		0.97	0.99	
Incremental Delay, d2	62.3	4.3		4.2	12.5		11.2	11.0		29.7	1.5	
Delay (s)	110.3	42.7		34.4	35.3		59.4	46.8		75.2	29.9	
Level of Service	F	D		C	D		E	D		E	C	
Approach Delay (s)		59.5			35.1			48.1			50.3	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM Average Control Delay	47.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	10	40	30	20	50	60	766	10	40	631	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.93			0.93			1.00			0.99	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1680			1682			3515			3496	
Flt Permitted		0.73			0.85			0.84			0.86	
Satd. Flow (perm)		1248			1446			2975			3023	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	33	10	41	31	20	51	61	782	10	41	644	30
RTOR Reduction (vph)	0	37	0	0	47	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	47	0	0	55	0	0	853	0	0	714	0
Confl. Peds. (#/hr)	11		9	9		11	14		25	25		14
Confl. Bikes (#/hr)			2			3			6			6
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		9.5			9.5			94.5			94.5	
Effective Green, g (s)		9.5			9.5			94.5			94.5	
Actuated g/C Ratio		0.09			0.09			0.86			0.86	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		108			125			2556			2597	
v/s Ratio Prot												
v/s Ratio Perm		0.04			c0.04			c0.29			0.24	
v/c Ratio		0.43			0.44			0.33			0.27	
Uniform Delay, d1		47.7			47.7			1.5			1.4	
Progression Factor		1.00			1.00			1.00			0.27	
Incremental Delay, d2		2.7			2.5			0.4			0.2	
Delay (s)		50.4			50.2			1.9			0.6	
Level of Service		D			D			A			A	
Approach Delay (s)		50.4			50.2			1.9			0.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	210	170	30	110	53	90	545	30	52	491	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.98			0.99		1.00	1.00			0.98	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.93			0.96		1.00	0.99			0.96	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1748	3249			3333		1765	3500			3333	
Flt Permitted	0.62	1.00			0.87		0.22	1.00			0.86	
Satd. Flow (perm)	1138	3249			2919		400	3500			2864	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	284	231	187	33	121	58	99	599	33	57	540	190
RTOR Reduction (vph)	0	106	0	0	0	0	0	5	0	0	38	0
Lane Group Flow (vph)	284	312	0	0	212	0	99	627	0	0	749	0
Confl. Peds. (#/hr)	24		22	22		24	71		66	66		71
Confl. Bikes (#/hr)			17			9			27			14
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	491	1401			1259		264	1641			1074	
v/s Ratio Prot		0.10					0.02	c0.18				
v/s Ratio Perm	c0.25				0.07		0.15				c0.26	
v/c Ratio	0.58	0.22			0.17		0.38	0.38			0.70	
Uniform Delay, d1	17.2	14.3			14.0		13.2	13.8			21.2	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	4.9	0.4			0.3		4.0	0.7			3.8	
Delay (s)	22.1	14.7			14.2		17.2	14.4			24.9	
Level of Service	C	B			B		B	B			C	
Approach Delay (s)		17.7			14.2			14.8			24.9	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	33
RTOR Reduction (vph)	21
Lane Group Flow (vph)	12
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.02
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	15.8
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Appendix F
Sample Survey Questionnaire

SAFEWAY VISITOR SURVEY

1. Time visitor left store: ________ PM

2. How did you get to the store today?
   - ______ Drive
   - ______ Bus (AC Transit)
   - ______ Bicycle
   - ______ Walk
   - ______ Other (specify: ____________________)

3. How long were you in the store?
   - ______ Less than 15 minutes
   - ______ 15 - 30 minutes
   - ______ 30 minutes - 1 hr
   - ______ > 1 hour

4. Are you visiting other stores in the shopping center?
   - ______ Yes:
     - ________ Longs Drug
     - ________ Other Store
   - ______ No

SAFEWAY VISITOR SURVEY

1. Time visitor left store: ________ PM

2. How did you get to the store today?
   - ______ Drive
   - ______ Bus (AC Transit)
   - ______ Bicycle
   - ______ Walk
   - ______ Other (specify: ____________________)

3. How long were you in the store?
   - ______ Less than 15 minutes
   - ______ 15 - 30 minutes
   - ______ 30 minutes - 1 hr
   - ______ > 1 hour

4. Are you visiting other stores in the shopping center?
   - ______ Yes:
     - ________ Longs Drug
     - ________ Other Store
   - ______ No

SAFEWAY VISITOR SURVEY

1. Time visitor left store: ________ PM

2. How did you get to the store today?
   - ______ Drive
   - ______ Bus (AC Transit)
   - ______ Bicycle
   - ______ Walk
   - ______ Other (specify: ____________________)

3. How long were you in the store?
   - ______ Less than 15 minutes
   - ______ 15 - 30 minutes
   - ______ 30 minutes - 1 hr
   - ______ > 1 hour

4. Are you visiting other stores in the shopping center?
   - ______ Yes:
     - ________ Longs Drug
     - ________ Other Store
   - ______ No

SAFEWAY VISITOR SURVEY

1. Time visitor left store: ________ PM

2. How did you get to the store today?
   - ______ Drive
   - ______ Bus (AC Transit)
   - ______ Bicycle
   - ______ Walk
   - ______ Other (specify: ____________________)

3. How long were you in the store?
   - ______ Less than 15 minutes
   - ______ 15 - 30 minutes
   - ______ 30 minutes - 1 hr
   - ______ > 1 hour

4. Are you visiting other stores in the shopping center?
   - ______ Yes:
     - ________ Longs Drug
     - ________ Other Store
   - ______ No

LONGS VISITOR SURVEY

1. Time visitor left store: ________ PM

2. How did you get to the store today?

   ______ Drive
   ______ Bus (AC Transit)
   ______ Bicycle
   ______ Walk
   ______ Other (specify: ____________________)

3. How long were you in the store?

   ______ Less than 15 minutes
   ______ 15 - 30 minutes
   ______ 30 minutes - 1 hr
   ______ > 1 hour

4. Are you visiting other stores in the shopping center?

   ______ Yes:
   ________ Safeway
   ________ Other Store
   ______ No

LONGS VISITOR SURVEY

1. Time visitor left store: ________ PM

2. How did you get to the store today?

   ______ Drive
   ______ Bus (AC Transit)
   ______ Bicycle
   ______ Walk
   ______ Other (specify: ____________________)

3. How long were you in the store?

   ______ Less than 15 minutes
   ______ 15 - 30 minutes
   ______ 30 minutes - 1 hr
   ______ > 1 hour

4. Are you visiting other stores in the shopping center?

   ______ Yes:
   ________ Safeway
   ________ Other Store
   ______ No

LONGS VISITOR SURVEY

1. Time visitor left store: ________ PM

2. How did you get to the store today?

   ______ Drive
   ______ Bus (AC Transit)
   ______ Bicycle
   ______ Walk
   ______ Other (specify: ____________________)

3. How long were you in the store?

   ______ Less than 15 minutes
   ______ 15 - 30 minutes
   ______ 30 minutes - 1 hr
   ______ > 1 hour

4. Are you visiting other stores in the shopping center?

   ______ Yes:
   ________ Safeway
   ________ Other Store
   ______ No

LONGS VISITOR SURVEY

1. Time visitor left store: ________ PM

2. How did you get to the store today?

   ______ Drive
   ______ Bus (AC Transit)
   ______ Bicycle
   ______ Walk
   ______ Other (specify: ____________________)

3. How long were you in the store?

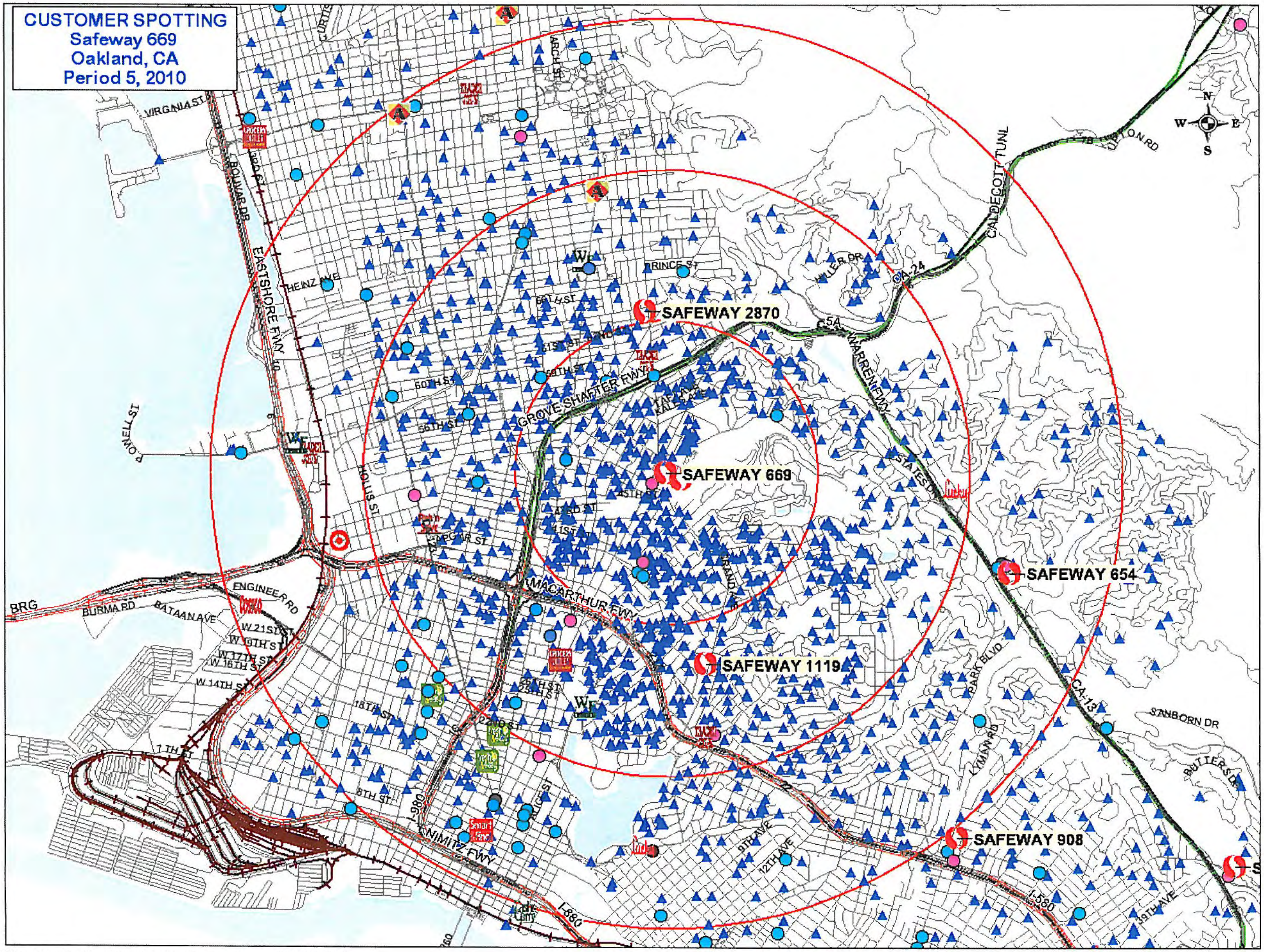
   ______ Less than 15 minutes
   ______ 15 - 30 minutes
   ______ 30 minutes - 1 hr
   ______ > 1 hour

4. Are you visiting other stores in the shopping center?

   ______ Yes:
   ________ Safeway
   ________ Other Store
   ______ No

Appendix G

Safeway Customer Spotting Data



Prepared by Safeway Market Research, 06/22/2010

Appendix H

LOS Calculation Worksheets
Existing Plus Project Conditions

FEHR PEERS

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	78	11	55	14	21	9	13	8	821	15	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0				3.0			5.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.99				0.99			1.00			
Flpb, ped/bikes		1.00				1.00			1.00			
Frt		0.94				0.96			1.00			
Flt Protected		0.98				0.98			1.00			
Satd. Flow (prot)		1685				1727			3523			
Flt Permitted		0.84				0.88			0.95			
Satd. Flow (perm)		1450				1560			3354			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	81	11	57	15	22	9	14	8	855	16	4	4
RTOR Reduction (vph)	0	6	0	0	0	11	0	0	0	0	0	0
Lane Group Flow (vph)	0	158	0	0	0	34	0	0	883	0	0	0
Confl. Peds. (#/hr)	11		5		5		11	9				
Confl. Bikes (#/hr)							3			7	7	
Turn Type	Perm				Perm			Perm				Perm
Protected Phases		4				4			2			
Permitted Phases	4				4			2				6
Actuated Green, G (s)		10.8				10.8			33.4			
Effective Green, g (s)		10.8				10.8			33.4			
Actuated g/C Ratio		0.21				0.21			0.64			
Clearance Time (s)		3.0				3.0			5.0			
Vehicle Extension (s)		3.0				3.0			3.0			
Lane Grp Cap (vph)		300				323			2146			
v/s Ratio Prot												
v/s Ratio Perm		c0.11				0.02			c0.26			
v/c Ratio		0.53				0.10			0.41			
Uniform Delay, d1		18.4				16.8			4.6			
Progression Factor		1.00				1.00			1.00			
Incremental Delay, d2		1.7				0.1			0.6			
Delay (s)		20.1				16.9			5.2			
Level of Service		C				B			A			
Approach Delay (s)		20.1				16.9			5.2			
Approach LOS		C				B			A			

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	NWL
Lane Configurations				
Volume (vph)	44	350	23	0
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.0		
Lane Util. Factor		0.95		
Frpb, ped/bikes		1.00		
Flpb, ped/bikes		1.00		
Frt		0.99		
Flt Protected		0.99		
Satd. Flow (prot)		3485		
Flt Permitted		0.82		
Satd. Flow (perm)		2871		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	46	365	24	0
RTOR Reduction (vph)	0	3	0	0
Lane Group Flow (vph)	0	436	0	0
Confl. Peds. (#/hr)			9	
Confl. Bikes (#/hr)			1	
Turn Type	Perm			
Protected Phases		6		8
Permitted Phases	6			
Actuated Green, G (s)		33.4		
Effective Green, g (s)		33.4		
Actuated g/C Ratio		0.64		
Clearance Time (s)		5.0		
Vehicle Extension (s)		3.0		
Lane Grp Cap (vph)		1837		
v/s Ratio Prot				
v/s Ratio Perm		0.15		
v/c Ratio		0.24		
Uniform Delay, d1		4.0		
Progression Factor		1.00		
Incremental Delay, d2		0.1		
Delay (s)		4.1		
Level of Service		A		
Approach Delay (s)		4.1		0.0
Approach LOS		A		A

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	186	30	767	375	46	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	*1.00
Frpb, ped/bikes	0.99		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1741		3305		1711	3601
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1741		3305		1711	3601
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	190	31	783	383	47	270
RTOR Reduction (vph)	12	0	82	0	0	0
Lane Group Flow (vph)	209	0	1084	0	47	270
Confl. Peds. (#/hr)		30		12	12	
Confl. Bikes (#/hr)		4		13		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	10.9		29.3		2.8	36.1
Effective Green, g (s)	10.9		29.3		2.8	36.1
Actuated g/C Ratio	0.20		0.53		0.05	0.66
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		3.0	2.0
Lane Grp Cap (vph)	345		1761		87	2364
v/s Ratio Prot	c0.12		c0.33		c0.03	0.07
v/s Ratio Perm						
v/c Ratio	0.61		0.62		0.54	0.11
Uniform Delay, d1	20.1		8.9		25.5	3.5
Progression Factor	1.00		1.97		1.00	1.00
Incremental Delay, d2	2.1		1.5		6.7	0.1
Delay (s)	22.2		19.1		32.2	3.6
Level of Service	C		B		C	A
Approach Delay (s)	22.2		19.1			7.8
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	399	366	1142	412	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3336	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3336	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	407	373	1165	420	39
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	0	407	373	1165	448	0
Confl. Peds. (#/hr)						77
Confl. Bikes (#/hr)						2
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		17.9	17.9	41.5	27.1	
Effective Green, g (s)		17.9	17.9	41.5	27.1	
Actuated g/C Ratio		0.33	0.33	0.75	0.49	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		524	557	2492	1644	
v/s Ratio Prot		c0.25	0.22	c0.35	0.13	
v/s Ratio Perm						
v/c Ratio		0.78	0.67	0.47	0.27	
Uniform Delay, d1		16.7	16.0	2.6	8.2	
Progression Factor		1.00	1.21	0.72	0.56	
Incremental Delay, d2		7.1	2.3	0.5	0.4	
Delay (s)		23.9	21.6	2.3	5.0	
Level of Service		C	C	A	A	
Approach Delay (s)	23.9			7.0	5.0	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	0	38	96	0	281	0	1208	235	148	677	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.95			0.97		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.91		1.00	0.85			0.98		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1650		1770	1506			3223		1652	3539	
Flt Permitted		0.44		0.77	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		743		1437	1506			3223		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	19	0	39	98	0	287	0	1233	240	151	691	0
RTOR Reduction (vph)	0	33	0	0	125	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	25	0	98	162	0	0	1462	0	151	691	0
Confl. Peds. (#/hr)						30	26		58	58		26
Confl. Bikes (#/hr)			2			1			13			18
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		16.9		16.9	16.9			71.1		7.0	83.1	
Effective Green, g (s)		16.9		16.9	16.9			71.1		7.0	83.1	
Actuated g/C Ratio		0.15		0.15	0.15			0.65		0.06	0.76	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		114		221	231			2083		105	2674	
v/s Ratio Prot					c0.11			c0.45		c0.09	0.20	
v/s Ratio Perm		0.03		0.07								
v/c Ratio		0.22		0.44	0.70			0.70		1.44	0.26	
Uniform Delay, d1		40.8		42.3	44.1			12.6		51.5	4.1	
Progression Factor		1.00		1.00	1.00			0.28		1.07	1.16	
Incremental Delay, d2		1.0		1.4	9.2			0.8		239.1	0.2	
Delay (s)		41.7		43.7	53.3			4.3		294.0	5.0	
Level of Service		D		D	D			A		F	A	
Approach Delay (s)		41.7			50.9			4.3			56.8	
Approach LOS		D			D			A			E	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	275	767	79	167	422	351	104	817	180	397	279	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	11	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3482		1711	3254		1711	3301		3319	3229	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3482		1711	3254		1711	3301		3319	3229	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	281	783	81	170	431	358	106	834	184	405	285	139
RTOR Reduction (vph)	0	8	0	0	147	0	0	17	0	0	52	0
Lane Group Flow (vph)	281	856	0	170	642	0	106	1001	0	405	372	0
Confl. Peds. (#/hr)			7			16			29			6
Confl. Bikes (#/hr)			6			3			5			5
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	21.7	33.0		16.7	28.0		11.1	31.3		13.0	33.2	
Effective Green, g (s)	21.7	33.0		16.7	28.0		11.1	31.3		13.0	33.2	
Actuated g/C Ratio	0.20	0.30		0.15	0.25		0.10	0.28		0.12	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	349	1045		260	828		173	939		392	975	
v/s Ratio Prot	c0.16	c0.25		0.10	0.20		0.06	c0.30		c0.12	0.12	
v/s Ratio Perm												
v/c Ratio	0.81	0.82		0.65	0.78		0.61	1.07		1.03	0.38	
Uniform Delay, d1	42.1	35.7		43.9	38.1		47.4	39.4		48.5	30.3	
Progression Factor	1.00	1.00		0.88	0.52		0.92	0.94		0.90	0.81	
Incremental Delay, d2	12.7	5.1		5.1	4.0		6.0	47.9		53.8	1.1	
Delay (s)	54.8	40.9		43.7	23.9		49.7	84.9		97.3	25.6	
Level of Service	D	D		D	C		D	F		F	C	
Approach Delay (s)		44.3			27.4			81.6			60.7	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM Average Control Delay	54.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	5	47	25	14	40	76	1186	19	17	477	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.98			0.98			1.00			0.99	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.94			0.93			1.00			0.99	
Flt Protected		0.97			0.98			1.00			1.00	
Satd. Flow (prot)		1671			1670			5046			4989	
Flt Permitted		0.73			0.87			0.86			0.88	
Satd. Flow (perm)		1246			1470			4331			4419	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	59	5	48	26	14	41	78	1210	19	17	487	40
RTOR Reduction (vph)	0	33	0	0	37	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	79	0	0	44	0	0	1307	0	0	541	0
Confl. Peds. (#/hr)	11		28	28		11	30		18	18		30
Confl. Bikes (#/hr)			3			5			7			10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		11.4			11.4			92.6			92.6	
Effective Green, g (s)		11.4			11.4			92.6			92.6	
Actuated g/C Ratio		0.10			0.10			0.84			0.84	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		129			152			3646			3720	
v/s Ratio Prot												
v/s Ratio Perm		c0.06			0.03			c0.30			0.12	
v/c Ratio		0.61			0.29			0.36			0.15	
Uniform Delay, d1		47.2			45.6			2.0			1.6	
Progression Factor		1.00			1.00			1.00			0.58	
Incremental Delay, d2		8.3			1.1			0.3			0.1	
Delay (s)		55.5			46.6			2.2			1.0	
Level of Service		E			D			A			A	
Approach Delay (s)		55.5			46.6			2.2			1.0	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	286	268	104	33	146	56	94	840	47	24	358	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95			0.91			0.91	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	
Frt	1.00	0.96			0.96			0.99			0.97	
Flt Protected	0.95	1.00			0.99			1.00			1.00	
Satd. Flow (prot)	1749	3365			3361			5005			4880	
Flt Permitted	0.60	1.00			0.88			0.83			0.87	
Satd. Flow (perm)	1100	3365			2981			4170			4254	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	289	271	105	33	147	57	95	848	47	24	362	92
RTOR Reduction (vph)	0	51	0	0	0	0	0	7	0	0	49	0
Lane Group Flow (vph)	289	325	0	0	237	0	0	983	0	0	429	0
Confl. Peds. (#/hr)	22		17	17		22	46		52	52		46
Confl. Bikes (#/hr)			7			3			14			10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	34.5	34.5			34.5			37.5			37.5	
Effective Green, g (s)	34.5	34.5			34.5			37.5			37.5	
Actuated g/C Ratio	0.43	0.43			0.43			0.47			0.47	
Clearance Time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Grp Cap (vph)	474	1451			1286			1955			1994	
v/s Ratio Prot		0.10										
v/s Ratio Perm	c0.26				0.08			c0.24			0.10	
v/c Ratio	0.61	0.22			0.18			0.50			0.22	
Uniform Delay, d1	17.6	14.3			14.1			14.8			12.6	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	5.7	0.4			0.3			0.9			0.2	
Delay (s)	23.3	14.7			14.4			15.7			12.8	
Level of Service	C	B			B			B			B	
Approach Delay (s)		18.4			14.4			15.7			12.8	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	128.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	17
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	17
RTOR Reduction (vph)	10
Lane Group Flow (vph)	7
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	34.5
Effective Green, g (s)	34.5
Actuated g/C Ratio	0.43
Clearance Time (s)	3.0
Lane Grp Cap (vph)	695
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.01
Uniform Delay, d1	13.0
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.0
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	94	456	56	91	347	269	116	530	88	229	338	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	11	11	11	11	11
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.94		1.00	1.00		1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1559	1770	4470		1652	3340		1711	3421	1368
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1559	1770	4470		1652	3340		1711	3421	1368
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	99	480	59	96	365	283	122	558	93	241	356	82
RTOR Reduction (vph)	0	0	42	0	130	0	0	13	0	0	0	61
Lane Group Flow (vph)	99	480	17	96	518	0	122	638	0	241	356	21
Confl. Peds. (#/hr)			1			96			1			78
Confl. Bikes (#/hr)			3			2			5			8
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases			4									2
Actuated Green, G (s)	9.2	29.3	29.3	9.2	29.3		17.5	26.0		17.5	26.0	26.0
Effective Green, g (s)	9.2	29.3	29.3	9.2	29.3		17.5	26.0		17.5	26.0	26.0
Actuated g/C Ratio	0.09	0.29	0.29	0.09	0.29		0.18	0.26		0.18	0.26	0.26
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	163	1037	457	163	1310		289	868		299	889	356
v/s Ratio Prot	c0.06	c0.14		0.05	0.12		0.07	c0.19		c0.14	0.10	
v/s Ratio Perm			0.01									0.02
v/c Ratio	0.61	0.46	0.04	0.59	0.40		0.42	0.73		0.81	0.40	0.06
Uniform Delay, d1	43.7	28.9	25.3	43.6	28.3		36.7	33.8		39.6	30.6	27.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.3	0.1	0.0	3.5	0.1		0.4	5.5		13.8	1.3	0.3
Delay (s)	48.0	29.0	25.3	47.1	28.3		37.1	39.3		53.4	31.9	28.1
Level of Service	D	C	C	D	C		D	D		D	C	C
Approach Delay (s)		31.6			30.8			39.0			39.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	85	83	151	69	189	132	1522	80	173	1442	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.97			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			0.98	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1756	1669			1759	1542	1770	5043		1770	5082	
Flt Permitted	0.45	1.00			0.59	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	830	1669			1073	1542	1770	5043		1770	5082	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	67	91	89	162	74	203	142	1637	86	186	1551	5
RTOR Reduction (vph)	0	39	0	0	0	154	0	5	0	0	1	0
Lane Group Flow (vph)	67	141	0	0	236	49	142	1718	0	186	1556	0
Confl. Peds. (#/hr)	12		48	48		12			3			11
Confl. Bikes (#/hr)			9			3			2			2
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	24.2	24.2			24.2	24.2	12.3	44.8		17.5	50.0	
Effective Green, g (s)	24.2	24.2			24.2	24.2	12.3	44.8		17.5	50.0	
Actuated g/C Ratio	0.24	0.24			0.24	0.24	0.12	0.45		0.18	0.50	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	201	404			260	373	218	2259		310	2541	
v/s Ratio Prot		0.08					0.08	c0.34		0.11	c0.31	
v/s Ratio Perm	0.08				c0.22	0.03						
v/c Ratio	0.33	0.35			0.91	0.13	0.65	0.76		0.60	0.61	
Uniform Delay, d1	31.2	31.4			36.8	29.7	41.8	23.1		38.0	18.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2			31.7	0.1	5.2	2.5		2.1	1.1	
Delay (s)	31.6	31.6			68.5	29.7	47.0	25.6		40.1	19.1	
Level of Service	C	C			E	C	D	C		D	B	
Approach Delay (s)		31.6			50.6			27.2			21.4	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	969	177	38	761	120	146	221	42	144	151	386
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.98		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4947		1768	4950		1770	1805		1748	1611	
Flt Permitted	0.95	1.00		0.22	1.00		0.13	1.00		0.59	1.00	
Satd. Flow (perm)	1770	4947		417	4950		234	1805		1087	1611	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	297	1009	184	40	793	125	152	230	44	150	157	402
RTOR Reduction (vph)	0	31	0	0	21	0	0	6	0	0	86	0
Lane Group Flow (vph)	297	1162	0	40	897	0	152	268	0	150	473	0
Confl. Peds. (#/hr)			3	3		11	2		16	16		2
Confl. Bikes (#/hr)			2			5			25			34
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	22.4	52.6		26.2	26.2		42.4	42.4		27.8	27.8	
Effective Green, g (s)	22.4	52.6		26.2	26.2		42.4	42.4		27.8	27.8	
Actuated g/C Ratio	0.22	0.51		0.25	0.25		0.41	0.41		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	381	2502		105	1247		252	736		291	431	
v/s Ratio Prot	c0.17	0.23			c0.18		c0.06	0.15			c0.29	
v/s Ratio Perm				0.10			0.18			0.14		
v/c Ratio	0.78	0.46		0.38	0.72		0.60	0.36		0.52	1.10	
Uniform Delay, d1	38.5	16.6		32.2	35.5		24.0	21.4		32.4	38.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.7	0.1		2.3	2.0		4.0	1.4		6.4	72.6	
Delay (s)	48.2	16.7		34.5	37.6		28.0	22.8		38.8	110.7	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		23.0			37.4			24.7			95.5	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	41.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	49	31	25	46	32	25	797	15	17	525	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.96			1.00			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1752			1749			3508			3501	
Flt Permitted		0.82			0.87			0.93			0.92	
Satd. Flow (perm)		1459			1546			3260			3231	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	48	53	33	27	49	34	27	857	16	18	565	14
RTOR Reduction (vph)	0	22	0	0	30	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	112	0	0	80	0	0	899	0	0	597	0
Confl. Peds. (#/hr)	11		24	24			57		37	37		61
Confl. Bikes (#/hr)			1			2			56			47
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		10.1			10.1			60.9			60.9	
Effective Green, g (s)		10.1			10.1			60.9			60.9	
Actuated g/C Ratio		0.13			0.13			0.76			0.76	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		184			195			2482			2460	
v/s Ratio Prot												
v/s Ratio Perm		c0.08			0.05			c0.28			0.18	
v/c Ratio		0.61			0.41			9.00dl			0.24	
Uniform Delay, d1		33.1			32.2			3.1			2.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.9			0.5			0.4			0.2	
Delay (s)		37.0			32.7			3.6			3.0	
Level of Service		D			C			A			A	
Approach Delay (s)		37.0			32.7			3.6			3.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	204	45
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	219	48
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	262	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	60.9	
Effective Green, g (s)	60.9	
Actuated g/C Ratio	0.76	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1226	
v/s Ratio Prot	0.16	
v/s Ratio Perm		
v/c Ratio	0.21	
Uniform Delay, d1	2.7	
Progression Factor	1.00	
Incremental Delay, d2	0.4	
Delay (s)	3.1	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	5	10	128	60	146	11	975	202	71	778	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.97			0.98		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.95		1.00	0.90			0.97		1.00	0.98	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1716		1681	1539			3387		1770	3395	
Flt Permitted		0.98		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1716		1681	1539			3202		1770	3395	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	5	10	132	62	151	11	1005	208	73	802	144
RTOR Reduction (vph)	0	10	0	0	81	0	0	12	0	0	10	0
Lane Group Flow (vph)	0	16	0	119	145	0	0	1212	0	73	936	0
Confl. Peds. (#/hr)			1			19	27		19	19		27
Confl. Bikes (#/hr)						5			48			54
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		3.9		13.7	13.7			56.9		7.5	68.9	
Effective Green, g (s)		3.9		13.7	13.7			56.9		7.5	68.9	
Actuated g/C Ratio		0.04		0.14	0.14			0.57		0.08	0.69	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		67		230	211			1822		133	2339	
v/s Ratio Prot		c0.01		0.07	c0.09					c0.04	0.28	
v/s Ratio Perm								c0.38				
v/c Ratio		0.24		0.52	0.69			0.67		0.55	0.40	
Uniform Delay, d1		46.6		40.1	41.1			14.9		44.6	6.7	
Progression Factor		1.00		1.00	1.00			0.88		1.00	1.00	
Incremental Delay, d2		0.7		0.8	7.2			1.2		2.5	0.5	
Delay (s)		47.3		40.9	48.3			14.5		47.1	7.2	
Level of Service		D		D	D			B		D	A	
Approach Delay (s)		47.3			45.7			14.5			10.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	446	570	72	105	391	209	95	533	126	291	570	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3454		1770	3298		1770	3377		1770	3466	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3454		1770	3298		1770	3377		1770	3466	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	455	582	73	107	399	213	97	544	129	297	582	56
RTOR Reduction (vph)	0	10	0	0	76	0	0	19	0	0	7	0
Lane Group Flow (vph)	455	645	0	107	536	0	97	654	0	297	631	0
Confl. Peds. (#/hr)			35			18			43			42
Confl. Bikes (#/hr)			9			12			41			42
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.0	23.9		9.4	21.3		5.0	37.7		12.0	44.7	
Effective Green, g (s)	12.0	23.9		9.4	21.3		5.0	37.7		12.0	44.7	
Actuated g/C Ratio	0.12	0.24		0.09	0.21		0.05	0.38		0.12	0.45	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	826		166	702		89	1273		212	1549	
v/s Ratio Prot	c0.13	c0.19		0.06	0.16		0.05	c0.19		c0.17	0.18	
v/s Ratio Perm												
v/c Ratio	1.10	0.78		0.64	0.76		1.09	0.51		1.40	0.41	
Uniform Delay, d1	44.0	35.6		43.7	37.0		47.5	24.1		44.0	18.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.17	0.72	
Incremental Delay, d2	75.7	4.5		6.3	4.5		121.9	1.5		205.0	0.8	
Delay (s)	119.7	40.1		50.0	41.5		169.4	25.5		256.7	14.1	
Level of Service	F	D		D	D		F	C		F	B	
Approach Delay (s)		72.7			42.7			43.7			91.2	
Approach LOS		E			D			D			F	

Intersection Summary			
HCM Average Control Delay	65.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	896	28	28	624	28	49	59	35	48	38	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1764	3520		1766	3512			1750			1744	
Flt Permitted	0.37	1.00		0.24	1.00			0.87			0.84	
Satd. Flow (perm)	680	3520		455	3512			1554			1495	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	49	933	29	29	650	29	51	61	36	50	40	28
RTOR Reduction (vph)	0	3	0	0	4	0	0	15	0	0	14	0
Lane Group Flow (vph)	49	959	0	29	675	0	0	133	0	0	104	0
Confl. Peds. (#/hr)	10		11	11		10	13		7	7		13
Confl. Bikes (#/hr)			8			3			21			25
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	386	1999		258	1994			480			461	
v/s Ratio Prot		c0.27			0.19							
v/s Ratio Perm	0.07			0.06				c0.09			0.07	
v/c Ratio	0.13	0.48		0.11	0.34			0.28			0.23	
Uniform Delay, d1	8.1	10.4		8.1	9.4			21.2			20.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.7	0.8		0.9	0.5			1.4			1.1	
Delay (s)	8.8	11.2		9.0	9.8			22.6			21.9	
Level of Service	A	B		A	A			C			C	
Approach Delay (s)		11.1			9.8			22.6			21.9	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	346	945	55	18	572	192	36	45	9	319	51	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00			1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	1.00
Frt	1.00	0.99		1.00	0.96			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.96	1.00
Satd. Flow (prot)	3204	3380		1711	3268			1778			1766	1457
Flt Permitted	0.95	1.00		0.95	1.00			0.69			0.70	1.00
Satd. Flow (perm)	3204	3380		1711	3268			1253			1285	1457
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	353	964	56	18	584	196	37	46	9	326	52	339
RTOR Reduction (vph)	0	3	0	0	29	0	0	4	0	0	0	227
Lane Group Flow (vph)	353	1017	0	18	751	0	0	88	0	0	378	112
Confl. Peds. (#/hr)			15			12	52		13	13		52
Confl. Bikes (#/hr)			7			3			10			16
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	17.4	59.9		1.6	44.1			36.5			36.5	36.5
Effective Green, g (s)	17.4	59.9		1.6	44.1			36.5			36.5	36.5
Actuated g/C Ratio	0.16	0.54		0.01	0.40			0.33			0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	507	1841		25	1310			416			426	483
v/s Ratio Prot	c0.11	0.30		0.01	c0.23							
v/s Ratio Perm								0.07			c0.29	0.08
v/c Ratio	0.70	0.55		0.72	0.57			0.21			0.89	0.23
Uniform Delay, d1	43.8	16.3		54.0	25.6			26.4			34.8	26.6
Progression Factor	0.55	0.15		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.9	0.5		67.0	1.8			0.3			19.4	0.2
Delay (s)	26.1	2.9		120.9	27.5			26.7			54.2	26.9
Level of Service	C	A		F	C			C			D	C
Approach Delay (s)		8.9			29.6			26.7			41.3	
Approach LOS		A			C			C			D	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	1161	95	9	789	9	6	2	11	5	1	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	17	1235	101	10	839	10	6	2	12	5	1	10
Pedestrians		9			1			13			7	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		881			649							
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	856			1349			1791	2208	682	1536	2254	440
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	856			1004			1538	2042	198	1230	2097	440
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			89	95	98	95	97	98
cM capacity (veh/h)	775			561			59	44	662	100	40	557

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	635	719	429	429	20	16
Volume Left	17	0	10	0	6	5
Volume Right	0	101	0	10	12	10
cSH	775	1700	561	1700	116	164
Volume to Capacity	0.02	0.42	0.02	0.25	0.17	0.10
Queue Length 95th (ft)	2	0	1	0	15	8
Control Delay (s)	0.6	0.0	0.5	0.0	42.5	29.2
Lane LOS	A		A		E	D
Approach Delay (s)	0.3		0.3		42.5	29.2
Approach LOS					E	D

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	1095	76	14	765	9	37	1	94	11	2	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	6	1129	78	14	789	9	38	1	97	11	2	5
Pedestrians		3						14			18	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1205			325							
pX, platoon unblocked	0.94			0.89			0.92	0.92	0.89	0.92	0.92	0.94
vC, conflicting volume	816			1221			1627	2039	618	1514	2074	420
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	674			992			1203	1653	311	1080	1690	253
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			68	99	84	91	97	99
cM capacity (veh/h)	844			607			118	84	600	124	80	689

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	571	643	409	404	136	19
Volume Left	6	0	14	0	38	11
Volume Right	0	78	0	9	97	5
cSH	844	1700	607	1700	274	149
Volume to Capacity	0.01	0.38	0.02	0.24	0.50	0.12
Queue Length 95th (ft)	1	0	2	0	65	10
Control Delay (s)	0.2	0.0	0.7	0.0	30.5	32.7
Lane LOS	A		A		D	D
Approach Delay (s)	0.1		0.4		30.5	32.7
Approach LOS					D	D

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	931	222	116	546	40	208	29	169	41	31	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.98			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.97			0.99			0.94			0.96	
Flt Protected		1.00			0.99			0.98			0.98	
Satd. Flow (prot)		3409			3472			1882			1715	
Flt Permitted		0.89			0.52			0.79			0.79	
Satd. Flow (perm)		3023			1817			1534			1386	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	1012	241	126	593	43	226	32	184	45	34	38
RTOR Reduction (vph)	0	28	0	0	6	0	0	36	0	0	25	0
Lane Group Flow (vph)	0	1276	0	0	756	0	0	406	0	0	92	0
Confl. Peds. (#/hr)	16		7			16	24		33	33		24
Confl. Bikes (#/hr)			9			2			3			5
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		25.5			41.5			19.0			19.0	
Effective Green, g (s)		25.5			41.5			19.0			19.0	
Actuated g/C Ratio		0.36			0.59			0.27			0.27	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		1101			1385			416			376	
v/s Ratio Prot					c0.10							
v/s Ratio Perm		c0.42			0.22			c0.26			0.07	
v/c Ratio		1.16			0.55			0.97			0.25	
Uniform Delay, d1		22.2			8.6			25.3			19.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		81.9			1.5			38.3			1.5	
Delay (s)		104.2			10.1			63.6			21.5	
Level of Service		F			B			E			C	
Approach Delay (s)		104.2			10.1			63.6			21.5	
Approach LOS		F			B			E			C	

Intersection Summary			
HCM Average Control Delay	66.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	99.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	191	85	73	306	268	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.97		1.00	1.00	1.00	0.91
Flpb, ped/bikes	1.00		0.96	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1673		1695	1863	1863	1445
Flt Permitted	0.97		0.53	1.00	1.00	1.00
Satd. Flow (perm)	1673		944	1863	1863	1445
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	212	94	81	340	298	102
RTOR Reduction (vph)	29	0	0	0	0	50
Lane Group Flow (vph)	277	0	81	340	298	52
Confl. Peds. (#/hr)	74	57	68			68
Confl. Bikes (#/hr)		6				3
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	639		481	948	948	736
v/s Ratio Prot	c0.17			c0.18	0.16	
v/s Ratio Perm			0.09			0.04
v/c Ratio	0.43		0.17	0.36	0.31	0.07
Uniform Delay, d1	12.6		7.2	8.1	7.9	6.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1		0.8	1.1	0.9	0.2
Delay (s)	14.7		8.0	9.2	8.8	7.1
Level of Service	B		A	A	A	A
Approach Delay (s)	14.7			8.9	8.3	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	522	634	434	41	12	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.87	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3494		1591	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3494		1591	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	538	654	447	42	12	345
RTOR Reduction (vph)	0	0	11	0	240	0
Lane Group Flow (vph)	538	654	478	0	117	0
Confl. Peds. (#/hr)					3	
Confl. Bikes (#/hr)						6
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	819		485	
v/s Ratio Prot	c0.30	0.18	c0.14		c0.07	
v/s Ratio Perm						
v/c Ratio	0.97	0.31	0.58		0.24	
Uniform Delay, d1	21.7	6.5	21.7		16.7	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	32.1	0.4	3.0		1.2	
Delay (s)	53.9	6.9	24.8		17.9	
Level of Service	D	A	C		B	
Approach Delay (s)		28.1	24.8		17.9	
Approach LOS		C	C		B	

Intersection Summary			
HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	15	38	386	8	61	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.90		1.00		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1659		1857		1770	1863
Flt Permitted	0.99		1.00		0.95	1.00
Satd. Flow (perm)	1659		1857		1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	16	41	415	9	66	584
RTOR Reduction (vph)	39	0	1	0	0	0
Lane Group Flow (vph)	18	0	423	0	66	584
Confl. Bikes (#/hr)				2		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	1.8		15.6		1.5	21.1
Effective Green, g (s)	1.8		15.6		1.5	21.1
Actuated g/C Ratio	0.06		0.49		0.05	0.66
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	94		908		83	1232
v/s Ratio Prot	c0.01		0.23		0.04	c0.31
v/s Ratio Perm						
v/c Ratio	0.19		0.47		0.80	0.47
Uniform Delay, d1	14.4		5.4		15.0	2.7
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0		0.4		39.3	0.3
Delay (s)	15.4		5.8		54.4	3.0
Level of Service	B		A		D	A
Approach Delay (s)	15.4		5.8			8.2
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	31.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	9	20	50	16	15	12	32	48	6	40	363	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.98			0.94					0.99	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.98			0.90					0.99	
Flt Protected			0.98			0.99					0.99	
Satd. Flow (prot)			1551			1377					1619	
Flt Permitted			0.89			0.96					0.90	
Satd. Flow (perm)			1408			1330					1465	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	10	22	55	18	16	13	35	53	7	44	399	18
RTOR Reduction (vph)	0	0	12	0	0	41	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	93	0	0	76	0	0	0	0	465	0
Confl. Peds. (#/hr)				53				31				115
Confl. Bikes (#/hr)												14
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			14.0			14.0					22.0	
Effective Green, g (s)			14.0			14.0					22.0	
Actuated g/C Ratio			0.23			0.23					0.37	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			329			310					537	
v/s Ratio Prot												
v/s Ratio Perm			c0.07			0.06					0.32	
v/c Ratio			0.28			0.25					0.87	
Uniform Delay, d1			18.9			18.7					17.6	
Progression Factor			1.00			1.00					1.00	
Incremental Delay, d2			2.1			1.9					17.0	
Delay (s)			21.0			20.6					34.6	
Level of Service			C			C					C	
Approach Delay (s)			21.0			20.6					34.6	
Approach LOS			C			C					C	

Intersection Summary			
HCM Average Control Delay	33.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	56	385	14	30	11	62	52	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.98				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.99				0.93		
Flt Protected		0.99				0.98		
Satd. Flow (prot)		1761				1493		
Flt Permitted		0.90				0.98		
Satd. Flow (perm)		1593				1493		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	62	423	15	33	12	68	57	40
RTOR Reduction (vph)	0	4	0	0	0	18	0	0
Lane Group Flow (vph)	0	529	0	0	0	159	0	0
Confl. Peds. (#/hr)			65	105				
Confl. Bikes (#/hr)			14	6				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		22.0				12.0		
Effective Green, g (s)		22.0				12.0		
Actuated g/C Ratio		0.37				0.20		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		584				299		
v/s Ratio Prot								
v/s Ratio Perm		c0.33				0.11		
v/c Ratio		0.91				0.53		
Uniform Delay, d1		18.0				21.5		
Progression Factor		1.00				1.00		
Incremental Delay, d2		20.1				6.7		
Delay (s)		38.2				28.2		
Level of Service		D				C		
Approach Delay (s)		38.2				28.2		
Approach LOS		D				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1	6	0	0	0	0	27	26	4	11	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	3	1	8	0	0	0	0	35	33	5	14	0
Pedestrians					7						5	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					372							
pX, platoon unblocked												
vC, conflicting volume	5			9			17	15	12	73	19	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			9			17	15	12	73	19	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	96	97	99	98	100
cM capacity (veh/h)	1610			1611			981	874	1068	855	870	1074

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	68	19
Volume Left	3	0	5
Volume Right	8	33	0
cSH	1610	960	866
Volume to Capacity	0.00	0.07	0.02
Queue Length 95th (ft)	0	6	2
Control Delay (s)	1.6	9.0	9.3
Lane LOS	A	A	A
Approach Delay (s)	1.6	9.0	9.3
Approach LOS		A	A

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1080	0	0	747	15	0	0	2	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	1161	0	0	803	16	0	0	2	0	0	0
Pedestrians					1			8			1	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1282			613							
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	
vC, conflicting volume	820			1169			1571	1990	590	1396	1982	411
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	820			971			1416	1880	328	1222	1871	411
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	804			633			87	63	598	121	64	590

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	774	387	535	284	2
Volume Left	0	0	0	0	0
Volume Right	0	0	0	16	2
cSH	1700	1700	1700	1700	598
Volume to Capacity	0.46	0.23	0.31	0.17	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	11.0
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.0
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1272	752	53	0	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1383	817	58	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		226	1304			
pX, platoon unblocked					0.81	
vC, conflicting volume	875				1538	438
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	875				1189	438
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	767				146	567

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	691	691	545	330	33
Volume Left	0	0	0	0	0
Volume Right	0	0	0	58	33
cSH	1700	1700	1700	1700	567
Volume to Capacity	0.41	0.41	0.32	0.19	0.06
Queue Length 95th (ft)	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	11.7
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.7
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	35	4	27	19	2	18	6	10	14	516	15	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0			4.0		
Lane Util. Factor		1.00					1.00			0.95		
Frpb, ped/bikes		0.98					0.99			1.00		
Flpb, ped/bikes		1.00					0.99			1.00		
Frt		0.93					0.96			0.99		
Flt Protected		0.98					0.97			1.00		
Satd. Flow (prot)		1646					1707			3507		
Flt Permitted		0.89					0.86			0.94		
Satd. Flow (perm)		1489					1508			3293		
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	41	5	31	22	2	21	7	12	16	600	17	5
RTOR Reduction (vph)	0	16	0	0	0	0	9	0	0	1	0	0
Lane Group Flow (vph)	0	83	0	0	0	0	33	0	0	637	0	0
Confl. Peds. (#/hr)	8		17	12	17	12		8	9		17	9
Confl. Bikes (#/hr)			1	1							3	3
Turn Type	Perm					Perm			Perm			
Protected Phases		4					4			2		
Permitted Phases	4					4			2			
Actuated Green, G (s)		16.0					16.0			16.0		
Effective Green, g (s)		16.0					16.0			16.0		
Actuated g/C Ratio		0.27					0.27			0.27		
Clearance Time (s)		4.0					4.0			4.0		
Lane Grp Cap (vph)		397					402			878		
v/s Ratio Prot												
v/s Ratio Perm		c0.06					0.02			c0.19		
v/c Ratio		0.21					0.08			0.73		
Uniform Delay, d1		17.1					16.5			20.0		
Progression Factor		0.84					1.00			1.00		
Incremental Delay, d2		1.1					0.4			5.2		
Delay (s)		15.4					16.9			25.2		
Level of Service		B					B			C		
Approach Delay (s)		15.4					16.9			25.2		
Approach LOS		B					B			C		

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Volume (vph)	5	50	340	23	5	33	42	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0			4.0		
Lane Util. Factor			0.95			1.00		
Frpb, ped/bikes			1.00			0.97		
Flpb, ped/bikes			1.00			0.98		
Frt			0.99			0.93		
Flt Protected			0.99			0.98		
Satd. Flow (prot)			3472			1609		
Flt Permitted			0.72			0.98		
Satd. Flow (perm)			2532			1609		
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	6	58	395	27	6	38	49	3
RTOR Reduction (vph)	0	0	7	0	0	2	0	0
Lane Group Flow (vph)	0	0	479	0	0	94	0	0
Confl. Peds. (#/hr)	9	17		9	12	9	8	9
Confl. Bikes (#/hr)				1			1	1
Turn Type		Perm			Perm			
Protected Phases			6			8		
Permitted Phases		6			8			
Actuated Green, G (s)			16.0			16.0		
Effective Green, g (s)			16.0			16.0		
Actuated g/C Ratio			0.27			0.27		
Clearance Time (s)			4.0			4.0		
Lane Grp Cap (vph)			675			429		
v/s Ratio Prot								
v/s Ratio Perm			0.19			0.06		
v/c Ratio			0.71			0.22		
Uniform Delay, d1			19.9			17.1		
Progression Factor			1.00			1.00		
Incremental Delay, d2			6.2			1.2		
Delay (s)			26.1			18.3		
Level of Service			C			B		
Approach Delay (s)			26.1			18.3		
Approach LOS			C			B		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	230	39	509	244	33	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.95		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1735		3213		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1735		3213		1711	3421
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	247	42	547	262	35	404
RTOR Reduction (vph)	12	0	83	0	0	0
Lane Group Flow (vph)	277	0	726	0	35	404
Confl. Peds. (#/hr)		55		57	57	
Confl. Bikes (#/hr)		2		5		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.7		27.9		2.4	34.3
Effective Green, g (s)	12.7		27.9		2.4	34.3
Actuated g/C Ratio	0.23		0.51		0.04	0.62
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		3.0	2.0
Lane Grp Cap (vph)	401		1630		75	2133
v/s Ratio Prot	c0.16		c0.23		c0.02	0.12
v/s Ratio Perm						
v/c Ratio	0.69		0.45		0.47	0.19
Uniform Delay, d1	19.3		8.6		25.7	4.4
Progression Factor	1.00		0.49		1.00	1.00
Incremental Delay, d2	4.1		0.8		4.5	0.2
Delay (s)	23.4		5.0		30.2	4.6
Level of Service	C		A		C	A
Approach Delay (s)	23.4		5.0			6.7
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	391	395	768	502	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.98	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3269	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3269	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	412	416	808	528	96
RTOR Reduction (vph)	0	0	0	0	21	0
Lane Group Flow (vph)	0	412	416	808	603	0
Confl. Peds. (#/hr)	124		75			75
Confl. Bikes (#/hr)		3				4
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		20.2	20.2	31.0	24.8	
Effective Green, g (s)		20.2	20.2	31.0	24.8	
Actuated g/C Ratio		0.37	0.37	0.56	0.45	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		592	628	1862	1474	
v/s Ratio Prot		c0.26	0.24	c0.24	0.18	
v/s Ratio Perm						
v/c Ratio		0.70	0.66	0.43	0.41	
Uniform Delay, d1		14.8	14.5	6.9	10.2	
Progression Factor		1.00	1.19	0.86	0.78	
Incremental Delay, d2		3.6	2.0	0.6	0.8	
Delay (s)		18.3	19.4	6.5	8.8	
Level of Service		B	B	A	A	
Approach Delay (s)	18.3			10.9	8.8	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	0	45	112	0	281	0	907	295	156	769	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.97			0.93		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.90		1.00	0.85			0.96		1.00	1.00	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1635		1765	1528			3056		1652	3539	
Flt Permitted		0.29		0.74	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		475		1382	1528			3056		1652	3539	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	18	0	48	119	0	299	0	965	314	166	818	0
RTOR Reduction (vph)	0	41	0	0	243	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	25	0	119	56	0	0	1258	0	166	818	0
Confl. Peds. (#/hr)	14		3	3		14	38		86	86		38
Confl. Bikes (#/hr)						4			6			11
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		15.1		15.1	15.1			64.9		15.0	84.9	
Effective Green, g (s)		15.1		15.1	15.1			64.9		15.0	84.9	
Actuated g/C Ratio		0.14		0.14	0.14			0.59		0.14	0.77	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		65		190	210			1803		225	2731	
v/s Ratio Prot					0.04			c0.41		c0.10	0.23	
v/s Ratio Perm		0.05		c0.09								
v/c Ratio		0.38		0.63	0.27			0.70		0.74	0.30	
Uniform Delay, d1		43.2		44.8	42.5			15.7		45.6	3.7	
Progression Factor		1.00		1.00	1.00			0.55		1.02	0.94	
Incremental Delay, d2		3.7		6.3	0.7			0.7		11.0	0.3	
Delay (s)		46.8		51.1	43.2			9.4		57.5	3.8	
Level of Service		D		D	D			A		E	A	
Approach Delay (s)		46.8			45.4			9.4			12.8	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	236	459	112	244	576	368	155	605	231	362	342	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	0.96		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3398		1711	3292		1711	3205		3319	3127	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3398		1711	3292		1711	3205		3319	3127	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	251	488	119	260	613	391	165	644	246	385	364	213
RTOR Reduction (vph)	0	22	0	0	94	0	0	36	0	0	76	0
Lane Group Flow (vph)	251	585	0	260	910	0	165	854	0	385	501	0
Confl. Peds. (#/hr)	20		23	23		20	22		66	20		66
Confl. Bikes (#/hr)			22									8
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	25.2		22.0	33.2		12.0	31.8		15.0	34.8	
Effective Green, g (s)	14.0	25.2		22.0	33.2		12.0	31.8		15.0	34.8	
Actuated g/C Ratio	0.13	0.23		0.20	0.30		0.11	0.29		0.14	0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	778		342	994		187	927		453	989	
v/s Ratio Prot	c0.14	0.17		0.15	c0.28		0.10	c0.27		c0.12	0.16	
v/s Ratio Perm												
v/c Ratio	1.12	0.75		0.76	0.92		0.88	0.92		0.85	0.51	
Uniform Delay, d1	48.0	39.5		41.5	37.0		48.3	37.9		46.4	30.6	
Progression Factor	1.00	1.00		0.86	0.82		1.20	0.96		0.98	0.98	
Incremental Delay, d2	94.5	4.1		7.8	10.5		33.5	15.0		13.5	1.8	
Delay (s)	142.5	43.6		43.6	41.1		91.6	51.5		59.0	31.7	
Level of Service	F	D		D	D		F	D		E	C	
Approach Delay (s)		72.6			41.6			57.8			42.6	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM Average Control Delay	52.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	8	111	35	16	54	113	831	16	27	632	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.96			0.99			1.00			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.94			0.93			1.00			0.99	
Flt Protected		0.98			0.98			0.99			1.00	
Satd. Flow (prot)		1618			1656			5020			4952	
Flt Permitted		0.74			0.83			0.74			0.87	
Satd. Flow (perm)		1223			1398			3752			4310	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	126	9	123	39	18	60	126	923	18	30	702	79
RTOR Reduction (vph)	0	39	0	0	45	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	219	0	0	72	0	0	1066	0	0	804	0
Confl. Peds. (#/hr)	15		89	89		15	36		45	45		36
Confl. Bikes (#/hr)			1			2			3			8
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		23.6			23.6			80.4			80.4	
Effective Green, g (s)		23.6			23.6			80.4			80.4	
Actuated g/C Ratio		0.21			0.21			0.73			0.73	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		262			300			2742			3150	
v/s Ratio Prot												
v/s Ratio Perm		c0.18			0.05			c0.28			0.19	
v/c Ratio		0.83			0.24			0.39			0.26	
Uniform Delay, d1		41.3			35.8			5.6			4.9	
Progression Factor		1.00			1.00			1.00			1.11	
Incremental Delay, d2		19.9			0.4			0.4			0.2	
Delay (s)		61.3			36.2			6.0			5.6	
Level of Service		E			D			A			A	
Approach Delay (s)		61.3			36.2			6.0			5.6	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	181	121	29	104	31	100	546	34	36	557	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95			0.91			0.91	
Frpb, ped/bikes	1.00	0.99			0.99			1.00			0.99	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.94			0.97			0.99			0.97	
Flt Protected	0.95	1.00			0.99			0.99			1.00	
Satd. Flow (prot)	1770	3279			3366			4989			4852	
Flt Permitted	0.64	1.00			0.88			0.73			0.88	
Satd. Flow (perm)	1197	3279			2978			3694			4264	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	223	191	127	31	109	33	105	575	36	38	586	177
RTOR Reduction (vph)	0	72	0	0	0	0	0	7	0	0	64	0
Lane Group Flow (vph)	223	246	0	0	173	0	0	709	0	0	737	0
Confl. Peds. (#/hr)			31	31		48	46		59	59		46
Confl. Bikes (#/hr)			4			6			7			8
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	34.5	34.5			34.5			37.5			37.5	
Effective Green, g (s)	34.5	34.5			34.5			37.5			37.5	
Actuated g/C Ratio	0.43	0.43			0.43			0.47			0.47	
Clearance Time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Grp Cap (vph)	516	1414			1284			1732			1999	
v/s Ratio Prot		0.07										
v/s Ratio Perm	c0.19				0.06			c0.19			0.17	
v/c Ratio	0.43	0.17			0.13			0.41			0.37	
Uniform Delay, d1	15.9	14.0			13.7			14.0			13.6	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	2.6	0.3			0.2			0.7			0.5	
Delay (s)	18.5	14.3			14.0			14.7			14.2	
Level of Service	B	B			B			B			B	
Approach Delay (s)		16.0			14.0			14.7			14.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	143.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	57
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1531
Flt Permitted	1.00
Satd. Flow (perm)	1531
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	60
RTOR Reduction (vph)	34
Lane Group Flow (vph)	26
Confl. Peds. (#/hr)	48
Confl. Bikes (#/hr)	6
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	34.5
Effective Green, g (s)	34.5
Actuated g/C Ratio	0.43
Clearance Time (s)	3.0
Lane Grp Cap (vph)	660
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.04
Uniform Delay, d1	13.2
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	13.3
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	277	40	72	343	304	80	331	44	273	386	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	11	11	11	11	11
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.95		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1559	1770	4485		1652	3352		1711	3250	1427
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1559	1770	4485		1652	3352		1711	3250	1427
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	301	43	78	373	330	87	360	48	297	420	80
RTOR Reduction (vph)	0	0	31	0	153	0	0	10	0	0	0	59
Lane Group Flow (vph)	91	301	12	78	550	0	87	398	0	297	420	21
Confl. Peds. (#/hr)	72		2	2		72	42		2	2		42
Confl. Bikes (#/hr)			1			8			11			11
Parking (#/hr)											0	
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases			4									2
Actuated Green, G (s)	9.3	28.7	28.7	9.3	28.7		17.5	26.5		17.5	26.5	26.5
Effective Green, g (s)	9.3	28.7	28.7	9.3	28.7		17.5	26.5		17.5	26.5	26.5
Actuated g/C Ratio	0.09	0.29	0.29	0.09	0.29		0.18	0.26		0.18	0.26	0.26
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	165	1016	447	165	1287		289	888		299	861	378
v/s Ratio Prot	c0.05	0.09		0.04	c0.12		0.05	0.12		c0.17	c0.13	
v/s Ratio Perm			0.01									0.01
v/c Ratio	0.55	0.30	0.03	0.47	0.43		0.30	0.45		0.99	0.49	0.06
Uniform Delay, d1	43.4	27.8	25.6	43.0	29.0		35.9	30.6		41.2	31.0	27.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	0.1	0.0	0.8	0.1		0.2	1.6		49.9	2.0	0.3
Delay (s)	45.6	27.8	25.6	43.8	29.1		36.1	32.3		91.1	33.0	27.7
Level of Service	D	C	C	D	C		D	C		F	C	C
Approach Delay (s)		31.3			30.5			33.0			54.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	38.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	63	40	55	112	170	5	1048	93	118	1022	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1734			1829	1533	1770	5013		1770	5081	
Flt Permitted	0.54	1.00			0.85	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	999	1734			1578	1533	1770	5013		1770	5081	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	35	66	42	57	117	177	5	1092	97	123	1065	4
RTOR Reduction (vph)	0	35	0	0	0	148	0	9	0	0	0	0
Lane Group Flow (vph)	35	73	0	0	174	29	5	1180	0	123	1069	0
Confl. Peds. (#/hr)	17		10	10		17	23		10	10		23
Confl. Bikes (#/hr)			7			5			5			3
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	13.2	13.2			13.2	13.2	1.1	40.9		12.4	52.2	
Effective Green, g (s)	13.2	13.2			13.2	13.2	1.1	40.9		12.4	52.2	
Actuated g/C Ratio	0.16	0.16			0.16	0.16	0.01	0.51		0.16	0.65	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	165	286			260	253	24	2563		274	3315	
v/s Ratio Prot		0.04					0.00	c0.24		c0.07	0.21	
v/s Ratio Perm	0.04				c0.11	0.02						
v/c Ratio	0.21	0.26			0.67	0.12	0.21	0.46		0.45	0.32	
Uniform Delay, d1	28.9	29.1			31.4	28.4	39.0	12.5		30.7	6.1	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2			5.0	0.1	1.6	0.6		0.4	0.3	
Delay (s)	29.1	29.3			36.3	28.5	40.6	13.1		31.1	6.4	
Level of Service	C	C			D	C	D	B		C	A	
Approach Delay (s)		29.2			32.4			13.2			8.9	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	283	741	186	41	858	147	188	157	66	116	151	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.96		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4900		1766	4935		1768	1761		1750	1636	
Flt Permitted	0.95	1.00		0.29	1.00		0.17	1.00		0.62	1.00	
Satd. Flow (perm)	1770	4900		539	4935		309	1761		1136	1636	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	289	756	190	42	876	150	192	160	67	118	154	283
RTOR Reduction (vph)	0	54	0	0	25	0	0	13	0	0	66	0
Lane Group Flow (vph)	289	892	0	42	1001	0	192	214	0	118	371	0
Confl. Peds. (#/hr)	20		5	5		20	17		14	14		17
Confl. Bikes (#/hr)			8			4			18			11
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	20.7	53.9		29.2	29.2		37.1	37.1		20.1	20.1	
Effective Green, g (s)	20.7	53.9		29.2	29.2		37.1	37.1		20.1	20.1	
Actuated g/C Ratio	0.21	0.54		0.29	0.29		0.37	0.37		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	366	2641		157	1441		304	653		228	329	
v/s Ratio Prot	c0.16	0.18			c0.20		c0.08	0.12			c0.23	
v/s Ratio Perm				0.08			0.15			0.10		
v/c Ratio	0.79	0.34		0.27	0.69		0.63	0.33		0.52	1.13	
Uniform Delay, d1	37.6	13.0		27.2	31.4		24.4	22.5		35.6	40.0	
Progression Factor	1.00	1.00		1.23	1.19		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.8	0.1		0.7	1.1		4.2	1.3		8.2	88.4	
Delay (s)	48.4	13.1		34.2	38.4		28.7	23.9		43.8	128.3	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		21.3			38.2			26.1			110.4	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	42.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	30	13	25	37	67	36	709	35	46	531	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.98			0.93			0.99			1.00	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1764			1697			3483			3492	
Flt Permitted		0.64			0.93			0.90			0.84	
Satd. Flow (perm)		1167			1586			3156			2946	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	33	14	27	40	73	39	771	38	50	577	11
RTOR Reduction (vph)	0	12	0	0	65	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	87	0	0	75	0	0	846	0	0	638	0
Confl. Peds. (#/hr)	17		20	20					42	42		73
Confl. Bikes (#/hr)			2			2			37			26
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		9.2			9.2			61.8			61.8	
Effective Green, g (s)		9.2			9.2			61.8			61.8	
Actuated g/C Ratio		0.11			0.11			0.77			0.77	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		134			182			2438			2276	
v/s Ratio Prot												
v/s Ratio Perm		c0.08			0.05			c0.27			0.22	
v/c Ratio		0.65			0.41			4.88dl			0.28	
Uniform Delay, d1		33.9			32.9			2.8			2.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		8.4			0.6			0.4			0.3	
Delay (s)		42.3			33.5			3.2			3.0	
Level of Service		D			C			A			A	
Approach Delay (s)		42.3			33.5			3.2			3.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	219	72
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	238	78
RTOR Reduction (vph)	6	0
Lane Group Flow (vph)	310	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		20
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	61.8	
Effective Green, g (s)	61.8	
Actuated g/C Ratio	0.77	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1244	
v/s Ratio Prot	0.19	
v/s Ratio Perm		
v/c Ratio	0.25	
Uniform Delay, d1	2.6	
Progression Factor	1.00	
Incremental Delay, d2	0.5	
Delay (s)	3.0	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	4	24	101	51	126	13	708	127	63	526	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.95			0.99		1.00	0.88	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.92		1.00	0.90			0.98		1.00	0.95	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1689		1681	1515			3399		1770	2982	
Flt Permitted		0.98		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1689		1681	1515			3194		1770	2982	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	14	4	25	106	54	133	14	745	134	66	554	251
RTOR Reduction (vph)	0	24	0	0	84	0	0	9	0	0	35	0
Lane Group Flow (vph)	0	19	0	95	114	0	0	884	0	66	770	0
Confl. Peds. (#/hr)	32					32	127		24	24		127
Confl. Bikes (#/hr)						6			23			20
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		4.1		11.9	11.9			58.8		7.2	70.5	
Effective Green, g (s)		4.1		11.9	11.9			58.8		7.2	70.5	
Actuated g/C Ratio		0.04		0.12	0.12			0.59		0.07	0.70	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		69		200	180			1878		127	2102	
v/s Ratio Prot		c0.01		0.06	c0.08					c0.04	0.26	
v/s Ratio Perm								c0.28				
v/c Ratio		0.28		0.47	0.64			0.47		0.52	0.37	
Uniform Delay, d1		46.5		41.1	42.0			11.7		44.7	5.9	
Progression Factor		1.00		1.00	1.00			0.63		1.00	1.00	
Incremental Delay, d2		0.8		0.6	5.3			0.7		1.5	0.5	
Delay (s)		47.3		41.8	47.3			8.1		46.2	6.4	
Level of Service		D		D	D			A		D	A	
Approach Delay (s)		47.3			45.5			8.1			9.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	248	505	128	145	598	196	115	417	157	196	402	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.95		1.00	0.99		1.00	0.94		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3271		1770	3366		1770	3200		1770	3432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3271		1770	3366		1770	3200		1770	3432	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	253	515	131	148	610	200	117	426	160	200	410	40
RTOR Reduction (vph)	0	23	0	0	33	0	0	37	0	0	7	0
Lane Group Flow (vph)	253	623	0	148	777	0	117	549	0	200	443	0
Confl. Peds. (#/hr)	25		162	162		25	130		139	139		130
Confl. Bikes (#/hr)			3			5			27			25
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.8	24.4		10.4	24.0		5.0	36.2		12.0	43.2	
Effective Green, g (s)	10.8	24.4		10.4	24.0		5.0	36.2		12.0	43.2	
Actuated g/C Ratio	0.11	0.24		0.10	0.24		0.05	0.36		0.12	0.43	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	371	798		184	808		89	1158		212	1483	
v/s Ratio Prot	0.07	0.19		c0.08	c0.23		c0.07	c0.17		c0.11	0.13	
v/s Ratio Perm												
v/c Ratio	0.68	0.78		0.80	0.96		1.31	0.47		0.94	0.30	
Uniform Delay, d1	42.9	35.3		43.8	37.5		47.5	24.6		43.7	18.5	
Progression Factor	0.91	1.26		1.00	1.00		1.00	1.00		1.13	0.79	
Incremental Delay, d2	3.9	4.4		20.8	22.6		201.1	1.4		44.1	0.5	
Delay (s)	43.0	48.9		64.6	60.1		248.6	26.0		93.3	15.1	
Level of Service	D	D		E	E		F	C		F	B	
Approach Delay (s)		47.2			60.8			63.0			39.2	
Approach LOS		D			E			E			D	

Intersection Summary			
HCM Average Control Delay	53.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	756	27	23	866	38	33	41	30	36	35	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1767	3517		1762	3512			1738			1767	
Flt Permitted	0.25	1.00		0.30	1.00			0.90			0.86	
Satd. Flow (perm)	462	3517		556	3512			1592			1559	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	796	28	24	912	40	35	43	32	38	37	14
RTOR Reduction (vph)	0	3	0	0	4	0	0	18	0	0	8	0
Lane Group Flow (vph)	45	821	0	24	948	0	0	92	0	0	81	0
Confl. Peds. (#/hr)	7		16	16		7	10		10	10		10
Confl. Bikes (#/hr)			3			6			22			30
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	262	1997		316	1994			491			481	
v/s Ratio Prot		0.23			c0.27							
v/s Ratio Perm	0.10			0.04				c0.06			0.05	
v/c Ratio	0.17	0.41		0.08	0.48			0.19			0.17	
Uniform Delay, d1	8.4	9.9		7.9	10.4			20.5			20.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.4	0.6		0.5	0.8			0.8			0.8	
Delay (s)	9.8	10.5		8.4	11.2			21.4			21.2	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		10.5			11.1			21.4			21.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	408	597	58	36	705	215	71	63	19	216	86	407
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00			1.00	0.94
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	1.00
Frt	1.00	0.99		1.00	0.96			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	1.00
Satd. Flow (prot)	3204	3456		1711	3258			1762			1780	1488
Flt Permitted	0.95	1.00		0.95	1.00			0.56			0.67	1.00
Satd. Flow (perm)	3204	3456		1711	3258			1015			1236	1488
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	429	628	61	38	742	226	75	66	20	227	91	428
RTOR Reduction (vph)	0	6	0	0	23	0	0	6	0	0	0	273
Lane Group Flow (vph)	429	683	0	38	945	0	0	155	0	0	318	155
Confl. Peds. (#/hr)	34		31	31		34	41		18	18		41
Confl. Bikes (#/hr)			4			2			5			4
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	18.6	59.5		4.6	45.5			33.9			33.9	33.9
Effective Green, g (s)	18.6	59.5		4.6	45.5			33.9			33.9	33.9
Actuated g/C Ratio	0.17	0.54		0.04	0.41			0.31			0.31	0.31
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	542	1869		72	1348			313			381	459
v/s Ratio Prot	c0.13	0.20		0.02	c0.29							
v/s Ratio Perm								0.15			c0.26	0.10
v/c Ratio	0.79	0.37		0.53	0.70			0.50			0.83	0.34
Uniform Delay, d1	43.8	14.5		51.6	26.6			31.1			35.4	29.4
Progression Factor	0.72	0.31		1.08	0.99			1.00			1.00	1.00
Incremental Delay, d2	5.1	0.4		5.7	2.5			1.2			14.5	0.4
Delay (s)	36.6	4.8		61.7	28.8			32.3			50.0	29.8
Level of Service	D	A		E	C			C			D	C
Approach Delay (s)		17.0			30.0			32.3			38.4	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	778	41	30	950	9	15	2	38	2	2	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	819	43	32	1000	9	16	2	40	2	2	38
Pedestrians		10			3			11			7	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked	0.99			0.93			0.94	0.94	0.93	0.94	0.94	0.99
vC, conflicting volume	1016			873			1569	2036	445	1634	2053	522
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	986			707			1398	1898	246	1467	1916	484
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			96			79	96	94	97	96	93
cM capacity (veh/h)	682			815			75	56	692	68	55	513

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	462	453	532	509	58	42
Volume Left	53	0	32	0	16	2
Volume Right	0	43	0	9	40	38
cSH	682	1700	815	1700	189	294
Volume to Capacity	0.08	0.27	0.04	0.30	0.31	0.14
Queue Length 95th (ft)	6	0	3	0	31	12
Control Delay (s)	2.2	0.0	1.1	0.0	32.2	19.3
Lane LOS	A		A		D	C
Approach Delay (s)	1.1		0.5		32.2	19.3
Approach LOS					D	C

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	743	60	40	883	32	58	21	62	11	20	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	22	774	62	42	920	33	60	22	65	11	21	45
Pedestrians		2			2			13			13	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.87			0.99			0.87	0.87	0.99	0.87	0.87	0.87
vC, conflicting volume	966			849			1462	1911	433	1541	1926	492
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	658			833			1197	1712	413	1288	1729	112
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			95			26	69	89	82	70	94
cM capacity (veh/h)	795			781			82	70	576	65	69	789

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	409	449	502	493	147	77
Volume Left	22	0	42	0	60	11
Volume Right	0	62	0	33	65	45
cSH	795	1700	781	1700	126	144
Volume to Capacity	0.03	0.26	0.05	0.29	1.16	0.54
Queue Length 95th (ft)	2	0	4	0	220	66
Control Delay (s)	0.8	0.0	1.5	0.0	197.7	55.6
Lane LOS	A		A		F	F
Approach Delay (s)	0.4		0.7		197.7	55.6
Approach LOS					F	F

Intersection Summary			
Average Delay	16.6		
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	430	279	94	673	122	141	117	134	64	48	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.95			0.98			0.95			0.92	
Flt Protected		0.99			0.99			0.98			0.99	
Satd. Flow (prot)		3268			3417			1940			1655	
Flt Permitted		0.71			0.64			0.77			0.84	
Satd. Flow (perm)		2327			2211			1524			1405	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	111	453	294	99	708	128	148	123	141	67	51	149
RTOR Reduction (vph)	0	122	0	0	23	0	0	34	0	0	82	0
Lane Group Flow (vph)	0	736	0	0	912	0	0	378	0	0	185	0
Confl. Peds. (#/hr)	23		18	18		23	37		28	28		37
Confl. Bikes (#/hr)			3			5			1			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		656			1241			526			485	
v/s Ratio Prot					c0.11							
v/s Ratio Perm		c0.32			0.25			c0.25			0.13	
v/c Ratio		1.12			0.74			0.72			0.38	
Uniform Delay, d1		19.8			11.4			15.7			13.6	
Progression Factor		1.31			1.00			1.00			1.00	
Incremental Delay, d2		72.9			3.9			8.2			2.3	
Delay (s)		98.8			15.3			23.9			15.8	
Level of Service		F			B			C			B	
Approach Delay (s)		98.8			15.3			23.9			15.8	
Approach LOS		F			B			C			B	

Intersection Summary			
HCM Average Control Delay	45.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	131	86	62	338	190	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.91		1.00	1.00	1.00	0.67
Flpb, ped/bikes	1.00		0.78	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1556		1384	1863	1863	1063
Flt Permitted	0.97		0.59	1.00	1.00	1.00
Satd. Flow (perm)	1556		854	1863	1863	1063
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	164	108	78	422	238	88
RTOR Reduction (vph)	43	0	0	0	0	43
Lane Group Flow (vph)	229	0	78	422	238	45
Confl. Peds. (#/hr)	92	156	315			315
Confl. Bikes (#/hr)		10				11
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	594		435	948	948	541
v/s Ratio Prot	c0.15			c0.23	0.13	
v/s Ratio Perm			0.09			0.04
v/c Ratio	0.39		0.18	0.45	0.25	0.08
Uniform Delay, d1	12.3		7.3	8.6	7.6	6.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9		0.9	1.5	0.6	0.3
Delay (s)	14.2		8.2	10.1	8.2	7.2
Level of Service	B		A	B	A	A
Approach Delay (s)	14.2			9.8	8.0	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	246	429	586	55	38	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.88	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	3539	3470		1609	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	3539	3470		1609	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	259	452	617	58	40	317
RTOR Reduction (vph)	0	0	11	0	220	0
Lane Group Flow (vph)	259	452	664	0	137	0
Confl. Peds. (#/hr)	22			22		2
Confl. Bikes (#/hr)				9		1
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	813		490	
v/s Ratio Prot	c0.15	0.13	c0.19		c0.08	
v/s Ratio Perm						
v/c Ratio	0.47	0.22	0.82		0.28	
Uniform Delay, d1	17.7	6.1	23.2		16.9	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	2.8	0.2	8.9		1.4	
Delay (s)	20.6	6.3	32.1		18.3	
Level of Service	C	A	C		B	
Approach Delay (s)		11.5	32.1		18.3	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	22	44	484	13	44	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.91		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1651		1855		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1651		1855		1770	1863
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	25	49	544	15	49	447
RTOR Reduction (vph)	45	0	2	0	0	0
Lane Group Flow (vph)	29	0	558	0	49	447
Confl. Peds. (#/hr)		1				
Confl. Bikes (#/hr)				10		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	3.2		17.7		1.5	23.2
Effective Green, g (s)	3.2		17.7		1.5	23.2
Actuated g/C Ratio	0.09		0.50		0.04	0.66
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	149		928		75	1221
v/s Ratio Prot	c0.02		c0.30		0.03	c0.24
v/s Ratio Perm						
v/c Ratio	0.20		0.60		0.65	0.37
Uniform Delay, d1	14.9		6.3		16.7	2.8
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.7		1.1		18.6	0.2
Delay (s)	15.6		7.4		35.3	3.0
Level of Service	B		A		D	A
Approach Delay (s)	15.6		7.4			6.1
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	35.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	12	20	5	20	8	26	41	3	30	376	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.98			0.63					0.99	
Flpb, ped/bikes			0.80			0.97					0.99	
Frt			0.99			0.90					1.00	
Flt Protected			0.98			0.99					1.00	
Satd. Flow (prot)			1253			904					1598	
Flt Permitted			0.87			0.95					0.95	
Satd. Flow (perm)			1118			864					1526	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	12	20	5	20	8	27	42	3	31	384	16
RTOR Reduction (vph)	0	0	4	0	0	32	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	43	0	0	65	0	0	0	0	432	0
Confl. Peds. (#/hr)	137	101		75	75		137	101	122	137		213
Confl. Bikes (#/hr)				1			3	3				21
Parking (#/hr)			3			3					3	
Turn Type		Perm			Perm					Perm		
Protected Phases			1			1					2	
Permitted Phases		1			1					2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			261			202					636	
v/s Ratio Prot												
v/s Ratio Perm			0.04			c0.07					c0.28	
v/c Ratio			0.17			0.32					0.68	
Uniform Delay, d1			18.3			19.1					14.2	
Progression Factor			1.00			1.09					1.00	
Incremental Delay, d2			1.4			3.9					5.8	
Delay (s)			19.7			24.6					20.0	
Level of Service			B			C					B	
Approach Delay (s)			19.7			24.6					20.0	
Approach LOS			B			C					B	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	31	330	14	25	11	20	39	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.97				0.67		
Flpb, ped/bikes		0.99				0.76		
Frt		0.99				0.92		
Flt Protected		1.00				0.98		
Satd. Flow (prot)		1729				758		
Flt Permitted		0.95				0.98		
Satd. Flow (perm)		1650				758		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	32	337	14	26	11	20	40	8
RTOR Reduction (vph)	0	4	0	0	0	7	0	0
Lane Group Flow (vph)	0	405	0	0	0	72	0	0
Confl. Peds. (#/hr)	213		122	137	101	213	75	122
Confl. Bikes (#/hr)			10	17				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		688				114		
v/s Ratio Prot								
v/s Ratio Perm		0.25				0.10		
v/c Ratio		0.59				0.63		
Uniform Delay, d1		13.5				24.0		
Progression Factor		1.00				1.00		
Incremental Delay, d2		3.7				23.8		
Delay (s)		17.2				47.8		
Level of Service		B				D		
Approach Delay (s)		17.2				47.8		
Approach LOS		B				D		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	1	2	0	0	0	0	12	16	10	7	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	4	1	3	0	0	0	0	16	21	13	9	0
Pedestrians		1			6			1			6	
Lane Width (ft)		12.0			0.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					380							
pX, platoon unblocked												
vC, conflicting volume	6			5			17	18	10	52	19	7
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	6			5			17	18	10	52	19	7
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	98	99	99	100
cM capacity (veh/h)	1607			1615			981	869	1071	905	868	1069

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	37	23
Volume Left	4	0	13
Volume Right	3	21	0
cSH	1607	974	889
Volume to Capacity	0.00	0.04	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	3.6	8.8	9.2
Lane LOS	A	A	A
Approach Delay (s)	3.6	8.8	9.2
Approach LOS		A	A

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	810	0	0	906	8	0	0	3	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	890	0	0	996	9	0	0	3	0	0	0
Pedestrians					4			8			13	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1247			648							
pX, platoon unblocked	0.90			0.95			0.92	0.92	0.95	0.92	0.92	0.90
vC, conflicting volume	1017			898			1396	1916	457	1465	1911	515
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	802			797			1043	1604	335	1118	1600	245
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	100	100	100
cM capacity (veh/h)	737			778			168	96	624	148	97	681

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	593	297	664	341	3
Volume Left	0	0	0	0	0
Volume Right	0	0	0	9	3
cSH	1700	1700	1700	1700	624
Volume to Capacity	0.35	0.17	0.39	0.20	0.01
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	10.8
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.8
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	848	946	100	0	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	883	985	104	0	34
Pedestrians					42	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					4	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		241	1290			
pX, platoon unblocked					0.89	
vC, conflicting volume	1132				1521	587
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1132				1346	587
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	92
cM capacity (veh/h)	592				123	437

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	442	442	657	433	34
Volume Left	0	0	0	0	0
Volume Right	0	0	0	104	34
cSH	1700	1700	1700	1700	437
Volume to Capacity	0.26	0.26	0.39	0.25	0.08
Queue Length 95th (ft)	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	13.9
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.9
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	NBL	NBT	NBR	NBR2	SBL2	SBL
Lane Configurations												
Volume (vph)	18	1	26	10	13	0	2	392	8	4	1	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0		4.0				
Lane Util. Factor		1.00				1.00		0.95				
Frpb, ped/bikes		0.98				1.00		1.00				
Flpb, ped/bikes		1.00				0.99		1.00				
Frt		0.91				1.00		1.00				
Flt Protected		0.98				0.95		1.00				
Satd. Flow (prot)		1624				1753		3519				
Flt Permitted		0.93				0.72		0.95				
Satd. Flow (perm)		1537				1324		3356				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	20	1	29	11	14	0	2	436	9	4	1	24
RTOR Reduction (vph)	0	8	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	53	0	0	0	14	0	450	0	0	0	0
Confl. Peds. (#/hr)	11		9		9		9		2			2
Confl. Bikes (#/hr)									5	5		
Turn Type	Perm				Perm		Perm					Perm
Protected Phases		4				4		2				
Permitted Phases	4				4		2					6
Actuated Green, G (s)		16.0				16.0		16.0				
Effective Green, g (s)		16.0				16.0		16.0				
Actuated g/C Ratio		0.27				0.27		0.27				
Clearance Time (s)		4.0				4.0		4.0				
Lane Grp Cap (vph)		410				353		895				
v/s Ratio Prot												
v/s Ratio Perm		c0.03				0.01		c0.13				
v/c Ratio		0.13				0.04		0.50				
Uniform Delay, d1		16.7				16.3		18.6				
Progression Factor		0.90				1.00		1.00				
Incremental Delay, d2		0.6				0.2		2.0				
Delay (s)		15.5				16.5		20.7				
Level of Service		B				B		C				
Approach Delay (s)		15.5				16.5		20.7				
Approach LOS		B				B		C				

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR	NWL2	NWL	NWR
Lane Configurations					
Volume (vph)	306	14	2	13	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	
Lane Util. Factor	0.95			1.00	
Frpb, ped/bikes	1.00			1.00	
Flpb, ped/bikes	1.00			1.00	
Frt	0.99			0.93	
Flt Protected	1.00			0.98	
Satd. Flow (prot)	3499			1690	
Flt Permitted	0.91			0.98	
Satd. Flow (perm)	3193			1690	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	340	16	2	14	18
RTOR Reduction (vph)	5	0	0	0	0
Lane Group Flow (vph)	376	0	0	34	0
Confl. Peds. (#/hr)		9			
Confl. Bikes (#/hr)		1			
Turn Type			Perm		
Protected Phases	6			8	
Permitted Phases			8		
Actuated Green, G (s)	16.0			16.0	
Effective Green, g (s)	16.0			16.0	
Actuated g/C Ratio	0.27			0.27	
Clearance Time (s)	4.0			4.0	
Lane Grp Cap (vph)	851			451	
v/s Ratio Prot					
v/s Ratio Perm	0.12			0.02	
v/c Ratio	0.44			0.08	
Uniform Delay, d1	18.3			16.5	
Progression Factor	1.00			1.00	
Incremental Delay, d2	1.7			0.3	
Delay (s)	19.9			16.8	
Level of Service	B			B	
Approach Delay (s)	19.9			16.8	
Approach LOS	B			B	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	176	22	435	169	22	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		0.99		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.99		0.96		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1753		3344		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1753		3344		1711	3421
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	180	22	444	172	22	300
RTOR Reduction (vph)	10	0	52	0	0	0
Lane Group Flow (vph)	192	0	564	0	22	300
Confl. Peds. (#/hr)		5		12	12	
Confl. Bikes (#/hr)		2		7		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	10.3		31.3		1.4	36.7
Effective Green, g (s)	10.3		31.3		1.4	36.7
Actuated g/C Ratio	0.19		0.57		0.03	0.67
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		3.0	2.0
Lane Grp Cap (vph)	328		1903		44	2283
v/s Ratio Prot	c0.11		c0.17		c0.01	0.09
v/s Ratio Perm						
v/c Ratio	0.59		0.30		0.50	0.13
Uniform Delay, d1	20.4		6.1		26.5	3.3
Progression Factor	1.00		0.30		1.00	1.00
Incremental Delay, d2	1.7		0.4		8.7	0.1
Delay (s)	22.1		2.2		35.1	3.5
Level of Service	C		A		D	A
Approach Delay (s)	22.1		2.2			5.6
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	368	346	602	429	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3363	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3363	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	376	353	614	438	40
RTOR Reduction (vph)	0	0	0	0	9	0
Lane Group Flow (vph)	0	376	353	614	469	0
Confl. Peds. (#/hr)						20
Confl. Bikes (#/hr)		3				4
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		18.9	18.9	31.0	26.1	
Effective Green, g (s)		18.9	18.9	31.0	26.1	
Actuated g/C Ratio		0.34	0.34	0.56	0.47	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		554	588	1862	1596	
v/s Ratio Prot		c0.23	0.21	c0.19	0.14	
v/s Ratio Perm						
v/c Ratio		0.68	0.60	0.33	0.29	
Uniform Delay, d1		15.5	14.9	6.4	8.8	
Progression Factor		1.00	1.26	0.76	0.84	
Incremental Delay, d2		3.3	1.6	0.4	0.5	
Delay (s)		18.8	20.4	5.3	7.9	
Level of Service		B	C	A	A	
Approach Delay (s)	18.8			10.8	7.9	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	0	27	101	0	244	0	693	251	178	637	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.98			0.94		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.91		1.00	0.85			0.96		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1661		1770	1546			3102		1652	3539	
Flt Permitted		0.46		0.85	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		773		1577	1546			3102		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	13	0	28	103	0	249	0	707	256	182	650	0
RTOR Reduction (vph)	0	24	0	0	218	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	17	0	103	31	0	0	939	0	182	650	0
Confl. Peds. (#/hr)	10					10			58	58		11
Confl. Bikes (#/hr)									10			15
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		13.9		13.9	13.9			66.1		15.0	86.1	
Effective Green, g (s)		13.9		13.9	13.9			66.1		15.0	86.1	
Actuated g/C Ratio		0.13		0.13	0.13			0.60		0.14	0.78	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		98		199	195			1864		225	2770	
v/s Ratio Prot					0.02			c0.30		c0.11	0.18	
v/s Ratio Perm		0.02		c0.07								
v/c Ratio		0.17		0.52	0.16			0.50		0.81	0.23	
Uniform Delay, d1		42.9		44.9	42.9			12.6		46.1	3.2	
Progression Factor		1.01		1.00	1.00			0.37		1.06	1.05	
Incremental Delay, d2		0.8		2.3	0.4			0.7		18.0	0.2	
Delay (s)		44.2		47.2	43.2			5.3		67.1	3.5	
Level of Service		D		D	D			A		E	A	
Approach Delay (s)		44.2			44.4			5.3			17.4	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	189	510	46	167	495	333	65	422	143	424	237	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.94		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3495		1711	3282		1711	3254		3319	3242	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3495		1711	3282		1711	3254		3319	3242	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	193	520	47	170	505	340	66	431	146	433	242	107
RTOR Reduction (vph)	0	7	0	0	111	0	0	29	0	0	41	0
Lane Group Flow (vph)	193	560	0	170	734	0	66	548	0	433	308	0
Confl. Peds. (#/hr)						22			31			5
Confl. Bikes (#/hr)												8
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.7	23.8		20.1	30.2		8.2	34.3		15.8	41.9	
Effective Green, g (s)	13.7	23.8		20.1	30.2		8.2	34.3		15.8	41.9	
Actuated g/C Ratio	0.12	0.22		0.18	0.27		0.07	0.31		0.14	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	220	756		313	901		128	1015		477	1235	
v/s Ratio Prot	c0.11	c0.16		0.10	c0.22		0.04	c0.17		c0.13	0.10	
v/s Ratio Perm												
v/c Ratio	0.88	0.74		0.54	0.81		0.52	0.54		0.91	0.25	
Uniform Delay, d1	47.3	40.2		40.8	37.3		49.0	31.3		46.4	23.3	
Progression Factor	1.00	1.00		0.80	0.71		0.95	0.95		0.96	0.92	
Incremental Delay, d2	30.0	3.9		1.6	4.8		3.5	2.1		20.5	0.5	
Delay (s)	77.3	44.1		34.0	31.4		49.8	31.9		65.0	22.0	
Level of Service	E	D		C	C		D	C		E	C	
Approach Delay (s)		52.6			31.9			33.7			45.8	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM Average Control Delay	40.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	2	17	17	8	27	37	576	6	21	450	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.95			0.93			1.00			0.99	
Flt Protected		0.97			0.98			1.00			1.00	
Satd. Flow (prot)		1694			1677			5057			5030	
Flt Permitted		0.80			0.93			0.88			0.90	
Satd. Flow (perm)		1390			1582			4484			4552	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	23	2	17	17	8	28	38	588	6	21	459	22
RTOR Reduction (vph)	0	16	0	0	26	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	26	0	0	27	0	0	632	0	0	501	0
Confl. Peds. (#/hr)	7		6	6		7	9		16	16		9
Confl. Bikes (#/hr)			1			2			4			4
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		6.5			6.5			97.5			97.5	
Effective Green, g (s)		6.5			6.5			97.5			97.5	
Actuated g/C Ratio		0.06			0.06			0.89			0.89	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		82			93			3974			4035	
v/s Ratio Prot												
v/s Ratio Perm		c0.02			0.02			c0.14			0.11	
v/c Ratio		0.32			0.29			0.16			0.12	
Uniform Delay, d1		49.6			49.5			0.8			0.8	
Progression Factor		1.00			1.00			1.00			0.44	
Incremental Delay, d2		2.2			1.7			0.1			0.1	
Delay (s)		51.8			51.2			0.9			0.4	
Level of Service		D			D			A			A	
Approach Delay (s)		51.8			51.2			0.9			0.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	178	119	15	92	23	62	356	20	21	368	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95			0.91			0.91	
Frpb, ped/bikes	1.00	0.99			1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.94			0.97			0.99			0.97	
Flt Protected	0.95	1.00			0.99			0.99			1.00	
Satd. Flow (prot)	1770	3290			3408			4994			4861	
Flt Permitted	0.66	1.00			0.91			0.81			0.91	
Satd. Flow (perm)	1233	3290			3136			4062			4427	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	207	196	131	16	101	25	68	391	22	23	404	116
RTOR Reduction (vph)	0	75	0	0	0	0	0	6	0	0	62	0
Lane Group Flow (vph)	207	252	0	0	142	0	0	475	0	0	481	0
Confl. Peds. (#/hr)			14	14		15	45		42	42		45
Confl. Bikes (#/hr)			11			6			17			9
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	34.5	34.5			34.5			37.5			37.5	
Effective Green, g (s)	34.5	34.5			34.5			37.5			37.5	
Actuated g/C Ratio	0.43	0.43			0.43			0.47			0.47	
Clearance Time (s)	3.0	3.0			3.0			5.0			5.0	
Lane Grp Cap (vph)	532	1419			1352			1904			2075	
v/s Ratio Prot		0.08										
v/s Ratio Perm	c0.17				0.05			c0.12			0.11	
v/c Ratio	0.39	0.18			0.11			0.25			0.23	
Uniform Delay, d1	15.5	14.0			13.6			12.8			12.7	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	2.1	0.3			0.2			0.3			0.3	
Delay (s)	17.7	14.3			13.7			13.1			12.9	
Level of Service	B	B			B			B			B	
Approach Delay (s)		15.6			13.7			13.1			12.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	21
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	23
RTOR Reduction (vph)	13
Lane Group Flow (vph)	10
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	34.5
Effective Green, g (s)	34.5
Actuated g/C Ratio	0.43
Clearance Time (s)	3.0
Lane Grp Cap (vph)	695
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.01
Uniform Delay, d1	13.0
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.1
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	300	34	43	283	130	55	250	53	204	239	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	11	11	11	11	11
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.97		1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1553	1770	4718		1652	3318		1711	3250	1447
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1553	1770	4718		1652	3318		1711	3250	1447
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	64	337	38	48	318	146	62	281	60	229	269	73
RTOR Reduction (vph)	0	0	26	0	76	0	0	18	0	0	0	54
Lane Group Flow (vph)	64	337	12	48	388	0	62	323	0	229	269	19
Confl. Peds. (#/hr)			3			50			5			34
Confl. Bikes (#/hr)			5			12			6			5
Parking (#/hr)											0	
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases			4									2
Actuated Green, G (s)	7.1	32.5	32.5	7.1	32.5		15.9	26.5		15.9	26.5	26.5
Effective Green, g (s)	7.1	32.5	32.5	7.1	32.5		15.9	26.5		15.9	26.5	26.5
Actuated g/C Ratio	0.07	0.32	0.32	0.07	0.32		0.16	0.26		0.16	0.26	0.26
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	126	1150	505	126	1533		263	879		272	861	383
v/s Ratio Prot	c0.04	c0.10		0.03	0.08		0.04	c0.10		c0.13	0.08	
v/s Ratio Perm			0.01									0.01
v/c Ratio	0.51	0.29	0.02	0.38	0.25		0.24	0.37		0.84	0.31	0.05
Uniform Delay, d1	44.8	25.2	23.0	44.4	24.8		36.7	29.9		40.8	29.4	27.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1	0.0	0.7	0.0		0.2	1.2		19.7	0.9	0.2
Delay (s)	45.9	25.2	23.0	45.1	24.9		36.9	31.1		60.5	30.4	27.6
Level of Service	D	C	C	D	C		D	C		E	C	C
Approach Delay (s)		28.1			26.8			32.0			42.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	76	44	80	79	135	131	1117	73	140	1270	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1763	1737			1809	1543	1770	5029		1770	5082	
Flt Permitted	0.56	1.00			0.77	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1042	1737			1430	1543	1770	5029		1770	5082	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	39	81	47	85	84	144	139	1188	78	149	1351	5
RTOR Reduction (vph)	0	36	0	0	0	119	0	6	0	0	0	0
Lane Group Flow (vph)	39	92	0	0	169	25	139	1260	0	149	1356	0
Confl. Peds. (#/hr)	6		14	14		6			16			12
Confl. Bikes (#/hr)			10			7			2			6
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	13.7	13.7			13.7	13.7	7.8	40.3		12.5	45.0	
Effective Green, g (s)	13.7	13.7			13.7	13.7	7.8	40.3		12.5	45.0	
Actuated g/C Ratio	0.17	0.17			0.17	0.17	0.10	0.50		0.16	0.56	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	178	297			245	264	173	2533		277	2859	
v/s Ratio Prot		0.05					c0.08	c0.25		0.08	c0.27	
v/s Ratio Perm	0.04				c0.12	0.02						
v/c Ratio	0.22	0.31			0.69	0.09	0.80	0.50		0.54	0.47	
Uniform Delay, d1	28.5	29.0			31.2	27.9	35.3	13.1		31.1	10.4	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2			6.3	0.1	21.8	0.7		1.0	0.6	
Delay (s)	28.8	29.2			37.5	28.0	57.2	13.8		32.1	11.0	
Level of Service	C	C			D	C	E	B		C	B	
Approach Delay (s)		29.1			33.1			18.1			13.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	275	700	163	29	654	162	158	174	30	123	180	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4910		1764	4896		1770	1811		1744	1632	
Flt Permitted	0.95	1.00		0.30	1.00		0.14	1.00		0.63	1.00	
Satd. Flow (perm)	1770	4910		566	4896		264	1811		1148	1632	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	286	729	170	30	681	169	165	181	31	128	188	390
RTOR Reduction (vph)	0	52	0	0	49	0	0	5	0	0	70	0
Lane Group Flow (vph)	286	847	0	30	801	0	165	207	0	128	508	0
Confl. Peds. (#/hr)			8	8		9	13		18	18		13
Confl. Bikes (#/hr)			2			4			18			13
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	20.6	49.8		25.2	25.2		41.2	41.2		24.2	24.2	
Effective Green, g (s)	20.6	49.8		25.2	25.2		41.2	41.2		24.2	24.2	
Actuated g/C Ratio	0.21	0.50		0.25	0.25		0.41	0.41		0.24	0.24	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	365	2445		143	1234		305	746		278	395	
v/s Ratio Prot	c0.16	0.17			c0.16		c0.07	0.11			c0.31	
v/s Ratio Perm				0.05			0.15			0.11		
v/c Ratio	0.78	0.35		0.21	0.65		0.54	0.28		0.46	1.28	
Uniform Delay, d1	37.6	15.2		29.5	33.4		22.3	19.5		32.3	37.9	
Progression Factor	1.00	1.00		1.13	1.10		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.5	0.1		0.7	1.1		2.0	0.9		5.4	146.2	
Delay (s)	48.1	15.3		34.0	38.0		24.2	20.4		37.7	184.1	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		23.2			37.9			22.1			157.6	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	57.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	21	18	25	19	22	14	598	21	18	560	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			1.00			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.96			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1734			1730			3500			3492	
Flt Permitted		0.88			0.89			0.94			0.93	
Satd. Flow (perm)		1562			1565			3292			3253	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	33	22	19	27	20	23	15	636	22	19	596	17
RTOR Reduction (vph)	0	17	0	0	21	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	57	0	0	49	0	0	672	0	0	632	0
Confl. Peds. (#/hr)	17		20	20					42	42		73
Confl. Bikes (#/hr)			4			1			35			39
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		6.6			6.6			64.4			64.4	
Effective Green, g (s)		6.6			6.6			64.4			64.4	
Actuated g/C Ratio		0.08			0.08			0.81			0.81	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		129			129			2650			2619	
v/s Ratio Prot												
v/s Ratio Perm		c0.04			0.03			c0.20			0.19	
v/c Ratio		0.44			0.38			3.67dl			0.24	
Uniform Delay, d1		34.9			34.8			1.9			1.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.9			0.7			0.2			0.2	
Delay (s)		35.8			35.4			2.1			2.1	
Level of Service		D			D			A			A	
Approach Delay (s)		35.8			35.4			2.1			2.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	211	35
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.94	0.94
Adj. Flow (vph)	224	37
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	258	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	64.4	
Effective Green, g (s)	64.4	
Actuated g/C Ratio	0.81	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1297	
v/s Ratio Prot	0.16	
v/s Ratio Perm		
v/c Ratio	0.20	
Uniform Delay, d1	1.8	
Progression Factor	1.00	
Incremental Delay, d2	0.3	
Delay (s)	2.2	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1	20	67	31	120	10	689	97	79	678	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.96			0.99		1.00	0.97	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.94		1.00	0.89			0.98		1.00	0.96	
Flt Protected		0.97		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1675		1681	1503			3434		1770	3317	
Flt Permitted		0.97		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1675		1681	1503			3239		1770	3317	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	23	1	20	68	32	122	10	703	99	81	692	213
RTOR Reduction (vph)	0	19	0	0	111	0	0	7	0	0	18	0
Lane Group Flow (vph)	0	25	0	61	50	0	0	805	0	81	887	0
Confl. Peds. (#/hr)						22	32		22			32
Confl. Bikes (#/hr)			5			4			14			31
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		4.3		8.8	8.8			61.0		7.9	73.4	
Effective Green, g (s)		4.3		8.8	8.8			61.0		7.9	73.4	
Actuated g/C Ratio		0.04		0.09	0.09			0.61		0.08	0.73	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		72		148	132			1976		140	2435	
v/s Ratio Prot		c0.01		c0.04	0.03					c0.05	0.27	
v/s Ratio Perm								c0.25				
v/c Ratio		0.35		0.41	0.38			0.41		0.58	0.36	
Uniform Delay, d1		46.5		43.2	43.0			10.1		44.4	4.8	
Progression Factor		1.00		1.00	1.00			0.59		1.00	1.00	
Incremental Delay, d2		1.1		0.7	0.7			0.5		3.6	0.4	
Delay (s)		47.5		43.8	43.7			6.5		48.0	5.3	
Level of Service		D		D	D			A		D	A	
Approach Delay (s)		47.5			43.7			6.5			8.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	259	454	86	101	413	150	87	386	129	250	453	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.96		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3420		1770	3255		1770	3344		1770	3465	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3420		1770	3255		1770	3344		1770	3465	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	267	468	89	104	426	155	90	398	133	258	467	64
RTOR Reduction (vph)	0	17	0	0	39	0	0	30	0	0	10	0
Lane Group Flow (vph)	267	540	0	104	542	0	90	501	0	258	521	0
Confl. Peds. (#/hr)			30			99			40			
Confl. Bikes (#/hr)			12			16			15			24
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	24.1		8.1	21.2		5.0	38.8		12.0	45.8	
Effective Green, g (s)	11.0	24.1		8.1	21.2		5.0	38.8		12.0	45.8	
Actuated g/C Ratio	0.11	0.24		0.08	0.21		0.05	0.39		0.12	0.46	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	378	824		143	690		89	1297		212	1587	
v/s Ratio Prot	c0.08	c0.16		0.06	c0.17		0.05	c0.15		c0.15	0.15	
v/s Ratio Perm												
v/c Ratio	0.71	0.66		0.73	0.78		1.01	0.39		1.22	0.33	
Uniform Delay, d1	42.9	34.2		44.9	37.2		47.5	22.0		44.0	17.3	
Progression Factor	0.88	1.24		1.00	1.00		1.00	1.00		1.15	0.76	
Incremental Delay, d2	4.7	1.4		14.4	5.4		98.5	0.9		131.5	0.5	
Delay (s)	42.6	43.9		59.3	42.7		146.0	22.9		182.1	13.7	
Level of Service	D	D		E	D		F	C		F	B	
Approach Delay (s)		43.5			45.2			40.7			68.8	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	730	33	17	686	25	28	27	25	35	32	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.99			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1767	3512		1768	3517			1725			1745	
Flt Permitted	0.34	1.00		0.32	1.00			0.90			0.88	
Satd. Flow (perm)	633	3512		588	3517			1579			1567	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	32	753	34	18	707	26	29	28	26	36	33	20
RTOR Reduction (vph)	0	4	0	0	3	0	0	18	0	0	13	0
Lane Group Flow (vph)	32	783	0	18	730	0	0	65	0	0	76	0
Confl. Peds. (#/hr)	5		3	3		5	4		20	20		4
Confl. Bikes (#/hr)			4			10			23			26
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	359	1994		334	1997			487			484	
v/s Ratio Prot		c0.22			0.21							
v/s Ratio Perm	0.05			0.03				0.04			c0.05	
v/c Ratio	0.09	0.39		0.05	0.37			0.13			0.16	
Uniform Delay, d1	8.0	9.7		7.8	9.5			20.2			20.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.5	0.6		0.3	0.5			0.6			0.7	
Delay (s)	8.5	10.3		8.1	10.1			20.8			21.0	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		10.2			10.0			20.8			21.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	406	630	44	16	571	209	45	64	4	345	72	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00			1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	1.00
Frt	1.00	0.99		1.00	0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.96	1.00
Satd. Flow (prot)	3204	3486		1711	3259			1796			1774	1448
Flt Permitted	0.95	1.00		0.95	1.00			0.63			0.68	1.00
Satd. Flow (perm)	3204	3486		1711	3259			1161			1264	1448
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	414	643	45	16	583	213	46	65	4	352	73	386
RTOR Reduction (vph)	0	4	0	0	34	0	0	1	0	0	0	245
Lane Group Flow (vph)	414	684	0	16	762	0	0	114	0	0	425	141
Confl. Peds. (#/hr)			18			10	61		11	11		60
Confl. Bikes (#/hr)			7			6			11			12
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	19.4	55.3		2.4	38.3			40.3			40.3	40.3
Effective Green, g (s)	19.4	55.3		2.4	38.3			40.3			40.3	40.3
Actuated g/C Ratio	0.18	0.50		0.02	0.35			0.37			0.37	0.37
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	565	1753		37	1135			425			463	530
v/s Ratio Prot	c0.13	0.20		0.01	c0.23							
v/s Ratio Perm								0.10			c0.34	0.10
v/c Ratio	0.73	0.39		0.43	0.67			0.27			0.92	0.27
Uniform Delay, d1	42.8	16.9		53.1	30.5			24.5			33.3	24.5
Progression Factor	0.66	0.23		1.07	1.03			1.00			1.00	1.00
Incremental Delay, d2	3.5	0.5		6.7	2.7			0.3			23.0	0.3
Delay (s)	31.7	4.4		63.3	34.0			24.8			56.2	24.7
Level of Service	C	A		E	C			C			E	C
Approach Delay (s)		14.6			34.6			24.8			41.2	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	927	33	20	831	5	13	0	17	3	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	16	966	34	21	866	5	14	0	18	3	0	6
Pedestrians		9			3			10			6	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	877			1010			1514	1943	513	1451	1957	450
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	877			836			1384	1850	296	1315	1866	450
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			85	100	97	97	100	99
cM capacity (veh/h)	762			724			88	63	637	98	62	549

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	498	517	454	438	31	9
Volume Left	16	0	21	0	14	3
Volume Right	0	34	0	5	18	6
cSH	762	1700	724	1700	172	216
Volume to Capacity	0.02	0.30	0.03	0.26	0.18	0.04
Queue Length 95th (ft)	2	0	2	0	16	3
Control Delay (s)	0.6	0.0	0.8	0.0	30.6	22.4
Lane LOS	A		A		D	C
Approach Delay (s)	0.3		0.4		30.6	22.4
Approach LOS					D	C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	875	70	21	789	7	46	0	48	0	1	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	921	74	22	831	7	48	0	51	0	1	20
Pedestrians		2			2			12			12	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.93			0.96			0.95	0.95	0.96	0.95	0.95	0.93
vC, conflicting volume	850			1007			1458	1870	511	1410	1903	433
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	679			930			1191	1627	415	1140	1662	229
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			61	100	91	100	99	97
cM capacity (veh/h)	834			697			123	90	558	127	86	708

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	464	534	437	423	99	21
Volume Left	3	0	22	0	48	0
Volume Right	0	74	0	7	51	20
cSH	834	1700	697	1700	204	520
Volume to Capacity	0.00	0.31	0.03	0.25	0.48	0.04
Queue Length 95th (ft)	0	0	2	0	60	3
Control Delay (s)	0.1	0.0	0.9	0.0	38.1	12.2
Lane LOS	A		A		E	B
Approach Delay (s)	0.1		0.5		38.1	12.2
Approach LOS					E	B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	639	235	160	541	54	213	75	139	52	62	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.99			0.96			0.95	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3344			3450			1926			1716	
Flt Permitted		0.84			0.56			0.76			0.84	
Satd. Flow (perm)		2813			1944			1509			1456	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	60	659	242	165	558	56	220	77	143	54	64	66
RTOR Reduction (vph)	0	60	0	0	10	0	0	31	0	0	37	0
Lane Group Flow (vph)	0	901	0	0	769	0	0	409	0	0	147	0
Confl. Peds. (#/hr)	21		16			21	34		25	25		34
Confl. Bikes (#/hr)			7			3			3			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		793			1156			521			503	
v/s Ratio Prot					c0.10							
v/s Ratio Perm		c0.32			0.22			c0.27			0.10	
v/c Ratio		1.14			0.66			0.78			0.29	
Uniform Delay, d1		19.8			10.9			16.2			13.1	
Progression Factor		1.26			1.00			1.00			1.00	
Incremental Delay, d2		75.0			3.0			11.3			1.5	
Delay (s)		99.8			13.9			27.4			14.6	
Level of Service		F			B			C			B	
Approach Delay (s)		99.8			13.9			27.4			14.6	
Approach LOS		F			B			C			B	

Intersection Summary			
HCM Average Control Delay	51.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	151	58	59	310	278	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.94		1.00	1.00	1.00	0.70
Flpb, ped/bikes	1.00		0.82	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1631		1457	1863	1863	1109
Flt Permitted	0.97		0.53	1.00	1.00	1.00
Satd. Flow (perm)	1631		806	1863	1863	1109
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	164	63	64	337	302	115
RTOR Reduction (vph)	25	0	0	0	0	56
Lane Group Flow (vph)	202	0	64	337	302	59
Confl. Peds. (#/hr)	84	142	286			286
Confl. Bikes (#/hr)		7				8
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	623		410	948	948	565
v/s Ratio Prot	c0.12			c0.18	0.16	
v/s Ratio Perm			0.08			0.05
v/c Ratio	0.32		0.16	0.36	0.32	0.10
Uniform Delay, d1	12.0		7.2	8.1	7.9	7.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4		0.8	1.0	0.9	0.4
Delay (s)	13.4		8.0	9.1	8.8	7.4
Level of Service	B		A	A	A	A
Approach Delay (s)	13.4			9.0	8.4	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	299	507	401	22	13	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.87	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3512		1592	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3512		1592	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	315	534	422	23	14	271
RTOR Reduction (vph)	0	0	6	0	188	0
Lane Group Flow (vph)	315	534	439	0	97	0
Confl. Peds. (#/hr)					3	
Confl. Bikes (#/hr)						8
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	823		485	
v/s Ratio Prot	c0.18	0.15	c0.12		c0.06	
v/s Ratio Perm						
v/c Ratio	0.57	0.25	0.53		0.20	
Uniform Delay, d1	18.4	6.2	21.4		16.5	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	4.2	0.3	2.5		0.9	
Delay (s)	22.6	6.5	23.9		17.4	
Level of Service	C	A	C		B	
Approach Delay (s)		12.5	23.9		17.4	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	9	40	334	15	48	438
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.97		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.89		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1599		1850		1770	1863
Flt Permitted	0.99		1.00		0.95	1.00
Satd. Flow (perm)	1599		1850		1770	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	42	352	16	51	461
RTOR Reduction (vph)	39	0	3	0	0	0
Lane Group Flow (vph)	12	0	365	0	51	461
Confl. Peds. (#/hr)		4				
Confl. Bikes (#/hr)				3		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	1.6		10.0		1.4	15.4
Effective Green, g (s)	1.6		10.0		1.4	15.4
Actuated g/C Ratio	0.06		0.38		0.05	0.59
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	98		712		95	1103
v/s Ratio Prot	c0.01		0.20		0.03	c0.25
v/s Ratio Perm						
v/c Ratio	0.12		0.51		0.54	0.42
Uniform Delay, d1	11.5		6.1		12.0	2.9
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.5		0.6		5.7	0.3
Delay (s)	12.1		6.8		17.7	3.1
Level of Service	B		A		B	A
Approach Delay (s)	12.1		6.8			4.6
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	26.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	4	14	8	5	8	6	18	27	4	23	292	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.99			0.98					1.00	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.98			0.90					1.00	
Flt Protected			0.97			0.99					1.00	
Satd. Flow (prot)			1549			1444					1636	
Flt Permitted			0.87			0.97					0.95	
Satd. Flow (perm)			1381			1411					1552	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	15	9	5	9	6	19	29	4	25	314	5
RTOR Reduction (vph)	0	0	4	0	0	22	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	29	0	0	41	0	0	0	0	347	0
Confl. Peds. (#/hr)				29				1				82
Confl. Bikes (#/hr)				3								2
Parking (#/hr)			3			3					3	
Turn Type		Perm			Perm					Perm		
Protected Phases			1			1					2	
Permitted Phases		1			1					2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			322			329					647	
v/s Ratio Prot												
v/s Ratio Perm			0.02			c0.03					0.22	
v/c Ratio			0.09			0.12					0.54	
Uniform Delay, d1			18.0			18.2					13.2	
Progression Factor			1.00			1.06					1.00	
Incremental Delay, d2			0.6			0.8					3.2	
Delay (s)			18.6			20.0					16.3	
Level of Service			B			C					B	
Approach Delay (s)			18.6			20.0					16.3	
Approach LOS			B			C					B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	37	356	20	33	7	25	33	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.98				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.98				0.91		
Flt Protected		1.00				0.99		
Satd. Flow (prot)		1760				1471		
Flt Permitted		0.95				0.99		
Satd. Flow (perm)		1682				1471		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	383	22	35	8	27	35	47
RTOR Reduction (vph)	0	5	0	0	0	40	0	0
Lane Group Flow (vph)	0	475	0	0	0	77	0	0
Confl. Peds. (#/hr)			58	80				
Confl. Bikes (#/hr)			2	2				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		701				221		
v/s Ratio Prot								
v/s Ratio Perm		c0.28				0.05		
v/c Ratio		0.68				0.35		
Uniform Delay, d1		14.2				22.9		
Progression Factor		1.00				1.00		
Incremental Delay, d2		5.2				4.3		
Delay (s)		19.4				27.2		
Level of Service		B				C		
Approach Delay (s)		19.4				27.2		
Approach LOS		B				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	3	7	0	0	0	0	9	7	10	16	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	0	4	10	0	0	0	0	13	10	15	24	0
Pedestrians					3						4	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					380							
pX, platoon unblocked												
vC, conflicting volume	4			15			21	14	13	33	19	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			15			21	14	13	33	19	4
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	98	97	100
cM capacity (veh/h)	1612			1603			968	878	1068	947	872	1076

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	15	24	38
Volume Left	0	0	15
Volume Right	10	10	0
cSH	1612	952	900
Volume to Capacity	0.00	0.02	0.04
Queue Length 95th (ft)	0	2	3
Control Delay (s)	0.0	8.9	9.2
Lane LOS		A	A
Approach Delay (s)	0.0	8.9	9.2
Approach LOS		A	A

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	775	4	0	675	12	0	0	2	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	871	4	0	758	13	0	0	2	0	0	0
Pedestrians					1			12				
Lane Width (ft)					12.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1247			648							
pX, platoon unblocked				0.97			0.97	0.97	0.97	0.97	0.97	
vC, conflicting volume	772			887			1264	1657	451	1204	1652	386
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	772			827			1215	1619	378	1153	1614	386
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	839			770			131	98	596	146	99	612

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	581	295	506	266	2
Volume Left	0	0	0	0	0
Volume Right	0	4	0	13	2
cSH	1700	1700	1700	1700	596
Volume to Capacity	0.34	0.17	0.30	0.16	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	11.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.1
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	975	743	107	0	54
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1060	808	116	0	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		241	1290			
pX, platoon unblocked					0.88	
vC, conflicting volume	924				1396	462
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	924				1185	462
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	89
cM capacity (veh/h)	735				161	547

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	530	530	538	386	59
Volume Left	0	0	0	0	0
Volume Right	0	0	0	116	59
cSH	1700	1700	1700	1700	547
Volume to Capacity	0.31	0.31	0.32	0.23	0.11
Queue Length 95th (ft)	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	12.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.4
Approach LOS					B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	446	570	72	105	391	209	95	533	126	291	570	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3454		1770	3297		1770	3376		1770	3466	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3454		1770	3297		1770	3376		1770	3466	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	455	582	73	107	399	213	97	544	129	297	582	56
RTOR Reduction (vph)	0	10	0	0	72	0	0	20	0	0	6	0
Lane Group Flow (vph)	455	645	0	107	540	0	97	653	0	297	632	0
Confl. Peds. (#/hr)			35			18			43			42
Confl. Bikes (#/hr)			9			12			41			42
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	14.5	25.4		8.7	19.6		7.3	34.4		14.5	41.6	
Effective Green, g (s)	14.5	25.4		8.7	19.6		7.3	34.4		14.5	41.6	
Actuated g/C Ratio	0.14	0.25		0.09	0.20		0.07	0.34		0.14	0.42	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	498	877		154	646		129	1161		257	1442	
v/s Ratio Prot	c0.13	0.19		0.06	c0.16		0.05	c0.19		c0.17	0.18	
v/s Ratio Perm												
v/c Ratio	0.91	0.74		0.69	0.84		0.75	0.56		1.16	0.44	
Uniform Delay, d1	42.1	34.2		44.4	38.6		45.5	26.7		42.8	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.15	0.74	
Incremental Delay, d2	20.9	2.8		10.4	8.8		19.5	2.0		103.2	0.9	
Delay (s)	63.0	37.0		54.8	47.4		64.9	28.7		152.5	16.3	
Level of Service	E	D		D	D		E	C		F	B	
Approach Delay (s)		47.7			48.5			33.2			59.5	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM Average Control Delay	47.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	931	222	116	546	40	208	29	169	41	31	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.98			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.97			0.99			0.94			0.96	
Flt Protected		1.00			0.99			0.98			0.98	
Satd. Flow (prot)		3411			3472			1882			1715	
Flt Permitted		0.89			0.56			0.80			0.79	
Satd. Flow (perm)		3048			1973			1535			1388	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	1012	241	126	593	43	226	32	184	45	34	38
RTOR Reduction (vph)	0	18	0	0	6	0	0	37	0	0	25	0
Lane Group Flow (vph)	0	1286	0	0	756	0	0	405	0	0	92	0
Confl. Peds. (#/hr)	16		7			16	24		33	33		24
Confl. Bikes (#/hr)			9			2			3			5
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		40.8			40.8			19.7			19.7	
Effective Green, g (s)		40.8			40.8			19.7			19.7	
Actuated g/C Ratio		0.58			0.58			0.28			0.28	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1777			1150			432			391	
v/s Ratio Prot												
v/s Ratio Perm		c0.42			0.38			c0.26			0.07	
v/c Ratio		0.72			0.66			0.94			0.23	
Uniform Delay, d1		10.5			9.9			24.6			19.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.6			1.4			28.0			0.3	
Delay (s)		13.1			11.2			52.6			19.7	
Level of Service		B			B			D			B	
Approach Delay (s)		13.1			11.2			52.6			19.7	
Approach LOS		B			B			D			B	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	99.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	275	700	163	29	654	162	158	174	30	123	180	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4910		1764	4896		1770	1811		1744	1635	
Flt Permitted	0.95	1.00		0.30	1.00		0.12	1.00		0.63	1.00	
Satd. Flow (perm)	1770	4910		566	4896		216	1811		1148	1635	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	286	729	170	30	681	169	165	181	31	128	188	390
RTOR Reduction (vph)	0	46	0	0	49	0	0	5	0	0	74	0
Lane Group Flow (vph)	286	853	0	30	801	0	165	207	0	128	504	0
Confl. Peds. (#/hr)			8	8		9	13		18	18		13
Confl. Bikes (#/hr)			2			4			18			13
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	15.0	44.2		25.2	25.2		46.8	46.8		30.5	30.5	
Effective Green, g (s)	15.0	44.2		25.2	25.2		46.8	46.8		30.5	30.5	
Actuated g/C Ratio	0.15	0.44		0.25	0.25		0.47	0.47		0.30	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	266	2170		143	1234		292	848		350	499	
v/s Ratio Prot	c0.16	0.17			c0.16		c0.07	0.11			c0.31	
v/s Ratio Perm				0.05			0.19			0.11		
v/c Ratio	1.08	0.39		0.21	0.65		0.57	0.24		0.37	1.01	
Uniform Delay, d1	42.5	18.8		29.5	33.4		20.7	16.0		27.2	34.8	
Progression Factor	1.00	1.00		0.96	0.99		1.00	1.00		1.00	1.00	
Incremental Delay, d2	76.6	0.1		0.7	1.1		2.5	0.7		2.9	42.6	
Delay (s)	119.1	19.0		29.1	34.2		23.2	16.7		30.1	77.4	
Level of Service	F	B		C	C		C	B		C	E	
Approach Delay (s)		43.1			34.0			19.5			68.8	
Approach LOS		D			C			B			E	

Intersection Summary			
HCM Average Control Delay	43.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	639	235	160	541	54	213	75	139	52	62	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.99			0.96			0.95	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3347			3450			1926			1716	
Flt Permitted		0.86			0.58			0.76			0.84	
Satd. Flow (perm)		2875			2018			1509			1456	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	60	659	242	165	558	56	220	77	143	54	64	66
RTOR Reduction (vph)	0	44	0	0	10	0	0	31	0	0	37	0
Lane Group Flow (vph)	0	917	0	0	769	0	0	409	0	0	147	0
Confl. Peds. (#/hr)	21		16			21	34		25	25		34
Confl. Bikes (#/hr)			7			3			3			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		26.5			26.5			19.0			19.0	
Effective Green, g (s)		26.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.48			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1385			972			521			503	
v/s Ratio Prot												
v/s Ratio Perm		0.32			c0.38			c0.27			0.10	
v/c Ratio		0.66			0.79			0.78			0.29	
Uniform Delay, d1		10.8			11.9			16.2			13.1	
Progression Factor		0.80			1.00			1.00			1.00	
Incremental Delay, d2		2.2			4.5			11.3			1.5	
Delay (s)		10.9			16.4			27.4			14.6	
Level of Service		B			B			C			B	
Approach Delay (s)		10.9			16.4			27.4			14.6	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Appendix I

ACTC Model Land Use Modifications

FEHR & PEERS

FEHR & PEERS
TRANSPORTATION CONSULTANTS

MEMORANDUM

Date: June 15, 2010

To: Peterson Vollman, City of Oakland
Darin Ranelletti, City of Oakland

From: Sam Tabibnia and Ellen Robinson

Subject: ***Safeway on College Avenue and 51st and Broadway Center – ACCMA Travel Demand Model Land Use Assumptions***

WC07-2483 & WC10-2728

This memorandum summarizes Fehr & Peers' approach in developing land use assumptions for forecasting future traffic volumes in preparing the EIRs for the Safeway on College Avenue and 51st and Broadway Center projects. Previously, we used a similar methodology for the Alta Bates Summit Medical Center, Summit Campus Master Plan EIR. We have reviewed the land use database in the most recent Alameda County Congestion Management Authority's (ACCMA) Travel Demand Model, which was released in February 2009. The land use database is based on the Association of Bay Area Governments' *Projections 2007*. Our review methodology and recommendations for modifying the land use database are summarized below.

MODEL LAND USE REVIEW

The land use assumptions as modified for the Alta Bates Summit Medical Center Summit Campus Seismic Upgrade and Master Plan Project EIR were the starting point for development of land use assumptions for the EIRs for the Safeway on College Avenue and 51st Street and Broadway Center projects. The changes made from the original land uses for the Summit Campus project were documented in a memorandum by Fehr & Peers dated May 7, 2009 (see Appendix A).

Consistent with the methodology for the Summit Campus land use adjustments, Fehr & Peers reviewed the model land uses in the project area. The number and growth of households and employment by type in the project area from the year 2005 to 2035 are summarized in Table 1. The transportation analysis zones (TAZs) included in the project area are shown on Figure 1.

Fehr and Peers compared the projected growth in households and employment in each project-area TAZ to the development included in the City's Active Major Projects list. The most recent version of the Active Major Projects list, dated October – November 2009, was used for this comparison. The project square footage measurements from the list were converted to employment numbers by assuming one employee per 500 square feet for retail space and one employee per 300 square feet of office (service) space.

The Active Major Projects list identified pending, planned, proposed and recently completed development of households, retail employment and service employment in the project area. The total growth of these development types in the model and the Active Major Projects list are compared in Table 2.

FEHR & PEERS
TRANSPORTATION CONSULTANTS

TABLE 1
ACCMA TRAVEL DEMAND MODEL
PROJECT VICINITY AREA[1] LAND USE GROWTH ASSUMPTIONS

Land Use Variable	2005	2035	2005 – 2035 Growth
Households (HH)	25,505	29,363	3,858
Agricultural Employment (AFM)	52	82	30
Manufacturing Employment (MFG)	1,347	1,607	260
Retail Employment (RET)	4,270	5,885	1,615
Service Employment (SVC)	13,823	20,486	6,663
Trade Employment (TRD)	793	926	133
Other Employment (OTH)	2,972	3,513	541
Total Employment	23,257	32,500	9,243

1. See Figure 1 for a map of the project vicinity area.
Source: ACCMA model as summarized by Fehr & Peers, 2010

TABLE 2
PROJECT VICINITY AREA[1] LAND USE GROWTH COMPARISON

Land Use Variable	ACCMA Model 2005-2035 [2]	Pending, Planned, Proposed and Completed Projects [3]	Difference
Households (HH)	3,858	1,325	2,533
Retail Employment (RET)	1,615	319	1,296
Service Employment (SVC)	6,663	2,191	4,472

1. See Figure 1 for a map of the project vicinity area.
2. Latest ACCMA model based on ABAG *Projection 2009*.
3. Includes projects from City of Oakland's Active Major Projects list, October – November 2009, and proposed Safeway projects

As shown in Table 2, the 2035 model assumes more total development in the project area than is identified in the Active Major Projects list. However, the model land use growth for many individual TAZs was not high enough to include specific projects in the Active Major Projects list. In these cases, Fehr & Peers shifted development growth to the project TAZ from other TAZs in the study area. In this way, the model land uses are modified to better match foreseeable development, while maintain the overall household and employment growth in the model. Appendix A documents the changes in 2035 land use assumptions by TAZ, and the resulting recommended modifications to 2035 model land uses.

Several development projects have been completed in the project area since 2005. Because the 2005 model will be used to represent existing traffic volumes for the purposes of forecasting traffic growth, projects identified as recently completed on the Active Major Projects list were added to the 2005 model land use assumptions. Appendix B documents the changes in 2005 land use assumptions by TAZ, and the resulting recommended modifications to 2005 model land uses.

Please contact us with questions or comments.

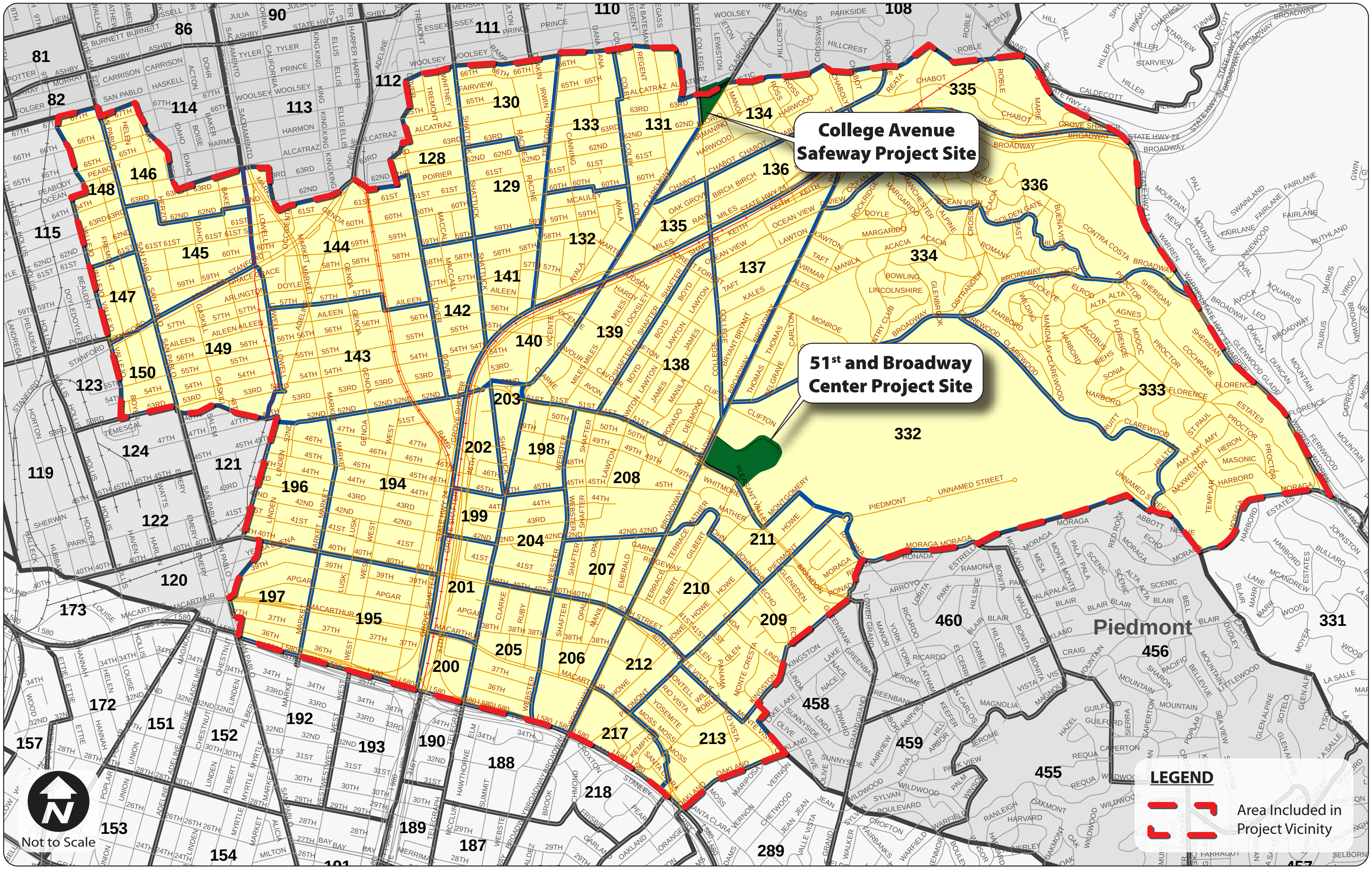
Attachments:

Figure 1 – Project Area TAZ Map

Appendix A – ABSMC Summit Campus Master Plan EIR – ACCMA Travel Demand Model Land Use Assumptions Memorandum

Appendix B – Adjustments to 2035 Model Land Use Assumptions

Appendix C – Adjustments to 2005 Model Land Use Assumptions



Safeway on College Avenue and 51st and Broadway Center

FEHR & PEERS
TRANSPORTATION CONSULTANTS

June 2010
WC07-2483_1_Taz

PROJECT AREA TAZ MAP

FIGURE 1

APPENDIX A

FINAL MEMORANDUM

Date: May 7, 2009

To: Scott Gregory, Lamphier-Gregory

From: Sam Tabibnia and Ellen Robinson

Subject: ***Alta Bates Summit Medical Center Summit Campus Master Plan EIR – ACCMA Travel Demand Model Land Use Assumptions***

WC08-2611

This memorandum summarizes Fehr & Peers proposed approach to developing land use assumptions for forecasting future traffic volumes. We have reviewed the land use database in the most recent Alameda County Congestion Management Authority's (ACCMA) Travel Demand Model, which was released in February 2009. The land use database is based on the Association of Bay Area Governments' *Projections 2007*. Our review methodology and recommendations for modifying the land use database are summarized below.

MODEL LAND USE REVIEW

The number of households and employment by type for City of Oakland assumed in the ACCMA model under 2005 and 2035 conditions are summarized in Table 1. The ACCMA model represents potential trip origins and destinations with transportation analysis zones, or TAZs. Each TAZ represents an area of several blocks, and is assigned land use characteristics, including the number of households and the number of jobs of varied types (agricultural, manufacturing, retail, service, trade and other) in the zone. Since the ACCMA model is a regional forecasting model, the distribution of future developments may not be very accurate at the TAZ level.

TABLE 1
ACCMA TRAVEL DEMAND MODEL
CITYWIDE LAND USE GROWTH ASSUMPTIONS

Land Use Variable	2005	2035	2005 – 2035 Growth
Households (HH)	154,570	207,249	52,679
Agricultural Employment (AFM)	289	383	94
Manufacturing Employment (MFG)	16,952	29,667	12,716
Retail Employment (RET)	24,161	40,753	16,592
Service Employment (SVC)	84,947	131,689	46,742
Trade Employment (TRD)	6,910	6,982	72
Other Employment (OTH)	68,457	75,702	7,245
Total Employment	201,715	285,176	83,461

Source: ACCMA model as summarized by Fehr & Peers, 2009

The land uses in the area surrounding the Alta Bates Summit Medical Center would most affect traffic patterns at the study intersections. Thus, we have reviewed in detail the land use growth assumptions for TAZs in the project vicinity area as presented on Figure 1. Fehr & Peers reviewed the years 2005 and 2035 model land use assumptions for the TAZs in the project vicinity area, and calculated the household and employment growth projected for each zone. Table 2 summarizes the growth in number of households and employment types in the project vicinity area.

TABLE 2
ACCMA TRAVEL DEMAND MODEL
PROJECT VICINITY AREA[1] LAND USE GROWTH ASSUMPTIONS

Land Use Variable	2005	2035	2005 – 2035 Growth
Households (HH)	35,669	51,314	15,647
Agricultural Employment (AFM)	0	0	0
Manufacturing Employment (MFG)	2,226	4,133	1,906
Retail Employment (RET)	5,867	10,275	4,410
Service Employment (SVC)	31,361	49,631	18,271
Trade Employment (TRD)	1,223	1,290	64
Other Employment (OTH)	17,062	18,645	1,585
Total Employment	57,739	83,973	26,235

1. See Figure 1 for a map of the project vicinity area.
Source: ACCMA model as summarized by Fehr & Peers, 2009

The land use growth assumptions in the project vicinity area were compared to planned, approved and pending projects, including those listed on the City of Oakland's Active Major Development Projects matrix (updated in November 2008), as well as the Summit Campus project and the Upper Broadway Retail Specific Plan. Appendix A presents the number of households and the number of retail and service jobs by TAZ in the project vicinity area. Appendix A also compares the land use growth assumed in the model with the expected land use growth. Since the model land use is based on employment numbers and information regarding specific development projects available in square footages, the project square footage measurements were converted to employment numbers by assuming one employee per 500 square feet for retail space and one employee per 300 square feet of office (service) space. Only service and retail employment were included in the comparison, as these employment types are the majority of employment growth in the project vicinity area, as shown in Table 2.

In addition to the project vicinity area, the model land use database was checked to assure that the following major projects in other parts of Oakland were also accounted for: Oak to Ninth Mixed Use Project, Wood Street Mixed Use Project and Jack London Square Redevelopment Project

As shown in Appendix A, the model land use assumptions for individual TAZs do not match the growth expected from pending, planned, and proposed projects. Table 3 compares the overall growth in the project vicinity areas as assumed in the model with the growth from pending, planned, and proposed projects. Overall, the model assumes more household, and retail and service employment growth in the project vicinity areas than is expected from pending, planned, and proposed projects, though growth in several individual TAZs is lower than expected. Note

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that this comparison does not account for existing uses that are currently occupied by most of the pending, planned, and proposed projects. Although these existing uses would be eliminated, this comparison does not account for it to present a more conservative analysis.

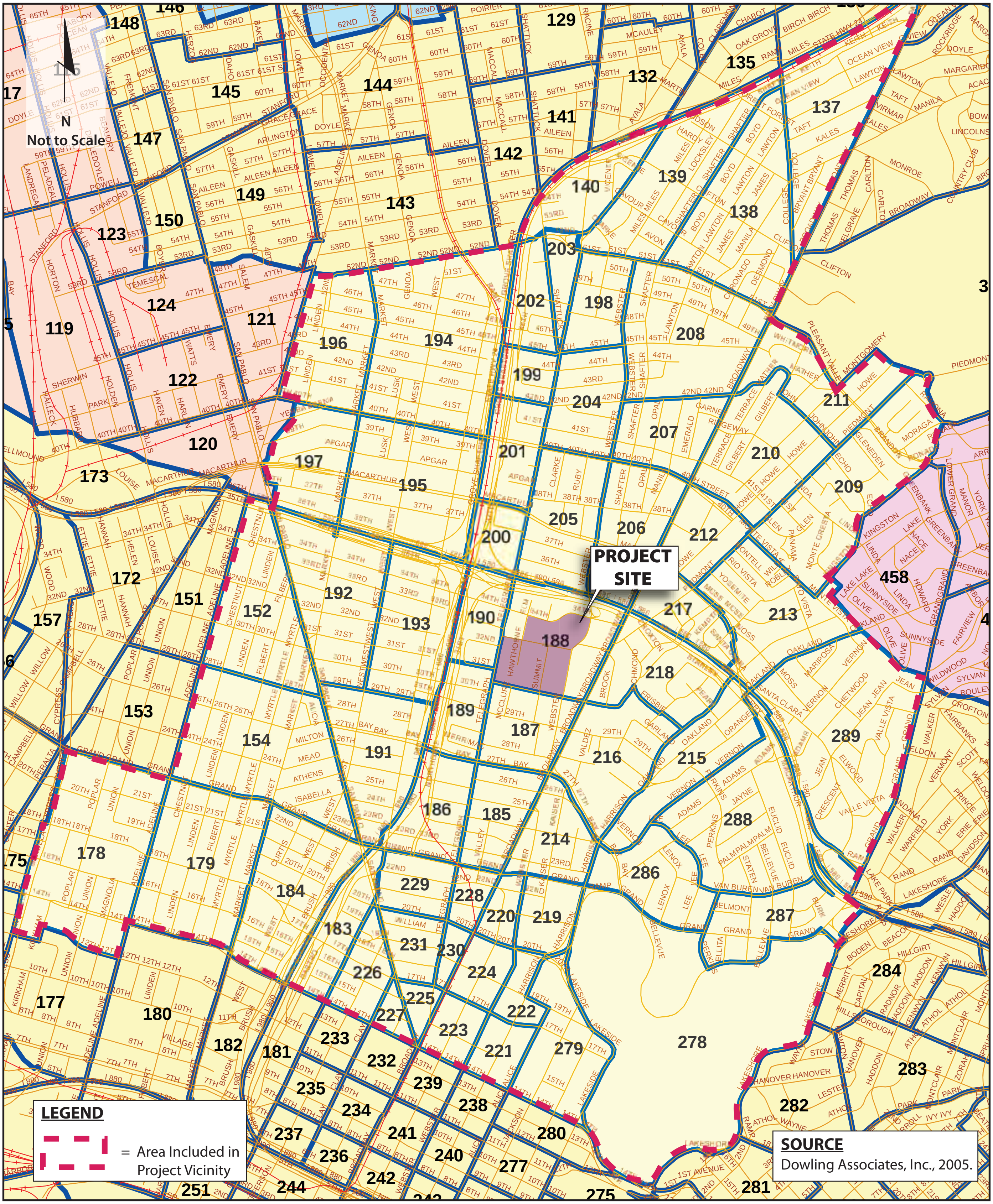
TABLE 3
PROJECT VICINITY AREA[1] LAND USE GROWTH COMPARISON

Land Use Variable	ACCMA Model 2005-2035 [2]	Pending, Planned, and Proposed Projects [2]	Difference
Households (HH)	15,647	9,187	6,460
Retail Employment (RET)	4,410	4,066	344
Service Employment (SVC)	18,271	10,818	7,453

1. See Figure 1 for a map of the project vicinity area.
2. Latest ACCMA model based on ABAG *Projection 2009*.

RECOMMENDED MODIFICATIONS

Appendix A presents our recommended modifications to the land uses in TAZs in the project vicinity area based on the growth expected from pending, planned, and proposed projects. For household and retail and service employment growth in TAZs where pending, planned, and proposed projects include more growth than is assumed in the TAZ, we recommend increasing the corresponding land uses and then reducing the land use growth in the rest of the TAZs in the project vicinity area so that the overall growth in number of households and service jobs is consistent with the ACCMA for the project vicinity area.



Alta Bates Summit Medical Center Master Plan EIR

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May 2009
WC08-2611_1 TAZ

TAZ MAP – PROJECT VICINITY

FIGURE 1

APPENDIX A

Adjustments to Land Use Assumptions in Project Vicinity TAZs

TAZ	ABAG P'07 Model												Pending, Planned and Proposed Projects				Recommended Modifications								Notes
	2005				2035				2005 - 2035 Growth								Adjustments				Net Growth				
	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	
137	708	232	347	709	708	261	386	779	0	29	39	70						(25)	(9)	(34)	0	4	30	36	
138	848	371	283	814	848	459	320	950	0	88	37	136						(77)	(8)	(85)	0	11	29	51	
139	594	26	189	346	594	44	307	484	0	18	118	138	188		36	36	188	(16)	(26)	(42)	188	2	92	96	The Creekside MXD - 120 DU, 7.7 ksf commercial; Civiq - 68 DU, 3 ksf commercial
140	345	106	134	327	345	127	218	435	0	21	83	109						(18)	(19)	(37)	0	3	64	72	
152	743	65	96	312	763	121	132	350	20	56	36	39					(4)	(49)	(8)	(57)	16	7	28	(18)	
154	573	82	326	600	804	172	387	732	231	89	61	132					(44)	(78)	(14)	(91)	187	11	47	41	
178	170	28	268	960	171	315	1,060	2,438	1	287	791	1,479	1,577	300	500	800	1,576	13	(176)	(163)	1,577	300	615	1,316	Mandela Grand MXD - 1577 DU, 300 ksf non-residential
179	1,054	26	144	413	1,440	83	199	898	386	56	56	484					(73)	(49)	(12)	(61)	313	7	44	423	
183	197	17	109	219	197	17	109	219	0	0	0	0									0	0	0	0	
184	455	22	128	215	781	65	245	360	326	43	117	145	146				(61)	(38)	(26)	(64)	265	5	91	81	2116 Brush St. - 146 DU
185	190	244	176	575	993	277	205	649	803	33	29	74	524	17	30	47	(151)	(16)	(6)	(22)	652	17	23	52	459 23rd St. - 60 DU, ground floor retail; 2538 Telegraph - 97 DU, 9 ksf commercial; Broadway West Grand - 367 DU, 8.5 ksf retail
186	555	46	218	339	1,610	113	260	449	1,055	66	42	110					(199)	(58)	(9)	(67)	856	8	33	43	
187	296	185	863	1,143	516	306	1,084	1,488	221	121	221	345	145	94	17	111	(42)	(27)	(49)	(76)	179	94	172	269	Broadway Retail - 145 DU, 52 ksf retail
188	64	140	2,724	2,982	64	333	5,738	6,189	0	193	3,014	3,207	480	304	759	1,063	480	111	(672)	(561)	480	304	2,342	2,646	Broadway Retail - 480 DU, 164.6 ksf retail; ABSMC Summit - 234 ksf MOB, 50 ksf admin, +275 university enrollment
189	180	10	98	138	189	10	98	138	9	0	0	0	40				31				40	0	0	0	557 Merrimac - 40 Condos
190	275	18	43	114	275	47	99	203	0	29	57	89	142	6		6	142	(23)	(13)	(36)	142	6	44	53	Courthouse Condominiums - 142 DU, 3 ksf retail
191	385	18	218	403	428	208	251	567	43	190	33	163					(8)	(166)	(7)	(174)	35	24	26	(11)	
192	561	8	150	227	604	61	188	306	43	54	38	79					(8)	(47)	(8)	(56)	35	7	30	23	
193	548	3	3	6	613	3	22	25	66	0	19	19					(12)		(4)	(4)	54	0	15	15	
194	987	66	1,837	2,084	990	89	2,446	2,727	3	24	609	642					(1)	(21)	(136)	(157)	2	3	473	485	
195	647	39	155	255	1,058	100	204	344	411	61	49	89	74				(77)	(53)	(11)	(64)	334	8	38	25	3860 & 3880 MLK Jr. Way - 74 DU
196	450	58	228	623	560	83	490	1,295	109	25	261	672					(21)	(22)	(58)	(80)	88	3	203	592	
197	307	51	118	408	493	115	259	916	186	64	140	508					(35)	(56)	(31)	(87)	151	8	109	421	
198	271	83	167	343	271	94	181	370	0	11	15	26						(10)	(3)	(13)	0	1	12	13	
199	109	61	9	93	109	61	9	93	0	1	0	1						(1)		(1)	0	0	0	0	
200	79	10	31	111	79	10	32	113	0	0	0	2									0	0	0	2	
201	180	46	103	266	2,213	422	247	787	2,033	376	143	521	540	30	50	80	(383)	(329)	(32)	(361)	1,650	47	111	160	MacArthur BART Transit Village - 540 DU, 30 ksf retail/commercial
202	158	17	26	56	158	60	40	114	0	43	14	58	44				44	(38)	(3)	(41)	44	5	11	17	4801 Shattuck Ave. - 44 DU
203	63	128	70	309	70	178	87	381	7	50	17	72					(1)	(44)	(4)	(48)	6	6	13	24	
204	440	32	93	262	440	37	104	279	0	6	11	17						(5)	(2)	(8)	0	1	9	9	
205	664	24	137	242	664	47	162	293	0	23	26	51						(20)	(6)	(26)	0	3	20	25	
206	317	106	560	858	317	106	561	858	0	0	1	0			484				483	483	0	0	484	483	Kaiser Medical Center - 484 service jobs
207	392	166	177	430	392	166	177	432	0	1	1	2						(1)		(1)	0	0	1	1	
208	491	4	407	499	694	168	1,340	1,607	203	164	933	1,109					(38)	(143)	(208)	(352)	165	21	725	757	
209	1,642	422	383	946	1,642	463	407	1,013	0	41	24	66						(36)	(5)	(41)	0	5	19	25	
210	930	172	548	921	930	174	552	928	0	1	5	8						(1)	(1)	(2)	0	0	4	6	
211	784	73	183	357	819	161	280	546	35	87	97	189					(7)	(76)	(22)	(98)	28	11	75	91	
212	205	144	2,717	2,973	211	319	2,266	2,768	6	176	(450)	(205)			(2,656)		(1)	(154)	(2,206)	(2,360)	5	22	(2,656)	(2,565)	Kaiser Medical Center Relocation - minus 2656 service jobs
213	1,593	175	318	624	1,593	255	265	653	0	80	(53)	28						(70)		(70)	0	10	(53)	(42)	
214	137	213	599	1,385	4,531	338	661	1,577	4,394	125	62	192	2,739	2,556	473	3,029	(828)	2,431	411	2,842	3,566	2,556	473	3,034	Broadway Retail - 2217 DU, 1408 ksf retail; Valdez & 23rd St. - 281 DU, 12 ksf retail; 100 Grand - 241 DU
215	1,218	50	72	163	1,218	70	99	211	0	20	27	49						(17)	(6)	(24)	0	3	21	25	

	ABAG P'07 Model												Pending, Planned and Proposed Projects				Recommended Modifications								
	2005				2035				2005 - 2035 Growth								Adjustments				Net Growth				Notes
TAZ	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	HH	RET	SVC	Total Emp	
216	1,262	79	198	333	1,805	218	307	584	543	138	109	251	460	544	101	644	(102)	406	(8)	397	441	544	101	648	Broadway Retail - 460 DU, 302 ksf retail
217	390	34	314	380	390	45	4,077	4,168	0	11	3,763	3,789			4,095			(10)	332	322	0	1	4,095	4,111	Kaiser Medical Center - 4,095 Service Jobs
218	652	19	77	162	652	20	79	167	0	1	3	5						(1)	(1)	(2)	0	0	2	3	
219	1	221	2,733	7,468	1	407	4,031	9,200	0	185	1,298	1,732		40	3,557	3,597		(145)	2,259	2,114	0	40	3,557	3,846	Kaiser Center - 1,345 ksf office, 22 ksf retail; demo 280 ksf
220	1	72	273	687	1	210	1,021	2,134	0	138	749	1,447						(121)	(167)	(288)	0	17	582	1,159	
221	823	134	392	1,421	1,174	173	469	1,544	351	39	76	123					(66)	(34)	(17)	(51)	285	5	59	72	
222	2	117	2,619	4,396	2	152	2,615	4,396	0	34	(5)	0						(30)		(30)	0	4	(5)	(30)	
223	23	293	1,207	2,595	226	397	3,530	5,394	203	104	2,322	2,799	69	9	592	601	(38)	(91)	(518)	(609)	165	13	1,804	2,190	1538 Broadway - 69 DU, ground floor food sales; 1640 Broadway - 177.6 ksf office, 4.7 ksf retail, alt. 254 DU with ground floor retail
224	44	158	1,782	2,560	44	295	3,085	4,389	0	138	1,303	1,829	220	153	2,793	2,947	220	15	1,490	1,506	220	153	2,793	3,335	1930 Broadway - 85.2 ksf retail/fitness club, 829.5 ksf office, 220 DU
225	45	66	652	1,215	45	179	1,109	1,996	0	113	456	781						(99)	(102)	(201)	0	14	354	580	
226	719	37	433	1,996	935	134	493	2,321	216	97	60	326	157				(41)	(85)	(13)	(98)	175	12	47	228	1530 MLK Jr. Way - 121 Condos; ~1417 -1431 Jefferson St. - 36 DU, commercial
227	1	0	74	858	1	57	127	1,038	0	57	54	180						(50)	(12)	(62)	0	7	42	118	
228	0	59	758	1,183	0	108	884	1,354	0	49	125	170						(43)	(28)	(71)	0	6	97	99	
229	429	33	323	709	2,237	80	181	681	1,808	46	(142)	(29)	88				(341)	(40)		(40)	1,467	6	(142)	(69)	630 Thomas Berkley Square Housing - 88 DU, 3 commercial spaces
230	0	294	265	714	0	417	797	1,393	0	122	531	679						(107)	(118)	(225)	0	15	413	454	
231	26	28	120	167	1,778	226	387	646	1,752	199	267	479	1,139	14	(16)	(2)	(330)	(174)	(60)	(234)	1,422	25	207	245	Fox Courts - 80 DU, 2.5 ksf childcare, art space; 1755 Broadway - 24 DU (replace office with live/work condos); Uptown Project - 665 DU, 14 ksf retail/commercial; Uptown Parcel 4 - 370 DU;
278	0	0	373	394	0	24	400	451	0	24	28	57						(21)	(6)	(27)	0	3	22	30	
279	2,578	78	1,252	2,275	2,761	116	1,536	2,571	183	37	284	297	415		3	3	232	(32)	(63)	(96)	415	5	221	201	Emerald Views - 370 DU, 933 SF Café; Jackson Courtyard Condominiums - 45 DU
286	1,908	45	461	630	1,908	127	645	906	0	83	185	276						(73)	(41)	(114)	0	10	144	162	
287	1,210	57	758	1,062	1,210	57	762	1,067	0	0	3	5							(1)	(1)	0	0	2	4	
288	2,573	15	289	445	2,573	15	313	468	0	0	24	23							(5)	(5)	0	0	19	18	
289	2,178	240	552	1,040	2,178	283	607	1,141	0	43	55	101						(38)	(12)	(50)	0	5	43	51	
Project Vicinity Total	35,669	5,867	31,361	57,739	51,314	10,275	49,631	83,973	15,647	4,410	18,271	26,235	9,187	4,066	10,818	12,962	0	0	0	0	15,647	4,410	18,271	26,235	

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APPENDIX B

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APPENDIX B - Adjustments to 2035 Model Land Use Assumptions

ABAG P'07 Model

TAZ	2035								2005 - 2035 Growth							
	HH	AFM	MFG	RET	SVC	TRD	OTH	Total Emp	HH	AFM	MFG	RET	SVC	TRD	OTH	Total Emp
128	639	0	0	41	115	4	4	164	0	0	0	5	5	0	0	10
129	263	0	4	34	112	0	31	182	0	0	0	5	11	0	1	17
130	631	5	11	29	148	0	51	243	0	1	0	10	16	0	1	28
131	742	0	22	178	169	2	42	413	0	0	0	26	13	0	0	40
132	490	0	15	39	275	22	66	417	19	0	0	12	30	0	1	44
133	590	0	21	71	206	2	34	334	0	0	1	17	20	0	1	39
134	446	0	216	386	526	33	134	1,294	0	0	6	10	14	0	4	33
135	197	0	119	117	108	17	30	391	0	0	108	13	25	0	1	145
136	219	0	99	64	170	0	1	333	0	0	99	16	30	0	1	145
137	708	0	54	261	386	22	56	779	0	0	1	29	39	0	1	70
138	848	0	40	459	320	27	104	950	0	0	2	88	37	2	7	136
139	594	0	17	44	307	5	112	484	0	0	0	18	118	0	2	138
140	345	0	17	127	218	29	45	435	0	0	1	21	83	1	2	109
141	325	0	0	34	46	0	9	89	0	0	0	7	6	0	0	13
142	397	0	0	8	47	0	11	67	0	0	0	0	8	0	0	8
143	880	0	44	14	495	26	35	615	3	0	14	4	185	8	11	222
144	940	27	71	31	541	0	18	687	5	11	19	11	189	0	5	234
145	626	0	0	28	170	11	27	236	167	0	0	8	15	0	0	24
146	852	0	0	45	150	0	10	205	280	0	0	14	14	0	0	28
147	216	0	25	33	74	61	24	218	0	0	0	6	15	(2)	0	18
148	425	50	3	62	326	114	181	736	218	18	(212)	32	106	22	34	0
149	1,003	0	118	12	166	34	47	377	161	0	0	7	23	(1)	1	31
150	218	0	12	5	50	12	11	91	0	0	0	5	13	0	0	19
194	990	0	81	89	2,446	13	98	2,727	3	0	4	24	609	1	6	642
195	1,058	0	0	100	204	9	32	344	411	0	(21)	61	49	0	1	89
196	560	0	365	83	490	62	296	1,295	109	0	204	25	261	16	166	672
197	493	0	61	115	259	168	314	916	186	0	30	64	140	85	188	508
198	271	0	0	94	181	0	95	370	0	0	0	11	15	0	1	26
199	109	0	0	61	9	15	9	93	0	0	0	1	0	0	0	1
200	79	0	0	10	32	0	71	113	0	0	0	0	0	0	1	2
201	2,213	0	0	422	247	6	112	787	2,033	0	0	376	143	(1)	3	521
202	158	0	0	60	40	4	9	114	0	0	0	43	14	0	1	58
203	70	0	0	178	87	30	86	381	7	0	0	50	17	1	3	72
204	440	0	32	37	104	20	86	279	0	0	0	6	11	(1)	1	17
205	664	0	20	47	162	13	50	293	0	0	0	23	26	0	2	51
206	317	0	11	106	561	62	118	858	0	0	0	0	1	(1)	0	0
207	392	0	22	166	177	0	66	432	0	0	0	1	1	0	0	2
208	694	0	0	168	1,340	11	89	1,607	203	0	0	164	933	1	11	1,109
209	1,642	0	14	463	407	13	115	1,013	0	0	0	41	24	0	2	66
210	930	0	16	174	552	26	160	928	0	0	0	1	5	0	1	8
211	819	0	26	161	280	15	65	546	35	0	1	87	97	0	4	189
212	211	0	12	319	2,266	0	170	2,768	6	0	5	176	(450)	0	65	(205)
213	1,593	0	2	255	265	4	127	653	0	0	0	80	(53)	0	2	28
217	390	0	0	45	4,077	8	38	4,168	0	0	0	11	3,763	2	12	3,789
332	263	0	0	449	446	0	123	1,018	0	0	0	5	9	0	0	14
333	1,091	0	20	148	281	8	30	487	3	0	0	1	16	0	0	17
334	912	0	4	4	282	19	47	355	10	0	0	0	14	(1)	0	13
335	46	0	4	1	91	0	7	103	0	0	0	0	3	0	0	3
336	365	0	10	6	76	0	18	110	0	0	0	0	0	0	0	0
Safeway Project Area Total	29,363	82	1,607	5,885	20,486	926	3,513	32,500	3,859	30	262	1,615	6,663	132	543	9,243

Recommended Modifications

TAZ	Pending, Planned and Proposed Projects						ABSMC Adjustments to Growth						Additional Safeway Adjustments to Growth					
	HH	RET	SVC	TRD	OTH	Total Emp	HH	RET	SVC	TRD	OTH	Total Emp	HH	RET	SVC	TRD	OTH	Total Emp
128														(7)				(7)
129														(7)				(7)
130														(13)				(13)
131														(34)				(34)
132													(4)	(16)				(16)
133														(22)				(22)
134		81												71				71
135														(17)				(17)
136														(21)				(21)
137								(25)	(9)			(34)						
138								(77)	(8)			(85)						
139	188		36			36	188	(16)	(26)			(42)						
140								(18)	(19)			(37)						
141														(9)				(9)
142																		
143	61		21			21							58	(5)				(5)
144													(1)	(14)				(14)
145													(35)	(11)				(11)
146													(58)	(18)				(18)
147														(8)				(8)
148													(164)	(42)				(42)
149													(33)	(9)				(9)
150														(7)				(7)
194							(1)	(21)	(136)			(157)						
195							(77)	(53)	(11)			(64)	(74)					
196	48						(21)	(22)	(58)			(80)	(62)					
197	25						(35)	(56)	(31)			(87)						
198								(10)	(3)			(13)						
199								(1)				(1)						
200																		
201	654	43	71			113	(383)	(329)	(32)			(361)						
202	44						44	(38)	(3)			(41)						
203							(1)	(44)	(4)			(48)						
204								(5)	(2)			(8)						
205								(20)	(6)			(26)						
206									483			483			(484)			(484)
207								(1)				(1)						
208							(38)	(143)	(208)			(352)						
209								(36)	(5)			(41)						
210								(1)	(1)			(2)						
211							(7)	(76)	(22)			(98)						
212			(2,656)				(1)	(154)	(2,206)			(2,360)						
213								(70)				(70)						
217			4,095					(10)	332			322						
332		196	140											191	131			322
333														(1)	(131)			(133)
334													(2)					
335																		
336																		
Safeway Project Area Total	1,020	319	1,707	0	0	170	0	(1,226)	(1,975)	0	0	(3,201)	(239)	(0)	(484)	0	0	(484)

TAZ	2005 Adjusted Totals						Adjusted Net Growth						2035 Adjusted Totals						Notes
	HH	RET	SVC	TRD	OTH	Total Emp	HH	RET	SVC	TRD	OTH	Total Emp	HH	RET	SVC	TRD	OTH	Total Emp	
128	639	36	111	4	4	155	0	(2)	5	0	0	3	639	35	116	4	4	158	
129	263	29	102	0	31	165	0	(2)	11	0	1	10	263	27	113	0	32	176	
130	631	19	132	0	50	215	0	(3)	16	0	1	15	631	16	148	0	51	230	
131	742	152	156	2	42	373	0	(8)	13	0	0	6	742	143	169	2	42	379	
132	471	27	245	21	65	374	19	(4)	30	0	1	28	490	24	275	21	66	402	
133	590	54	186	2	33	295	0	(5)	20	0	1	17	590	49	206	2	34	312	
134	446	375	512	33	130	1,261	0	81	14	0	4	104	446	456	526	33	134	1,365	Safeway on College - 40.5 ksf new retail
135	197	105	83	17	29	246	0	(4)	25	0	1	128	197	100	108	17	30	374	
136	219	48	140	0	0	188	0	(5)	30	0	1	124	219	43	170	0	1	312	
137	708	232	347	22	55	709	0	4	30	0	1	36	708	236	377	22	56	745	
138	848	371	283	26	97	814	0	11	29	2	7	51	848	382	311	28	104	864	
139	594	26	189	5	110	346	188	2	92	0	2	96	782	28	281	5	112	442	The Creekside MXD - 120 DU, 7.7 ksf commercial; Civiq - 68 DU, 3 ksf commercial
140	345	106	134	27	43	327	0	3	64	1	2	72	345	108	199	28	45	399	
141	325	27	41	0	9	77	0	(2)	6	0	0	4	325	25	47	0	9	80	
142	397	8	39	0	11	59	0	0	8	0	0	8	397	8	47	0	11	67	
143	954	16	310	18	24	399	61	(1)	185	8	11	217	1,015	14	495	26	35	615	Bakery Lofts - 61 DU, 3.2 ksf commercial; 46th Street Lofts - 79 DU, 3ksf commercial (completed)
144	935	20	353	0	13	453	4	(3)	189	0	5	220	939	16	542	0	18	673	
145	459	20	154	11	27	212	132	(3)	15	0	0	13	591	18	169	11	27	225	
146	572	31	135	0	10	177	222	(4)	14	0	0	10	794	27	149	0	10	186	
147	216	27	58	64	25	200	0	(2)	15	(2)	0	10	216	25	73	62	25	210	
148	371	30	220	92	147	736	54	(10)	106	22	34	(42)	425	20	326	114	181	694	66th & San Pablo - 72 DU (completed); City Limits Project - 92 DU (completed)
149	842	4	143	35	46	346	128	(2)	23	(1)	1	22	970	2	166	34	47	368	
150	218	0	37	12	11	72	0	(2)	13	0	0	12	218	(2)	50	12	11	84	
194	987	66	1,837	12	92	2,084	2	3	473	1	6	485	989	69	2,310	13	98	2,570	
195	721	39	155	9	31	255	260	8	38	0	1	25	980	46	193	9	32	280	3860 & 3880 MLK Jr. Way - 74 DU (completed)
196	512	58	228	46	131	623	26	3	203	16	166	592	539	61	431	62	297	1,215	989 41st Street - 48 DU; Green City Loft Project - 62 DU (completed)
197	307	51	118	82	125	408	151	8	109	85	188	421	458	59	227	167	313	829	1032 39th Street - 25 DU
198	271	83	167	0	93	343	0	1	12	0	1	13	271	84	178	0	94	356	
199	109	61	9	15	9	93	0	0	0	0	0	0	109	61	9	15	9	93	
200	79	10	31	0	70	111	0	0	0	0	1	2	79	10	31	0	71	113	
201	180	46	103	7	110	266	1,650	47	111	(1)	3	160	1,830	93	215	6	113	426	MacArthur BART Transit Village - 624 DU, 42.5 ksf retail/commercial; 3884 MLK Way - 30 DU
202	158	17	26	4	8	56	44	5	11	0	1	17	202	22	37	4	9	73	4801 Shattuck Ave. - 44 DU
203	63	128	70	29	82	309	6	6	13	1	3	24	68	135	83	30	85	334	
204	440	32	93	21	85	262	0	1	9	(1)	1	9	440	32	101	20	86	272	
205	664	24	137	13	49	242	0	3	20	0	2	25	664	27	157	13	51	267	
206	317	106	1,044	63	117	858	0	0	0	(1)	0	(1)	317	106	1,044	62	117	857	Kaiser Medical Center - 484 service jobs (completed)
207	392	166	177	0	66	430	0	0	1	0	0	1	392	166	178	0	66	431	
208	491	4	407	10	78	499	165	21	725	1	11	757	656	24	1,132	11	89	1,256	
209	1,642	422	383	13	114	946	0	5	19	0	2	25	1,642	427	402	13	116	971	
210	930	172	548	26	159	921	0	0	4	0	1	6	930	173	551	26	160	927	
211	784	73	183	15	61	357	28	11	75	0	4	91	812	84	258	15	65	448	
212	205	144	2,717	0	105	2,973	5	22	(2,656)	0	65	(2,565)	210	166	61	0	170	408	Kaiser Medical Center Relocation - minus 2656 service jobs
213	1,593	175	318	4	125	624	0	10	(53)	0	2	(42)	1,593	185	265	4	127	582	
217	390	34	314	6	26	380	0	1	4,095	2	12	4,111	390	35	4,409	8	38	4,491	Kaiser Medical Center - 4,095 Service Jobs
332	263	444	437	0	123	1,004	0	196	140	0	0	336	263	640	577	0	123	1,340	51st & Broadway Center - 97.9 ksf new retail, 42.1 ksf new office
333	1,088	147	265	8	29	470	3	(0)	(115)	0	0	(116)	1,091	147	150	8	29	354	
334	903	4	268	20	47	342	8	0	14	(1)	0	13	910	4	282	19	47	355	
335	46	1	88	0	7	100	0	0	3	0	0	3	46	1	91	0	7	103	
336	365	6	76	0	18	110	0	0	0	0	0	0	365	6	76	0	18	110	
Safeway Project Area Total	25,881	4,276	14,307	793	2,972	23,263	3,155	389	4,204	132	543	5,558	29,037	4,665	18,510	925	3,515	28,821	

APPENDIX C

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APPENDIX C - Adjustments to 2005 Model Land Use Assumptions

TAZ	ABAG P'07 Model 2005								Completed Projects						Recommended Modifications: Safeway Adjustments to 2005						Recommended Modifications: 2005 Adjusted Totals						Notes
	HH	AFM	MFG	RET	SVC	TRD	OTH	Total Emp	HH	RET	SVC	TRD	OTH	Total Emp	HH	RET	SVC	TRD	OTH	Total Emp	HH	RET	SVC	TRD	OTH	Total Emp	
128	639	0	0	36	111	4	4	155													639	36	111	4	4	155	
129	263	0	4	29	102	0	31	165													263	29	102	0	31	165	
130	631	4	10	19	132	0	50	215													631	19	132	0	50	215	
131	742	0	22	152	156	2	42	373													742	152	156	2	42	373	
132	471	0	15	27	245	21	65	374													471	27	245	21	65	374	
133	590	0	21	54	186	2	33	295													590	54	186	2	33	295	
134	446	0	210	375	512	33	130	1,261													446	375	512	33	130	1,261	Safeway on College - 40.5 ksf new retail
135	197	0	12	105	83	17	29	246													197	105	83	17	29	246	
136	219	0	0	48	140	0	0	188													219	48	140	0	0	188	
137	708	0	53	232	347	22	55	709													708	232	347	22	55	709	
138	848	0	38	371	283	26	97	814													848	371	283	26	97	814	
139	594	0	16	26	189	5	110	346													594	26	189	5	110	346	The Creekside MXD - 120 DU, 7.7 ksf commercial; Civiq - 68 DU, 3 ksf commercial
140	345	0	16	106	134	27	43	327													345	106	134	27	43	327	
141	325	0	0	27	41	0	9	77													325	27	41	0	9	77	
142	397	0	0	8	39	0	11	59													397	8	39	0	11	59	
143	878	0	31	10	310	18	24	393	76	6					76	6				6	954	16	310	18	24	399	Bakery Lofts - 61 DU, 3.2 ksf commercial; 46th Street Lofts - 79 DU, 3ksf commercial (completed)
144	935	16	52	20	353	0	13	453													935	20	353	0	13	453	
145	459	0	0	20	154	11	27	212													459	20	154	11	27	212	
146	572	0	0	31	135	0	10	177													572	31	135	0	10	177	
147	216	0	26	27	58	64	25	200													216	27	58	64	25	200	
148	207	32	215	30	220	92	147	736	164						164						371	30	220	92	147	736	66th & San Pablo - 72 DU (completed); City Limits Project - 92 DU (completed)
149	842	0	117	4	143	35	46	346													842	4	143	35	46	346	
150	218	0	12	0	37	12	11	72													218	0	37	12	11	72	
194	987	0	77	66	1,837	12	92	2,084													987	66	1,837	12	92	2,084	
195	647	0	21	39	155	9	31	255	74						74						721	39	155	9	31	255	3860 & 3880 MLK Jr. Way - 74 DU (completed)
196	450	0	161	58	228	46	131	623	62						62						512	58	228	46	131	623	989 41st Street - 48 DU; Green City Loft Project - 62 DU (completed)
197	307	0	32	51	118	82	125	408													307	51	118	82	125	408	1032 39th Street - 25 DU
198	271	0	0	83	167	0	93	343													271	83	167	0	93	343	
199	109	0	0	61	9	15	9	93													109	61	9	15	9	93	
200	79	0	0	10	31	0	70	111													79	10	31	0	70	111	
201	180	0	0	46	103	7	110	266													180	46	103	7	110	266	MacArthur BART Transit Village - 624 DU, 42.5 ksf retail/commercial; 3884 MLK Way - 30 DU
202	158	0	0	17	26	4	8	56													158	17	26	4	8	56	4801 Shattuck Ave. - 44 DU
203	63	0	0	128	70	29	82	309													63	128	70	29	82	309	
204	440	0	32	32	93	21	85	262													440	32	93	21	85	262	
205	664	0	20	24	137	13	49	242													664	24	137	13	49	242	
206	317	0	11	106	560	63	117	858			484						484				317	106	1,044	63	117	858	Kaiser Medical Center - 484 service jobs (completed)
207	392	0	22	166	177	0	66	430													392	166	177	0	66	430	
208	491	0	0	4	407	10	78	499													491	4	407	10	78	499	
209	1,642	0	14	422	383	13	114	946													1,642	422	383	13	114	946	
210	930	0	16	172	548	26	159	921													930	172	548	26	159	921	
211	784	0	25	73	183	15	61	357													784	73	183	15	61	357	
212	205	0	7	144	2,717	0	105	2,973													205	144	2,717	0	105	2,973	Kaiser Medical Center Relocation - minus 2656 service jobs
213	1,593	0	2	175	318	4	125	624													1,593	175	318	4	125	624	
217	390	0	0	34	314	6	26	380													390	34	314	6	26	380	Kaiser Medical Center - 4,095 Service Jobs
332	263	0	0	444	437	0	123	1,004													263	444	437	0	123	1,004	51st & Broadway Center - 97.9 ksf new retail, 42.1 ksf new office
333	1,088	0	20	147	265	8	29	470													1,088	147	265	8	29	470	
334	903	0	4	4	268	20	47	342													903	4	268	20	47	342	
335	46	0	4	1	88	0	7	100													46	1	88	0	7	100	
336	365	0	10	6	76	0	18	110													365	6	76	0	18	110	
Safeway Project Area Total	25,505	52	1,347	4,270	13,823	793	2,972	23,257	376	6	484	0	0	0	376	6	484	0	0	6	25,881	4,276	14,307	793	2,972	23,263	

Appendix J

LOS Calculation Worksheets
2015 No Project Conditions

FEHR & PEERS

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	80	10	60	20	20	10	10	10	870	20	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0				3.0			5.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.99				0.99			1.00			
Flpb, ped/bikes		1.00				1.00			1.00			
Frt		0.94				0.97			1.00			
Flt Protected		0.98				0.98			1.00			
Satd. Flow (prot)		1673				1742			3516			
Flt Permitted		0.85				0.89			0.95			
Satd. Flow (perm)		1449				1594			3341			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	83	10	62	21	21	10	10	10	906	21	10	10
RTOR Reduction (vph)	0	7	0	0	0	8	0	0	1	0	0	0
Lane Group Flow (vph)	0	169	0	0	0	33	0	0	946	0	0	0
Confl. Peds. (#/hr)	14		6		6		14	11				
Confl. Bikes (#/hr)							4			9	9	
Turn Type	Perm				Perm			Perm				Perm
Protected Phases		4				4			2			
Permitted Phases	4				4			2				6
Actuated Green, G (s)		11.7				11.7			32.9			
Effective Green, g (s)		11.7				11.7			32.9			
Actuated g/C Ratio		0.20				0.20			0.56			
Clearance Time (s)		3.0				3.0			5.0			
Vehicle Extension (s)		3.0				3.0			3.0			
Lane Grp Cap (vph)		291				320			1885			
v/s Ratio Prot												
v/s Ratio Perm		c0.12				0.02			c0.28			
v/c Ratio		0.58				0.10			0.50			
Uniform Delay, d1		21.1				19.0			7.7			
Progression Factor		1.00				1.00			1.00			
Incremental Delay, d2		2.9				0.1			1.0			
Delay (s)		24.0				19.2			8.7			
Level of Service		C				B			A			
Approach Delay (s)		24.0				19.2			8.7			
Approach LOS		C				B			A			

Intersection Summary			
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	58.3	Sum of lost time (s)	11.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	50	390	20	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			3.0	
Lane Util. Factor		0.95			1.00	
Frpb, ped/bikes		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	
Frt		0.99			0.95	
Flt Protected		0.99			0.97	
Satd. Flow (prot)		3490			1718	
Flt Permitted		0.78			0.97	
Satd. Flow (perm)		2728			1718	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.92
Adj. Flow (vph)	52	406	21	10	10	11
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	0	486	0	0	31	0
Confl. Peds. (#/hr)			11			
Confl. Bikes (#/hr)			1			
Turn Type	Perm			Perm		
Protected Phases		6			8	
Permitted Phases	6			8		
Actuated Green, G (s)		32.9			2.7	
Effective Green, g (s)		32.9			2.7	
Actuated g/C Ratio		0.56			0.05	
Clearance Time (s)		5.0			3.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1539			80	
v/s Ratio Prot						
v/s Ratio Perm		0.18			0.02	
v/c Ratio		0.32			0.39	
Uniform Delay, d1		6.7			27.0	
Progression Factor		1.00			1.00	
Incremental Delay, d2		0.1			3.1	
Delay (s)		6.9			30.1	
Level of Service		A			C	
Approach Delay (s)		6.9			30.1	
Approach LOS		A			C	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	190	30	790	380	50	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1739		3299		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1739		3299		1711	3421
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	196	31	814	392	52	278
RTOR Reduction (vph)	12	0	83	0	0	0
Lane Group Flow (vph)	215	0	1123	0	52	278
Confl. Peds. (#/hr)		38		15	15	
Confl. Bikes (#/hr)		5		16		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	11.1		28.3		3.6	35.9
Effective Green, g (s)	11.1		28.3		3.6	35.9
Actuated g/C Ratio	0.20		0.51		0.07	0.65
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	351		1697		112	2233
v/s Ratio Prot	c0.12		c0.34		c0.03	0.08
v/s Ratio Perm						
v/c Ratio	0.61		0.66		0.46	0.12
Uniform Delay, d1	20.0		9.8		24.8	3.6
Progression Factor	1.00		0.92		1.00	1.00
Incremental Delay, d2	2.2		1.8		1.1	0.1
Delay (s)	22.2		10.9		25.9	3.7
Level of Service	C		B		C	A
Approach Delay (s)	22.2		10.9			7.2
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	400	380	1170	420	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3324	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3324	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	426	404	1245	447	43
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	0	426	404	1245	478	0
Confl. Peds. (#/hr)						97
Confl. Bikes (#/hr)						3
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		18.4	18.4	41.5	26.6	
Effective Green, g (s)		18.4	18.4	41.5	26.6	
Actuated g/C Ratio		0.33	0.33	0.75	0.48	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		539	553	2492	1608	
v/s Ratio Prot		c0.26	0.24	c0.38	0.14	
v/s Ratio Perm						
v/c Ratio		0.79	0.73	0.50	0.30	
Uniform Delay, d1		16.6	16.1	2.7	8.6	
Progression Factor		1.00	1.15	0.60	0.88	
Incremental Delay, d2		7.7	4.0	0.6	0.5	
Delay (s)		24.3	22.5	2.2	8.0	
Level of Service		C	C	A	A	
Approach Delay (s)	24.3			7.1	8.0	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	0	40	7	0	22	14	1510	1	11	810	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	21	0	42	7	0	23	15	1589	1	12	853	0
Pedestrians		33			73						15	
Lane Width (ft)		12.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		3			6						1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								483			264	
pX, platoon unblocked												
vC, conflicting volume	1506	2602	317	2042	2601	618	886			1664		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1506	2602	317	2042	2601	618	886			1664		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	69	100	94	72	100	94	98			97		
cM capacity (veh/h)	68	21	660	26	21	401	739			360		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	63	31	412	795	398	182	341	341
Volume Left	21	7	15	0	0	12	0	0
Volume Right	42	23	0	0	1	0	0	0
cSH	169	89	739	1700	1700	360	1700	1700
Volume to Capacity	0.37	0.34	0.02	0.47	0.23	0.03	0.20	0.20
Queue Length 95th (ft)	40	33	2	0	0	2	0	0
Control Delay (s)	38.5	65.1	0.6	0.0	0.0	1.5	0.0	0.0
Lane LOS	E	F	A			A		
Approach Delay (s)	38.5	65.1	0.2			0.3		
Approach LOS	E	F						

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	162	0	1370	25	0	870	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	0	0	0	184	0	1557	28	0	989	0
Pedestrians					32							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					3							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								295			452	
pX, platoon unblocked												
vC, conflicting volume	1692	2606	247	1836	2577	551	989			1617		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1692	2606	247	1836	2577	551	989			1617		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	60	100			100		
cM capacity (veh/h)	36	24	753	45	25	465	695			388		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	184	519	519	519	28	282	282	282	141
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	184	0	0	0	28	0	0	0	0
cSH	465	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.40	0.31	0.31	0.31	0.02	0.17	0.17	0.17	0.08
Queue Length 95th (ft)	47	0	0	0	0	0	0	0	0
Control Delay (s)	17.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C								
Approach Delay (s)	17.7	0.0				0.0			
Approach LOS	C								

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	52	1340	202	0	870
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	63	1634	246	0	1061
Pedestrians	55					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	5					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			174			573
pX, platoon unblocked						
vC, conflicting volume	2078	587			1935	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2078	587			1935	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	85			100	
cM capacity (veh/h)	44	432			286	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	63	467	467	467	480	265	265	265	265
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	63	0	0	0	246	0	0	0	0
cSH	432	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.15	0.27	0.27	0.27	0.28	0.16	0.16	0.16	0.16
Queue Length 95th (ft)	13	0	0	0	0	0	0	0	0
Control Delay (s)	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	14.8	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	250	790	80	160	420	390	110	830	180	70	370	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.93			0.98			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.95	0.98
Satd. Flow (prot)	1770	3481		1770	3223			4884			1420	4396
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.95	0.98
Satd. Flow (perm)	1770	3481		1770	3223			4884			1420	4396
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	255	806	82	163	429	398	112	847	184	71	378	327
RTOR Reduction (vph)	0	7	0	0	151	0	0	26	0	0	0	0
Lane Group Flow (vph)	255	881	0	163	676	0	0	1118	0	0	226	550
Confl. Peds. (#/hr)			9			20			37			
Confl. Bikes (#/hr)			8			4			6			
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	18.7	36.2		11.8	29.3			27.5			18.5	18.5
Effective Green, g (s)	18.7	36.2		11.8	29.3			27.5			18.5	18.5
Actuated g/C Ratio	0.17	0.33		0.11	0.27			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	301	1146		190	858			1221			239	739
v/s Ratio Prot	c0.14	c0.25		0.09	0.21			c0.23			c0.16	0.13
v/s Ratio Perm												
v/c Ratio	0.85	0.77		0.86	0.79			0.92			0.95	0.74
Uniform Delay, d1	44.3	33.1		48.3	37.5			40.1			45.3	43.5
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.99	0.99
Incremental Delay, d2	19.3	5.0		29.7	7.2			12.1			43.9	6.3
Delay (s)	63.5	38.1		78.0	44.7			52.2			88.7	49.4
Level of Service	E	D		E	D			D			F	D
Approach Delay (s)		43.8			50.2			52.2				58.9
Approach LOS		D			D			D				E

Intersection Summary			
HCM Average Control Delay	50.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	110
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.97
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1428
Flt Permitted	1.00
Satd. Flow (perm)	1428
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	112
RTOR Reduction (vph)	42
Lane Group Flow (vph)	70
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	6
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	18.5
Effective Green, g (s)	18.5
Actuated g/C Ratio	0.17
Clearance Time (s)	4.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	240
v/s Ratio Prot	
v/s Ratio Perm	0.05
v/c Ratio	0.29
Uniform Delay, d1	40.0
Progression Factor	1.07
Incremental Delay, d2	2.9
Delay (s)	45.6
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	10	60	30	20	40	80	1140	20	20	500	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.98			0.99			1.00			0.99	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.94			0.94			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1672			1691			5044			4991	
Flt Permitted		0.84			0.89			0.85			0.88	
Satd. Flow (perm)		1444			1537			4312			4403	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	64	11	64	32	21	43	85	1213	21	21	532	43
RTOR Reduction (vph)	0	38	0	0	32	0	0	2	0	0	11	0
Lane Group Flow (vph)	0	101	0	0	64	0	0	1317	0	0	585	0
Confl. Peds. (#/hr)	14		35	35		14	38		23	23		38
Confl. Bikes (#/hr)			4			6			9			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		379			403			2857			2917	
v/s Ratio Prot												
v/s Ratio Perm		c0.07			0.04			c0.31			0.13	
v/c Ratio		0.27			0.16			0.46			0.20	
Uniform Delay, d1		23.4			22.7			6.6			5.3	
Progression Factor		1.00			1.00			1.42			1.00	
Incremental Delay, d2		1.7			0.8			0.4			0.2	
Delay (s)		25.1			23.6			9.8			5.4	
Level of Service		C			C			A			A	
Approach Delay (s)		25.1			23.6			9.8			5.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	280	110	40	150	70	100	920	50	30	390	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		0.99	1.00			1.00	
Frt	1.00	0.96			0.96		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1746	3360			3336		1756	3500			4877	
Flt Permitted	0.58	1.00			0.87		0.40	1.00			0.85	
Satd. Flow (perm)	1058	3360			2910		737	3500			4174	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	303	283	111	40	152	71	101	929	51	30	394	91
RTOR Reduction (vph)	0	52	0	0	0	0	0	5	0	0	42	0
Lane Group Flow (vph)	303	342	0	0	263	0	101	975	0	0	473	0
Confl. Peds. (#/hr)	28		21	21		28	58		66	66		58
Confl. Bikes (#/hr)			9			4			18			13
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	456	1449			1255		403	1641			1565	
v/s Ratio Prot		0.10					0.01	c0.28				
v/s Ratio Perm	c0.29				0.09		0.10				0.11	
v/c Ratio	0.66	0.24			0.21		0.25	0.59			0.30	
Uniform Delay, d1	18.1	14.4			14.2		12.1	15.6			17.6	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.79	
Incremental Delay, d2	7.4	0.4			0.4		1.5	1.6			0.5	
Delay (s)	25.6	14.8			14.6		13.6	17.2			32.1	
Level of Service	C	B			B		B	B			C	
Approach Delay (s)		19.5			14.6			16.9			32.1	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	20
RTOR Reduction (vph)	13
Lane Group Flow (vph)	8
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.01
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.7
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	510	80	100	410	280	150	600	90	230	360	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.93		1.00	1.00	0.98	1.00	1.00	0.87
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4971		1770	4450		1770	3539	1554	1770	3539	1378
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4971		1770	4450		1770	3539	1554	1770	3539	1378
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	537	84	105	432	295	158	632	95	242	379	84
RTOR Reduction (vph)	0	20	0	0	115	0	0	0	70	0	0	62
Lane Group Flow (vph)	116	601	0	105	612	0	158	632	25	242	379	22
Confl. Peds. (#/hr)			1			121			1			98
Confl. Bikes (#/hr)			4			3			6			10
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	9.7	29.1		9.7	29.1		17.2	26.0	26.0	17.2	26.0	26.0
Effective Green, g (s)	9.7	29.1		9.7	29.1		17.2	26.0	26.0	17.2	26.0	26.0
Actuated g/C Ratio	0.10	0.29		0.10	0.29		0.17	0.26	0.26	0.17	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	172	1447		172	1295		304	920	404	304	920	358
v/s Ratio Prot	c0.07	0.12		0.06	c0.14		0.09	c0.18		c0.14	0.11	
v/s Ratio Perm									0.02			0.02
v/c Ratio	0.67	0.42		0.61	0.47		0.52	0.69	0.06	0.80	0.41	0.06
Uniform Delay, d1	43.6	28.6		43.3	29.1		37.6	33.3	27.8	39.7	30.7	27.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.9	0.1		4.4	0.1		0.6	4.2	0.3	12.6	1.4	0.3
Delay (s)	51.6	28.7		47.8	29.2		38.3	37.5	28.1	52.3	32.0	28.1
Level of Service	D	C		D	C		D	D	C	D	C	C
Approach Delay (s)		32.3			31.6			36.6			38.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	80	90	140	70	190	140	1560	70	170	1480	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.96			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			0.97	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1753	1644			1751	1536	1770	5049		1770	5078	
Flt Permitted	0.46	1.00			0.58	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	851	1644			1058	1536	1770	5049		1770	5078	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	65	86	97	151	75	204	151	1677	75	183	1591	11
RTOR Reduction (vph)	0	45	0	0	0	156	0	4	0	0	0	0
Lane Group Flow (vph)	65	138	0	0	226	48	151	1748	0	183	1602	0
Confl. Peds. (#/hr)	15		60	60		15			4			14
Confl. Bikes (#/hr)			11			4			3			3
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	23.6	23.6			23.6	23.6	12.6	45.4		17.5	50.3	
Effective Green, g (s)	23.6	23.6			23.6	23.6	12.6	45.4		17.5	50.3	
Actuated g/C Ratio	0.24	0.24			0.24	0.24	0.13	0.45		0.18	0.50	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	201	388			250	362	223	2292		310	2554	
v/s Ratio Prot		0.08					0.09	c0.35		0.10	c0.32	
v/s Ratio Perm	0.08				c0.21	0.03						
v/c Ratio	0.32	0.36			0.90	0.13	0.68	0.76		0.59	0.63	
Uniform Delay, d1	31.6	31.9			37.1	30.1	41.8	22.8		38.0	18.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			32.0	0.1	6.3	2.5		2.0	1.2	
Delay (s)	31.9	32.1			69.1	30.2	48.0	25.3		40.0	19.2	
Level of Service	C	C			E	C	D	C		D	B	
Approach Delay (s)		32.0			50.6			27.1			21.3	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	960	180	40	760	120	150	220	40	140	150	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.98		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4942		1767	4945		1770	1805		1743	1599	
Flt Permitted	0.95	1.00		0.23	1.00		0.13	1.00		0.59	1.00	
Satd. Flow (perm)	1770	4942		419	4945		238	1805		1087	1599	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	302	1000	188	42	792	125	156	229	42	146	156	406
RTOR Reduction (vph)	0	32	0	0	21	0	0	5	0	0	88	0
Lane Group Flow (vph)	302	1156	0	42	896	0	156	266	0	146	474	0
Confl. Peds. (#/hr)			4	4		14	3		20	20		3
Confl. Bikes (#/hr)			3			6			32			43
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	22.7	52.9		26.2	26.2		42.1	42.1		27.3	27.3	
Effective Green, g (s)	22.7	52.9		26.2	26.2		42.1	42.1		27.3	27.3	
Actuated g/C Ratio	0.22	0.51		0.25	0.25		0.40	0.40		0.26	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	386	2514		106	1246		255	731		285	420	
v/s Ratio Prot	c0.17	0.23			c0.18		c0.06	0.15			c0.30	
v/s Ratio Perm				0.10			0.18			0.13		
v/c Ratio	0.78	0.46		0.40	0.72		0.61	0.36		0.51	1.13	
Uniform Delay, d1	38.3	16.4		32.3	35.5		24.1	21.6		32.7	38.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.9	0.1		2.4	2.0		4.3	1.4		6.4	84.0	
Delay (s)	48.2	16.5		34.8	37.6		28.4	23.0		39.1	122.4	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		23.0			37.4			25.0			105.2	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	43.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	50	30	30	50	40	30	840	20	20	620	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.95			1.00			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1752			1740			3497			3508	
Flt Permitted		0.77			0.87			0.92			0.91	
Satd. Flow (perm)		1373			1528			3211			3208	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	54	32	32	54	43	32	903	22	22	667	11
RTOR Reduction (vph)	0	20	0	0	34	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	120	0	0	95	0	0	956	0	0	700	0
Confl. Peds. (#/hr)	14		30	30			72		47	47		77
Confl. Bikes (#/hr)			1			3			71			59
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		10.7			10.7			60.3			60.3	
Effective Green, g (s)		10.7			10.7			60.3			60.3	
Actuated g/C Ratio		0.13			0.13			0.75			0.75	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		184			204			2420			2418	
v/s Ratio Prot												
v/s Ratio Perm		c0.09			0.06			c0.30			0.22	
v/c Ratio		0.65			0.47			8.00dl			0.29	
Uniform Delay, d1		32.9			32.0			3.5			3.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.2			0.6			0.5			0.3	
Delay (s)		39.1			32.6			3.9			3.4	
Level of Service		D			C			A			A	
Approach Delay (s)		39.1			32.6			3.9			3.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	220	50
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	237	54
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	286	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	60.3	
Effective Green, g (s)	60.3	
Actuated g/C Ratio	0.75	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1214	
v/s Ratio Prot	0.18	
v/s Ratio Perm		
v/c Ratio	0.24	
Uniform Delay, d1	2.9	
Progression Factor	1.00	
Incremental Delay, d2	0.5	
Delay (s)	3.4	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	20	160	60	160	10	1020	210	80	830	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.96			0.98		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.93		1.00	0.90			0.97		1.00	0.98	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1696		1681	1527			3376		1770	3390	
Flt Permitted		0.99		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (perm)		1696		1681	1527			3194		1770	3390	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	10	21	165	62	165	10	1052	216	82	856	144
RTOR Reduction (vph)	0	20	0	0	83	0	0	12	0	0	10	0
Lane Group Flow (vph)	0	21	0	148	161	0	0	1266	0	82	990	0
Confl. Peds. (#/hr)			1			24	34		24	24		34
Confl. Bikes (#/hr)						6			60			68
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		4.2		14.8	14.8			55.0		8.0	67.5	
Effective Green, g (s)		4.2		14.8	14.8			55.0		8.0	67.5	
Actuated g/C Ratio		0.04		0.15	0.15			0.55		0.08	0.68	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		71		249	226			1757		142	2288	
v/s Ratio Prot		c0.01		0.09	c0.11					c0.05	0.29	
v/s Ratio Perm								c0.40				
v/c Ratio		0.29		0.59	0.71			0.72		0.58	0.43	
Uniform Delay, d1		46.5		39.8	40.6			16.8		44.4	7.5	
Progression Factor		1.00		1.00	1.00			0.83		1.00	1.00	
Incremental Delay, d2		0.8		2.5	8.6			1.6		3.5	0.6	
Delay (s)		47.3		42.3	49.2			15.5		47.9	8.1	
Level of Service		D		D	D			B		D	A	
Approach Delay (s)		47.3			46.6			15.5			11.1	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	570	80	100	380	210	100	580	110	290	660	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3440		1770	3282		1770	3393		1770	3464	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3440		1770	3282		1770	3393		1770	3464	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	459	582	82	102	388	214	102	592	112	296	673	61
RTOR Reduction (vph)	0	11	0	0	80	0	0	14	0	0	6	0
Lane Group Flow (vph)	459	653	0	102	522	0	102	690	0	296	728	0
Confl. Peds. (#/hr)			44			23			54			53
Confl. Bikes (#/hr)			11			15			52			53
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.0	25.8		8.1	21.9		5.0	37.1		12.0	44.1	
Effective Green, g (s)	12.0	25.8		8.1	21.9		5.0	37.1		12.0	44.1	
Actuated g/C Ratio	0.12	0.26		0.08	0.22		0.05	0.37		0.12	0.44	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	888		143	719		89	1259		212	1528	
v/s Ratio Prot	c0.13	c0.19		0.06	0.16		0.06	c0.20		c0.17	0.21	
v/s Ratio Perm												
v/c Ratio	1.11	0.74		0.71	0.73		1.15	0.55		1.40	0.48	
Uniform Delay, d1	44.0	34.0		44.8	36.3		47.5	24.8		44.0	19.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.14	0.71	
Incremental Delay, d2	79.0	2.8		13.1	3.1		140.2	1.7		202.6	1.0	
Delay (s)	123.0	36.7		57.9	39.4		187.7	26.5		252.7	14.9	
Level of Service	F	D		E	D		F	C		F	B	
Approach Delay (s)		72.0			42.1			46.9			83.3	
Approach LOS		E			D			D			F	

Intersection Summary			
HCM Average Control Delay	63.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	860	30	20	590	30	50	60	30	50	40	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1762	3517		1764	3508			1754			1737	
Flt Permitted	0.38	1.00		0.26	1.00			0.87			0.84	
Satd. Flow (perm)	710	3517		479	3508			1545			1491	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	896	31	21	615	31	52	62	31	52	42	31
RTOR Reduction (vph)	0	3	0	0	4	0	0	12	0	0	15	0
Lane Group Flow (vph)	52	924	0	21	642	0	0	133	0	0	110	0
Confl. Peds. (#/hr)	13		14	14		13	16		9	9		16
Confl. Bikes (#/hr)			10			4			26			32
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	403	1997		272	1992			477			460	
v/s Ratio Prot		c0.26			0.18							
v/s Ratio Perm	0.07			0.04				c0.09			0.07	
v/c Ratio	0.13	0.46		0.08	0.32			0.28			0.24	
Uniform Delay, d1	8.2	10.3		7.9	9.3			21.2			20.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.7	0.8		0.6	0.4			1.5			1.2	
Delay (s)	8.8	11.0		8.5	9.7			22.6			22.1	
Level of Service	A	B		A	A			C			C	
Approach Delay (s)		10.9			9.6			22.6			22.1	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	262	1020	60	20	710	114	40	31	10	255	40	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.96		1.00			0.97	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.99			1.00	0.85		0.98			0.94	
Flt Protected	0.95	1.00			1.00	1.00		0.98			0.98	
Satd. Flow (prot)	1770	3502			3534	1521		1766			3127	
Flt Permitted	0.95	1.00			0.91	1.00		0.69			0.80	
Satd. Flow (perm)	1770	3502			3231	1521		1246			2577	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	270	1052	62	21	732	118	41	32	10	263	41	224
RTOR Reduction (vph)	0	4	0	0	0	61	0	6	0	0	168	0
Lane Group Flow (vph)	270	1110	0	0	753	57	0	77	0	0	360	0
Confl. Peds. (#/hr)			19	19		15	66		16	16		66
Confl. Bikes (#/hr)			9			4			13			20
Turn Type	Prot			Perm		Perm	Perm			Perm		
Protected Phases	1	6			2			4			4	
Permitted Phases				2		2	4			4		
Actuated Green, G (s)	15.3	40.9			22.6	22.6		15.8			15.8	
Effective Green, g (s)	15.3	40.9			22.6	22.6		15.8			15.8	
Actuated g/C Ratio	0.24	0.65			0.36	0.36		0.25			0.25	
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	432	2284			1165	548		314			649	
v/s Ratio Prot	c0.15	0.32										
v/s Ratio Perm					c0.23	0.04		0.06			c0.14	
v/c Ratio	0.62	0.49			0.65	0.10		0.25			0.56	
Uniform Delay, d1	21.1	5.5			16.7	13.3		18.7			20.4	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	2.8	0.2			1.2	0.1		0.4			1.0	
Delay (s)	24.0	5.7			18.0	13.4		19.1			21.4	
Level of Service	C	A			B	B		B			C	
Approach Delay (s)		9.3			17.3			19.1			21.4	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	62.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1160	100	10	790	50	10	10	10	10	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	1234	106	11	840	53	11	11	11	11	11	11
Pedestrians		11			1			16			9	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		881			649							
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	
vC, conflicting volume	903			1356			1814	2270	687	1574	2296	467
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	903			1181			1688	2192	441	1422	2221	467
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			98			73	72	98	83	71	98
cM capacity (veh/h)	743			523			39	38	502	63	36	534

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	638	723	431	473	32	32
Volume Left	21	0	11	0	11	11
Volume Right	0	106	0	53	11	11
cSH	743	1700	523	1700	55	66
Volume to Capacity	0.03	0.43	0.02	0.28	0.58	0.48
Queue Length 95th (ft)	2	0	2	0	57	48
Control Delay (s)	0.8	0.0	0.6	0.0	136.6	102.8
Lane LOS	A		A		F	F
Approach Delay (s)	0.4		0.3		136.6	102.8
Approach LOS					F	F

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	1100	70	20	800	10	40	10	100	10	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	1134	72	21	825	10	41	10	103	10	10	10
Pedestrians		4						18			23	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						1			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1205			325							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	858			1224			1682	2108	621	1590	2139	445
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	685			1224			1575	2036	621	1476	2069	238
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			20	78	76	78	77	99
cM capacity (veh/h)	821			557			51	48	424	47	45	690

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	577	639	433	423	155	31
Volume Left	10	0	21	0	41	10
Volume Right	0	72	0	10	103	10
cSH	821	1700	557	1700	123	67
Volume to Capacity	0.01	0.38	0.04	0.25	1.26	0.46
Queue Length 95th (ft)	1	0	3	0	247	46
Control Delay (s)	0.3	0.0	1.1	0.0	235.2	97.7
Lane LOS	A		A		F	F
Approach Delay (s)	0.2		0.6		235.2	97.7
Approach LOS					F	F

Intersection Summary			
Average Delay	17.7		
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	940	220	120	590	50	200	40	180	50	40	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.97			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.97			0.99			0.94			0.96	
Flt Protected		1.00			0.99			0.98			0.98	
Satd. Flow (prot)		3408			3466			1870			1715	
Flt Permitted		0.87			0.52			0.78			0.76	
Satd. Flow (perm)		2982			1812			1501			1337	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	1022	239	130	641	54	217	43	196	54	43	43
RTOR Reduction (vph)	0	27	0	0	7	0	0	39	0	0	23	0
Lane Group Flow (vph)	0	1288	0	0	818	0	0	417	0	0	117	0
Confl. Peds. (#/hr)	20		9			20	30		42	42		30
Confl. Bikes (#/hr)			11			3			4			6
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		25.5			41.5			19.0			19.0	
Effective Green, g (s)		25.5			41.5			19.0			19.0	
Actuated g/C Ratio		0.36			0.59			0.27			0.27	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		1086			1381			407			363	
v/s Ratio Prot					c0.11							
v/s Ratio Perm		c0.43			0.24			c0.28			0.09	
v/c Ratio		1.19			0.59			1.03			0.32	
Uniform Delay, d1		22.2			8.9			25.5			20.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		93.1			1.9			51.3			2.4	
Delay (s)		115.3			10.8			76.8			22.7	
Level of Service		F			B			E			C	
Approach Delay (s)		115.3			10.8			76.8			22.7	
Approach LOS		F			B			E			C	

Intersection Summary			
HCM Average Control Delay	72.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	200	90	80	320	270	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.96		1.00	1.00	1.00	0.89
Flpb, ped/bikes	1.00		0.95	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1661		1675	1863	1863	1416
Flt Permitted	0.97		0.53	1.00	1.00	1.00
Satd. Flow (perm)	1661		930	1863	1863	1416
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	222	100	89	356	300	111
RTOR Reduction (vph)	30	0	0	0	0	54
Lane Group Flow (vph)	292	0	89	356	300	57
Confl. Peds. (#/hr)	93	72	86			86
Confl. Bikes (#/hr)		8				4
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	634		473	948	948	721
v/s Ratio Prot	c0.18			c0.19	0.16	
v/s Ratio Perm			0.10			0.04
v/c Ratio	0.46		0.19	0.38	0.32	0.08
Uniform Delay, d1	12.8		7.3	8.2	7.9	6.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4		0.9	1.1	0.9	0.2
Delay (s)	15.2		8.2	9.3	8.8	7.1
Level of Service	B		A	A	A	A
Approach Delay (s)	15.2			9.1	8.3	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	530	670	490	50	10	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.87	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3490		1588	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3490		1588	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	546	691	505	52	10	340
RTOR Reduction (vph)	0	0	12	0	236	0
Lane Group Flow (vph)	546	691	545	0	114	0
Confl. Peds. (#/hr)					4	
Confl. Bikes (#/hr)						8
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	818		484	
v/s Ratio Prot	c0.31	0.20	c0.16		c0.07	
v/s Ratio Perm						
v/c Ratio	0.99	0.33	0.67		0.23	
Uniform Delay, d1	21.9	6.6	22.2		16.7	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	35.3	0.4	4.3		1.1	
Delay (s)	57.2	7.0	26.5		17.8	
Level of Service	E	A	C		B	
Approach Delay (s)		29.1	26.5		17.8	
Approach LOS		C	C		B	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	20	40	440	10	60	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.91		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1668		1856		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1668		1856		1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	22	43	473	11	65	634
RTOR Reduction (vph)	39	0	1	0	0	0
Lane Group Flow (vph)	26	0	483	0	65	634
Confl. Bikes (#/hr)				3		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	3.1		17.0		2.6	23.6
Effective Green, g (s)	3.1		17.0		2.6	23.6
Actuated g/C Ratio	0.09		0.48		0.07	0.66
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	145		884		129	1232
v/s Ratio Prot	c0.02		0.26		0.04	c0.34
v/s Ratio Perm						
v/c Ratio	0.18		0.55		0.50	0.51
Uniform Delay, d1	15.1		6.6		15.9	3.1
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.6		0.7		3.1	0.4
Delay (s)	15.7		7.3		19.0	3.5
Level of Service	B		A		B	A
Approach Delay (s)	15.7		7.3			4.9
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	35.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	20	50	20	20	20	40	50	10	40	380	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.97			0.94					0.99	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.97			0.91					0.99	
Flt Protected			0.99			0.99					0.99	
Satd. Flow (prot)			1537			1394					1616	
Flt Permitted			0.89			0.95					0.89	
Satd. Flow (perm)			1386			1333					1448	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	22	55	22	22	22	44	55	11	44	418	22
RTOR Reduction (vph)	0	0	15	0	0	38	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	95	0	0	105	0	0	0	0	492	0
Confl. Peds. (#/hr)				55				32				118
Confl. Bikes (#/hr)												14
Parking (#/hr)			3			3					3	
Turn Type		Perm			Perm					Perm		
Protected Phases			1			1					2	
Permitted Phases		1			1					2		
Actuated Green, G (s)			14.0			14.0					22.0	
Effective Green, g (s)			14.0			14.0					22.0	
Actuated g/C Ratio			0.23			0.23					0.37	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			323			311					531	
v/s Ratio Prot												
v/s Ratio Perm			0.07			c0.08					0.34	
v/c Ratio			0.29			0.34					0.93	
Uniform Delay, d1			18.9			19.1					18.2	
Progression Factor			1.00			1.00					1.00	
Incremental Delay, d2			2.3			2.9					24.7	
Delay (s)			21.2			22.1					42.9	
Level of Service			C			C					D	
Approach Delay (s)			21.2			22.1					42.9	
Approach LOS			C			C					D	

Intersection Summary			
HCM Average Control Delay	38.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	60	380	20	30	20	70	50	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.97				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.99				0.93		
Flt Protected		0.99				0.98		
Satd. Flow (prot)		1751				1500		
Flt Permitted		0.88				0.98		
Satd. Flow (perm)		1551				1500		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	66	418	22	33	22	77	55	44
RTOR Reduction (vph)	0	4	0	0	0	17	0	0
Lane Group Flow (vph)	0	535	0	0	0	181	0	0
Confl. Peds. (#/hr)			67	108				
Confl. Bikes (#/hr)			14	6				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		22.0				12.0		
Effective Green, g (s)		22.0				12.0		
Actuated g/C Ratio		0.37				0.20		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		569				300		
v/s Ratio Prot								
v/s Ratio Perm		c0.35				0.12		
v/c Ratio		0.94				0.60		
Uniform Delay, d1		18.4				21.8		
Progression Factor		1.00				1.00		
Incremental Delay, d2		25.6				8.7		
Delay (s)		44.0				30.6		
Level of Service		D				C		
Approach Delay (s)		44.0				30.6		
Approach LOS		D				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	10	10	0	0	0	0	30	30	10	20	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	13	13	13	0	0	0	0	38	38	13	26	0
Pedestrians					9						6	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	6			26			58	51	28	118	57	6
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	6			26			58	51	28	118	57	6
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	95	96	98	97	100
cM capacity (veh/h)	1607			1589			908	830	1047	786	823	1071

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	38	77	38
Volume Left	13	0	13
Volume Right	13	38	0
cSH	1607	926	810
Volume to Capacity	0.01	0.08	0.05
Queue Length 95th (ft)	1	7	4
Control Delay (s)	2.5	9.2	9.7
Lane LOS	A	A	A
Approach Delay (s)	2.5	9.2	9.7
Approach LOS		A	A

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1050	0	0	690	20	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	1129	0	0	742	22	0	0	11	0	0	0
Pedestrians					1			10			1	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1258			636							
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	764			1139			1510	1903	576	1330	1893	383
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	764			966			1371	1801	350	1175	1790	383
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	844			643			95	72	586	131	73	615

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	753	376	495	269	11
Volume Left	0	0	0	0	0
Volume Right	0	0	0	22	11
cSH	1700	1700	1700	1700	586
Volume to Capacity	0.44	0.22	0.29	0.16	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.3
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1280	760	56	0	82
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1391	826	61	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		226	1304			
pX, platoon unblocked					0.84	
vC, conflicting volume	887				1552	443
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	887				1277	443
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	84
cM capacity (veh/h)	759				133	562

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	696	696	551	336	89
Volume Left	0	0	0	0	0
Volume Right	0	0	0	61	89
cSH	1700	1700	1700	1700	562
Volume to Capacity	0.41	0.41	0.32	0.20	0.16
Queue Length 95th (ft)	0	0	0	0	14
Control Delay (s)	0.0	0.0	0.0	0.0	12.6
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.6
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	40	10	30	20	10	10	10	20	550	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0			4.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.97				0.99			1.00			
Flpb, ped/bikes		1.00				1.00			1.00			
Frt		0.93				0.95			0.99			
Flt Protected		0.98				0.98			1.00			
Satd. Flow (prot)		1652				1729			3503			
Flt Permitted		0.89				0.92			0.93			
Satd. Flow (perm)		1494				1615			3254			
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	47	12	35	23	12	12	12	23	640	12	12	12
RTOR Reduction (vph)	0	15	0	0	0	9	0	0	2	0	0	0
Lane Group Flow (vph)	0	102	0	0	0	27	0	0	685	0	0	0
Confl. Peds. (#/hr)	10		21	15	15		10	11		21	11	11
Confl. Bikes (#/hr)			1	1						4	4	
Turn Type	Perm				Perm			Perm				
Protected Phases		4				4			2			
Permitted Phases	4				4			2				
Actuated Green, G (s)		16.0				16.0			16.0			
Effective Green, g (s)		16.0				16.0			16.0			
Actuated g/C Ratio		0.27				0.27			0.27			
Clearance Time (s)		4.0				4.0			4.0			
Lane Grp Cap (vph)		398				431			868			
v/s Ratio Prot												
v/s Ratio Perm		c0.07				0.02			0.21			
v/c Ratio		0.26				0.06			0.79			
Uniform Delay, d1		17.3				16.4			20.4			
Progression Factor		0.86				1.00			1.00			
Incremental Delay, d2		1.4				0.3			7.2			
Delay (s)		16.3				16.7			27.6			
Level of Service		B				B			C			
Approach Delay (s)		16.3				16.7			27.6			
Approach LOS		B				B			C			

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	NWL	NWR
Lane Configurations					
Volume (vph)	50	370	20	30	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	
Lane Util. Factor		0.95		1.00	
Frpb, ped/bikes		1.00		0.99	
Flpb, ped/bikes		1.00		1.00	
Frt		0.99		0.92	
Flt Protected		0.99		0.98	
Satd. Flow (prot)		3478		1660	
Flt Permitted		0.68		0.98	
Satd. Flow (perm)		2393		1660	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	58	430	23	35	47
RTOR Reduction (vph)	0	5	0	0	0
Lane Group Flow (vph)	0	518	0	82	0
Confl. Peds. (#/hr)	21		11	11	10
Confl. Bikes (#/hr)			1		1
Turn Type	Perm				
Protected Phases		6		8	
Permitted Phases	6				
Actuated Green, G (s)		16.0		16.0	
Effective Green, g (s)		16.0		16.0	
Actuated g/C Ratio		0.27		0.27	
Clearance Time (s)		4.0		4.0	
Lane Grp Cap (vph)		638		443	
v/s Ratio Prot				c0.05	
v/s Ratio Perm		c0.22			
v/c Ratio		0.81		0.19	
Uniform Delay, d1		20.6		17.0	
Progression Factor		1.00		1.00	
Incremental Delay, d2		10.8		0.9	
Delay (s)		31.4		17.9	
Level of Service		C		B	
Approach Delay (s)		31.4		17.9	
Approach LOS		C		B	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	230	40	560	270	30	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.95		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1734		3212		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1734		3212		1711	3421
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	247	43	602	290	32	441
RTOR Reduction (vph)	12	0	97	0	0	0
Lane Group Flow (vph)	278	0	795	0	32	441
Confl. Peds. (#/hr)		69		72	72	
Confl. Bikes (#/hr)		3		6		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	11.2		18.1		1.8	23.9
Effective Green, g (s)	11.2		18.1		1.8	23.9
Actuated g/C Ratio	0.26		0.42		0.04	0.55
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	451		1349		71	1897
v/s Ratio Prot	c0.16		c0.25		c0.02	0.13
v/s Ratio Perm						
v/c Ratio	0.62		0.59		0.45	0.23
Uniform Delay, d1	14.1		9.6		20.2	4.9
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.8		0.4		1.7	0.0
Delay (s)	15.8		10.1		21.8	4.9
Level of Service	B		B		C	A
Approach Delay (s)	15.8		10.1			6.1
Approach LOS	B		B			A

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	43.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	380	410	840	550	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.97	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.98	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3252	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3252	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	400	432	884	579	105
RTOR Reduction (vph)	0	0	0	0	26	0
Lane Group Flow (vph)	0	400	432	884	658	0
Confl. Peds. (#/hr)	156		95			95
Confl. Bikes (#/hr)						1
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		21.0	21.0	33.0	26.0	
Effective Green, g (s)		21.0	21.0	33.0	26.0	
Actuated g/C Ratio		0.37	0.37	0.58	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		594	609	1912	1483	
v/s Ratio Prot		0.25	c0.26	c0.27	0.20	
v/s Ratio Perm						
v/c Ratio		0.67	0.71	0.46	0.44	
Uniform Delay, d1		15.1	15.4	6.9	10.6	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		6.0	6.9	0.2	1.0	
Delay (s)		21.1	22.2	7.1	11.5	
Level of Service		C	C	A	B	
Approach Delay (s)	21.1			12.1	11.5	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	20	0	50	10	0	20	20	0	1260	0	20	920
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	0	53	11	0	21	0	0	1340	0	21	979
Pedestrians		48			108				4			18
Lane Width (ft)		12.0			12.0				10.0			10.0
Walking Speed (ft/s)		4.0			4.0				4.0			4.0
Percent Blockage		4			9				0			1
Right turn flare (veh)												
Median type									None			None
Median storage veh)												
Upstream signal (ft)									483			264
pX, platoon unblocked							0.00					
vC, conflicting volume	1555	2518	378	1874	2518	573	0	1027			1448	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1555	2518	378	1874	2518	573	0	1027			1448	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			2.2	
p0 queue free %	64	100	91	66	100	95	0	100			95	
cM capacity (veh/h)	60	23	593	32	23	416	0	645			422	

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	74	32	335	670	335	266	489	245
Volume Left	21	11	0	0	0	21	0	0
Volume Right	53	21	0	0	0	0	0	0
cSH	167	82	645	1700	1700	422	1700	1700
Volume to Capacity	0.45	0.39	0.00	0.39	0.20	0.05	0.29	0.14
Queue Length 95th (ft)	51	38	0	0	0	4	0	0
Control Delay (s)	42.7	74.1	0.0	0.0	0.0	1.9	0.0	0.0
Lane LOS	E	F				A		
Approach Delay (s)	42.7	74.1	0.0			0.5		
Approach LOS	E	F						

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Sign Control	
Grade	
Peak Hour Factor	0.94
Hourly flow rate (vph)	0
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	

Direction, Lane #

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	150	0	1120	20	0	990	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	0	0	0	0	156	0	1167	21	0	1031	0
Pedestrians		24			38			1			3	
Lane Width (ft)		0.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			3			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								295			452	
pX, platoon unblocked												
vC, conflicting volume	1603	2281	283	1463	2260	430	1055			1226		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1603	2281	283	1463	2260	430	1055			1226		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	72	100			100		
cM capacity (veh/h)	49	38	714	85	39	554	656			547		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	156	389	389	389	21	295	295	295	147
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	156	0	0	0	21	0	0	0	0
cSH	554	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.28	0.23	0.23	0.23	0.01	0.17	0.17	0.17	0.09
Queue Length 95th (ft)	29	0	0	0	0	0	0	0	0
Control Delay (s)	14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	14.0	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	70	1070	230	0	990
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	74	1138	245	0	1053
Pedestrians	48					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	4					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			174			573
pX, platoon unblocked						
vC, conflicting volume	1572	455			1431	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1572	455			1431	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	86			100	
cM capacity (veh/h)	97	530			452	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	74	325	325	325	407	263	263	263	263
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	74	0	0	0	245	0	0	0	0
cSH	530	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.14	0.19	0.19	0.19	0.24	0.15	0.15	0.15	0.15
Queue Length 95th (ft)	12	0	0	0	0	0	0	0	0
Control Delay (s)	12.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	12.9	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	190	390	120	230	540	400	160	640	210	70	360	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.96		1.00	0.94			0.97			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (prot)	1770	3377		1770	3252			4757			1420	4406
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (perm)	1770	3377		1770	3252			4757			1420	4406
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	202	415	128	245	574	426	170	681	223	74	383	404
RTOR Reduction (vph)	0	26	0	0	63	0	0	43	0	0	0	0
Lane Group Flow (vph)	202	517	0	245	937	0	0	1031	0	0	227	634
Confl. Peds. (#/hr)	25		29	29		25	28		83	25	83	
Confl. Bikes (#/hr)			1			3			1			
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	14.6	36.0		12.0	33.4			27.5			18.5	18.5
Effective Green, g (s)	14.6	36.0		12.0	33.4			27.5			18.5	18.5
Actuated g/C Ratio	0.13	0.33		0.11	0.30			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	235	1105		193	987			1189			239	741
v/s Ratio Prot	0.11	c0.15		c0.14	c0.29			c0.22			c0.16	0.14
v/s Ratio Perm												
v/c Ratio	0.86	0.47		1.27	0.95			0.87			0.95	0.86
Uniform Delay, d1	46.7	29.4		49.0	37.5			39.5			45.3	44.5
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	25.4	1.4		155.5	18.8			8.6			46.6	12.1
Delay (s)	72.1	30.8		204.5	56.3			48.1			91.8	56.6
Level of Service	E	C		F	E			D			F	E
Approach Delay (s)		42.0			85.4			48.1				63.2
Approach LOS		D			F			D				E

Intersection Summary			
HCM Average Control Delay	62.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	170
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.93
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1370
Flt Permitted	1.00
Satd. Flow (perm)	1370
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	181
RTOR Reduction (vph)	57
Lane Group Flow (vph)	124
Confl. Peds. (#/hr)	28
Confl. Bikes (#/hr)	10
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	18.5
Effective Green, g (s)	18.5
Actuated g/C Ratio	0.17
Clearance Time (s)	4.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	230
v/s Ratio Prot	
v/s Ratio Perm	0.09
v/c Ratio	0.54
Uniform Delay, d1	41.8
Progression Factor	1.00
Incremental Delay, d2	8.7
Delay (s)	50.6
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	10	130	40	20	60	120	840	20	30	660	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.96			0.99			1.00			0.99	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.93			0.93			1.00			0.99	
Flt Protected		0.98			0.98			0.99			1.00	
Satd. Flow (prot)		1612			1661			5016			4960	
Flt Permitted		0.80			0.85			0.75			0.87	
Satd. Flow (perm)		1323			1431			3779			4336	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	122	11	144	44	22	67	133	933	22	33	733	78
RTOR Reduction (vph)	0	49	0	0	46	0	0	3	0	0	15	0
Lane Group Flow (vph)	0	228	0	0	87	0	0	1085	0	0	829	0
Confl. Peds. (#/hr)	19		112	112		19	45		57	57		45
Confl. Bikes (#/hr)			1			3			4			10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		347			376			2504			2873	
v/s Ratio Prot												
v/s Ratio Perm		c0.17			0.06			c0.29			0.19	
v/c Ratio		0.66			0.23			0.43			0.29	
Uniform Delay, d1		26.3			23.2			6.4			5.6	
Progression Factor		1.00			1.00			0.75			1.00	
Incremental Delay, d2		9.4			1.4			0.5			0.3	
Delay (s)		35.7			24.6			5.3			5.9	
Level of Service		D			C			A			A	
Approach Delay (s)		35.7			24.6			5.3			5.9	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	190	130	30	110	30	110	590	40	40	600	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.98			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.94			0.97		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1770	3268			3370		1765	3492			4844	
Flt Permitted	0.64	1.00			0.87		0.24	1.00			0.88	
Satd. Flow (perm)	1189	3268			2969		441	3492			4255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	200	137	32	116	32	116	621	42	42	632	179
RTOR Reduction (vph)	0	78	0	0	0	0	0	6	0	0	60	0
Lane Group Flow (vph)	221	259	0	0	180	0	116	657	0	0	793	0
Confl. Peds. (#/hr)			39	39		60	58		74	74		58
Confl. Bikes (#/hr)			5			8			9			10
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	513	1409			1280		281	1637			1596	
v/s Ratio Prot		0.08					0.02	c0.19				
v/s Ratio Perm	c0.19				0.06		0.17				c0.19	
v/c Ratio	0.43	0.18			0.14		0.41	0.40			0.50	
Uniform Delay, d1	15.9	14.1			13.8		12.6	13.9			19.2	
Progression Factor	1.00	1.00			1.00		1.00	1.00			0.85	
Incremental Delay, d2	2.6	0.3			0.2		4.4	0.7			1.1	
Delay (s)	18.5	14.3			14.0		17.1	14.6			17.4	
Level of Service	B	B			B		B	B			B	
Approach Delay (s)		16.0			14.0			15.0			17.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	143.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	70
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1526
Flt Permitted	1.00
Satd. Flow (perm)	1526
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	74
RTOR Reduction (vph)	46
Lane Group Flow (vph)	28
Confl. Peds. (#/hr)	48
Confl. Bikes (#/hr)	6
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	572
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.05
Uniform Delay, d1	15.9
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	16.1
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	310	60	80	400	320	100	370	50	280	410	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.94		1.00	1.00		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1557	1770	4462		1770	3465		1770	3362	1453
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1557	1770	4462		1770	3465		1770	3362	1453
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	337	65	87	435	348	109	402	54	304	446	76
RTOR Reduction (vph)	0	0	47	0	138	0	0	10	0	0	0	56
Lane Group Flow (vph)	98	337	18	87	645	0	109	446	0	304	446	20
Confl. Peds. (#/hr)	91		3	3		91	53		3	3		53
Confl. Bikes (#/hr)			1			10			14			14
Parking (#/hr)											0	
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases			4									2
Actuated Green, G (s)	9.6	28.4	28.4	9.6	28.4		17.5	26.5		17.5	26.5	26.5
Effective Green, g (s)	9.6	28.4	28.4	9.6	28.4		17.5	26.5		17.5	26.5	26.5
Actuated g/C Ratio	0.10	0.28	0.28	0.10	0.28		0.18	0.26		0.18	0.26	0.26
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	170	1005	442	170	1267		310	918		310	891	385
v/s Ratio Prot	c0.06	0.10		0.05	c0.14		0.06	0.13		c0.17	c0.13	
v/s Ratio Perm			0.01									0.01
v/c Ratio	0.58	0.34	0.04	0.51	0.51		0.35	0.49		0.98	0.50	0.05
Uniform Delay, d1	43.3	28.3	25.9	43.0	30.0		36.3	31.0		41.1	31.1	27.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.9	0.1	0.0	1.1	0.1		0.3	1.8		45.5	2.0	0.3
Delay (s)	46.2	28.4	26.0	44.1	30.1		36.5	32.8		86.6	33.1	27.6
Level of Service	D	C	C	D	C		D	C		F	C	C
Approach Delay (s)		31.6			31.5			33.5			52.3	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	38.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	50	40	40	110	170	10	1070	80	110	1050	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98			1.00	0.96	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1747	1711			1834	1525	1770	5022		1770	5074	
Flt Permitted	0.57	1.00			0.88	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1056	1711			1636	1525	1770	5022		1770	5074	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	52	42	42	115	177	10	1115	83	115	1094	10
RTOR Reduction (vph)	0	36	0	0	0	151	0	7	0	0	1	0
Lane Group Flow (vph)	42	58	0	0	157	26	10	1191	0	115	1103	0
Confl. Peds. (#/hr)	21		13	13		21	29		13	13		29
Confl. Bikes (#/hr)			9			6			6			4
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	11.9	11.9			11.9	11.9	1.2	42.2		12.4	53.4	
Effective Green, g (s)	11.9	11.9			11.9	11.9	1.2	42.2		12.4	53.4	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.01	0.53		0.16	0.67	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	157	255			243	227	27	2649		274	3387	
v/s Ratio Prot		0.03					0.01	c0.24		c0.06	0.22	
v/s Ratio Perm	0.04				c0.10	0.02						
v/c Ratio	0.27	0.23			0.65	0.12	0.37	0.45		0.42	0.33	
Uniform Delay, d1	30.2	30.0			32.1	29.5	39.0	11.7		30.5	5.7	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			4.4	0.1	3.1	0.6		0.4	0.3	
Delay (s)	30.5	30.2			36.4	29.6	42.1	12.3		30.9	5.9	
Level of Service	C	C			D	C	D	B		C	A	
Approach Delay (s)		30.3			32.8			12.5			8.3	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	710	190	40	850	140	190	160	70	100	150	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.95		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4886		1764	4929		1768	1754		1745	1627	
Flt Permitted	0.95	1.00		0.30	1.00		0.17	1.00		0.61	1.00	
Satd. Flow (perm)	1770	4886		555	4929		308	1754		1126	1627	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	296	724	194	41	867	143	194	163	71	102	153	286
RTOR Reduction (vph)	0	61	0	0	24	0	0	14	0	0	67	0
Lane Group Flow (vph)	296	857	0	41	986	0	194	220	0	102	372	0
Confl. Peds. (#/hr)	25		6	6		25	21		18	18		21
Confl. Bikes (#/hr)			10			5			23			14
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	21.0	53.8		28.8	28.8		37.2	37.2		20.2	20.2	
Effective Green, g (s)	21.0	53.8		28.8	28.8		37.2	37.2		20.2	20.2	
Actuated g/C Ratio	0.21	0.54		0.29	0.29		0.37	0.37		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	372	2629		160	1420		304	652		227	329	
v/s Ratio Prot	c0.17	0.18			c0.20		c0.08	0.13			c0.23	
v/s Ratio Perm				0.07			0.15			0.09		
v/c Ratio	0.80	0.33		0.26	0.69		0.64	0.34		0.45	1.13	
Uniform Delay, d1	37.5	12.9		27.4	31.7		24.4	22.6		35.0	39.9	
Progression Factor	1.00	1.00		1.23	1.18		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	0.1		0.7	1.1		4.4	1.4		6.3	89.8	
Delay (s)	48.7	13.0		34.2	38.6		28.8	24.0		41.3	129.7	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		21.7			38.4			26.1			113.0	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	43.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	30	10	30	40	50	30	740	40	50	620	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			0.99			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.98			0.94			0.99			1.00	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1767			1717			3475			3493	
Flt Permitted		0.68			0.90			0.91			0.84	
Satd. Flow (perm)		1236			1561			3166			2934	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	33	11	33	43	54	33	804	43	54	674	11
RTOR Reduction (vph)	0	9	0	0	48	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	89	0	0	82	0	0	878	0	0	739	0
Confl. Peds. (#/hr)	21		25	25					53	53		92
Confl. Bikes (#/hr)			3			3			47			33
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		9.3			9.3			61.7			61.7	
Effective Green, g (s)		9.3			9.3			61.7			61.7	
Actuated g/C Ratio		0.12			0.12			0.77			0.77	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		144			181			2442			2263	
v/s Ratio Prot												
v/s Ratio Perm		c0.07			0.05			c0.28			0.25	
v/c Ratio		0.62			0.45			4.78dl			0.33	
Uniform Delay, d1		33.7			33.0			2.9			2.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		5.5			0.7			0.4			0.4	
Delay (s)		39.1			33.6			3.3			3.2	
Level of Service		D			C			A			A	
Approach Delay (s)		39.1			33.6			3.3			3.2	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	230	80
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	250	87
RTOR Reduction (vph)	7	0
Lane Group Flow (vph)	330	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		20
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	61.7	
Effective Green, g (s)	61.7	
Actuated g/C Ratio	0.77	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1242	
v/s Ratio Prot	0.21	
v/s Ratio Perm		
v/c Ratio	0.27	
Uniform Delay, d1	2.6	
Progression Factor	1.00	
Incremental Delay, d2	0.5	
Delay (s)	3.2	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	40	120	50	130	10	740	140	70	550	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.95			0.95		1.00	0.86	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.91		1.00	0.90			0.94		1.00	0.95	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1683		1681	1499			3150		1770	2902	
Flt Permitted		0.99		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (perm)		1683		1681	1499			2984		1770	2902	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.25	0.95	0.95	0.95
Adj. Flow (vph)	11	11	42	126	53	137	11	779	560	74	579	253
RTOR Reduction (vph)	0	40	0	0	84	0	0	88	0	0	35	0
Lane Group Flow (vph)	0	24	0	113	119	0	0	1262	0	74	797	0
Confl. Peds. (#/hr)	40					40	160		30	30		160
Confl. Bikes (#/hr)						8			29			25
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		5.3		12.4	12.4			56.7		7.6	68.8	
Effective Green, g (s)		5.3		12.4	12.4			56.7		7.6	68.8	
Actuated g/C Ratio		0.05		0.12	0.12			0.57		0.08	0.69	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		89		208	186			1692		135	1997	
v/s Ratio Prot		c0.01		0.07	c0.08					c0.04	0.27	
v/s Ratio Perm								c0.42				
v/c Ratio		0.27		0.54	0.64			0.75		0.55	0.40	
Uniform Delay, d1		45.5		41.1	41.7			16.2		44.5	6.7	
Progression Factor		1.00		1.00	1.00			0.72		1.00	1.00	
Incremental Delay, d2		0.6		1.6	5.2			2.8		2.4	0.6	
Delay (s)		46.1		42.7	46.9			14.5		47.0	7.3	
Level of Service		D		D	D			B		D	A	
Approach Delay (s)		46.1			45.4			14.5			10.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	460	140	130	570	190	120	460	130	190	470	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.93		1.00	0.98		1.00	0.94		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3186		1770	3355		1770	3227		1770	3431	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3186		1770	3355		1770	3227		1770	3431	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	255	469	143	133	582	194	122	469	133	194	480	41
RTOR Reduction (vph)	0	30	0	0	34	0	0	25	0	0	6	0
Lane Group Flow (vph)	255	582	0	133	742	0	122	577	0	194	515	0
Confl. Peds. (#/hr)	32		204	204		32	164		175	175		164
Confl. Bikes (#/hr)			4			6			34			32
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.8	24.0		10.1	23.3		5.0	36.9		12.0	43.9	
Effective Green, g (s)	10.8	24.0		10.1	23.3		5.0	36.9		12.0	43.9	
Actuated g/C Ratio	0.11	0.24		0.10	0.23		0.05	0.37		0.12	0.44	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	371	765		179	782		89	1191		212	1506	
v/s Ratio Prot	0.07	0.18		c0.08	c0.22		c0.07	c0.18		c0.11	0.15	
v/s Ratio Perm												
v/c Ratio	0.69	0.76		0.74	0.95		1.37	0.48		0.92	0.34	
Uniform Delay, d1	43.0	35.3		43.7	37.8		47.5	24.2		43.5	18.5	
Progression Factor	0.91	1.24		1.00	1.00		1.00	1.00		1.16	0.76	
Incremental Delay, d2	4.0	3.9		13.5	20.3		222.8	1.4		36.7	0.6	
Delay (s)	43.3	47.7		57.2	58.1		270.3	25.7		87.0	14.6	
Level of Service	D	D		E	E		F	C		F	B	
Approach Delay (s)		46.4			58.0			66.9			34.2	
Approach LOS		D			E			E			C	

Intersection Summary			
HCM Average Control Delay	51.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	650	30	20	810	40	30	40	20	30	40	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.97			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1766	3509		1759	3509			1753			1777	
Flt Permitted	0.27	1.00		0.35	1.00			0.90			0.89	
Satd. Flow (perm)	502	3509		645	3509			1606			1608	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	684	32	21	853	42	32	42	21	32	42	11
RTOR Reduction (vph)	0	4	0	0	4	0	0	12	0	0	7	0
Lane Group Flow (vph)	42	712	0	21	891	0	0	83	0	0	78	0
Confl. Peds. (#/hr)	9		20	20		9	13		13	13		13
Confl. Bikes (#/hr)			4			8			28			38
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	285	1993		366	1993			496			496	
v/s Ratio Prot		0.20			c0.25							
v/s Ratio Perm	0.08			0.03				c0.05			0.05	
v/c Ratio	0.15	0.36		0.06	0.45			0.17			0.16	
Uniform Delay, d1	8.3	9.5		7.8	10.1			20.4			20.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.1	0.5		0.3	0.7			0.7			0.7	
Delay (s)	9.3	10.0		8.1	10.9			21.1			21.0	
Level of Service	A	A		A	B			C			C	
Approach Delay (s)		10.0			10.8			21.1			21.0	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	670	60	40	820	100	70	40	20	130	70	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.93		1.00			0.97	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.99			1.00	0.85		0.98			0.91	
Flt Protected	0.95	1.00			1.00	1.00		0.97			0.99	
Satd. Flow (prot)	1770	3479			3528	1476		1753			3092	
Flt Permitted	0.95	1.00			0.90	1.00		0.51			0.82	
Satd. Flow (perm)	1770	3479			3170	1476		919			2567	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	705	63	42	863	105	74	42	21	137	74	284
RTOR Reduction (vph)	0	6	0	0	0	42	0	9	0	0	220	0
Lane Group Flow (vph)	253	762	0	0	905	63	0	128	0	0	275	0
Confl. Peds. (#/hr)	43		39	39		43	52		23	23		52
Confl. Bikes (#/hr)			5			3			6			5
Turn Type	Prot			Perm		Perm	Perm			Perm		
Protected Phases	1	6			2			4			4	
Permitted Phases				2		2	4			4		
Actuated Green, G (s)	14.8	43.9			26.1	26.1		14.4			14.4	
Effective Green, g (s)	14.8	43.9			26.1	26.1		14.4			14.4	
Actuated g/C Ratio	0.23	0.68			0.41	0.41		0.22			0.22	
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	407	2375			1287	599		206			575	
v/s Ratio Prot	c0.14	0.22										
v/s Ratio Perm					c0.29	0.04		c0.14			0.11	
v/c Ratio	0.62	0.32			0.70	0.11		0.62			0.48	
Uniform Delay, d1	22.2	4.1			15.9	11.9		22.5			21.7	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	2.9	0.1			1.8	0.1		5.8			0.6	
Delay (s)	25.2	4.2			17.6	11.9		28.3			22.3	
Level of Service	C	A			B	B		C			C	
Approach Delay (s)		9.4			17.1			28.3			22.3	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	760	40	30	940	10	10	0	40	10	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	800	42	32	989	11	11	0	42	11	11	11
Pedestrians		13			4			14			9	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	1009			856			1527	2012	439	1618	2028	522
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	972			856			1500	1994	439	1593	2010	476
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			96			82	100	92	82	79	98
cM capacity (veh/h)	687			771			60	51	557	58	50	516

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	453	442	526	505	53	32
Volume Left	53	0	32	0	11	11
Volume Right	0	42	0	11	42	11
cSH	687	1700	771	1700	209	76
Volume to Capacity	0.08	0.26	0.04	0.30	0.25	0.41
Queue Length 95th (ft)	6	0	3	0	24	41
Control Delay (s)	2.2	0.0	1.1	0.0	27.9	82.0
Lane LOS	A		A		D	F
Approach Delay (s)	1.1		0.6		27.9	82.0
Approach LOS					D	F

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	730	60	40	880	30	60	10	60	10	40	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.95	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	21	760	62	42	917	31	62	11	62	10	42	52
Pedestrians		3			3			16			16	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.86						0.86	0.86		0.86	0.86	0.86
vC, conflicting volume	964			839			1467	1897	430	1524	1912	493
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	638			839			1222	1720	430	1288	1738	92
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			95			0	85	89	86	38	94
cM capacity (veh/h)	801			781			50	69	564	74	67	804

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	401	443	500	490	136	104
Volume Left	21	0	42	0	62	10
Volume Right	0	62	0	31	62	52
cSH	801	1700	781	1700	90	126
Volume to Capacity	0.03	0.26	0.05	0.29	1.51	0.83
Queue Length 95th (ft)	2	0	4	0	263	126
Control Delay (s)	0.8	0.0	1.5	0.0	360.1	105.4
Lane LOS	A		A		F	F
Approach Delay (s)	0.4		0.7		360.1	105.4
Approach LOS					F	F

Intersection Summary			
Average Delay	29.4		
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	420	270	120	680	120	120	130	140	130	50	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.98			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.95			0.98			0.95			0.95	
Flt Protected		0.99			0.99			0.98			0.98	
Satd. Flow (prot)		3258			3412			1934			1696	
Flt Permitted		0.69			0.59			0.82			0.64	
Satd. Flow (perm)		2272			2019			1606			1110	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	442	284	126	716	126	126	137	147	137	53	95
RTOR Reduction (vph)	0	117	0	0	22	0	0	37	0	0	33	0
Lane Group Flow (vph)	0	725	0	0	946	0	0	373	0	0	252	0
Confl. Peds. (#/hr)	29		23	23		29	47		35	35		47
Confl. Bikes (#/hr)			4			6			1			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		640			1175			555			383	
v/s Ratio Prot					c0.12							
v/s Ratio Perm		c0.32			0.27			c0.23			0.23	
v/c Ratio		1.13			0.81			0.67			0.66	
Uniform Delay, d1		19.8			12.1			15.3			15.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		78.1			5.9			6.4			8.6	
Delay (s)		97.8			18.0			21.7			23.8	
Level of Service		F			B			C			C	
Approach Delay (s)		97.8			18.0			21.7			23.8	
Approach LOS		F			B			C			C	

Intersection Summary			
HCM Average Control Delay	46.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	130	90	70	350	210	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.88		1.00	1.00	1.00	0.59
Flpb, ped/bikes	1.00		0.74	1.00	1.00	1.00
Frt	0.94		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1512		1304	1863	1863	937
Flt Permitted	0.97		0.56	1.00	1.00	1.00
Satd. Flow (perm)	1512		773	1863	1863	937
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	162	112	88	438	262	100
RTOR Reduction (vph)	42	0	0	0	0	49
Lane Group Flow (vph)	232	0	88	438	262	51
Confl. Peds. (#/hr)	116	197	397			397
Confl. Bikes (#/hr)		13				14
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	577		394	948	948	477
v/s Ratio Prot	c0.15			c0.24	0.14	
v/s Ratio Perm			0.11			0.05
v/c Ratio	0.40		0.22	0.46	0.28	0.11
Uniform Delay, d1	12.4		7.5	8.7	7.7	7.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1		1.3	1.6	0.7	0.5
Delay (s)	14.5		8.8	10.3	8.4	7.5
Level of Service	B		A	B	A	A
Approach Delay (s)	14.5			10.0	8.2	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	240	450	620	60	40	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.88	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	3539	3463		1610	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	3539	3463		1610	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	474	653	63	42	295
RTOR Reduction (vph)	0	0	11	0	205	0
Lane Group Flow (vph)	253	474	705	0	132	0
Confl. Peds. (#/hr)	28			28		3
Confl. Bikes (#/hr)				11		1
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	812		491	
v/s Ratio Prot	c0.14	0.13	c0.20		c0.08	
v/s Ratio Perm						
v/c Ratio	0.46	0.23	0.87		0.27	
Uniform Delay, d1	17.6	6.1	23.5		16.8	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	2.7	0.2	12.1		1.3	
Delay (s)	20.4	6.3	35.6		18.2	
Level of Service	C	A	D		B	
Approach Delay (s)		11.2	35.6		18.2	
Approach LOS		B	D		B	

Intersection Summary			
HCM Average Control Delay	22.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	30	50	560	20	50	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.92		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1659		1852		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1659		1852		1770	1863
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	34	56	629	22	56	483
RTOR Reduction (vph)	51	0	2	0	0	0
Lane Group Flow (vph)	39	0	649	0	56	483
Confl. Peds. (#/hr)		1				
Confl. Bikes (#/hr)				13		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	3.4		20.8		2.6	27.4
Effective Green, g (s)	3.4		20.8		2.6	27.4
Actuated g/C Ratio	0.09		0.52		0.07	0.69
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	142		968		116	1283
v/s Ratio Prot	c0.02		c0.35		0.03	c0.26
v/s Ratio Perm						
v/c Ratio	0.27		0.67		0.48	0.38
Uniform Delay, d1	17.0		7.0		18.0	2.6
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0		1.8		3.1	0.2
Delay (s)	18.1		8.8		21.1	2.8
Level of Service	B		A		C	A
Approach Delay (s)	18.1		8.8			4.7
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	39.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	10	10	20	10	20	10	30	40	30	400	20	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0				4.0		
Lane Util. Factor			1.00			1.00				1.00		
Frpb, ped/bikes			0.96			0.62				0.98		
Flpb, ped/bikes			0.83			0.96				0.99		
Frt			0.97			0.90				0.99		
Flt Protected			0.98			0.99				1.00		
Satd. Flow (prot)			1243			876				1598		
Flt Permitted			0.89			0.95				0.96		
Satd. Flow (perm)			1126			839				1537		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	10	20	10	20	10	31	41	31	408	20	31
RTOR Reduction (vph)	0	0	8	0	0	31	0	0	0	3	0	0
Lane Group Flow (vph)	0	0	42	0	0	71	0	0	0	456	0	0
Confl. Peds. (#/hr)	173	127		95	95		173	127	173		268	268
Confl. Bikes (#/hr)				1			4	4			26	
Parking (#/hr)			3			3				3		
Turn Type	Perm	Perm			Perm				Perm			Perm
Protected Phases			1			1				2		
Permitted Phases	1	1			1				2			2
Actuated Green, G (s)			14.0			14.0				25.0		
Effective Green, g (s)			14.0			14.0				25.0		
Actuated g/C Ratio			0.23			0.23				0.42		
Clearance Time (s)			4.0			4.0				4.0		
Lane Grp Cap (vph)			263			196				640		
v/s Ratio Prot												
v/s Ratio Perm			0.04			c0.08				c0.30		
v/c Ratio			0.16			0.36				0.71		
Uniform Delay, d1			18.3			19.3				14.5		
Progression Factor			1.00			0.98				1.00		
Incremental Delay, d2			1.3			4.7				6.6		
Delay (s)			19.6			23.4				21.2		
Level of Service			B			C				C		
Approach Delay (s)			19.6			23.4				21.2		
Approach LOS			B			C				C		

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations							
Volume (vph)	320	20	30	10	20	30	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12	12
Total Lost time (s)	4.0				4.0		
Lane Util. Factor	1.00				1.00		
Frpb, ped/bikes	0.95				0.69		
Flpb, ped/bikes	0.99				0.74		
Frt	0.98				0.92		
Flt Protected	1.00				0.98		
Satd. Flow (prot)	1686				760		
Flt Permitted	0.95				0.98		
Satd. Flow (perm)	1608				760		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	327	20	31	10	20	31	10
RTOR Reduction (vph)	5	0	0	0	9	0	0
Lane Group Flow (vph)	404	0	0	0	63	0	0
Confl. Peds. (#/hr)		154	173	101	213	75	122
Confl. Bikes (#/hr)		13	21				
Parking (#/hr)	6				3		
Turn Type				Perm			
Protected Phases	2				4		
Permitted Phases				4			
Actuated Green, G (s)	25.0				9.0		
Effective Green, g (s)	25.0				9.0		
Actuated g/C Ratio	0.42				0.15		
Clearance Time (s)	4.0				4.0		
Lane Grp Cap (vph)	670				114		
v/s Ratio Prot							
v/s Ratio Perm	0.25				0.08		
v/c Ratio	0.60				0.55		
Uniform Delay, d1	13.6				23.6		
Progression Factor	1.00				1.00		
Incremental Delay, d2	4.0				17.6		
Delay (s)	17.6				41.2		
Level of Service	B				D		
Approach Delay (s)	17.6				41.2		
Approach LOS	B				D		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	0	0	0	0	0	10	20	10	10	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	13	0	0	0	0	0	0	13	27	13	13	0
Pedestrians		1			8			1			8	
Lane Width (ft)		12.0			0.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	8			1			35	36	9	76	36	9
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	8			1			35	36	9	76	36	9
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	98	98	98	98	100
cM capacity (veh/h)	1602			1620			946	843	1072	864	843	1065

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	13	40	27
Volume Left	13	0	13
Volume Right	0	27	0
cSH	1602	983	853
Volume to Capacity	0.01	0.04	0.03
Queue Length 95th (ft)	1	3	2
Control Delay (s)	7.3	8.8	9.4
Lane LOS	A	A	A
Approach Delay (s)	7.3	8.8	9.4
Approach LOS		A	A

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	700	0	0	850	10	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	769	0	0	934	11	0	0	11	0	0	0
Pedestrians					5			10			16	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1268			632							
pX, platoon unblocked												
vC, conflicting volume	961			779			1246	1740	400	1356	1735	489
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	961			779			1246	1740	400	1356	1735	489
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	712			827			128	85	593	105	86	525

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	513	256	623	322	11
Volume Left	0	0	0	0	0
Volume Right	0	0	0	11	11
cSH	1700	1700	1700	1700	593
Volume to Capacity	0.30	0.15	0.37	0.19	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.2
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.2
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	830	940	100	0	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	865	979	104	0	31
Pedestrians					53	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					4	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		217	1314			
pX, platoon unblocked					0.92	
vC, conflicting volume	1136				1517	595
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1136				1394	595
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	584				117	428

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	432	432	653	431	31
Volume Left	0	0	0	0	0
Volume Right	0	0	0	104	31
cSH	1700	1700	1700	1700	428
Volume to Capacity	0.25	0.25	0.38	0.25	0.07
Queue Length 95th (ft)	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	14.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		14.1
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Lane Configurations												
Volume (vph)	20	10	30	10	10	10	10	10	430	10	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0			4.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.98				0.99			1.00			
Flpb, ped/bikes		1.00				1.00			1.00			
Frt		0.92				0.95			0.99			
Flt Protected		0.99				0.98			1.00			
Satd. Flow (prot)		1647				1727			3505			
Flt Permitted		0.93				0.93			0.94			
Satd. Flow (perm)		1559				1630			3312			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	11	33	11	11	11	11	11	478	11	11	22
RTOR Reduction (vph)	0	8	0	0	0	8	0	0	2	0	0	0
Lane Group Flow (vph)	0	69	0	0	0	25	0	0	509	0	0	0
Confl. Peds. (#/hr)	14		12		12		14	12		3		3
Confl. Bikes (#/hr)										6	6	
Turn Type	Perm				Perm			Perm				Perm
Protected Phases		4				4			2			
Permitted Phases	4				4			2				6
Actuated Green, G (s)		16.0				16.0			16.0			
Effective Green, g (s)		16.0				16.0			16.0			
Actuated g/C Ratio		0.27				0.27			0.27			
Clearance Time (s)		4.0				4.0			4.0			
Lane Grp Cap (vph)		416				435			883			
v/s Ratio Prot												
v/s Ratio Perm		c0.04				0.02			c0.15			
v/c Ratio		0.17				0.06			0.58			
Uniform Delay, d1		16.9				16.4			19.1			
Progression Factor		0.89				1.00			1.00			
Incremental Delay, d2		0.7				0.3			2.7			
Delay (s)		15.8				16.6			21.8			
Level of Service		B				B			C			
Approach Delay (s)		15.8				16.6			21.8			
Approach LOS		B				B			C			

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR	NWL2	NWL	NWR
Lane Configurations					
Volume (vph)	330	20	10	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	
Lane Util. Factor	0.95			1.00	
Frpb, ped/bikes	1.00			1.00	
Flpb, ped/bikes	1.00			1.00	
Frt	0.99			0.93	
Flt Protected	1.00			0.98	
Satd. Flow (prot)	3493			1695	
Flt Permitted	0.91			0.98	
Satd. Flow (perm)	3204			1695	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	367	22	11	11	22
RTOR Reduction (vph)	7	0	0	0	0
Lane Group Flow (vph)	404	0	0	44	0
Confl. Peds. (#/hr)		12			
Confl. Bikes (#/hr)		1			
Turn Type			Perm		
Protected Phases	6			8	
Permitted Phases			8		
Actuated Green, G (s)	16.0			16.0	
Effective Green, g (s)	16.0			16.0	
Actuated g/C Ratio	0.27			0.27	
Clearance Time (s)	4.0			4.0	
Lane Grp Cap (vph)	854			452	
v/s Ratio Prot					
v/s Ratio Perm	0.13			0.03	
v/c Ratio	0.47			0.10	
Uniform Delay, d1	18.5			16.6	
Progression Factor	1.00			1.00	
Incremental Delay, d2	1.9			0.4	
Delay (s)	20.3			17.0	
Level of Service	C			B	
Approach Delay (s)	20.3			17.0	
Approach LOS	C			B	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	170	20	470	170	20	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		0.99		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.99		0.96		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1754		3355		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1754		3355		1711	3421
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	183	22	505	183	22	366
RTOR Reduction (vph)	9	0	57	0	0	0
Lane Group Flow (vph)	196	0	631	0	22	366
Confl. Peds. (#/hr)		6		15		
Confl. Bikes (#/hr)		3		9		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	7.1		16.8		0.8	21.6
Effective Green, g (s)	7.1		16.8		0.8	21.6
Actuated g/C Ratio	0.19		0.46		0.02	0.59
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	339		1536		37	2013
v/s Ratio Prot	c0.11		c0.19		c0.01	0.11
v/s Ratio Perm						
v/c Ratio	0.58		0.41		0.59	0.18
Uniform Delay, d1	13.4		6.6		17.8	3.5
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.5		0.1		15.9	0.0
Delay (s)	14.9		6.7		33.7	3.5
Level of Service	B		A		C	A
Approach Delay (s)	14.9		6.7			5.2
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	36.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	350	357	610	440	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.98	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3346	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3346	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	380	388	663	478	54
RTOR Reduction (vph)	0	0	0	0	15	0
Lane Group Flow (vph)	0	380	388	663	517	0
Confl. Peds. (#/hr)						26
Confl. Bikes (#/hr)		4				5
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		21.0	21.0	33.0	26.0	
Effective Green, g (s)		21.0	21.0	33.0	26.0	
Actuated g/C Ratio		0.37	0.37	0.58	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		594	609	1912	1526	
v/s Ratio Prot		c0.24	0.23	c0.20	0.15	
v/s Ratio Perm						
v/c Ratio		0.64	0.64	0.35	0.34	
Uniform Delay, d1		14.9	14.9	6.3	10.0	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.2	5.0	0.1	0.6	
Delay (s)		20.1	19.9	6.4	10.6	
Level of Service		C	B	A	B	
Approach Delay (s)	20.1			11.4	10.6	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	30	0	0	17	30	940	0	20	770	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	11	0	32	0	0	18	32	1000	0	21	819	0
Pedestrians		14			74						13	
Lane Width (ft)		12.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		1			6						1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								483			264	
pX, platoon unblocked												
vC, conflicting volume	1304	2014	287	1485	2014	420	833			1074		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1304	2014	287	1485	2014	420	833			1074		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	100	95	100	100	97	96			96		
cM capacity (veh/h)	99	50	701	69	50	541	786			605		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	43	18	282	500	250	185	328	328
Volume Left	11	0	32	0	0	21	0	0
Volume Right	32	18	0	0	0	0	0	0
cSH	279	541	786	1700	1700	605	1700	1700
Volume to Capacity	0.15	0.03	0.04	0.29	0.15	0.04	0.19	0.19
Queue Length 95th (ft)	13	3	3	0	0	3	0	0
Control Delay (s)	20.2	11.9	1.5	0.0	0.0	1.7	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	20.2	11.9	0.4			0.4		
Approach LOS	C	B						

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	141	0	820	31	0	790	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	0	0	0	0	144	0	837	32	0	806	0
Pedestrians					24							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								295			452	
pX, platoon unblocked												
vC, conflicting volume	1229	1698	202	1062	1667	303	806			892		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1229	1698	202	1062	1667	303	806			892		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	79	100			100		
cM capacity (veh/h)	104	90	806	171	94	679	814			740		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	144	279	279	279	32	230	230	230	115
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	144	0	0	0	32	0	0	0	0
cSH	679	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.21	0.16	0.16	0.16	0.02	0.14	0.14	0.14	0.07
Queue Length 95th (ft)	20	0	0	0	0	0	0	0	0
Control Delay (s)	11.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	11.7	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	40	810	164	0	790
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	43	871	176	0	849
Pedestrians	22					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	2					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			174			573
pX, platoon unblocked						
vC, conflicting volume	1194	328			1069	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1194	328			1069	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	93			100	
cM capacity (veh/h)	176	656			636	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	43	249	249	249	301	212	212	212	212
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	43	0	0	0	176	0	0	0	0
cSH	656	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.15	0.15	0.15	0.18	0.12	0.12	0.12	0.12
Queue Length 95th (ft)	5	0	0	0	0	0	0	0	0
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	10.9	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	150	480	50	150	450	370	70	390	120	60	410	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.93			0.97			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (prot)	1770	3489		1770	3233			4829			1420	4380
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (perm)	1770	3489		1770	3233			4829			1420	4380
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	153	490	51	153	459	378	71	398	122	61	418	255
RTOR Reduction (vph)	0	7	0	0	133	0	0	43	0	0	0	0
Lane Group Flow (vph)	153	534	0	153	704	0	0	548	0	0	241	493
Confl. Peds. (#/hr)						28			40			
Confl. Bikes (#/hr)												
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	13.3	36.4		11.6	34.7			27.5			18.5	18.5
Effective Green, g (s)	13.3	36.4		11.6	34.7			27.5			18.5	18.5
Actuated g/C Ratio	0.12	0.33		0.11	0.32			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	214	1155		187	1020			1207			239	737
v/s Ratio Prot	0.09	0.15		c0.09	c0.22			c0.11			c0.17	0.11
v/s Ratio Perm												
v/c Ratio	0.71	0.46		0.82	0.69			0.45			1.01	0.90dl
Uniform Delay, d1	46.5	29.1		48.2	32.9			34.9			45.8	42.9
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	10.8	1.3		23.4	3.8			1.2			60.4	4.8
Delay (s)	57.3	30.4		71.6	36.8			36.1			106.1	47.7
Level of Service	E	C		E	D			D			F	D
Approach Delay (s)		36.3			42.2			36.1				64.6
Approach LOS		D			D			D				E

Intersection Summary			
HCM Average Control Delay	45.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	70
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.96
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1425
Flt Permitted	1.00
Satd. Flow (perm)	1425
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	71
RTOR Reduction (vph)	29
Lane Group Flow (vph)	42
Confl. Peds. (#/hr)	6
Confl. Bikes (#/hr)	10
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	18.5
Effective Green, g (s)	18.5
Actuated g/C Ratio	0.17
Clearance Time (s)	4.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	240
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.17
Uniform Delay, d1	39.2
Progression Factor	1.00
Incremental Delay, d2	1.6
Delay (s)	40.8
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	20	20	10	30	40	560	10	20	450	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.93			0.93			1.00			1.00	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1695			1688			5049			5053	
Flt Permitted		0.96			0.93			0.89			0.91	
Satd. Flow (perm)		1640			1593			4486			4598	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	10	21	21	10	31	42	583	10	21	469	10
RTOR Reduction (vph)	0	15	0	0	23	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	26	0	0	39	0	0	633	0	0	497	0
Confl. Peds. (#/hr)	9		8	8		9	12		20	20		12
Confl. Bikes (#/hr)			1			3			5			5
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		431			418			2972			3046	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.02			c0.14			0.11	
v/c Ratio		0.06			0.09			0.21			0.16	
Uniform Delay, d1		22.1			22.3			5.3			5.1	
Progression Factor		1.00			1.00			1.41			1.00	
Incremental Delay, d2		0.3			0.4			0.2			0.1	
Delay (s)		22.4			22.7			7.6			5.2	
Level of Service		C			C			A			A	
Approach Delay (s)		22.4			22.7			7.6			5.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	180	130	20	100	30	70	380	20	30	380	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		0.99	1.00			1.00	
Frt	1.00	0.94			0.97		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1751	3273			3387		1758	3503			4838	
Flt Permitted	0.65	1.00			0.90		0.37	1.00			0.89	
Satd. Flow (perm)	1193	3273			3068		679	3503			4342	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	198	198	143	22	110	33	77	418	22	33	418	121
RTOR Reduction (vph)	0	81	0	0	0	0	0	5	0	0	61	0
Lane Group Flow (vph)	198	260	0	0	165	0	77	435	0	0	511	0
Confl. Peds. (#/hr)	19		18	18		19	58		54	54		58
Confl. Bikes (#/hr)			14			8			22			12
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	514	1411			1323		379	1642			1628	
v/s Ratio Prot		0.08					0.01	c0.12				
v/s Ratio Perm	c0.17				0.05		0.08				c0.12	
v/c Ratio	0.39	0.18			0.12		0.20	0.27			0.31	
Uniform Delay, d1	15.5	14.1			13.7		12.0	12.9			17.7	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.92	
Incremental Delay, d2	2.2	0.3			0.2		1.2	0.4			0.5	
Delay (s)	17.7	14.3			13.9		13.2	13.3			34.6	
Level of Service	B	B			B		B	B			C	
Approach Delay (s)		15.6			13.9			13.3			34.6	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	126.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	22
RTOR Reduction (vph)	14
Lane Group Flow (vph)	8
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.01
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.7
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	330	50	50	330	130	70	270	60	210	260	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.97	1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4971		1770	4729		1770	3539	1543	1770	3362	1478
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4971		1770	4729		1770	3539	1543	1770	3362	1478
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	56	371	56	56	371	146	79	303	67	236	292	79
RTOR Reduction (vph)	0	18	0	0	64	0	0	0	49	0	0	58
Lane Group Flow (vph)	56	409	0	56	453	0	79	303	18	236	292	21
Confl. Peds. (#/hr)			4			64			6			44
Confl. Bikes (#/hr)			6			15			8			6
Parking (#/hr)											0	
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	6.7	32.9		6.7	32.9		15.9	26.5	26.5	15.9	26.5	26.5
Effective Green, g (s)	6.7	32.9		6.7	32.9		15.9	26.5	26.5	15.9	26.5	26.5
Actuated g/C Ratio	0.07	0.33		0.07	0.33		0.16	0.26	0.26	0.16	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	119	1635		119	1556		281	938	409	281	891	392
v/s Ratio Prot	c0.03	0.08		0.03	c0.10		0.04	0.09		c0.13	c0.09	
v/s Ratio Perm									0.01			0.01
v/c Ratio	0.47	0.25		0.47	0.29		0.28	0.32	0.04	0.84	0.33	0.05
Uniform Delay, d1	44.9	24.5		44.9	24.9		37.0	29.5	27.3	40.8	29.6	27.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.0		1.1	0.0		0.2	0.9	0.2	18.5	1.0	0.3
Delay (s)	46.0	24.6		46.0	24.9		37.2	30.5	27.5	59.4	30.6	27.7
Level of Service	D	C		D	C		D	C	C	E	C	C
Approach Delay (s)		27.0			27.0			31.2			41.4	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	70	50	70	80	130	130	1150	60	130	1300	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			0.99	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1761	1715			1811	1535	1770	5038		1770	5077	
Flt Permitted	0.58	1.00			0.78	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1075	1715			1451	1535	1770	5038		1770	5077	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	74	53	74	85	138	138	1223	64	138	1383	11
RTOR Reduction (vph)	0	44	0	0	0	116	0	5	0	0	1	0
Lane Group Flow (vph)	43	83	0	0	159	22	138	1282	0	138	1393	0
Confl. Peds. (#/hr)	8		18	18		8			20			15
Confl. Bikes (#/hr)			13			9			3			8
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	12.9	12.9			12.9	12.9	7.8	41.1		12.5	45.8	
Effective Green, g (s)	12.9	12.9			12.9	12.9	7.8	41.1		12.5	45.8	
Actuated g/C Ratio	0.16	0.16			0.16	0.16	0.10	0.51		0.16	0.57	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	173	277			234	248	173	2588		277	2907	
v/s Ratio Prot		0.05					c0.08	c0.25		0.08	c0.27	
v/s Ratio Perm	0.04				c0.11	0.01						
v/c Ratio	0.25	0.30			0.68	0.09	0.80	0.50		0.50	0.48	
Uniform Delay, d1	29.3	29.6			31.6	28.6	35.3	12.7		30.9	10.1	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			6.0	0.1	20.7	0.7		0.5	0.6	
Delay (s)	29.6	29.8			37.6	28.6	56.0	13.4		31.4	10.6	
Level of Service	C	C			D	C	E	B		C	B	
Approach Delay (s)		29.7			33.4			17.5			12.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	670	170	30	640	160	160	180	30	110	190	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4892		1761	4886		1770	1811		1737	1626	
Flt Permitted	0.95	1.00		0.31	1.00		0.14	1.00		0.62	1.00	
Satd. Flow (perm)	1770	4892		579	4886		265	1811		1136	1626	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	292	698	177	31	667	167	167	188	31	115	198	396
RTOR Reduction (vph)	0	60	0	0	50	0	0	5	0	0	68	0
Lane Group Flow (vph)	292	815	0	31	784	0	167	214	0	115	526	0
Confl. Peds. (#/hr)			10	10		12	17		23	23		17
Confl. Bikes (#/hr)			3			5			23			17
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	20.8	49.7		24.9	24.9		41.3	41.3		24.1	24.1	
Effective Green, g (s)	20.8	49.7		24.9	24.9		41.3	41.3		24.1	24.1	
Actuated g/C Ratio	0.21	0.50		0.25	0.25		0.41	0.41		0.24	0.24	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	368	2431		144	1217		308	748		274	392	
v/s Ratio Prot	c0.17	0.17			c0.16		c0.07	0.12			c0.32	
v/s Ratio Perm				0.05			0.15			0.10		
v/c Ratio	0.79	0.34		0.22	0.64		0.54	0.29		0.42	1.34	
Uniform Delay, d1	37.6	15.2		29.8	33.6		22.2	19.5		32.0	38.0	
Progression Factor	1.00	1.00		1.13	1.10		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	0.1		0.7	1.1		1.9	1.0		4.7	169.8	
Delay (s)	48.7	15.3		34.3	38.0		24.2	20.5		36.7	207.7	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		23.6			37.8			22.1			180.0	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	62.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	20	20	30	20	30	20	620	20	20	610	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			0.99			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.96			0.95			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1722			1715			3498			3480	
Flt Permitted		0.85			0.89			0.93			0.93	
Satd. Flow (perm)		1494			1555			3251			3231	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	32	21	21	32	21	32	21	660	21	21	649	21
RTOR Reduction (vph)	0	19	0	0	29	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	55	0	0	56	0	0	701	0	0	691	0
Confl. Peds. (#/hr)	22		26	26					54	54		93
Confl. Bikes (#/hr)			5			1			45			50
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		6.6			6.6			64.4			64.4	
Effective Green, g (s)		6.6			6.6			64.4			64.4	
Actuated g/C Ratio		0.08			0.08			0.81			0.81	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		123			128			2617			2601	
v/s Ratio Prot												
v/s Ratio Perm		c0.04			0.04			c0.22			0.21	
v/c Ratio		0.44			0.43			4.20dl			0.27	
Uniform Delay, d1		35.0			34.9			1.9			1.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.9			0.9			0.3			0.3	
Delay (s)		35.9			35.8			2.2			2.2	
Level of Service		D			D			A			A	
Approach Delay (s)		35.9			35.8			2.2			2.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	220	40
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.94	0.94
Adj. Flow (vph)	234	43
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	274	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	64.4	
Effective Green, g (s)	64.4	
Actuated g/C Ratio	0.81	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1297	
v/s Ratio Prot	0.17	
v/s Ratio Perm		
v/c Ratio	0.21	
Uniform Delay, d1	1.8	
Progression Factor	1.00	
Incremental Delay, d2	0.4	
Delay (s)	2.2	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	20	80	30	130	10	720	100	90	700	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.95			0.99		1.00	0.96	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.93		1.00	0.88			0.98		1.00	0.96	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1658		1681	1485			3427		1770	3291	
Flt Permitted		0.98		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1658		1681	1485			3233		1770	3291	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	0	20	82	31	133	10	735	102	92	714	224
RTOR Reduction (vph)	0	19	0	0	121	0	0	7	0	0	18	0
Lane Group Flow (vph)	0	21	0	74	51	0	0	840	0	92	920	0
Confl. Peds. (#/hr)						28	41		28			41
Confl. Bikes (#/hr)			6			5			18			40
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		4.2		9.2	9.2			60.2		8.4	73.1	
Effective Green, g (s)		4.2		9.2	9.2			60.2		8.4	73.1	
Actuated g/C Ratio		0.04		0.09	0.09			0.60		0.08	0.73	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		70		155	137			1946		149	2406	
v/s Ratio Prot		c0.01		c0.04	0.03					c0.05	0.28	
v/s Ratio Perm								c0.26				
v/c Ratio		0.30		0.48	0.37			0.43		0.62	0.38	
Uniform Delay, d1		46.5		43.1	42.7			10.7		44.2	5.0	
Progression Factor		1.00		1.00	1.00			0.58		1.00	1.00	
Incremental Delay, d2		0.9		0.8	0.6			0.6		5.3	0.5	
Delay (s)		47.3		44.0	43.3			6.8		49.5	5.5	
Level of Service		D		D	D			A		D	A	
Approach Delay (s)		47.3			43.5			6.8			9.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	410	100	90	380	150	90	420	100	240	500	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.94		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3384		1770	3199		1770	3378		1770	3472	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3384		1770	3199		1770	3378		1770	3472	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	268	423	103	93	392	155	93	433	103	247	515	62
RTOR Reduction (vph)	0	22	0	0	45	0	0	19	0	0	8	0
Lane Group Flow (vph)	268	504	0	93	502	0	93	517	0	247	569	0
Confl. Peds. (#/hr)			38			127			51			
Confl. Bikes (#/hr)			15			20			19			31
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	23.4		7.9	20.3		5.0	39.7		12.0	46.7	
Effective Green, g (s)	11.0	23.4		7.9	20.3		5.0	39.7		12.0	46.7	
Actuated g/C Ratio	0.11	0.23		0.08	0.20		0.05	0.40		0.12	0.47	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	378	792		140	649		89	1341		212	1621	
v/s Ratio Prot	c0.08	c0.15		0.05	c0.16		0.05	c0.15		c0.14	0.16	
v/s Ratio Perm												
v/c Ratio	0.71	0.64		0.66	0.77		1.04	0.39		1.17	0.35	
Uniform Delay, d1	43.0	34.5		44.8	37.7		47.5	21.5		44.0	17.0	
Progression Factor	0.89	1.25		1.00	1.00		1.00	1.00		1.16	0.76	
Incremental Delay, d2	4.8	1.2		8.8	5.2		108.2	0.8		112.1	0.6	
Delay (s)	42.8	44.2		53.6	42.9		155.7	22.3		163.1	13.5	
Level of Service	D	D		D	D		F	C		F	B	
Approach Delay (s)		43.7			44.4			42.0			58.3	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	47.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	630	30	10	620	20	30	30	20	30	30	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	1.00			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1766	3511		1767	3519			1738			1734	
Flt Permitted	0.38	1.00		0.37	1.00			0.89			0.89	
Satd. Flow (perm)	699	3511		681	3519			1581			1577	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	31	649	31	10	639	21	31	31	21	31	31	21
RTOR Reduction (vph)	0	4	0	0	3	0	0	15	0	0	15	0
Lane Group Flow (vph)	31	676	0	10	657	0	0	68	0	0	68	0
Confl. Peds. (#/hr)	6		4	4		6	5		26	26		5
Confl. Bikes (#/hr)			5			13			29			33
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	397	1994		387	1998			488			487	
v/s Ratio Prot		c0.19			0.19							
v/s Ratio Perm	0.04			0.01				0.04			c0.04	
v/c Ratio	0.08	0.34		0.03	0.33			0.14			0.14	
Uniform Delay, d1	7.9	9.4		7.7	9.3			20.2			20.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.4	0.5		0.1	0.4			0.6			0.6	
Delay (s)	8.3	9.8		7.8	9.7			20.8			20.8	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		9.8			9.7			20.8			20.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	700	50	20	670	98	50	40	10	256	52	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.96		1.00			0.97	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.99			1.00	0.85		0.99			0.93	
Flt Protected	0.95	1.00			1.00	1.00		0.98			0.98	
Satd. Flow (prot)	1770	3494			3533	1516		1771			3117	
Flt Permitted	0.95	1.00			0.93	1.00		0.62			0.79	
Satd. Flow (perm)	1770	3494			3275	1516		1131			2517	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	277	729	52	21	698	102	52	42	10	267	54	258
RTOR Reduction (vph)	0	5	0	0	0	56	0	4	0	0	176	0
Lane Group Flow (vph)	277	776	0	0	719	46	0	100	0	0	403	0
Confl. Peds. (#/hr)			23	23		13	77		14	14		77
Confl. Bikes (#/hr)			9			8			14			15
Turn Type	Prot			Perm		Perm	Perm			Perm		
Protected Phases	1	6			2			4			4	
Permitted Phases				2		2	4			4		
Actuated Green, G (s)	15.7	40.9			22.2	22.2		17.7			17.7	
Effective Green, g (s)	15.7	40.9			22.2	22.2		17.7			17.7	
Actuated g/C Ratio	0.24	0.63			0.34	0.34		0.27			0.27	
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	430	2212			1125	521		310			690	
v/s Ratio Prot	c0.16	0.22										
v/s Ratio Perm					c0.22	0.03		0.09			c0.16	
v/c Ratio	0.64	0.35			0.64	0.09		0.32			0.58	
Uniform Delay, d1	21.9	5.6			17.8	14.3		18.7			20.3	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	3.3	0.1			1.2	0.1		0.6			1.3	
Delay (s)	25.2	5.7			19.0	14.4		19.3			21.5	
Level of Service	C	A			B	B		B			C	
Approach Delay (s)		10.8			18.5			19.3			21.5	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	910	40	20	820	10	10	0	20	10	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	21	948	42	21	854	10	10	0	21	10	0	10
Pedestrians		12			4			13			8	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked												
vC, conflicting volume	873			1003			1515	1938	512	1450	1953	452
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	873			1003			1515	1938	512	1450	1953	452
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			86	100	96	87	100	98
cM capacity (veh/h)	764			679			74	60	500	82	59	545

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	495	516	448	438	31	21
Volume Left	21	0	21	0	10	10
Volume Right	0	42	0	10	21	10
cSH	764	1700	679	1700	172	143
Volume to Capacity	0.03	0.30	0.03	0.26	0.18	0.15
Queue Length 95th (ft)	2	0	2	0	16	12
Control Delay (s)	0.8	0.0	0.9	0.0	30.5	34.4
Lane LOS	A		A		D	D
Approach Delay (s)	0.4		0.5		30.5	34.4
Approach LOS					D	D

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	870	70	20	790	10	40	10	50	10	10	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	916	74	21	832	11	42	11	53	11	11	21
Pedestrians		3			3			15			15	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	857			1004			1476	1888	513	1434	1919	439
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	675			1004			1346	1793	513	1301	1828	221
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			48	85	89	87	84	97
cM capacity (veh/h)	830			677			80	69	499	81	65	710

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	468	532	437	426	105	42
Volume Left	11	0	21	0	42	11
Volume Right	0	74	0	11	53	21
cSH	830	1700	677	1700	135	131
Volume to Capacity	0.01	0.31	0.03	0.25	0.78	0.32
Queue Length 95th (ft)	1	0	2	0	118	32
Control Delay (s)	0.4	0.0	0.9	0.0	91.6	45.0
Lane LOS	A		A		F	E
Approach Delay (s)	0.2		0.5		91.6	45.0
Approach LOS					F	E

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	630	230	170	560	70	190	90	140	60	70	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.99			0.96			0.95	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3336			3435			1921			1712	
Flt Permitted		0.83			0.56			0.76			0.82	
Satd. Flow (perm)		2763			1934			1502			1427	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	62	649	237	175	577	72	196	93	144	62	72	72
RTOR Reduction (vph)	0	59	0	0	13	0	0	33	0	0	35	0
Lane Group Flow (vph)	0	889	0	0	811	0	0	400	0	0	171	0
Confl. Peds. (#/hr)	27		20			27	44		32	32		44
Confl. Bikes (#/hr)			9			4			4			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		779			1150			519			493	
v/s Ratio Prot					c0.10							
v/s Ratio Perm		c0.32			0.24			c0.27			0.12	
v/c Ratio		1.14			0.71			0.77			0.35	
Uniform Delay, d1		19.8			11.2			16.1			13.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		78.7			3.6			10.6			1.9	
Delay (s)		98.4			14.8			26.7			15.3	
Level of Service		F			B			C			B	
Approach Delay (s)		98.4			14.8			26.7			15.3	
Approach LOS		F			B			C			B	

Intersection Summary			
HCM Average Control Delay	49.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	160	60	70	320	280	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.93		1.00	1.00	1.00	0.62
Flpb, ped/bikes	1.00		0.77	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1609		1371	1863	1863	987
Flt Permitted	0.96		0.52	1.00	1.00	1.00
Satd. Flow (perm)	1609		756	1863	1863	987
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	65	76	348	304	130
RTOR Reduction (vph)	25	0	0	0	0	64
Lane Group Flow (vph)	214	0	76	348	304	66
Confl. Peds. (#/hr)	108	182	366			366
Confl. Bikes (#/hr)		9				10
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	614		385	948	948	502
v/s Ratio Prot	c0.13			c0.19	0.16	
v/s Ratio Perm			0.10			0.07
v/c Ratio	0.35		0.20	0.37	0.32	0.13
Uniform Delay, d1	12.1		7.4	8.2	7.9	7.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6		1.1	1.1	0.9	0.5
Delay (s)	13.7		8.5	9.2	8.8	7.6
Level of Service	B		A	A	A	A
Approach Delay (s)	13.7			9.1	8.5	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	290	520	440	30	20	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.88	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3505		1595	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3505		1595	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	305	547	463	32	21	253
RTOR Reduction (vph)	0	0	8	0	176	0
Lane Group Flow (vph)	305	547	487	0	98	0
Confl. Peds. (#/hr)					4	
Confl. Bikes (#/hr)						10
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	821		486	
v/s Ratio Prot	c0.17	0.15	c0.14		c0.06	
v/s Ratio Perm						
v/c Ratio	0.55	0.26	0.59		0.20	
Uniform Delay, d1	18.3	6.2	21.8		16.5	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.9	0.3	3.1		0.9	
Delay (s)	22.2	6.5	24.9		17.4	
Level of Service	C	A	C		B	
Approach Delay (s)		12.2	24.9		17.4	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	50	380	20	50	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.97		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.89		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1592		1848		1770	1863
Flt Permitted	0.99		1.00		0.95	1.00
Satd. Flow (perm)	1592		1848		1770	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	53	400	21	53	484
RTOR Reduction (vph)	50	0	3	0	0	0
Lane Group Flow (vph)	14	0	418	0	53	484
Confl. Peds. (#/hr)		5				
Confl. Bikes (#/hr)				4		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	1.7		11.5		1.4	16.9
Effective Green, g (s)	1.7		11.5		1.4	16.9
Actuated g/C Ratio	0.06		0.42		0.05	0.61
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	98		770		90	1141
v/s Ratio Prot	c0.01		c0.23		0.03	c0.26
v/s Ratio Perm						
v/c Ratio	0.15		0.54		0.59	0.42
Uniform Delay, d1	12.3		6.1		12.8	2.8
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.7		0.8		9.5	0.3
Delay (s)	12.9		6.9		22.3	3.1
Level of Service	B		A		C	A
Approach Delay (s)	12.9		6.9			5.0
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	27.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	20	10	10	10	10	20	30	10	20	310	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.98			0.98					1.00	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.97			0.90					1.00	
Flt Protected			0.97			0.99					1.00	
Satd. Flow (prot)			1530			1456					1629	
Flt Permitted			0.83			0.97					0.94	
Satd. Flow (perm)			1313			1418					1538	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	22	11	11	11	11	22	32	11	22	333	11
RTOR Reduction (vph)	0	0	8	0	0	25	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	47	0	0	51	0	0	0	0	375	0
Confl. Peds. (#/hr)				30				1				84
Confl. Bikes (#/hr)				3								2
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			306			331					641	
v/s Ratio Prot												
v/s Ratio Perm			0.04			c0.04					0.24	
v/c Ratio			0.15			0.16					0.59	
Uniform Delay, d1			18.3			18.3					13.5	
Progression Factor			1.00			0.75					1.00	
Incremental Delay, d2			1.1			1.0					3.9	
Delay (s)			19.3			14.7					17.4	
Level of Service			B			B					B	
Approach Delay (s)			19.3			14.7					17.4	
Approach LOS			B			B					B	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	40	350	20	40	10	30	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.97				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.98				0.91		
Flt Protected		1.00				0.98		
Satd. Flow (prot)		1750				1476		
Flt Permitted		0.94				0.98		
Satd. Flow (perm)		1659				1476		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	376	22	43	11	32	32	54
RTOR Reduction (vph)	0	6	0	0	0	43	0	0
Lane Group Flow (vph)	0	478	0	0	0	86	0	0
Confl. Peds. (#/hr)			60	82				
Confl. Bikes (#/hr)			2	2				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		691				221		
v/s Ratio Prot								
v/s Ratio Perm		c0.29				0.06		
v/c Ratio		0.69				0.39		
Uniform Delay, d1		14.3				23.0		
Progression Factor		1.00				1.00		
Incremental Delay, d2		5.6				5.1		
Delay (s)		20.0				28.1		
Level of Service		B				C		
Approach Delay (s)		20.0				28.1		
Approach LOS		B				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	10	10	0	0	0	0	10	10	10	20	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	0	15	15	0	0	0	0	15	15	15	29	0
Pedestrians					4						5	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	5			29			37	27	26	53	34	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			29			37	27	26	53	34	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	98	97	100
cM capacity (veh/h)	1610			1584			940	862	1050	913	855	1074

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	29	29	44
Volume Left	0	0	15
Volume Right	15	15	0
cSH	1610	947	873
Volume to Capacity	0.00	0.03	0.05
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	8.9	9.3
Lane LOS		A	A
Approach Delay (s)	0.0	8.9	9.3
Approach LOS		A	A

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	660	0	0	590	20	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	742	0	0	663	22	0	0	11	0	0	0
Pedestrians					1			15				
Lane Width (ft)					12.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1268			632							
pX, platoon unblocked												
vC, conflicting volume	685			757			1088	1442	387	1057	1431	343
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	685			757			1088	1442	387	1057	1431	343
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	904			839			166	130	603	174	132	653

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	494	247	442	243	11
Volume Left	0	0	0	0	0
Volume Right	0	0	0	22	11
cSH	1700	1700	1700	1700	603
Volume to Capacity	0.29	0.15	0.26	0.14	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.1
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	970	730	107	0	54
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1054	793	116	0	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		217	1314			
pX, platoon unblocked					0.90	
vC, conflicting volume	910				1379	455
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	910				1207	455
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	89
cM capacity (veh/h)	744				159	552

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	527	527	529	381	59
Volume Left	0	0	0	0	0
Volume Right	0	0	0	116	59
cSH	1700	1700	1700	1700	552
Volume to Capacity	0.31	0.31	0.31	0.22	0.11
Queue Length 95th (ft)	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	12.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.3
Approach LOS					B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix K

LOS Calculation Worksheets
2015 Plus Project Conditions

FEHR PEERS

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	80	10	60	20	25	10	10	10	877	25	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0				3.0			5.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.99				0.99			1.00			
Flpb, ped/bikes		1.00				1.00			1.00			
Frt		0.94				0.97			0.99			
Flt Protected		0.98				0.97			1.00			
Satd. Flow (prot)		1673				1745			3513			
Flt Permitted		0.84				0.87			0.95			
Satd. Flow (perm)		1446				1569			3338			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	83	10	62	21	26	10	10	10	914	26	10	10
RTOR Reduction (vph)	0	7	0	0	0	8	0	0	1	0	0	0
Lane Group Flow (vph)	0	169	0	0	0	38	0	0	959	0	0	0
Confl. Peds. (#/hr)	14		6		6		14	11				
Confl. Bikes (#/hr)							4			9	9	
Turn Type	Perm				Perm			Perm				Perm
Protected Phases		4				4			2			
Permitted Phases	4				4			2				6
Actuated Green, G (s)		11.8				11.8			32.9			
Effective Green, g (s)		11.8				11.8			32.9			
Actuated g/C Ratio		0.20				0.20			0.56			
Clearance Time (s)		3.0				3.0			5.0			
Vehicle Extension (s)		3.0				3.0			3.0			
Lane Grp Cap (vph)		292				317			1880			
v/s Ratio Prot												
v/s Ratio Perm		c0.12				0.02			c0.29			
v/c Ratio		0.58				0.12			0.51			
Uniform Delay, d1		21.1				19.1			7.8			
Progression Factor		1.00				1.00			1.00			
Incremental Delay, d2		2.8				0.2			1.0			
Delay (s)		23.8				19.2			8.8			
Level of Service		C				B			A			
Approach Delay (s)		23.8				19.2			8.8			
Approach LOS		C				B			A			

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	11.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	50	397	20	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			3.0	
Lane Util. Factor		0.95			1.00	
Frpb, ped/bikes		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	
Frt		0.99			0.95	
Flt Protected		0.99			0.97	
Satd. Flow (prot)		3491			1718	
Flt Permitted		0.78			0.97	
Satd. Flow (perm)		2727			1718	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.92
Adj. Flow (vph)	52	414	21	10	10	11
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	0	494	0	0	31	0
Confl. Peds. (#/hr)			11			
Confl. Bikes (#/hr)			1			
Turn Type	Perm			Perm		
Protected Phases		6			8	
Permitted Phases	6			8		
Actuated Green, G (s)		32.9			2.7	
Effective Green, g (s)		32.9			2.7	
Actuated g/C Ratio		0.56			0.05	
Clearance Time (s)		5.0			3.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1536			79	
v/s Ratio Prot						
v/s Ratio Perm		0.18			0.02	
v/c Ratio		0.32			0.39	
Uniform Delay, d1		6.8			27.1	
Progression Factor		1.00			1.00	
Incremental Delay, d2		0.1			3.2	
Delay (s)		6.9			30.3	
Level of Service		A			C	
Approach Delay (s)		6.9			30.3	
Approach LOS		A			C	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	197	30	802	387	50	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	*1.00
Frpb, ped/bikes	0.99		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1741		3298		1711	3601
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1741		3298		1711	3601
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	201	31	818	395	51	288
RTOR Reduction (vph)	12	0	81	0	0	0
Lane Group Flow (vph)	220	0	1132	0	51	288
Confl. Peds. (#/hr)		38		15	15	
Confl. Bikes (#/hr)		5		16		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	11.2		29.0		2.8	35.8
Effective Green, g (s)	11.2		29.0		2.8	35.8
Actuated g/C Ratio	0.20		0.53		0.05	0.65
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		3.0	2.0
Lane Grp Cap (vph)	355		1739		87	2344
v/s Ratio Prot	c0.13		c0.34		c0.03	0.08
v/s Ratio Perm						
v/c Ratio	0.62		0.65		0.59	0.12
Uniform Delay, d1	20.0		9.4		25.5	3.6
Progression Factor	1.00		1.33		1.00	1.00
Incremental Delay, d2	2.3		1.7		9.7	0.1
Delay (s)	22.2		14.2		35.2	3.8
Level of Service	C		B		D	A
Approach Delay (s)	22.2		14.2			8.5
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	413	408	1189	438	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3328	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3328	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	421	416	1213	447	41
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	0	421	416	1213	477	0
Confl. Peds. (#/hr)						97
Confl. Bikes (#/hr)						3
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		18.3	18.3	41.5	26.7	
Effective Green, g (s)		18.3	18.3	41.5	26.7	
Actuated g/C Ratio		0.33	0.33	0.75	0.49	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		536	569	2492	1616	
v/s Ratio Prot		c0.26	0.24	c0.37	0.14	
v/s Ratio Perm						
v/c Ratio		0.79	0.73	0.49	0.29	
Uniform Delay, d1		16.6	16.2	2.6	8.5	
Progression Factor		1.00	1.14	0.77	0.73	
Incremental Delay, d2		7.4	3.4	0.5	0.5	
Delay (s)		24.0	21.8	2.5	6.7	
Level of Service		C	C	A	A	
Approach Delay (s)	24.0			7.4	6.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	40	96	0	281	0	1284	235	148	704	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.94			0.96		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.91		1.00	0.85			0.98		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1648		1770	1492			3208		1652	3539	
Flt Permitted		0.46		0.76	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		773		1418	1492			3208		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	0	41	98	0	287	0	1310	240	151	718	0
RTOR Reduction (vph)	0	35	0	0	119	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	26	0	98	168	0	0	1540	0	151	718	0
Confl. Peds. (#/hr)						38	33		73	73		33
Confl. Bikes (#/hr)			3			1			16			23
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		17.4		17.4	17.4			70.6		7.0	82.6	
Effective Green, g (s)		17.4		17.4	17.4			70.6		7.0	82.6	
Actuated g/C Ratio		0.16		0.16	0.16			0.64		0.06	0.75	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		122		224	236			2059		105	2657	
v/s Ratio Prot					c0.11			c0.48		c0.09	0.20	
v/s Ratio Perm		0.03		0.07								
v/c Ratio		0.22		0.44	0.71			0.75		1.44	0.27	
Uniform Delay, d1		40.4		41.9	43.9			13.6		51.5	4.3	
Progression Factor		1.06		1.00	1.00			0.26		1.05	1.03	
Incremental Delay, d2		0.9		1.4	9.8			0.9		238.5	0.2	
Delay (s)		43.7		43.2	53.7			4.3		292.4	4.6	
Level of Service		D		D	D			A		F	A	
Approach Delay (s)		43.7			51.0			4.3			54.6	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM Average Control Delay	26.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	841	80	183	475	393	110	848	201	357	370	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	11	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3485		1711	3248		1711	3288		3319	3256	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3485		1711	3248		1711	3288		3319	3256	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	286	858	82	187	485	401	112	865	205	364	378	145
RTOR Reduction (vph)	0	7	0	0	143	0	0	18	0	0	36	0
Lane Group Flow (vph)	286	933	0	187	743	0	112	1052	0	364	487	0
Confl. Peds. (#/hr)			9			20			37			8
Confl. Bikes (#/hr)			8			4			6			6
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	17.2	34.0		14.5	31.3		11.3	35.0		10.5	34.2	
Effective Green, g (s)	17.2	34.0		14.5	31.3		11.3	35.0		10.5	34.2	
Actuated g/C Ratio	0.16	0.31		0.13	0.28		0.10	0.32		0.10	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	277	1077		226	924		176	1046		317	1012	
v/s Ratio Prot	c0.16	c0.27		0.11	0.23		0.07	c0.32		c0.11	0.15	
v/s Ratio Perm												
v/c Ratio	1.03	0.87		0.83	0.80		0.64	1.01		1.15	0.48	
Uniform Delay, d1	46.4	35.9		46.5	36.5		47.4	37.5		49.8	30.7	
Progression Factor	1.00	1.00		0.80	0.44		0.91	0.93		0.93	0.88	
Incremental Delay, d2	62.7	7.5		18.3	4.3		7.0	28.4		96.5	1.6	
Delay (s)	109.1	43.3		55.6	20.3		50.0	63.3		142.7	28.7	
Level of Service	F	D		E	C		D	E		F	C	
Approach Delay (s)		58.7			26.5			62.0			75.5	
Approach LOS		E			C			E			E	

Intersection Summary			
HCM Average Control Delay	55.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	10	60	30	20	40	80	1173	20	20	534	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.98			0.98			1.00			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.94			0.94			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1664			1682			5042			4976	
Flt Permitted		0.74			0.84			0.84			0.88	
Satd. Flow (perm)		1254			1431			4252			4371	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	68	10	61	31	20	41	82	1197	20	20	545	48
RTOR Reduction (vph)	0	34	0	0	35	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	105	0	0	57	0	0	1298	0	0	609	0
Confl. Peds. (#/hr)	14		35	35		14	38		23	23		38
Confl. Bikes (#/hr)			4			6			9			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		13.3			13.3			90.7			90.7	
Effective Green, g (s)		13.3			13.3			90.7			90.7	
Actuated g/C Ratio		0.12			0.12			0.82			0.82	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		152			173			3506			3604	
v/s Ratio Prot												
v/s Ratio Perm		c0.08			0.04			c0.31			0.14	
v/c Ratio		0.69			0.33			0.37			0.17	
Uniform Delay, d1		46.4			44.3			2.4			2.0	
Progression Factor		1.00			1.00			1.00			0.43	
Incremental Delay, d2		12.3			1.1			0.3			0.1	
Delay (s)		58.6			45.4			2.7			0.9	
Level of Service		E			D			A			A	
Approach Delay (s)		58.6			45.4			2.7			0.9	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	280	110	40	150	72	100	928	50	32	399	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		0.99	1.00			1.00	
Frt	1.00	0.96			0.96		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1746	3360			3333		1757	3501			4862	
Flt Permitted	0.57	1.00			0.87		0.39	1.00			0.85	
Satd. Flow (perm)	1055	3360			2909		715	3501			4139	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	313	283	111	40	152	73	101	937	51	32	403	102
RTOR Reduction (vph)	0	52	0	0	0	0	0	5	0	0	48	0
Lane Group Flow (vph)	313	342	0	0	265	0	101	983	0	0	489	0
Confl. Peds. (#/hr)	28		21	21		28	58		66	66		58
Confl. Bikes (#/hr)			9			4			18			13
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	455	1449			1255		394	1641			1552	
v/s Ratio Prot		0.10					0.01	c0.28				
v/s Ratio Perm	c0.30				0.09		0.11				0.12	
v/c Ratio	0.69	0.24			0.21		0.26	0.60			0.31	
Uniform Delay, d1	18.4	14.4			14.2		12.1	15.7			17.7	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	8.2	0.4			0.4		1.6	1.6			0.5	
Delay (s)	26.6	14.8			14.6		13.7	17.3			18.3	
Level of Service	C	B			B		B	B			B	
Approach Delay (s)		20.0			14.6			17.0			18.3	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	20
RTOR Reduction (vph)	13
Lane Group Flow (vph)	8
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.01
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.7
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	510	80	100	410	281	150	602	90	231	362	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	11	11	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.93		1.00	1.00	0.98	1.00	1.00	0.87
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4971		1770	4448		1652	3421	1503	1711	3421	1332
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4971		1770	4448		1652	3421	1503	1711	3421	1332
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	121	537	84	105	432	296	158	634	95	243	381	89
RTOR Reduction (vph)	0	20	0	0	116	0	0	0	70	0	0	66
Lane Group Flow (vph)	121	601	0	105	612	0	158	634	25	243	381	23
Confl. Peds. (#/hr)			1			121			1			98
Confl. Bikes (#/hr)			4			3			6			10
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	9.8	28.6		9.8	28.6		17.6	26.0	26.0	17.6	26.0	26.0
Effective Green, g (s)	9.8	28.6		9.8	28.6		17.6	26.0	26.0	17.6	26.0	26.0
Actuated g/C Ratio	0.10	0.29		0.10	0.29		0.18	0.26	0.26	0.18	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	173	1422		173	1272		291	889	391	301	889	346
v/s Ratio Prot	c0.07	0.12		0.06	c0.14		0.10	c0.19		c0.14	0.11	
v/s Ratio Perm									0.02			0.02
v/c Ratio	0.70	0.42		0.61	0.48		0.54	0.71	0.06	0.81	0.43	0.07
Uniform Delay, d1	43.7	29.0		43.3	29.6		37.5	33.6	27.8	39.6	30.8	27.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.5	0.1		4.1	0.1		1.1	4.9	0.3	13.8	1.5	0.4
Delay (s)	53.2	29.1		47.3	29.7		38.6	38.5	28.1	53.4	32.3	28.2
Level of Service	D	C		D	C		D	D	C	D	C	C
Approach Delay (s)		33.0			31.9			37.4			39.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	86	90	150	77	198	140	1560	79	177	1480	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.96			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			0.97	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1753	1651			1753	1536	1770	5044		1770	5078	
Flt Permitted	0.45	1.00			0.59	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	822	1651			1063	1536	1770	5044		1770	5078	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	65	92	97	161	83	213	151	1677	85	190	1591	11
RTOR Reduction (vph)	0	41	0	0	0	159	0	5	0	0	1	0
Lane Group Flow (vph)	65	148	0	0	244	54	151	1757	0	190	1601	0
Confl. Peds. (#/hr)	15		60	60		15			4			14
Confl. Bikes (#/hr)			11			4			3			3
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	25.2	25.2			25.2	25.2	12.6	43.8		17.5	48.7	
Effective Green, g (s)	25.2	25.2			25.2	25.2	12.6	43.8		17.5	48.7	
Actuated g/C Ratio	0.25	0.25			0.25	0.25	0.13	0.44		0.18	0.49	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	207	416			268	387	223	2209		310	2473	
v/s Ratio Prot		0.09					0.09	c0.35		0.11	c0.32	
v/s Ratio Perm	0.08				c0.23	0.03						
v/c Ratio	0.31	0.36			0.91	0.14	0.68	0.80		0.61	0.65	
Uniform Delay, d1	30.4	30.7			36.3	29.0	41.8	24.2		38.1	19.2	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			31.9	0.1	6.3	3.1		2.5	1.3	
Delay (s)	30.7	30.9			68.2	29.0	48.0	27.3		40.6	20.5	
Level of Service	C	C			E	C	D	C		D	C	
Approach Delay (s)		30.9			50.0			28.9			22.7	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	983	180	40	785	131	150	220	40	150	150	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.98		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4944		1767	4939		1770	1805		1743	1599	
Flt Permitted	0.95	1.00		0.22	1.00		0.13	1.00		0.59	1.00	
Satd. Flow (perm)	1770	4944		409	4939		240	1805		1087	1599	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	302	1024	188	42	818	136	156	229	42	156	156	406
RTOR Reduction (vph)	0	31	0	0	23	0	0	5	0	0	88	0
Lane Group Flow (vph)	302	1181	0	42	931	0	156	266	0	156	474	0
Confl. Peds. (#/hr)			4	4		14	3		20	20		3
Confl. Bikes (#/hr)			3			6			32			43
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	22.7	53.3		26.6	26.6		41.7	41.7		27.0	27.0	
Effective Green, g (s)	22.7	53.3		26.6	26.6		41.7	41.7		27.0	27.0	
Actuated g/C Ratio	0.22	0.51		0.26	0.26		0.40	0.40		0.26	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	386	2534		105	1263		254	724		282	415	
v/s Ratio Prot	c0.17	0.24			c0.19		c0.06	0.15			c0.30	
v/s Ratio Perm				0.10			0.18			0.14		
v/c Ratio	0.78	0.47		0.40	0.74		0.61	0.37		0.55	1.14	
Uniform Delay, d1	38.3	16.2		32.1	35.5		24.3	21.9		33.3	38.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.9	0.1		2.5	2.3		4.4	1.4		7.6	88.9	
Delay (s)	48.2	16.4		34.6	37.8		28.6	23.3		40.9	127.4	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		22.7			37.6			25.3			108.6	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	44.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	50	30	30	50	40	30	851	20	20	632	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.95			1.00			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1752			1740			3498			3508	
Flt Permitted		0.77			0.87			0.92			0.91	
Satd. Flow (perm)		1373			1528			3210			3209	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	54	32	32	54	43	32	915	22	22	680	11
RTOR Reduction (vph)	0	20	0	0	34	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	120	0	0	95	0	0	968	0	0	713	0
Confl. Peds. (#/hr)	14		30	30			72		47	47		77
Confl. Bikes (#/hr)			1			3			71			59
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		10.7			10.7			60.3			60.3	
Effective Green, g (s)		10.7			10.7			60.3			60.3	
Actuated g/C Ratio		0.13			0.13			0.75			0.75	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		184			204			2420			2419	
v/s Ratio Prot												
v/s Ratio Perm		c0.09			0.06			c0.30			0.22	
v/c Ratio		0.65			0.47			8.00dl			0.29	
Uniform Delay, d1		32.9			32.0			3.5			3.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.2			0.6			0.5			0.3	
Delay (s)		39.1			32.6			4.0			3.4	
Level of Service		D			C			A			A	
Approach Delay (s)		39.1			32.6			4.0			3.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	220	50
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	237	54
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	286	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	60.3	
Effective Green, g (s)	60.3	
Actuated g/C Ratio	0.75	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1214	
v/s Ratio Prot	0.18	
v/s Ratio Perm		
v/c Ratio	0.24	
Uniform Delay, d1	2.9	
Progression Factor	1.00	
Incremental Delay, d2	0.5	
Delay (s)	3.4	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	20	160	60	160	10	1028	210	80	837	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.96			0.98		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.93		1.00	0.90			0.97		1.00	0.98	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1696		1681	1527			3377		1770	3391	
Flt Permitted		0.99		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (perm)		1696		1681	1527			3195		1770	3391	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	10	21	165	62	165	10	1060	216	82	863	144
RTOR Reduction (vph)	0	20	0	0	83	0	0	12	0	0	10	0
Lane Group Flow (vph)	0	21	0	148	161	0	0	1274	0	82	997	0
Confl. Peds. (#/hr)			1			24	34		24	24		34
Confl. Bikes (#/hr)						6			60			68
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		4.2		14.8	14.8			55.0		8.0	67.5	
Effective Green, g (s)		4.2		14.8	14.8			55.0		8.0	67.5	
Actuated g/C Ratio		0.04		0.15	0.15			0.55		0.08	0.68	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		71		249	226			1757		142	2289	
v/s Ratio Prot		c0.01		0.09	c0.11					c0.05	0.29	
v/s Ratio Perm								c0.40				
v/c Ratio		0.29		0.59	0.71			0.73		0.58	0.44	
Uniform Delay, d1		46.5		39.8	40.6			16.8		44.4	7.5	
Progression Factor		1.00		1.00	1.00			0.82		1.00	1.00	
Incremental Delay, d2		0.8		2.5	8.6			1.6		3.5	0.6	
Delay (s)		47.3		42.3	49.2			15.4		47.9	8.1	
Level of Service		D		D	D			B		D	A	
Approach Delay (s)		47.3			46.6			15.4			11.1	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	603	80	120	416	218	100	580	129	297	660	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3444		1770	3291		1770	3372		1770	3464	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3444		1770	3291		1770	3372		1770	3464	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	459	615	82	122	424	222	102	592	132	303	673	61
RTOR Reduction (vph)	0	11	0	0	71	0	0	18	0	0	6	0
Lane Group Flow (vph)	459	686	0	122	575	0	102	706	0	303	728	0
Confl. Peds. (#/hr)			44			23			54			53
Confl. Bikes (#/hr)			11			15			52			53
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.0	24.7		9.8	22.5		5.0	36.5		12.0	43.5	
Effective Green, g (s)	12.0	24.7		9.8	22.5		5.0	36.5		12.0	43.5	
Actuated g/C Ratio	0.12	0.25		0.10	0.22		0.05	0.36		0.12	0.44	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	851		173	740		89	1231		212	1507	
v/s Ratio Prot	c0.13	c0.20		0.07	0.17		0.06	c0.21		c0.17	0.21	
v/s Ratio Perm												
v/c Ratio	1.11	0.81		0.71	0.78		1.15	0.57		1.43	0.48	
Uniform Delay, d1	44.0	35.4		43.7	36.4		47.5	25.5		44.0	20.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.14	0.72	
Incremental Delay, d2	79.0	5.3		10.2	4.7		140.2	1.9		216.5	1.0	
Delay (s)	123.0	40.7		53.9	41.1		187.7	27.4		266.6	15.5	
Level of Service	F	D		D	D		F	C		F	B	
Approach Delay (s)		73.4			43.1			47.2			88.9	
Approach LOS		E			D			D			F	

Intersection Summary			
HCM Average Control Delay	65.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	930	30	25	664	33	50	60	35	53	40	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1763	3519		1765	3509			1748			1738	
Flt Permitted	0.34	1.00		0.23	1.00			0.87			0.83	
Satd. Flow (perm)	638	3519		429	3509			1543			1477	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	969	31	26	692	34	52	62	36	55	42	31
RTOR Reduction (vph)	0	3	0	0	4	0	0	14	0	0	15	0
Lane Group Flow (vph)	52	997	0	26	722	0	0	136	0	0	113	0
Confl. Peds. (#/hr)	13		14	14		13	16		9	9		16
Confl. Bikes (#/hr)			10			4			26			32
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	362	1998		244	1993			476			456	
v/s Ratio Prot		c0.28			0.21							
v/s Ratio Perm	0.08			0.06				c0.09			0.08	
v/c Ratio	0.14	0.50		0.11	0.36			0.29			0.25	
Uniform Delay, d1	8.2	10.6		8.0	9.5			21.2			21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	0.9		0.9	0.5			1.5			1.3	
Delay (s)	9.1	11.4		8.9	10.0			22.7			22.3	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		11.3			10.0			22.7			22.3	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	356	987	60	20	676	192	40	47	10	334	57	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00			1.00	0.90
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	1.00
Frt	1.00	0.99		1.00	0.97			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.96	1.00
Satd. Flow (prot)	3204	3376		1711	3283			1770			1763	1430
Flt Permitted	0.95	1.00		0.95	1.00			0.65			0.69	1.00
Satd. Flow (perm)	3204	3376		1711	3283			1178			1274	1430
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	363	1007	61	20	690	196	41	48	10	341	58	339
RTOR Reduction (vph)	0	4	0	0	23	0	0	4	0	0	0	223
Lane Group Flow (vph)	363	1064	0	20	863	0	0	95	0	0	399	116
Confl. Peds. (#/hr)			19			15	66		16	16		66
Confl. Bikes (#/hr)			9			4			13			20
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	17.4	58.7		1.6	42.9			37.7			37.7	37.7
Effective Green, g (s)	17.4	58.7		1.6	42.9			37.7			37.7	37.7
Actuated g/C Ratio	0.16	0.53		0.01	0.39			0.34			0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	507	1802		25	1280			404			437	490
v/s Ratio Prot	c0.11	0.32		0.01	c0.26							
v/s Ratio Perm								0.08			c0.31	0.08
v/c Ratio	0.72	0.59		0.80	0.67			0.24			0.91	0.24
Uniform Delay, d1	44.0	17.5		54.0	27.8			25.8			34.6	25.9
Progression Factor	0.55	0.15		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.7	0.5		95.2	2.9			0.3			23.2	0.3
Delay (s)	25.7	3.2		149.2	30.6			26.1			57.8	26.1
Level of Service	C	A		F	C			C			E	C
Approach Delay (s)		8.9			33.2			26.1			43.3	
Approach LOS		A			C			C			D	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1204	101	10	831	50	11	10	10	10	10	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	1281	107	11	884	53	12	11	11	11	11	12
Pedestrians		11			1			16			9	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		881			649							
pX, platoon unblocked	0.99			0.81			0.81	0.81	0.81	0.81	0.81	0.99
vC, conflicting volume	946			1404			1884	2361	711	1641	2388	489
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	931			1021			1581	2169	161	1280	2202	470
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			98			71	70	98	85	68	98
cM capacity (veh/h)	720			537			41	35	680	71	33	527

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	662	748	453	495	33	33
Volume Left	21	0	11	0	12	11
Volume Right	0	107	0	53	11	12
cSH	720	1700	537	1700	54	67
Volume to Capacity	0.03	0.44	0.02	0.29	0.61	0.49
Queue Length 95th (ft)	2	0	2	0	61	50
Control Delay (s)	0.8	0.0	0.6	0.0	144.5	102.7
Lane LOS	A		A		F	F
Approach Delay (s)	0.4		0.3		144.5	102.7
Approach LOS					F	F

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	1141	73	20	840	10	43	10	100	10	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	1176	75	21	866	10	44	10	103	10	10	10
Pedestrians		4						18			23	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						1			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1205			325							
pX, platoon unblocked	0.92			0.87			0.91	0.91	0.87	0.91	0.91	0.92
vC, conflicting volume	899			1270			1746	2193	644	1652	2226	465
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	714			1002			1214	1707	280	1111	1743	241
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			56	86	83	90	86	98
cM capacity (veh/h)	795			586			101	75	612	102	72	683

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	598	663	454	443	158	31
Volume Left	10	0	21	0	44	10
Volume Right	0	75	0	10	103	10
cSH	795	1700	586	1700	212	119
Volume to Capacity	0.01	0.39	0.04	0.26	0.75	0.26
Queue Length 95th (ft)	1	0	3	0	126	24
Control Delay (s)	0.4	0.0	1.0	0.0	59.6	45.7
Lane LOS	A		A		F	E
Approach Delay (s)	0.2		0.5		59.6	45.7
Approach LOS					F	E

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	972	238	120	611	50	217	40	180	50	40	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.98			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.97			0.99			0.94			0.96	
Flt Protected		1.00			0.99			0.98			0.98	
Satd. Flow (prot)		3403			3468			1873			1713	
Flt Permitted		0.87			0.52			0.77			0.77	
Satd. Flow (perm)		2972			1815			1487			1352	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	1057	259	130	664	54	236	43	196	54	43	45
RTOR Reduction (vph)	0	29	0	0	7	0	0	36	0	0	24	0
Lane Group Flow (vph)	0	1342	0	0	841	0	0	439	0	0	118	0
Confl. Peds. (#/hr)	20		9			20	30		42	42		30
Confl. Bikes (#/hr)			11			3			4			6
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		25.5			41.5			19.0			19.0	
Effective Green, g (s)		25.5			41.5			19.0			19.0	
Actuated g/C Ratio		0.36			0.59			0.27			0.27	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		1083			1383			404			367	
v/s Ratio Prot					c0.11							
v/s Ratio Perm		c0.45			0.25			c0.29			0.09	
v/c Ratio		1.24			0.61			1.09			0.32	
Uniform Delay, d1		22.2			9.1			25.5			20.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		115.8			2.0			69.7			2.3	
Delay (s)		138.0			11.1			95.2			22.7	
Level of Service		F			B			F			C	
Approach Delay (s)		138.0			11.1			95.2			22.7	
Approach LOS		F			B			F			C	

Intersection Summary			
HCM Average Control Delay	87.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	201	90	80	324	274	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.96		1.00	1.00	1.00	0.89
Flpb, ped/bikes	1.00		0.95	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1662		1676	1863	1863	1416
Flt Permitted	0.97		0.52	1.00	1.00	1.00
Satd. Flow (perm)	1662		924	1863	1863	1416
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	223	100	89	360	304	113
RTOR Reduction (vph)	29	0	0	0	0	55
Lane Group Flow (vph)	294	0	89	360	304	58
Confl. Peds. (#/hr)	93	72	86			86
Confl. Bikes (#/hr)		8				4
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	635		470	948	948	721
v/s Ratio Prot	c0.18			c0.19	0.16	
v/s Ratio Perm			0.10			0.04
v/c Ratio	0.46		0.19	0.38	0.32	0.08
Uniform Delay, d1	12.8		7.3	8.2	7.9	6.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4		0.9	1.2	0.9	0.2
Delay (s)	15.2		8.2	9.4	8.8	7.1
Level of Service	B		A	A	A	A
Approach Delay (s)	15.2			9.1	8.4	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	542	677	497	50	10	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.87	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3490		1588	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3490		1588	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	559	698	512	52	10	352
RTOR Reduction (vph)	0	0	12	0	245	0
Lane Group Flow (vph)	559	698	552	0	117	0
Confl. Peds. (#/hr)					4	
Confl. Bikes (#/hr)						8
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	818		484	
v/s Ratio Prot	c0.32	0.20	c0.16		c0.07	
v/s Ratio Perm						
v/c Ratio	1.01	0.33	0.67		0.24	
Uniform Delay, d1	22.0	6.6	22.3		16.7	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	41.0	0.4	4.4		1.2	
Delay (s)	63.0	7.0	26.7		17.9	
Level of Service	E	A	C		B	
Approach Delay (s)		31.9	26.7		17.9	
Approach LOS		C	C		B	

Intersection Summary			
HCM Average Control Delay	28.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	20	40	440	10	60	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.91		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1668		1856		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1668		1856		1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	22	43	473	11	65	634
RTOR Reduction (vph)	39	0	1	0	0	0
Lane Group Flow (vph)	26	0	483	0	65	634
Confl. Bikes (#/hr)				3		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	3.1		17.0		2.6	23.6
Effective Green, g (s)	3.1		17.0		2.6	23.6
Actuated g/C Ratio	0.09		0.48		0.07	0.66
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	145		884		129	1232
v/s Ratio Prot	c0.02		0.26		0.04	c0.34
v/s Ratio Perm						
v/c Ratio	0.18		0.55		0.50	0.51
Uniform Delay, d1	15.1		6.6		15.9	3.1
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.6		0.7		3.1	0.4
Delay (s)	15.7		7.3		19.0	3.5
Level of Service	B		A		B	A
Approach Delay (s)	15.7		7.3			4.9
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	35.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations			✣			✣					✣	
Volume (vph)	10	20	50	20	20	20	40	50	10	43	388	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.97			0.94					0.99	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.97			0.91					0.99	
Flt Protected			0.99			0.99					0.99	
Satd. Flow (prot)			1537			1394					1616	
Flt Permitted			0.89			0.95					0.88	
Satd. Flow (perm)			1386			1333					1432	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	22	55	22	22	22	44	55	11	47	426	22
RTOR Reduction (vph)	0	0	15	0	0	38	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	95	0	0	105	0	0	0	0	503	0
Confl. Peds. (#/hr)				55				32				118
Confl. Bikes (#/hr)												14
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			14.0			14.0					22.0	
Effective Green, g (s)			14.0			14.0					22.0	
Actuated g/C Ratio			0.23			0.23					0.37	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			323			311					525	
v/s Ratio Prot												
v/s Ratio Perm			0.07			c0.08					c0.35	
v/c Ratio			0.29			0.34					0.96	
Uniform Delay, d1			18.9			19.1					18.6	
Progression Factor			1.00			1.00					1.00	
Incremental Delay, d2			2.3			2.9					30.3	
Delay (s)			21.2			22.1					48.9	
Level of Service			C			C					D	
Approach Delay (s)			21.2			22.1					48.9	
Approach LOS			C			C					D	

Intersection Summary			
HCM Average Control Delay	41.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	60	388	20	30	20	70	53	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.97				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.99				0.93		
Flt Protected		0.99				0.98		
Satd. Flow (prot)		1752				1499		
Flt Permitted		0.88				0.98		
Satd. Flow (perm)		1548				1499		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	66	426	22	33	22	77	58	44
RTOR Reduction (vph)	0	4	0	0	0	17	0	0
Lane Group Flow (vph)	0	543	0	0	0	184	0	0
Confl. Peds. (#/hr)			67	108				
Confl. Bikes (#/hr)			14	6				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		22.0				12.0		
Effective Green, g (s)		22.0				12.0		
Actuated g/C Ratio		0.37				0.20		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		568				300		
v/s Ratio Prot								
v/s Ratio Perm		0.35				0.12		
v/c Ratio		0.96				0.61		
Uniform Delay, d1		18.5				21.9		
Progression Factor		1.00				1.00		
Incremental Delay, d2		28.4				9.1		
Delay (s)		46.9				31.0		
Level of Service		D				C		
Approach Delay (s)		46.9				31.0		
Approach LOS		D				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	10	10	0	0	0	0	30	30	10	20	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	13	13	13	0	0	0	0	38	38	13	26	0
Pedestrians					9						6	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					372							
pX, platoon unblocked												
vC, conflicting volume	6			26			58	51	28	118	57	6
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	6			26			58	51	28	118	57	6
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	95	96	98	97	100
cM capacity (veh/h)	1607			1589			908	830	1047	786	823	1071

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	38	77	38
Volume Left	13	0	13
Volume Right	13	38	0
cSH	1607	926	810
Volume to Capacity	0.01	0.08	0.05
Queue Length 95th (ft)	1	7	4
Control Delay (s)	2.5	9.2	9.7
Lane LOS	A	A	A
Approach Delay (s)	2.5	9.2	9.7
Approach LOS		A	A

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1131	0	0	777	20	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	1216	0	0	835	22	0	0	11	0	0	0
Pedestrians					1			10			1	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1282			613							
pX, platoon unblocked				0.89			0.89	0.89	0.89	0.89	0.89	
vC, conflicting volume	858			1226			1644	2084	619	1467	2073	429
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	858			1000			1471	1967	315	1271	1955	429
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	779			605			77	55	598	108	56	574

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	811	405	557	300	11
Volume Left	0	0	0	0	0
Volume Right	0	0	0	22	11
cSH	1700	1700	1700	1700	598
Volume to Capacity	0.48	0.24	0.33	0.18	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.1
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1325	804	56	0	82
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1440	874	61	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		226	1304			
pX, platoon unblocked					0.79	
vC, conflicting volume	935				1624	467
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	935				1255	467
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	84
cM capacity (veh/h)	728				129	542

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	720	720	583	352	89
Volume Left	0	0	0	0	0
Volume Right	0	0	0	61	89
cSH	1700	1700	1700	1700	542
Volume to Capacity	0.42	0.42	0.34	0.21	0.16
Queue Length 95th (ft)	0	0	0	0	15
Control Delay (s)	0.0	0.0	0.0	0.0	12.9
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.9
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	40	10	30	20	18	10	10	20	559	16	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0			4.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.97				0.99			1.00			
Flpb, ped/bikes		1.00				0.99			1.00			
Frt		0.93				0.96			0.99			
Flt Protected		0.98				0.98			1.00			
Satd. Flow (prot)		1652				1733			3495			
Flt Permitted		0.88				0.87			0.93			
Satd. Flow (perm)		1489				1551			3247			
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	47	12	35	23	21	12	12	23	650	19	12	12
RTOR Reduction (vph)	0	15	0	0	0	9	0	0	2	0	0	0
Lane Group Flow (vph)	0	102	0	0	0	36	0	0	702	0	0	0
Confl. Peds. (#/hr)	10		21	15	15		10	11		21	11	11
Confl. Bikes (#/hr)			1	1						4	4	
Turn Type	Perm				Perm			Perm				
Protected Phases		4				4			2			
Permitted Phases	4				4			2				
Actuated Green, G (s)		16.0				16.0			16.0			
Effective Green, g (s)		16.0				16.0			16.0			
Actuated g/C Ratio		0.27				0.27			0.27			
Clearance Time (s)		4.0				4.0			4.0			
Lane Grp Cap (vph)		397				414			866			
v/s Ratio Prot												
v/s Ratio Perm		c0.07				0.02			0.22			
v/c Ratio		0.26				0.09			0.81			
Uniform Delay, d1		17.3				16.5			20.6			
Progression Factor		0.87				1.00			1.00			
Incremental Delay, d2		1.4				0.4			8.1			
Delay (s)		16.5				16.9			28.7			
Level of Service		B				B			C			
Approach Delay (s)		16.5				16.9			28.7			
Approach LOS		B				B			C			

Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	NWL	NWR
Lane Configurations					
Volume (vph)	50	382	20	41	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	
Lane Util. Factor		0.95		1.00	
Frpb, ped/bikes		1.00		0.99	
Flpb, ped/bikes		1.00		1.00	
Frt		0.99		0.93	
Flt Protected		0.99		0.98	
Satd. Flow (prot)		3480		1672	
Flt Permitted		0.68		0.98	
Satd. Flow (perm)		2368		1672	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	58	444	23	48	50
RTOR Reduction (vph)	0	5	0	0	0
Lane Group Flow (vph)	0	532	0	98	0
Confl. Peds. (#/hr)	21		11	11	10
Confl. Bikes (#/hr)			1		1
Turn Type	Perm				
Protected Phases		6		8	
Permitted Phases	6				
Actuated Green, G (s)		16.0		16.0	
Effective Green, g (s)		16.0		16.0	
Actuated g/C Ratio		0.27		0.27	
Clearance Time (s)		4.0		4.0	
Lane Grp Cap (vph)		631		446	
v/s Ratio Prot				c0.06	
v/s Ratio Perm		c0.22			
v/c Ratio		0.84		0.22	
Uniform Delay, d1		20.8		17.1	
Progression Factor		1.00		1.00	
Incremental Delay, d2		12.9		1.1	
Delay (s)		33.7		18.3	
Level of Service		C		B	
Approach Delay (s)		33.7		18.3	
Approach LOS		C		B	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	241	40	575	278	30	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.94		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1732		3176		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1732		3176		1711	3421
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	259	43	618	299	32	462
RTOR Reduction (vph)	12	0	85	0	0	0
Lane Group Flow (vph)	290	0	832	0	32	462
Confl. Peds. (#/hr)		69		72	72	
Confl. Bikes (#/hr)		3		6		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	13.0		27.7		2.3	34.0
Effective Green, g (s)	13.0		27.7		2.3	34.0
Actuated g/C Ratio	0.24		0.50		0.04	0.62
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		3.0	2.0
Lane Grp Cap (vph)	409		1600		72	2115
v/s Ratio Prot	c0.17		c0.26		c0.02	0.14
v/s Ratio Perm						
v/c Ratio	0.71		0.52		0.44	0.22
Uniform Delay, d1	19.3		9.2		25.7	4.6
Progression Factor	1.00		0.44		1.00	1.00
Incremental Delay, d2	4.5		1.1		4.3	0.2
Delay (s)	23.8		5.1		30.1	4.9
Level of Service	C		A		C	A
Approach Delay (s)	23.8		5.1			6.5
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	402	425	861	564	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.97	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.98	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3258	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3258	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	423	447	906	594	105
RTOR Reduction (vph)	0	0	0	0	21	0
Lane Group Flow (vph)	0	423	447	906	678	0
Confl. Peds. (#/hr)	156		95			95
Confl. Bikes (#/hr)						1
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		20.6	20.6	31.0	24.4	
Effective Green, g (s)		20.6	20.6	31.0	24.4	
Actuated g/C Ratio		0.37	0.37	0.56	0.44	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		603	641	1862	1445	
v/s Ratio Prot		c0.26	0.26	c0.27	0.21	
v/s Ratio Perm						
v/c Ratio		0.70	0.70	0.49	0.47	
Uniform Delay, d1		14.6	14.6	7.2	10.7	
Progression Factor		1.00	1.07	1.22	0.78	
Incremental Delay, d2		3.7	2.3	0.6	1.0	
Delay (s)		18.3	17.8	9.4	9.4	
Level of Service		B	B	A	A	
Approach Delay (s)	18.3			12.2	9.4	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	50	115	0	286	0	1012	296	164	830	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.96			0.92		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.90		1.00	0.85			0.97		1.00	1.00	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1635		1763	1519			3032		1652	3539	
Flt Permitted		0.28		0.72	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		467		1331	1519			3032		1652	3539	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	0	53	122	0	304	0	1077	315	174	883	0
RTOR Reduction (vph)	0	45	0	0	233	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	29	0	122	71	0	0	1374	0	174	883	0
Confl. Peds. (#/hr)	18		4	4		18	48		108	108		48
Confl. Bikes (#/hr)						5			8			14
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		15.7		15.7	15.7			64.3		15.0	84.3	
Effective Green, g (s)		15.7		15.7	15.7			64.3		15.0	84.3	
Actuated g/C Ratio		0.14		0.14	0.14			0.58		0.14	0.77	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		67		190	217			1772		225	2712	
v/s Ratio Prot					0.05			c0.45		c0.11	0.25	
v/s Ratio Perm		0.06		c0.09								
v/c Ratio		0.43		0.64	0.33			0.78		0.77	0.33	
Uniform Delay, d1		43.0		44.5	42.4			17.4		45.9	4.0	
Progression Factor		1.00		1.00	1.00			0.28		1.03	1.18	
Incremental Delay, d2		4.3		7.2	0.9			0.3		13.7	0.3	
Delay (s)		47.4		51.7	43.3			5.1		60.9	5.0	
Level of Service		D		D	D			A		E	A	
Approach Delay (s)		47.4			45.7			5.1			14.2	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	242	480	120	257	604	404	160	672	247	365	403	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	11	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3404		1711	3276		1711	3194		3319	3193	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3404		1711	3276		1711	3194		3319	3193	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	257	511	128	273	643	430	170	715	263	388	429	220
RTOR Reduction (vph)	0	22	0	0	104	0	0	34	0	0	59	0
Lane Group Flow (vph)	257	617	0	273	969	0	170	944	0	388	590	0
Confl. Peds. (#/hr)	25		29	29		25	28		83	83		28
Confl. Bikes (#/hr)			1			3			1			10
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	26.3		21.7	34.0		12.0	31.0		15.0	34.0	
Effective Green, g (s)	14.0	26.3		21.7	34.0		12.0	31.0		15.0	34.0	
Actuated g/C Ratio	0.13	0.24		0.20	0.31		0.11	0.28		0.14	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	814		338	1013		187	900		453	987	
v/s Ratio Prot	c0.15	0.18		0.16	c0.30		0.10	c0.30		c0.12	0.18	
v/s Ratio Perm												
v/c Ratio	1.14	0.76		0.81	0.96		0.91	1.05		0.86	0.60	
Uniform Delay, d1	48.0	38.9		42.2	37.3		48.5	39.5		46.4	32.2	
Progression Factor	1.00	1.00		0.92	0.53		0.91	0.84		0.95	0.80	
Incremental Delay, d2	103.7	4.1		10.3	15.2		38.1	42.1		14.2	2.6	
Delay (s)	151.7	43.0		48.9	35.0		82.3	75.3		58.3	28.4	
Level of Service	F	D		D	C		F	E		E	C	
Approach Delay (s)		74.1			37.8			76.3			39.5	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM Average Control Delay	55.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	10	130	40	20	60	120	896	20	30	701	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.94			0.98			1.00			0.99	
Flpb, ped/bikes		0.99			0.98			1.00			1.00	
Frt		0.93			0.93			1.00			0.99	
Flt Protected		0.98			0.98			0.99			1.00	
Satd. Flow (prot)		1594			1651			5015			4940	
Flt Permitted		0.74			0.82			0.73			0.86	
Satd. Flow (perm)		1209			1375			3667			4250	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	136	11	144	44	22	67	133	996	22	33	779	89
RTOR Reduction (vph)	0	40	0	0	42	0	0	1	0	0	8	0
Lane Group Flow (vph)	0	251	0	0	92	0	0	1150	0	0	893	0
Confl. Peds. (#/hr)	19		112	112		19	45		57	57		45
Confl. Bikes (#/hr)			1			3			4			10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		27.0			27.0			77.0			77.0	
Effective Green, g (s)		27.0			27.0			77.0			77.0	
Actuated g/C Ratio		0.25			0.25			0.70			0.70	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		297			338			2567			2975	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.07			c0.31			0.21	
v/c Ratio		0.85			0.27			0.45			0.30	
Uniform Delay, d1		39.5			33.5			7.2			6.3	
Progression Factor		1.00			1.00			1.00			0.36	
Incremental Delay, d2		19.3			0.4			0.6			0.2	
Delay (s)		58.8			34.0			7.8			2.4	
Level of Service		E			C			A			A	
Approach Delay (s)		58.8			34.0			7.8			2.4	
Approach LOS		E			C			A			A	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	228	190	130	30	110	33	110	605	40	42	611	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.98			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.94			0.97		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1770	3268			3361		1766	3493			4834	
Flt Permitted	0.64	1.00			0.87		0.23	1.00			0.87	
Satd. Flow (perm)	1186	3268			2964		422	3493			4228	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	240	200	137	32	116	35	116	637	42	44	643	193
RTOR Reduction (vph)	0	78	0	0	0	0	0	6	0	0	63	0
Lane Group Flow (vph)	240	259	0	0	183	0	116	673	0	0	817	0
Confl. Peds. (#/hr)			39	39		60	58		74	74		58
Confl. Bikes (#/hr)			5			8			9			10
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	511	1409			1278		273	1637			1586	
v/s Ratio Prot		0.08					0.02	c0.19				
v/s Ratio Perm	c0.20				0.06		0.18				c0.19	
v/c Ratio	0.47	0.18			0.14		0.42	0.41			0.52	
Uniform Delay, d1	16.2	14.1			13.8		12.7	14.0			19.4	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.1	0.3			0.2		4.8	0.8			1.2	
Delay (s)	19.3	14.3			14.0		17.5	14.8			20.6	
Level of Service	B	B			B		B	B			C	
Approach Delay (s)		16.4			14.0			15.1			20.6	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	143.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	70
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1526
Flt Permitted	1.00
Satd. Flow (perm)	1526
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	74
RTOR Reduction (vph)	46
Lane Group Flow (vph)	28
Confl. Peds. (#/hr)	48
Confl. Bikes (#/hr)	6
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	572
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.05
Uniform Delay, d1	15.9
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	16.1
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	310	60	80	400	322	100	374	50	282	413	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	11	11	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.94		1.00	1.00	0.97	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4949		1770	4460		1652	3421	1489	1711	3250	1404
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4949		1770	4460		1652	3421	1489	1711	3250	1404
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	337	65	87	435	350	109	407	54	307	449	83
RTOR Reduction (vph)	0	27	0	0	140	0	0	0	40	0	0	61
Lane Group Flow (vph)	109	375	0	87	645	0	109	407	14	307	449	22
Confl. Peds. (#/hr)	91		3	3		91	53		3	3		53
Confl. Bikes (#/hr)			1			10			14			14
Parking (#/hr)											0	
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	10.0	28.0		10.0	28.0		17.5	26.5	26.5	17.5	26.5	26.5
Effective Green, g (s)	10.0	28.0		10.0	28.0		17.5	26.5	26.5	17.5	26.5	26.5
Actuated g/C Ratio	0.10	0.28		0.10	0.28		0.18	0.26	0.26	0.18	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	177	1386		177	1249		289	907	395	299	861	372
v/s Ratio Prot	c0.06	0.08		0.05	c0.14		0.07	0.12		c0.18	c0.14	
v/s Ratio Perm									0.01			0.02
v/c Ratio	0.62	0.27		0.49	0.52		0.38	0.45	0.04	1.03	0.52	0.06
Uniform Delay, d1	43.2	28.0		42.6	30.3		36.4	30.7	27.3	41.2	31.3	27.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	0.0		0.8	0.2		0.3	1.6	0.2	59.1	2.3	0.3
Delay (s)	47.6	28.1		43.4	30.5		36.7	32.3	27.4	100.4	33.6	27.7
Level of Service	D	C		D	C		D	C	C	F	C	C
Approach Delay (s)		32.2			31.7			32.7			57.4	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	39.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	61	40	52	118	179	10	1070	97	123	1050	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99			1.00	0.96	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1748	1729			1830	1527	1770	5010		1770	5074	
Flt Permitted	0.54	1.00			0.86	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	985	1729			1597	1527	1770	5010		1770	5074	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	64	42	54	123	186	10	1115	101	128	1094	10
RTOR Reduction (vph)	0	35	0	0	0	155	0	9	0	0	1	0
Lane Group Flow (vph)	42	71	0	0	177	31	10	1207	0	128	1103	0
Confl. Peds. (#/hr)	21		13	13		21	29		13	13		29
Confl. Bikes (#/hr)			9			6			6			4
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	13.3	13.3			13.3	13.3	1.2	40.8		12.4	52.0	
Effective Green, g (s)	13.3	13.3			13.3	13.3	1.2	40.8		12.4	52.0	
Actuated g/C Ratio	0.17	0.17			0.17	0.17	0.01	0.51		0.16	0.65	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	164	287			266	254	27	2555		274	3298	
v/s Ratio Prot		0.04					0.01	c0.24		c0.07	0.22	
v/s Ratio Perm	0.04				c0.11	0.02						
v/c Ratio	0.26	0.25			0.67	0.12	0.37	0.47		0.47	0.33	
Uniform Delay, d1	29.0	29.0			31.3	28.4	39.0	12.7		30.8	6.3	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			4.8	0.1	3.1	0.6		0.5	0.3	
Delay (s)	29.3	29.2			36.1	28.5	42.1	13.3		31.3	6.5	
Level of Service	C	C			D	C	D	B		C	A	
Approach Delay (s)		29.2			32.2			13.5			9.1	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	750	190	40	879	153	190	160	70	118	150	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.95		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4896		1765	4927		1768	1754		1745	1627	
Flt Permitted	0.95	1.00		0.29	1.00		0.17	1.00		0.61	1.00	
Satd. Flow (perm)	1770	4896		532	4927		310	1754		1126	1627	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	296	765	194	41	897	156	194	163	71	120	153	286
RTOR Reduction (vph)	0	54	0	0	26	0	0	14	0	0	67	0
Lane Group Flow (vph)	296	905	0	41	1027	0	194	220	0	120	372	0
Confl. Peds. (#/hr)	25		6	6		25	21		18	18		21
Confl. Bikes (#/hr)			10			5			23			14
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	21.0	54.7		29.7	29.7		36.3	36.3		20.0	20.0	
Effective Green, g (s)	21.0	54.7		29.7	29.7		36.3	36.3		20.0	20.0	
Actuated g/C Ratio	0.21	0.55		0.30	0.30		0.36	0.36		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	372	2678		158	1463		292	637		225	325	
v/s Ratio Prot	c0.17	0.18			c0.21		c0.08	0.13			c0.23	
v/s Ratio Perm				0.08			0.16			0.11		
v/c Ratio	0.80	0.34		0.26	0.70		0.66	0.35		0.53	1.14	
Uniform Delay, d1	37.5	12.6		26.8	31.2		25.0	23.2		35.8	40.0	
Progression Factor	1.00	1.00		1.25	1.20		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	0.1		0.6	1.1		5.6	1.5		8.8	94.9	
Delay (s)	48.7	12.7		34.0	38.5		30.6	24.7		44.6	134.9	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		21.2			38.3			27.4			115.5	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	43.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	30	10	30	40	72	44	759	40	50	634	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			0.99			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.98			0.93			0.99			1.00	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1768			1696			3474			3494	
Flt Permitted		0.60			0.91			0.88			0.83	
Satd. Flow (perm)		1093			1566			3066			2924	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	33	11	33	43	78	48	825	43	54	689	11
RTOR Reduction (vph)	0	9	0	0	68	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	89	0	0	86	0	0	914	0	0	754	0
Confl. Peds. (#/hr)	21		25	25					53	53		92
Confl. Bikes (#/hr)			3			3			47			33
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		9.4			9.4			61.6			61.6	
Effective Green, g (s)		9.4			9.4			61.6			61.6	
Actuated g/C Ratio		0.12			0.12			0.77			0.77	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		128			184			2361			2251	
v/s Ratio Prot												
v/s Ratio Perm		c0.08			0.05			c0.30			0.26	
v/c Ratio		0.70			0.47			6.00dl			0.33	
Uniform Delay, d1		33.9			33.0			3.0			2.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		12.5			0.7			0.5			0.4	
Delay (s)		46.4			33.6			3.5			3.3	
Level of Service		D			C			A			A	
Approach Delay (s)		46.4			33.6			3.5			3.3	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	230	80
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	250	87
RTOR Reduction (vph)	7	0
Lane Group Flow (vph)	330	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		20
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	61.6	
Effective Green, g (s)	61.6	
Actuated g/C Ratio	0.77	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1240	
v/s Ratio Prot	0.21	
v/s Ratio Perm		
v/c Ratio	0.27	
Uniform Delay, d1	2.7	
Progression Factor	1.00	
Incremental Delay, d2	0.5	
Delay (s)	3.2	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	40	120	50	130	10	750	140	70	563	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.95			0.95		1.00	0.86	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.91		1.00	0.90			0.94		1.00	0.96	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1683		1681	1499			3153		1770	2912	
Flt Permitted		0.99		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (perm)		1683		1681	1499			2987		1770	2912	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.25	0.95	0.95	0.95
Adj. Flow (vph)	11	11	42	126	53	137	11	789	560	74	593	253
RTOR Reduction (vph)	0	40	0	0	84	0	0	87	0	0	33	0
Lane Group Flow (vph)	0	24	0	113	119	0	0	1273	0	74	813	0
Confl. Peds. (#/hr)	40					40	160		30	30		160
Confl. Bikes (#/hr)						8			29			25
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		5.3		12.4	12.4			56.7		7.6	68.8	
Effective Green, g (s)		5.3		12.4	12.4			56.7		7.6	68.8	
Actuated g/C Ratio		0.05		0.12	0.12			0.57		0.08	0.69	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		89		208	186			1694		135	2003	
v/s Ratio Prot		c0.01		0.07	c0.08					c0.04	0.28	
v/s Ratio Perm								c0.43				
v/c Ratio		0.27		0.54	0.64			0.75		0.55	0.41	
Uniform Delay, d1		45.5		41.1	41.7			16.3		44.5	6.8	
Progression Factor		1.00		1.00	1.00			0.71		1.00	1.00	
Incremental Delay, d2		0.6		1.6	5.2			2.9		2.4	0.6	
Delay (s)		46.1		42.7	46.9			14.5		47.0	7.4	
Level of Service		D		D	D			B		D	A	
Approach Delay (s)		46.1			45.4			14.5			10.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	518	140	153	612	199	120	460	163	203	470	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.94		1.00	0.99		1.00	0.93		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3217		1770	3359		1770	3170		1770	3431	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3217		1770	3359		1770	3170		1770	3431	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	255	529	143	156	624	203	122	469	166	207	480	41
RTOR Reduction (vph)	0	26	0	0	32	0	0	34	0	0	6	0
Lane Group Flow (vph)	255	646	0	156	795	0	122	601	0	207	515	0
Confl. Peds. (#/hr)	32		204	204		32	164		175	175		164
Confl. Bikes (#/hr)			4			6			34			32
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.8	24.9		10.6	24.7		5.0	35.5		12.0	42.5	
Effective Green, g (s)	10.8	24.9		10.6	24.7		5.0	35.5		12.0	42.5	
Actuated g/C Ratio	0.11	0.25		0.11	0.25		0.05	0.36		0.12	0.42	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	371	801		188	830		89	1125		212	1458	
v/s Ratio Prot	0.07	0.20		c0.09	c0.24		c0.07	c0.19		c0.12	0.15	
v/s Ratio Perm												
v/c Ratio	0.69	0.81		0.83	0.96		1.37	0.53		0.98	0.35	
Uniform Delay, d1	43.0	35.3		43.8	37.1		47.5	25.7		43.9	19.5	
Progression Factor	0.92	1.25		1.00	1.00		1.00	1.00		1.13	0.76	
Incremental Delay, d2	4.0	5.4		24.0	21.1		222.8	1.8		52.4	0.6	
Delay (s)	43.4	49.5		67.8	58.2		270.3	27.5		102.1	15.4	
Level of Service	D	D		E	E		F	C		F	B	
Approach Delay (s)		47.8			59.8			66.6			40.1	
Approach LOS		D			E			E			D	

Intersection Summary			
HCM Average Control Delay	53.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	772	30	25	897	44	30	40	28	35	40	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1766	3514		1761	3509			1737			1776	
Flt Permitted	0.23	1.00		0.29	1.00			0.91			0.87	
Satd. Flow (perm)	436	3514		539	3509			1598			1579	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	813	32	26	944	46	32	42	29	37	42	11
RTOR Reduction (vph)	0	3	0	0	4	0	0	17	0	0	6	0
Lane Group Flow (vph)	42	842	0	26	986	0	0	86	0	0	84	0
Confl. Peds. (#/hr)	9		20	20		9	13		13	13		13
Confl. Bikes (#/hr)			4			8			28			38
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	248	1996		306	1993			493			487	
v/s Ratio Prot		0.24			c0.28							
v/s Ratio Perm	0.10			0.05				c0.05			0.05	
v/c Ratio	0.17	0.42		0.08	0.49			0.17			0.17	
Uniform Delay, d1	8.4	9.9		7.9	10.5			20.5			20.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.5	0.7		0.5	0.9			0.8			0.8	
Delay (s)	9.8	10.6		8.5	11.4			21.2			21.2	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		10.6			11.3			21.2			21.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	410	633	60	40	782	213	70	68	20	221	90	403
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.99			1.00	0.93
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	1.00
Frt	1.00	0.99		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	1.00
Satd. Flow (prot)	3204	3335		1711	3263			1759			1775	1468
Flt Permitted	0.95	1.00		0.95	1.00			0.57			0.67	1.00
Satd. Flow (perm)	3204	3335		1711	3263			1028			1223	1468
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	432	666	63	42	823	224	74	72	21	233	95	424
RTOR Reduction (vph)	0	6	0	0	20	0	0	5	0	0	0	262
Lane Group Flow (vph)	432	723	0	42	1027	0	0	162	0	0	328	162
Confl. Peds. (#/hr)	43		39	39		43	52		23	23		52
Confl. Bikes (#/hr)			5			3			6			5
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	18.5	58.7		4.4	44.6			34.9			34.9	34.9
Effective Green, g (s)	18.5	58.7		4.4	44.6			34.9			34.9	34.9
Actuated g/C Ratio	0.17	0.53		0.04	0.41			0.32			0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	539	1780		68	1323			326			388	466
v/s Ratio Prot	c0.13	0.22		0.02	c0.31							
v/s Ratio Perm								0.16			c0.27	0.11
v/c Ratio	0.80	0.41		0.62	0.78			0.50			0.85	0.35
Uniform Delay, d1	44.0	15.3		52.0	28.4			30.4			35.0	28.8
Progression Factor	0.62	0.23		1.08	0.99			1.00			1.00	1.00
Incremental Delay, d2	5.1	0.4		11.9	3.4			1.2			15.4	0.5
Delay (s)	32.2	4.0		67.8	31.5			31.6			50.5	29.3
Level of Service	C	A		E	C			C			D	C
Approach Delay (s)		14.5			32.9			31.6			38.5	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	810	41	30	1012	10	12	0	40	10	10	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	54	853	43	32	1065	11	13	0	42	11	11	13
Pedestrians		13			4			14			9	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked	0.95			0.91			0.94	0.94	0.91	0.94	0.94	0.95
vC, conflicting volume	1085			910			1622	2144	466	1722	2160	560
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	993			714			1310	1866	228	1417	1883	443
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			96			84	100	94	86	81	98
cM capacity (veh/h)	656			797			81	58	698	76	57	527

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	480	469	564	543	55	34
Volume Left	54	0	32	0	13	11
Volume Right	0	43	0	11	42	13
cSH	656	1700	797	1700	252	97
Volume to Capacity	0.08	0.28	0.04	0.32	0.22	0.35
Queue Length 95th (ft)	7	0	3	0	20	34
Control Delay (s)	2.3	0.0	1.1	0.0	23.2	60.9
Lane LOS	A		A		C	F
Approach Delay (s)	1.2		0.5		23.2	60.9
Approach LOS					C	F

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	778	63	40	946	30	64	10	60	10	40	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.95	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	21	810	66	42	985	31	67	11	62	10	42	52
Pedestrians		3			3			16			16	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.85			0.98			0.86	0.86	0.98	0.86	0.86	0.85
vC, conflicting volume	1033			892			1553	2017	457	1618	2034	527
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	675			853			1212	1755	410	1289	1775	77
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			94			0	84	89	86	33	94
cM capacity (veh/h)	762			757			47	64	571	73	63	806

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	426	471	534	524	140	104
Volume Left	21	0	42	0	67	10
Volume Right	0	66	0	31	62	52
cSH	762	1700	757	1700	82	119
Volume to Capacity	0.03	0.28	0.06	0.31	1.69	0.87
Queue Length 95th (ft)	2	0	4	0	291	134
Control Delay (s)	0.8	0.0	1.5	0.0	445.4	119.0
Lane LOS	A		A		F	F
Approach Delay (s)	0.4		0.8		445.4	119.0
Approach LOS					F	F

Intersection Summary			
Average Delay	34.5		
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	111	446	291	120	717	120	149	130	140	130	50	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.95			0.98			0.95			0.95	
Flt Protected		0.99			0.99			0.98			0.98	
Satd. Flow (prot)		3255			3417			1937			1696	
Flt Permitted		0.69			0.57			0.78			0.64	
Satd. Flow (perm)		2263			1963			1533			1108	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	117	469	306	126	755	126	157	137	147	137	53	96
RTOR Reduction (vph)	0	123	0	0	20	0	0	33	0	0	33	0
Lane Group Flow (vph)	0	769	0	0	987	0	0	408	0	0	253	0
Confl. Peds. (#/hr)	29		23	23		29	47		35	35		47
Confl. Bikes (#/hr)			4			6			1			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		638			1157			530			383	
v/s Ratio Prot					c0.12							
v/s Ratio Perm		c0.34			0.29			c0.27			0.23	
v/c Ratio		1.21			0.85			0.77			0.66	
Uniform Delay, d1		19.8			12.5			16.1			15.3	
Progression Factor		1.49			1.00			1.00			1.00	
Incremental Delay, d2		106.1			8.0			10.4			8.6	
Delay (s)		135.6			20.6			26.4			23.9	
Level of Service		F			C			C			C	
Approach Delay (s)		135.6			20.6			26.4			23.9	
Approach LOS		F			C			C			C	

Intersection Summary			
HCM Average Control Delay	61.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	135	90	70	357	215	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.89		1.00	1.00	1.00	0.59
Flpb, ped/bikes	1.00		0.74	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1519		1310	1863	1863	937
Flt Permitted	0.97		0.56	1.00	1.00	1.00
Satd. Flow (perm)	1519		767	1863	1863	937
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	169	112	88	446	269	102
RTOR Reduction (vph)	41	0	0	0	0	50
Lane Group Flow (vph)	240	0	88	446	269	52
Confl. Peds. (#/hr)	116	197	397			397
Confl. Bikes (#/hr)		13				14
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	580		390	948	948	477
v/s Ratio Prot	c0.16			c0.24	0.14	
v/s Ratio Perm			0.11			0.06
v/c Ratio	0.41		0.23	0.47	0.28	0.11
Uniform Delay, d1	12.5		7.5	8.7	7.7	7.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2		1.3	1.7	0.8	0.5
Delay (s)	14.6		8.8	10.4	8.5	7.5
Level of Service	B		A	B	A	A
Approach Delay (s)	14.6			10.1	8.2	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	254	459	632	60	40	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.88	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	3539	3465		1609	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	3539	3465		1609	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	267	483	665	63	42	316
RTOR Reduction (vph)	0	0	11	0	220	0
Lane Group Flow (vph)	267	483	717	0	138	0
Confl. Peds. (#/hr)	28			28		3
Confl. Bikes (#/hr)				11		1
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	812		490	
v/s Ratio Prot	c0.15	0.14	c0.21		c0.09	
v/s Ratio Perm						
v/c Ratio	0.48	0.23	0.88		0.28	
Uniform Delay, d1	17.8	6.1	23.7		16.9	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.0	0.3	13.4		1.4	
Delay (s)	20.8	6.4	37.0		18.4	
Level of Service	C	A	D		B	
Approach Delay (s)		11.5	37.0		18.4	
Approach LOS		B	D		B	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	30	50	560	20	51	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.92		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1659		1852		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1659		1852		1770	1863
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	34	56	629	22	57	483
RTOR Reduction (vph)	51	0	2	0	0	0
Lane Group Flow (vph)	39	0	649	0	57	483
Confl. Peds. (#/hr)		1				
Confl. Bikes (#/hr)				13		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	3.4		20.8		2.6	27.4
Effective Green, g (s)	3.4		20.8		2.6	27.4
Actuated g/C Ratio	0.09		0.52		0.07	0.69
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	142		968		116	1283
v/s Ratio Prot	c0.02		c0.35		0.03	c0.26
v/s Ratio Perm						
v/c Ratio	0.27		0.67		0.49	0.38
Uniform Delay, d1	17.0		7.0		18.0	2.6
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0		1.8		3.3	0.2
Delay (s)	18.1		8.8		21.2	2.8
Level of Service	B		A		C	A
Approach Delay (s)	18.1		8.8			4.7
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	39.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	10	10	20	10	20	10	30	40	34	410	20	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0				4.0		
Lane Util. Factor			1.00			1.00				1.00		
Frpb, ped/bikes			0.96			0.62				0.99		
Flpb, ped/bikes			0.83			0.96				0.99		
Frt			0.97			0.90				0.99		
Flt Protected			0.98			0.99				1.00		
Satd. Flow (prot)			1243			876				1597		
Flt Permitted			0.89			0.95				0.95		
Satd. Flow (perm)			1126			839				1527		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	10	20	10	20	10	31	41	35	418	20	31
RTOR Reduction (vph)	0	0	8	0	0	31	0	0	0	3	0	0
Lane Group Flow (vph)	0	0	42	0	0	71	0	0	0	470	0	0
Confl. Peds. (#/hr)	173	127		95	95		173	127	173		268	268
Confl. Bikes (#/hr)				1			4	4			26	
Parking (#/hr)			3			3				3		
Turn Type		Perm			Perm				Perm			Perm
Protected Phases			1			1				2		
Permitted Phases		1			1				2			2
Actuated Green, G (s)			14.0			14.0				25.0		
Effective Green, g (s)			14.0			14.0				25.0		
Actuated g/C Ratio			0.23			0.23				0.42		
Clearance Time (s)			4.0			4.0				4.0		
Lane Grp Cap (vph)			263			196				636		
v/s Ratio Prot												
v/s Ratio Perm			0.04			c0.08				c0.31		
v/c Ratio			0.16			0.36				0.74		
Uniform Delay, d1			18.3			19.3				14.8		
Progression Factor			1.00			1.14				1.00		
Incremental Delay, d2			1.3			4.6				7.5		
Delay (s)			19.6			26.6				22.3		
Level of Service			B			C				C		
Approach Delay (s)			19.6			26.6				22.3		
Approach LOS			B			C				C		

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations							
Volume (vph)	333	20	30	10	20	36	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12	12
Total Lost time (s)	4.0				4.0		
Lane Util. Factor	1.00				1.00		
Frpb, ped/bikes	0.95				0.67		
Flpb, ped/bikes	0.99				0.76		
Frt	0.98				0.92		
Flt Protected	1.00				0.98		
Satd. Flow (prot)	1691				758		
Flt Permitted	0.95				0.98		
Satd. Flow (perm)	1613				758		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	340	20	31	10	20	37	10
RTOR Reduction (vph)	5	0	0	0	9	0	0
Lane Group Flow (vph)	417	0	0	0	69	0	0
Confl. Peds. (#/hr)		154	173	101	213	75	122
Confl. Bikes (#/hr)		13	21				
Parking (#/hr)	6				3		
Turn Type				Perm			
Protected Phases	2				4		
Permitted Phases				4			
Actuated Green, G (s)	25.0				9.0		
Effective Green, g (s)	25.0				9.0		
Actuated g/C Ratio	0.42				0.15		
Clearance Time (s)	4.0				4.0		
Lane Grp Cap (vph)	672				114		
v/s Ratio Prot							
v/s Ratio Perm	0.26				0.09		
v/c Ratio	0.62				0.60		
Uniform Delay, d1	13.8				23.8		
Progression Factor	1.00				1.00		
Incremental Delay, d2	4.3				21.3		
Delay (s)	18.1				45.1		
Level of Service	B				D		
Approach Delay (s)	18.1				45.1		
Approach LOS	B				D		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	0	0	0	0	0	10	20	10	10	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	13	0	0	0	0	0	0	13	27	13	13	0
Pedestrians		1			8			1			8	
Lane Width (ft)		12.0			0.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					380							
pX, platoon unblocked												
vC, conflicting volume	8			1			35	36	9	76	36	9
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	8			1			35	36	9	76	36	9
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	98	98	98	98	100
cM capacity (veh/h)	1602			1620			946	843	1072	864	843	1065

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	13	40	27
Volume Left	13	0	13
Volume Right	0	27	0
cSH	1602	983	853
Volume to Capacity	0.01	0.04	0.03
Queue Length 95th (ft)	1	3	2
Control Delay (s)	7.3	8.8	9.4
Lane LOS	A	A	A
Approach Delay (s)	7.3	8.8	9.4
Approach LOS		A	A

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	842	0	0	952	10	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	925	0	0	1046	11	0	0	11	0	0	0
Pedestrians					5			10			16	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1247			648							
pX, platoon unblocked	0.85			0.95			0.87	0.87	0.95	0.87	0.87	0.85
vC, conflicting volume	1073			935			1458	2008	478	1546	2003	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	729			821			967	1596	338	1068	1590	106
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	739			755			180	92	616	150	92	787

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	617	308	697	360	11
Volume Left	0	0	0	0	0
Volume Right	0	0	0	11	11
cSH	1700	1700	1700	1700	616
Volume to Capacity	0.36	0.18	0.41	0.21	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.0
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.0
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	882	1016	100	0	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	919	1058	104	0	31
Pedestrians					53	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					4	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		241	1290			
pX, platoon unblocked					0.88	
vC, conflicting volume	1216				1623	634
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1216				1435	634
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	92
cM capacity (veh/h)	544				105	403

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	459	459	706	457	31
Volume Left	0	0	0	0	0
Volume Right	0	0	0	104	31
cSH	1700	1700	1700	1700	403
Volume to Capacity	0.27	0.27	0.42	0.27	0.08
Queue Length 95th (ft)	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	14.7
Lane LOS					B
Approach Delay (s)	0.0		0.0		14.7
Approach LOS					B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Lane Configurations												
Volume (vph)	20	10	30	10	18	10	10	10	439	16	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0			4.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.98				0.99			1.00			
Flpb, ped/bikes		1.00				0.99			1.00			
Frt		0.92				0.96			0.99			
Flt Protected		0.99				0.98			1.00			
Satd. Flow (prot)		1647				1733			3497			
Flt Permitted		0.93				0.89			0.94			
Satd. Flow (perm)		1556				1571			3304			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	11	33	11	20	11	11	11	488	18	11	22
RTOR Reduction (vph)	0	8	0	0	0	8	0	0	2	0	0	0
Lane Group Flow (vph)	0	69	0	0	0	34	0	0	526	0	0	0
Confl. Peds. (#/hr)	14		12		12		14	12		3		3
Confl. Bikes (#/hr)										6	6	
Turn Type	Perm				Perm			Perm				Perm
Protected Phases		4				4			2			
Permitted Phases	4				4			2				6
Actuated Green, G (s)		16.0				16.0			16.0			
Effective Green, g (s)		16.0				16.0			16.0			
Actuated g/C Ratio		0.27				0.27			0.27			
Clearance Time (s)		4.0				4.0			4.0			
Lane Grp Cap (vph)		415				419			881			
v/s Ratio Prot												
v/s Ratio Perm		c0.04				0.02			c0.16			
v/c Ratio		0.17				0.08			0.60			
Uniform Delay, d1		16.9				16.5			19.2			
Progression Factor		0.91				1.00			1.00			
Incremental Delay, d2		0.7				0.4			3.0			
Delay (s)		16.1				16.9			22.2			
Level of Service		B				B			C			
Approach Delay (s)		16.1				16.9			22.2			
Approach LOS		B				B			C			

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR	NWL2	NWL	NWR
Lane Configurations					
Volume (vph)	342	20	10	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	
Lane Util. Factor	0.95			1.00	
Frpb, ped/bikes	1.00			1.00	
Flpb, ped/bikes	1.00			1.00	
Frt	0.99			0.93	
Flt Protected	1.00			0.98	
Satd. Flow (prot)	3494			1695	
Flt Permitted	0.91			0.98	
Satd. Flow (perm)	3204			1695	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	380	22	11	11	22
RTOR Reduction (vph)	7	0	0	0	0
Lane Group Flow (vph)	417	0	0	44	0
Confl. Peds. (#/hr)		12			
Confl. Bikes (#/hr)		1			
Turn Type			Perm		
Protected Phases	6			8	
Permitted Phases			8		
Actuated Green, G (s)	16.0			16.0	
Effective Green, g (s)	16.0			16.0	
Actuated g/C Ratio	0.27			0.27	
Clearance Time (s)	4.0			4.0	
Lane Grp Cap (vph)	854			452	
v/s Ratio Prot					
v/s Ratio Perm	0.13			0.03	
v/c Ratio	0.49			0.10	
Uniform Delay, d1	18.6			16.6	
Progression Factor	1.00			1.00	
Incremental Delay, d2	2.0			0.4	
Delay (s)	20.5			17.0	
Level of Service	C			B	
Approach Delay (s)	20.5			17.0	
Approach LOS	C			B	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	173	20	472	170	20	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		0.99		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.99		0.96		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1754		3348		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1754		3348		1711	3421
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	177	20	482	173	20	348
RTOR Reduction (vph)	9	0	46	0	0	0
Lane Group Flow (vph)	188	0	609	0	20	348
Confl. Peds. (#/hr)		6		15	15	
Confl. Bikes (#/hr)		3		9		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	10.2		31.3		1.5	36.8
Effective Green, g (s)	10.2		31.3		1.5	36.8
Actuated g/C Ratio	0.19		0.57		0.03	0.67
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		3.0	2.0
Lane Grp Cap (vph)	325		1905		47	2289
v/s Ratio Prot	c0.11		c0.18		c0.01	0.10
v/s Ratio Perm						
v/c Ratio	0.58		0.32		0.43	0.15
Uniform Delay, d1	20.4		6.2		26.3	3.4
Progression Factor	1.00		0.30		1.00	1.00
Incremental Delay, d2	1.6		0.4		6.1	0.1
Delay (s)	22.0		2.3		32.4	3.5
Level of Service	C		A		C	A
Approach Delay (s)	22.0		2.3			5.1
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	372	374	633	472	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3351	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3351	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	380	382	646	482	51
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	0	380	382	646	522	0
Confl. Peds. (#/hr)						26
Confl. Bikes (#/hr)		4				5
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		19.0	19.0	31.0	26.0	
Effective Green, g (s)		19.0	19.0	31.0	26.0	
Actuated g/C Ratio		0.35	0.35	0.56	0.47	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		557	591	1862	1584	
v/s Ratio Prot		c0.24	0.22	c0.20	0.16	
v/s Ratio Perm						
v/c Ratio		0.68	0.65	0.35	0.33	
Uniform Delay, d1		15.4	15.2	6.5	9.1	
Progression Factor		1.00	1.30	0.78	0.83	
Incremental Delay, d2		3.4	2.1	0.5	0.6	
Delay (s)		18.9	21.8	5.6	8.1	
Level of Service		B	C	A	A	
Approach Delay (s)	18.9			11.6	8.1	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	0	30	101	0	244	0	751	251	178	666	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.97			0.93		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.90		1.00	0.85			0.96		1.00	1.00	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1649		1770	1540			3078		1652	3539	
Flt Permitted		0.51		0.85	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		859		1587	1540			3078		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	0	31	103	0	249	0	766	256	182	680	0
RTOR Reduction (vph)	0	27	0	0	218	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	14	0	103	31	0	0	1000	0	182	680	0
Confl. Peds. (#/hr)	13					13			74	74		14
Confl. Bikes (#/hr)									13			19
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		13.9		13.9	13.9			66.1		15.0	86.1	
Effective Green, g (s)		13.9		13.9	13.9			66.1		15.0	86.1	
Actuated g/C Ratio		0.13		0.13	0.13			0.60		0.14	0.78	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		109		201	195			1850		225	2770	
v/s Ratio Prot					0.02			c0.33		c0.11	0.19	
v/s Ratio Perm		0.02		c0.06								
v/c Ratio		0.13		0.51	0.16			0.54		0.81	0.25	
Uniform Delay, d1		42.7		44.9	42.9			13.0		46.1	3.2	
Progression Factor		0.97		1.00	1.00			0.38		1.05	0.99	
Incremental Delay, d2		0.5		2.2	0.4			0.8		17.9	0.2	
Delay (s)		41.7		47.1	43.2			5.7		66.1	3.4	
Level of Service		D		D	D			A		E	A	
Approach Delay (s)		41.7			44.4			5.7			16.6	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	202	570	50	177	514	374	70	422	156	388	273	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.94		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3496		1711	3261		1711	3235		3319	3255	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3496		1711	3261		1711	3235		3319	3255	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	206	582	51	181	524	382	71	431	159	396	279	109
RTOR Reduction (vph)	0	6	0	0	124	0	0	34	0	0	34	0
Lane Group Flow (vph)	206	627	0	181	782	0	71	556	0	396	354	0
Confl. Peds. (#/hr)						28			40			6
Confl. Bikes (#/hr)												10
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	26.1		19.4	31.5		8.3	32.7		15.8	40.2	
Effective Green, g (s)	14.0	26.1		19.4	31.5		8.3	32.7		15.8	40.2	
Actuated g/C Ratio	0.13	0.24		0.18	0.29		0.08	0.30		0.14	0.37	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	830		302	934		129	962		477	1190	
v/s Ratio Prot	c0.12	0.18		0.11	c0.24		0.04	c0.17		c0.12	0.11	
v/s Ratio Perm												
v/c Ratio	0.92	0.76		0.60	0.84		0.55	0.58		0.83	0.30	
Uniform Delay, d1	47.4	39.0		41.7	36.8		49.1	32.8		45.8	24.8	
Progression Factor	1.00	1.00		0.78	0.69		0.94	0.95		0.96	0.94	
Incremental Delay, d2	37.4	3.9		2.5	5.4		5.0	2.5		11.5	0.6	
Delay (s)	84.8	42.9		35.1	30.7		51.1	33.7		55.5	24.1	
Level of Service	F	D		D	C		D	C		E	C	
Approach Delay (s)		53.2			31.5			35.6			40.0	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	39.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	10	20	20	10	30	40	616	10	20	491	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.95			0.93			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1709			1677			5051			5038	
Flt Permitted		0.82			0.90			0.88			0.91	
Satd. Flow (perm)		1432			1534			4447			4568	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	22	10	20	20	10	31	41	629	10	20	501	19
RTOR Reduction (vph)	0	19	0	0	29	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	33	0	0	32	0	0	680	0	0	539	0
Confl. Peds. (#/hr)	9		8	8		9	12		20	20		12
Confl. Bikes (#/hr)			1			3			5			5
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		6.9			6.9			97.1			97.1	
Effective Green, g (s)		6.9			6.9			97.1			97.1	
Actuated g/C Ratio		0.06			0.06			0.88			0.88	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		90			96			3925			4032	
v/s Ratio Prot												
v/s Ratio Perm		c0.02			0.02			c0.15			0.12	
v/c Ratio		0.37			0.33			0.17			0.13	
Uniform Delay, d1		49.5			49.3			0.9			0.9	
Progression Factor		1.00			1.00			1.00			0.31	
Incremental Delay, d2		2.6			2.0			0.1			0.1	
Delay (s)		52.0			51.4			1.0			0.3	
Level of Service		D			D			A			A	
Approach Delay (s)		52.0			51.4			1.0			0.3	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	198	180	130	20	100	33	70	395	20	32	391	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		0.99	1.00			1.00	
Frt	1.00	0.94			0.97		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1751	3273			3379		1759	3504			4824	
Flt Permitted	0.65	1.00			0.90		0.35	1.00			0.89	
Satd. Flow (perm)	1190	3273			3063		652	3504			4314	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	218	198	143	22	110	36	77	434	22	35	430	135
RTOR Reduction (vph)	0	81	0	0	0	0	0	5	0	0	66	0
Lane Group Flow (vph)	218	260	0	0	168	0	77	451	0	0	534	0
Confl. Peds. (#/hr)	19		18	18		19	58		54	54		58
Confl. Bikes (#/hr)			14			8			22			12
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	513	1411			1321		368	1643			1618	
v/s Ratio Prot		0.08					0.01	c0.13				
v/s Ratio Perm	c0.18				0.05		0.09				c0.12	
v/c Ratio	0.42	0.18			0.13		0.21	0.27			0.33	
Uniform Delay, d1	15.8	14.1			13.7		12.0	13.0			17.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	2.6	0.3			0.2		1.3	0.4			0.5	
Delay (s)	18.4	14.3			13.9		13.3	13.4			18.4	
Level of Service	B	B			B		B	B			B	
Approach Delay (s)		15.9			13.9			13.4			18.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	126.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	22
RTOR Reduction (vph)	14
Lane Group Flow (vph)	8
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.01
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.7
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	330	50	50	330	132	70	274	60	212	263	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	11	11	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.97	1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4971		1770	4725		1652	3421	1492	1711	3250	1429
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4971		1770	4725		1652	3421	1492	1711	3250	1429
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	67	371	56	56	371	148	79	308	67	238	296	85
RTOR Reduction (vph)	0	18	0	0	66	0	0	0	49	0	0	62
Lane Group Flow (vph)	67	409	0	56	453	0	79	308	18	238	296	23
Confl. Peds. (#/hr)			4			64			6			44
Confl. Bikes (#/hr)			6			15			8			6
Parking (#/hr)											0	
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	7.2	32.1		7.2	32.1		16.2	26.5	26.5	16.2	26.5	26.5
Effective Green, g (s)	7.2	32.1		7.2	32.1		16.2	26.5	26.5	16.2	26.5	26.5
Actuated g/C Ratio	0.07	0.32		0.07	0.32		0.16	0.26	0.26	0.16	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	127	1596		127	1517		268	907	395	277	861	379
v/s Ratio Prot	c0.04	0.08		0.03	c0.10		0.05	0.09		c0.14	c0.09	
v/s Ratio Perm									0.01			0.02
v/c Ratio	0.53	0.26		0.44	0.30		0.29	0.34	0.04	0.86	0.34	0.06
Uniform Delay, d1	44.8	25.1		44.5	25.5		36.9	29.7	27.3	40.8	29.7	27.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.0		0.9	0.0		0.2	1.0	0.2	21.6	1.1	0.3
Delay (s)	46.6	25.1		45.4	25.5		37.1	30.7	27.6	62.4	30.8	27.7
Level of Service	D	C		D	C		D	C	C	E	C	C
Approach Delay (s)		28.1			27.5			31.3			42.5	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	81	50	82	88	140	130	1150	77	142	1300	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			0.99	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1761	1728			1809	1537	1770	5026		1770	5076	
Flt Permitted	0.54	1.00			0.75	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	997	1728			1391	1537	1770	5026		1770	5076	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	86	53	87	94	149	138	1223	82	151	1383	12
RTOR Reduction (vph)	0	37	0	0	0	122	0	7	0	0	1	0
Lane Group Flow (vph)	43	102	0	0	181	27	138	1298	0	151	1394	0
Confl. Peds. (#/hr)	8		18	18		8			20			15
Confl. Bikes (#/hr)			13			9			3			8
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	14.3	14.3			14.3	14.3	7.8	39.7		12.5	44.4	
Effective Green, g (s)	14.3	14.3			14.3	14.3	7.8	39.7		12.5	44.4	
Actuated g/C Ratio	0.18	0.18			0.18	0.18	0.10	0.50		0.16	0.55	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	178	309			249	275	173	2494		277	2817	
v/s Ratio Prot		0.06					c0.08	c0.26		0.09	c0.27	
v/s Ratio Perm	0.04				c0.13	0.02						
v/c Ratio	0.24	0.33			0.73	0.10	0.80	0.52		0.55	0.49	
Uniform Delay, d1	28.2	28.7			31.0	27.5	35.3	13.7		31.1	10.9	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			8.6	0.1	20.7	0.8		1.2	0.6	
Delay (s)	28.5	28.9			39.6	27.5	56.0	14.5		32.3	11.5	
Level of Service	C	C			D	C	E	B		C	B	
Approach Delay (s)		28.8			34.2			18.4			13.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	710	170	30	669	173	160	180	30	127	190	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4903		1762	4884		1769	1811		1737	1625	
Flt Permitted	0.95	1.00		0.30	1.00		0.15	1.00		0.62	1.00	
Satd. Flow (perm)	1770	4903		555	4884		273	1811		1136	1625	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	292	740	177	31	697	180	167	188	31	132	198	397
RTOR Reduction (vph)	0	53	0	0	52	0	0	5	0	0	69	0
Lane Group Flow (vph)	292	864	0	31	825	0	167	214	0	132	526	0
Confl. Peds. (#/hr)			10	10		12	17		23	23		17
Confl. Bikes (#/hr)			3			5			23			17
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	20.8	50.9		26.1	26.1		40.1	40.1		23.3	23.3	
Effective Green, g (s)	20.8	50.9		26.1	26.1		40.1	40.1		23.3	23.3	
Actuated g/C Ratio	0.21	0.51		0.26	0.26		0.40	0.40		0.23	0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	368	2496		145	1275		301	726		265	379	
v/s Ratio Prot	c0.17	0.18			c0.17		c0.07	0.12			c0.32	
v/s Ratio Perm				0.06			0.15			0.12		
v/c Ratio	0.79	0.35		0.21	0.65		0.55	0.30		0.50	1.39	
Uniform Delay, d1	37.6	14.6		28.9	32.9		22.8	20.3		33.3	38.4	
Progression Factor	1.00	1.00		1.14	1.12		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	0.1		0.7	1.0		2.2	1.0		6.6	190.1	
Delay (s)	48.7	14.7		33.7	37.7		25.0	21.4		39.8	228.5	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		22.9			37.6			22.9			194.2	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	65.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	20	20	30	20	30	20	639	20	20	624	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			0.99			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.96			0.95			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1722			1715			3499			3481	
Flt Permitted		0.85			0.89			0.93			0.93	
Satd. Flow (perm)		1494			1555			3252			3232	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	32	21	21	32	21	32	21	680	21	21	664	21
RTOR Reduction (vph)	0	19	0	0	29	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	55	0	0	56	0	0	721	0	0	706	0
Confl. Peds. (#/hr)	22		26	26					54	54		93
Confl. Bikes (#/hr)			5			1			45			50
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		6.6			6.6			64.4			64.4	
Effective Green, g (s)		6.6			6.6			64.4			64.4	
Actuated g/C Ratio		0.08			0.08			0.81			0.81	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		123			128			2618			2602	
v/s Ratio Prot												
v/s Ratio Perm		c0.04			0.04			c0.22			0.22	
v/c Ratio		0.44			0.43			4.20dl			0.27	
Uniform Delay, d1		35.0			34.9			2.0			1.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.9			0.9			0.3			0.3	
Delay (s)		35.9			35.8			2.2			2.2	
Level of Service		D			D			A			A	
Approach Delay (s)		35.9			35.8			2.2			2.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	220	40
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.94	0.94
Adj. Flow (vph)	234	43
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	274	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	64.4	
Effective Green, g (s)	64.4	
Actuated g/C Ratio	0.81	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1297	
v/s Ratio Prot	0.17	
v/s Ratio Perm		
v/c Ratio	0.21	
Uniform Delay, d1	1.8	
Progression Factor	1.00	
Incremental Delay, d2	0.4	
Delay (s)	2.2	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	20	80	30	130	10	729	100	90	713	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.95			0.99		1.00	0.96	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.93		1.00	0.88			0.98		1.00	0.96	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1658		1681	1485			3429		1770	3294	
Flt Permitted		0.98		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1658		1681	1485			3233		1770	3294	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	0	20	82	31	133	10	744	102	92	728	224
RTOR Reduction (vph)	0	19	0	0	121	0	0	7	0	0	17	0
Lane Group Flow (vph)	0	21	0	74	51	0	0	849	0	92	935	0
Confl. Peds. (#/hr)						28	41		28			41
Confl. Bikes (#/hr)			6			5			18			40
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		4.2		9.2	9.2			60.2		8.4	73.1	
Effective Green, g (s)		4.2		9.2	9.2			60.2		8.4	73.1	
Actuated g/C Ratio		0.04		0.09	0.09			0.60		0.08	0.73	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		70		155	137			1946		149	2408	
v/s Ratio Prot		c0.01		c0.04	0.03					c0.05	0.28	
v/s Ratio Perm								c0.26				
v/c Ratio		0.30		0.48	0.37			0.44		0.62	0.39	
Uniform Delay, d1		46.5		43.1	42.7			10.7		44.2	5.1	
Progression Factor		1.00		1.00	1.00			0.57		1.00	1.00	
Incremental Delay, d2		0.9		0.8	0.6			0.6		5.3	0.5	
Delay (s)		47.3		44.0	43.3			6.8		49.5	5.5	
Level of Service		D		D	D			A		D	A	
Approach Delay (s)		47.3			43.5			6.8			9.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	468	100	113	422	159	90	420	133	253	500	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.95		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3399		1770	3211		1770	3338		1770	3472	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3399		1770	3211		1770	3338		1770	3472	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	268	482	103	116	435	164	93	433	137	261	515	62
RTOR Reduction (vph)	0	19	0	0	42	0	0	28	0	0	8	0
Lane Group Flow (vph)	268	566	0	116	557	0	93	542	0	261	569	0
Confl. Peds. (#/hr)			38			127			51			
Confl. Bikes (#/hr)			15			20			19			31
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	22.5		9.7	21.2		5.0	38.8		12.0	45.8	
Effective Green, g (s)	11.0	22.5		9.7	21.2		5.0	38.8		12.0	45.8	
Actuated g/C Ratio	0.11	0.22		0.10	0.21		0.05	0.39		0.12	0.46	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	378	765		172	681		89	1295		212	1590	
v/s Ratio Prot	c0.08	0.17		0.07	c0.17		0.05	c0.16		c0.15	0.16	
v/s Ratio Perm												
v/c Ratio	0.71	0.74		0.67	0.82		1.04	0.42		1.23	0.36	
Uniform Delay, d1	43.0	36.0		43.6	37.6		47.5	22.4		44.0	17.6	
Progression Factor	0.88	1.25		1.00	1.00		1.00	1.00		1.14	0.77	
Incremental Delay, d2	4.7	3.1		7.9	7.2		108.2	1.0		136.7	0.6	
Delay (s)	42.7	48.3		51.6	44.8		155.7	23.4		186.8	14.1	
Level of Service	D	D		D	D		F	C		F	B	
Approach Delay (s)		46.5			45.9			41.9			67.8	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	51.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	752	30	16	707	24	30	30	28	36	30	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	1.00			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1766	3515		1768	3518			1719			1734	
Flt Permitted	0.33	1.00		0.31	1.00			0.90			0.87	
Satd. Flow (perm)	615	3515		572	3518			1572			1547	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	31	775	31	16	729	25	31	31	29	37	31	21
RTOR Reduction (vph)	0	3	0	0	3	0	0	20	0	0	14	0
Lane Group Flow (vph)	31	803	0	16	751	0	0	71	0	0	75	0
Confl. Peds. (#/hr)	6		4	4		6	5		26	26		5
Confl. Bikes (#/hr)			5			13			29			33
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	349	1996		325	1998			485			477	
v/s Ratio Prot		c0.23			0.21							
v/s Ratio Perm	0.05			0.03				0.05			c0.05	
v/c Ratio	0.09	0.40		0.05	0.38			0.15			0.16	
Uniform Delay, d1	8.0	9.8		7.8	9.6			20.3			20.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.5	0.6		0.3	0.5			0.6			0.7	
Delay (s)	8.5	10.4		8.1	10.2			20.9			21.1	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		10.3			10.1			20.9			21.1	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	406	665	50	20	634	209	50	68	10	345	72	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00			1.00	0.89
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	1.00
Frt	1.00	0.99		1.00	0.96			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.96	1.00
Satd. Flow (prot)	3204	3362		1711	3267			1779			1770	1416
Flt Permitted	0.95	1.00		0.95	1.00			0.62			0.67	1.00
Satd. Flow (perm)	3204	3362		1711	3267			1124			1234	1416
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	414	679	51	20	647	213	51	69	10	352	73	386
RTOR Reduction (vph)	0	5	0	0	29	0	0	3	0	0	0	243
Lane Group Flow (vph)	414	725	0	20	831	0	0	127	0	0	425	143
Confl. Peds. (#/hr)			23			13	78		14	14		77
Confl. Bikes (#/hr)			9			8			14			15
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	19.4	54.8		2.4	37.8			40.8			40.8	40.8
Effective Green, g (s)	19.4	54.8		2.4	37.8			40.8			40.8	40.8
Actuated g/C Ratio	0.18	0.50		0.02	0.34			0.37			0.37	0.37
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	565	1675		37	1123			417			458	525
v/s Ratio Prot	c0.13	0.22		0.01	c0.25							
v/s Ratio Perm								0.11			c0.34	0.10
v/c Ratio	0.73	0.43		0.54	0.74			0.31			0.93	0.27
Uniform Delay, d1	42.8	17.7		53.3	31.8			24.6			33.2	24.2
Progression Factor	0.63	0.23		1.06	1.02			1.00			1.00	1.00
Incremental Delay, d2	3.5	0.6		12.1	3.5			0.4			24.9	0.3
Delay (s)	30.6	4.6		68.6	35.9			25.0			58.1	24.5
Level of Service	C	A		E	D			C			E	C
Approach Delay (s)		14.0			36.6			25.0			42.1	
Approach LOS		B			D			C			D	

Intersection Summary			
HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	960	41	20	892	10	12	0	20	10	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	22	1000	43	21	929	10	12	0	21	10	0	10
Pedestrians		12			4			13			8	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	948			1056			1607	2067	538	1553	2084	490
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	948			857			1464	1972	287	1405	1990	490
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			83	100	97	87	100	98
cM capacity (veh/h)	715			699			73	52	635	81	50	515

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	522	543	485	475	33	21
Volume Left	22	0	21	0	12	10
Volume Right	0	43	0	10	21	10
cSH	715	1700	699	1700	164	140
Volume to Capacity	0.03	0.32	0.03	0.28	0.20	0.15
Queue Length 95th (ft)	2	0	2	0	18	13
Control Delay (s)	0.9	0.0	0.8	0.0	32.4	35.1
Lane LOS	A		A		D	E
Approach Delay (s)	0.4		0.4		32.4	35.1
Approach LOS					D	E

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	918	73	20	856	10	44	10	50	10	10	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	966	77	21	901	11	46	11	53	11	11	21
Pedestrians		3			3			15			15	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.90			0.96			0.93	0.93	0.96	0.93	0.93	0.90
vC, conflicting volume	927			1058			1563	2009	540	1529	2043	474
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	708			968			1234	1716	426	1197	1752	207
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			53	86	90	89	86	97
cM capacity (veh/h)	792			668			99	77	543	99	73	712

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	494	560	472	461	109	42
Volume Left	11	0	21	0	46	11
Volume Right	0	77	0	11	53	21
cSH	792	1700	668	1700	156	150
Volume to Capacity	0.01	0.33	0.03	0.27	0.70	0.28
Queue Length 95th (ft)	1	0	2	0	103	27
Control Delay (s)	0.4	0.0	0.9	0.0	69.2	38.0
Lane LOS	A		A		F	E
Approach Delay (s)	0.2		0.5		69.2	38.0
Approach LOS					F	E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	656	251	170	597	70	219	90	140	60	70	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.99			0.96			0.95	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3329			3440			1924			1712	
Flt Permitted		0.82			0.56			0.75			0.82	
Satd. Flow (perm)		2745			1936			1478			1422	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	63	676	259	175	615	72	226	93	144	62	72	73
RTOR Reduction (vph)	0	64	0	0	12	0	0	29	0	0	35	0
Lane Group Flow (vph)	0	934	0	0	850	0	0	434	0	0	172	0
Confl. Peds. (#/hr)	27		20			27	44		32	32		44
Confl. Bikes (#/hr)			9			4			4			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		774			1152			511			491	
v/s Ratio Prot					c0.11							
v/s Ratio Perm		c0.34			0.25			c0.29			0.12	
v/c Ratio		1.21			0.74			0.85			0.35	
Uniform Delay, d1		19.8			11.5			16.7			13.4	
Progression Factor		1.25			1.00			1.00			1.00	
Incremental Delay, d2		103.9			4.2			16.0			2.0	
Delay (s)		128.6			15.7			32.6			15.4	
Level of Service		F			B			C			B	
Approach Delay (s)		128.6			15.7			32.6			15.4	
Approach LOS		F			B			C			B	

Intersection Summary			
HCM Average Control Delay	63.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	163	60	70	327	285	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.93		1.00	1.00	1.00	0.62
Flpb, ped/bikes	1.00		0.78	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1611		1375	1863	1863	987
Flt Permitted	0.96		0.52	1.00	1.00	1.00
Satd. Flow (perm)	1611		750	1863	1863	987
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	177	65	76	355	310	133
RTOR Reduction (vph)	24	0	0	0	0	65
Lane Group Flow (vph)	218	0	76	355	310	68
Confl. Peds. (#/hr)	108	182	366			366
Confl. Bikes (#/hr)		9				10
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	615		382	948	948	502
v/s Ratio Prot	c0.14			c0.19	0.17	
v/s Ratio Perm			0.10			0.07
v/c Ratio	0.35		0.20	0.37	0.33	0.13
Uniform Delay, d1	12.2		7.4	8.2	8.0	7.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6		1.2	1.1	0.9	0.6
Delay (s)	13.8		8.5	9.3	8.9	7.7
Level of Service	B		A	A	A	A
Approach Delay (s)	13.8			9.2	8.5	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	304	529	452	30	20	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.87	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3506		1594	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3506		1594	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	320	557	476	32	21	274
RTOR Reduction (vph)	0	0	8	0	191	0
Lane Group Flow (vph)	320	557	500	0	104	0
Confl. Peds. (#/hr)					4	
Confl. Bikes (#/hr)						10
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	822		486	
v/s Ratio Prot	c0.18	0.16	c0.14		c0.07	
v/s Ratio Perm						
v/c Ratio	0.58	0.27	0.61		0.21	
Uniform Delay, d1	18.5	6.3	21.9		16.6	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	4.4	0.3	3.3		1.0	
Delay (s)	22.8	6.6	25.2		17.6	
Level of Service	C	A	C		B	
Approach Delay (s)		12.5	25.2		17.6	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	50	380	20	51	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.97		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.89		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1592		1848		1770	1863
Flt Permitted	0.99		1.00		0.95	1.00
Satd. Flow (perm)	1592		1848		1770	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	53	400	21	54	484
RTOR Reduction (vph)	50	0	3	0	0	0
Lane Group Flow (vph)	14	0	418	0	54	484
Confl. Peds. (#/hr)		5				
Confl. Bikes (#/hr)				4		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	1.7		11.5		1.4	16.9
Effective Green, g (s)	1.7		11.5		1.4	16.9
Actuated g/C Ratio	0.06		0.42		0.05	0.61
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	98		770		90	1141
v/s Ratio Prot	c0.01		c0.23		0.03	c0.26
v/s Ratio Perm						
v/c Ratio	0.15		0.54		0.60	0.42
Uniform Delay, d1	12.3		6.1		12.8	2.8
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.7		0.8		10.3	0.3
Delay (s)	12.9		6.9		23.2	3.1
Level of Service	B		A		C	A
Approach Delay (s)	12.9		6.9			5.1
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	27.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	20	10	10	10	10	20	30	10	24	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.98			0.98					1.00	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.97			0.90					1.00	
Flt Protected			0.97			0.99					1.00	
Satd. Flow (prot)			1530			1456					1629	
Flt Permitted			0.83			0.97					0.94	
Satd. Flow (perm)			1313			1418					1533	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	22	11	11	11	11	22	32	11	26	344	11
RTOR Reduction (vph)	0	0	8	0	0	25	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	47	0	0	51	0	0	0	0	390	0
Confl. Peds. (#/hr)				30				1				84
Confl. Bikes (#/hr)				3								2
Parking (#/hr)			3			3					3	
Turn Type		Perm			Perm					Perm		
Protected Phases			1			1					2	
Permitted Phases		1			1					2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			306			331					639	
v/s Ratio Prot												
v/s Ratio Perm			0.04			c0.04					0.25	
v/c Ratio			0.15			0.16					0.61	
Uniform Delay, d1			18.3			18.3					13.7	
Progression Factor			1.00			0.74					1.00	
Incremental Delay, d2			1.1			1.0					4.3	
Delay (s)			19.3			14.5					18.0	
Level of Service			B			B					B	
Approach Delay (s)			19.3			14.5					18.0	
Approach LOS			B			B					B	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	40	363	20	40	10	30	36	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.98				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.98				0.91		
Flt Protected		1.00				0.98		
Satd. Flow (prot)		1752				1473		
Flt Permitted		0.94				0.98		
Satd. Flow (perm)		1661				1473		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	390	22	43	11	32	39	54
RTOR Reduction (vph)	0	6	0	0	0	39	0	0
Lane Group Flow (vph)	0	492	0	0	0	97	0	0
Confl. Peds. (#/hr)			60	82				
Confl. Bikes (#/hr)			2	2				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		692				221		
v/s Ratio Prot								
v/s Ratio Perm		c0.30				0.07		
v/c Ratio		0.71				0.44		
Uniform Delay, d1		14.5				23.2		
Progression Factor		1.00				1.00		
Incremental Delay, d2		6.1				6.2		
Delay (s)		20.6				29.4		
Level of Service		C				C		
Approach Delay (s)		20.6				29.4		
Approach LOS		C				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	10	10	0	0	0	0	10	10	10	20	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	0	15	15	0	0	0	0	15	15	15	29	0
Pedestrians					4						5	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					380							
pX, platoon unblocked												
vC, conflicting volume	5			29			37	27	26	53	34	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			29			37	27	26	53	34	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	98	97	100
cM capacity (veh/h)	1610			1584			940	862	1050	913	855	1074

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	29	29	44
Volume Left	0	0	15
Volume Right	15	15	0
cSH	1610	947	873
Volume to Capacity	0.00	0.03	0.05
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	8.9	9.3
Lane LOS		A	A
Approach Delay (s)	0.0	8.9	9.3
Approach LOS		A	A

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	802	0	0	692	20	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	901	0	0	778	22	0	0	11	0	0	0
Pedestrians					1			15				
Lane Width (ft)					12.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1247			648							
pX, platoon unblocked				0.96			0.96	0.96	0.96	0.96	0.96	
vC, conflicting volume	800			916			1305	1716	467	1252	1705	400
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	800			836			1240	1667	369	1184	1655	400
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	819			755			124	91	597	135	92	600

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	601	300	518	282	11
Volume Left	0	0	0	0	0
Volume Right	0	0	0	22	11
cSH	1700	1700	1700	1700	597
Volume to Capacity	0.35	0.18	0.30	0.17	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.2
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.2
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1022	806	107	0	54
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1111	876	116	0	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		241	1290			
pX, platoon unblocked					0.87	
vC, conflicting volume	992				1490	496
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	992				1263	496
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	89
cM capacity (veh/h)	693				141	519

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	555	555	584	408	59
Volume Left	0	0	0	0	0
Volume Right	0	0	0	116	59
cSH	1700	1700	1700	1700	519
Volume to Capacity	0.33	0.33	0.34	0.24	0.11
Queue Length 95th (ft)	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	12.8
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.8
Approach LOS					B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	603	80	120	416	218	100	580	129	297	660	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3444		1770	3290		1770	3371		1770	3463	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3444		1770	3290		1770	3371		1770	3463	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	459	615	82	122	424	222	102	592	132	303	673	61
RTOR Reduction (vph)	0	10	0	0	69	0	0	19	0	0	7	0
Lane Group Flow (vph)	459	687	0	122	577	0	102	705	0	303	727	0
Confl. Peds. (#/hr)			44			23			54			53
Confl. Bikes (#/hr)			11			15			52			53
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	14.5	25.8		9.0	20.3		8.6	33.7		14.5	39.6	
Effective Green, g (s)	14.5	25.8		9.0	20.3		8.6	33.7		14.5	39.6	
Actuated g/C Ratio	0.14	0.26		0.09	0.20		0.09	0.34		0.14	0.40	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	498	889		159	668		152	1136		257	1371	
v/s Ratio Prot	c0.13	c0.20		0.07	0.18		0.06	c0.21		c0.17	0.21	
v/s Ratio Perm												
v/c Ratio	0.92	0.77		0.77	0.86		0.67	0.62		1.18	0.53	
Uniform Delay, d1	42.2	34.4		44.5	38.5		44.3	27.8		42.8	23.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.14	0.74	
Incremental Delay, d2	22.3	3.8		17.9	10.8		8.8	2.6		111.4	1.4	
Delay (s)	64.5	38.2		62.3	49.3		53.1	30.4		160.1	18.5	
Level of Service	E	D		E	D		D	C		F	B	
Approach Delay (s)		48.7			51.4			33.2			59.9	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM Average Control Delay	48.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	972	238	120	611	50	217	40	180	50	40	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.98			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.97			0.99			0.94			0.96	
Flt Protected		1.00			0.99			0.98			0.98	
Satd. Flow (prot)		3406			3468			1873			1713	
Flt Permitted		0.88			0.55			0.78			0.78	
Satd. Flow (perm)		3001			1922			1491			1354	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	1057	259	130	664	54	236	43	196	54	43	45
RTOR Reduction (vph)	0	19	0	0	7	0	0	36	0	0	24	0
Lane Group Flow (vph)	0	1352	0	0	841	0	0	439	0	0	118	0
Confl. Peds. (#/hr)	20		9			20	30		42	42		30
Confl. Bikes (#/hr)			11			3			4			6
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		40.5			40.5			20.0			20.0	
Effective Green, g (s)		40.5			40.5			20.0			20.0	
Actuated g/C Ratio		0.58			0.58			0.29			0.29	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1736			1112			426			387	
v/s Ratio Prot												
v/s Ratio Perm		c0.45			0.44			c0.29			0.09	
v/c Ratio		0.78			0.90dl			1.03			0.31	
Uniform Delay, d1		11.3			11.1			25.0			19.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.5			3.0			51.4			0.5	
Delay (s)		14.8			14.0			76.4			20.0	
Level of Service		B			B			E			C	
Approach Delay (s)		14.8			14.0			76.4			20.0	
Approach LOS		B			B			E			C	

Intersection Summary			
HCM Average Control Delay	25.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	446	291	120	717	120	149	150	140	90	60	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.99			0.97	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.95			0.98			0.96			0.93	
Flt Protected		0.99			0.99			0.98			0.99	
Satd. Flow (prot)		3260			3415			1945			1660	
Flt Permitted		0.62			0.67			0.75			0.76	
Satd. Flow (perm)		2050			2309			1479			1280	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	127	469	306	126	755	126	157	158	147	95	63	159
RTOR Reduction (vph)	0	86	0	0	20	0	0	31	0	0	66	0
Lane Group Flow (vph)	0	817	0	0	987	0	0	431	0	0	251	0
Confl. Peds. (#/hr)	29		23	23		29	47		35	35		47
Confl. Bikes (#/hr)			4			6			1			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		26.5			26.5			19.0			19.0	
Effective Green, g (s)		26.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.48			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		988			1113			511			442	
v/s Ratio Prot												
v/s Ratio Perm		0.40			c0.43			c0.29			0.20	
v/c Ratio		0.83			0.89			0.84			0.57	
Uniform Delay, d1		12.3			12.9			16.6			14.7	
Progression Factor		1.68			1.00			1.00			1.00	
Incremental Delay, d2		7.5			8.7			15.6			5.2	
Delay (s)		28.1			21.6			32.2			19.9	
Level of Service		C			C			C			B	
Approach Delay (s)		28.1			21.6			32.2			19.9	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	710	170	30	669	173	160	180	30	127	190	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.98		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4903		1762	4884		1770	1811		1737	1629	
Flt Permitted	0.95	1.00		0.30	1.00		0.12	1.00		0.62	1.00	
Satd. Flow (perm)	1770	4903		555	4884		219	1811		1136	1629	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	292	740	177	31	697	180	167	188	31	132	198	397
RTOR Reduction (vph)	0	47	0	0	52	0	0	5	0	0	72	0
Lane Group Flow (vph)	292	870	0	31	825	0	167	214	0	132	523	0
Confl. Peds. (#/hr)			10	10		12	17		23	23		17
Confl. Bikes (#/hr)			3			5			23			17
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	15.0	45.0		26.0	26.0		46.0	46.0		30.1	30.1	
Effective Green, g (s)	15.0	45.0		26.0	26.0		46.0	46.0		30.1	30.1	
Actuated g/C Ratio	0.15	0.45		0.26	0.26		0.46	0.46		0.30	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	266	2206		144	1270		285	833		342	490	
v/s Ratio Prot	c0.17	0.18			c0.17		c0.07	0.12			c0.32	
v/s Ratio Perm				0.06			0.20			0.12		
v/c Ratio	1.10	0.39		0.22	0.65		0.59	0.26		0.39	1.07	
Uniform Delay, d1	42.5	18.4		29.0	32.9		21.1	16.5		27.6	35.0	
Progression Factor	1.00	1.00		0.97	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	83.9	0.1		0.7	1.1		3.1	0.7		3.3	59.8	
Delay (s)	126.4	18.5		28.8	33.9		24.1	17.3		30.9	94.8	
Level of Service	F	B		C	C		C	B		C	F	
Approach Delay (s)		44.6			33.7			20.2			83.2	
Approach LOS		D			C			C			F	

Intersection Summary			
HCM Average Control Delay	47.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	654	251	170	597	70	219	90	140	60	70	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.99			0.96			0.95	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3334			3440			1924			1712	
Flt Permitted		0.84			0.57			0.75			0.82	
Satd. Flow (perm)		2816			1990			1478			1422	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	63	674	259	175	615	72	226	93	144	62	72	73
RTOR Reduction (vph)	0	46	0	0	12	0	0	29	0	0	35	0
Lane Group Flow (vph)	0	950	0	0	850	0	0	434	0	0	172	0
Confl. Peds. (#/hr)	27		20			27	44		32	32		44
Confl. Bikes (#/hr)			9			4			4			1
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		26.5			26.5			19.0			19.0	
Effective Green, g (s)		26.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.48			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1357			959			511			491	
v/s Ratio Prot												
v/s Ratio Perm		0.34			c0.43			c0.29			0.12	
v/c Ratio		0.70			0.89			0.85			0.35	
Uniform Delay, d1		11.1			12.9			16.7			13.4	
Progression Factor		1.33			1.00			1.00			1.00	
Incremental Delay, d2		2.7			9.9			16.0			2.0	
Delay (s)		17.5			22.8			32.6			15.4	
Level of Service		B			C			C			B	
Approach Delay (s)		17.5			22.8			32.6			15.4	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Appendix L

LOS Calculation Worksheets
2035 No Project Conditions

FEHR & PEERS

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	90	20	100	20	30	30	20	30	1280	40	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0				3.0			5.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.98				0.99			1.00			
Flpb, ped/bikes		1.00				1.00			1.00			
Frt		0.93				0.97			0.99			
Flt Protected		0.98				0.98			1.00			
Satd. Flow (prot)		1663				1750			3511			
Flt Permitted		0.86				0.88			0.93			
Satd. Flow (perm)		1459				1577			3264			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	94	21	104	21	31	31	21	31	1333	42	10	10
RTOR Reduction (vph)	0	5	0	0	0	16	0	0	0	0	0	0
Lane Group Flow (vph)	0	235	0	0	0	67	0	0	1416	0	0	0
Confl. Peds. (#/hr)	18		8		8		18	14				
Confl. Bikes (#/hr)							5			11	11	
Turn Type	Perm				Perm			Perm				Perm
Protected Phases		4				4			2			
Permitted Phases	4				4			2				6
Actuated Green, G (s)		14.4				14.4			31.9			
Effective Green, g (s)		14.4				14.4			31.9			
Actuated g/C Ratio		0.24				0.24			0.53			
Clearance Time (s)		3.0				3.0			5.0			
Vehicle Extension (s)		3.0				3.0			3.0			
Lane Grp Cap (vph)		350				378			1735			
v/s Ratio Prot												
v/s Ratio Perm		c0.16				0.04			c0.43			
v/c Ratio		0.67				0.18			0.82			
Uniform Delay, d1		20.7				18.1			11.6			
Progression Factor		1.00				1.00			1.00			
Incremental Delay, d2		5.0				0.2			4.4			
Delay (s)		25.7				18.3			16.0			
Level of Service		C				B			B			
Approach Delay (s)		25.7				18.3			16.0			
Approach LOS		C				B			B			

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	80	570	30	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			3.0	
Lane Util. Factor		0.95			1.00	
Frpb, ped/bikes		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	
Frt		0.99			0.95	
Flt Protected		0.99			0.97	
Satd. Flow (prot)		3488			1718	
Flt Permitted		0.60			0.97	
Satd. Flow (perm)		2124			1718	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.92
Adj. Flow (vph)	83	594	31	10	10	11
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	0	715	0	0	31	0
Confl. Peds. (#/hr)			14			
Confl. Bikes (#/hr)			2			
Turn Type	Perm			Perm		
Protected Phases		6			8	
Permitted Phases	6			8		
Actuated Green, G (s)		31.9			2.7	
Effective Green, g (s)		31.9			2.7	
Actuated g/C Ratio		0.53			0.05	
Clearance Time (s)		5.0			3.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1129			77	
v/s Ratio Prot						
v/s Ratio Perm		0.34			0.02	
v/c Ratio		0.63			0.40	
Uniform Delay, d1		9.9			27.9	
Progression Factor		1.00			1.00	
Incremental Delay, d2		1.2			3.4	
Delay (s)		11.1			31.3	
Level of Service		B			C	
Approach Delay (s)		11.1			31.3	
Approach LOS		B			C	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	220	40	1250	450	50	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.96		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1732		3332		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1732		3332		1711	3421
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	227	41	1289	464	52	505
RTOR Reduction (vph)	13	0	54	0	0	0
Lane Group Flow (vph)	255	0	1699	0	52	505
Confl. Peds. (#/hr)		48		19	19	
Confl. Bikes (#/hr)		6		21		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.0		27.4		3.6	35.0
Effective Green, g (s)	12.0		27.4		3.6	35.0
Actuated g/C Ratio	0.22		0.50		0.07	0.64
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	378		1660		112	2177
v/s Ratio Prot	c0.15		c0.51		c0.03	0.15
v/s Ratio Perm						
v/c Ratio	0.67		1.02		0.46	0.23
Uniform Delay, d1	19.7		13.8		24.8	4.3
Progression Factor	1.00		0.88		1.00	1.00
Incremental Delay, d2	3.7		24.3		1.1	0.2
Delay (s)	23.4		36.4		25.9	4.5
Level of Service	C		D		C	A
Approach Delay (s)	23.4		36.4			6.5
Approach LOS	C		D			A

Intersection Summary			
HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	450	470	1710	650	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3316	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3316	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	479	500	1819	691	64
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	0	479	500	1819	743	0
Confl. Peds. (#/hr)						123
Confl. Bikes (#/hr)						3
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		19.6	19.6	41.5	25.4	
Effective Green, g (s)		19.6	19.6	41.5	25.4	
Actuated g/C Ratio		0.36	0.36	0.75	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		574	589	2492	1531	
v/s Ratio Prot		0.30	c0.30	c0.55	0.22	
v/s Ratio Perm						
v/c Ratio		0.83	0.85	0.73	0.49	
Uniform Delay, d1		16.2	16.3	3.7	10.3	
Progression Factor		1.00	1.23	0.99	0.81	
Incremental Delay, d2		10.1	5.2	0.9	1.1	
Delay (s)		26.3	25.3	4.5	9.3	
Level of Service		C	C	A	A	
Approach Delay (s)	26.3			9.0	9.3	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	0	40	7	0	22	14	2140	1	11	1090	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	21	0	42	7	0	23	15	2253	1	12	1147	0
Pedestrians		42			93						19	
Lane Width (ft)		12.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		4			8						1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								483			264	
pX, platoon unblocked	0.79	0.79		0.79	0.79	0.79				0.79		
vC, conflicting volume	2035	3589	424	2823	3588	863	1189			2347		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1379	3346	424	2377	3346	0	1189			1774		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	68	100	92	30	100	97	97			95		
cM capacity (veh/h)	66	5	558	11	5	780	562			253		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	63	31	578	1126	564	241	459	459
Volume Left	21	7	15	0	0	12	0	0
Volume Right	42	23	0	0	1	0	0	0
cSH	159	42	562	1700	1700	253	1700	1700
Volume to Capacity	0.40	0.73	0.03	0.66	0.33	0.05	0.27	0.27
Queue Length 95th (ft)	43	68	2	0	0	4	0	0
Control Delay (s)	41.7	206.9	0.7	0.0	0.0	2.0	0.0	0.0
Lane LOS	E	F	A			A		
Approach Delay (s)	41.7	206.9	0.2			0.4		
Approach LOS	E	F						

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	162	0	1990	25	0	1150	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	0	0	0	184	0	2261	28	0	1307	0
Pedestrians					40							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					3							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								295			452	
pX, platoon unblocked	0.77	0.77		0.77	0.77	0.77				0.77		
vC, conflicting volume	2245	3637	327	2628	3608	794	1307			2330		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1569	3378	327	2068	3341	0	1307			1680		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	77	100			100		
cM capacity (veh/h)	43	6	669	23	6	807	526			281		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	184	754	754	754	28	373	373	373	187
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	184	0	0	0	28	0	0	0	0
cSH	807	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.23	0.44	0.44	0.44	0.02	0.22	0.22	0.22	0.11
Queue Length 95th (ft)	22	0	0	0	0	0	0	0	0
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	10.8	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	52	1960	202	0	1150
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	63	2390	246	0	1402
Pedestrians	70					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	6					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			174			573
pX, platoon unblocked	0.77	0.77			0.77	
vC, conflicting volume	2934	791			2707	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2041	0			1747	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			100	
cM capacity (veh/h)	36	791			259	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	63	683	683	683	588	351	351	351	351
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	63	0	0	0	246	0	0	0	0
cSH	791	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.08	0.40	0.40	0.40	0.35	0.21	0.21	0.21	0.21
Queue Length 95th (ft)	7	0	0	0	0	0	0	0	0
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A								
Approach Delay (s)	9.9	0.0				0.0			
Approach LOS	A								

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	290	880	90	200	470	520	130	1280	240	70	450	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.92			0.98			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.95	0.98
Satd. Flow (prot)	1770	3480		1770	3181			4895			1420	4411
Flt Permitted	0.95	1.00		0.95	1.00			1.00			0.95	0.98
Satd. Flow (perm)	1770	3480		1770	3181			4895			1420	4411
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	296	898	92	204	480	531	133	1306	245	71	459	520
RTOR Reduction (vph)	0	7	0	0	164	0	0	22	0	0	0	0
Lane Group Flow (vph)	296	983	0	204	847	0	0	1662	0	0	264	786
Confl. Peds. (#/hr)			11			26			46			
Confl. Bikes (#/hr)			10			5			8			
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	19.8	36.0		12.0	28.2			27.5			18.5	18.5
Effective Green, g (s)	19.8	36.0		12.0	28.2			27.5			18.5	18.5
Actuated g/C Ratio	0.18	0.33		0.11	0.26			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	319	1139		193	815			1224			239	742
v/s Ratio Prot	c0.17	0.28		c0.12	c0.27			c0.34			c0.19	0.18
v/s Ratio Perm												
v/c Ratio	0.93	0.86		1.06	1.04			1.36			1.10	1.06
Uniform Delay, d1	44.4	34.7		49.0	40.9			41.2			45.8	45.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.06	1.05
Incremental Delay, d2	31.9	8.7		80.7	42.0			166.5			85.6	47.9
Delay (s)	76.3	43.4		129.7	82.9			207.8			134.2	96.1
Level of Service	E	D		F	F			F			F	F
Approach Delay (s)		51.0			90.8			207.8				99.9
Approach LOS		D			F			F				F

Intersection Summary			
HCM Average Control Delay	120.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	120
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.96
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1419
Flt Permitted	1.00
Satd. Flow (perm)	1419
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	122
RTOR Reduction (vph)	32
Lane Group Flow (vph)	90
Confl. Peds. (#/hr)	10
Confl. Bikes (#/hr)	8
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	18.5
Effective Green, g (s)	18.5
Actuated g/C Ratio	0.17
Clearance Time (s)	4.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	239
v/s Ratio Prot	
v/s Ratio Perm	0.06
v/c Ratio	0.38
Uniform Delay, d1	40.6
Progression Factor	1.14
Incremental Delay, d2	4.0
Delay (s)	50.4
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	10	90	40	30	60	110	1620	30	30	710	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.98			0.99			1.00			0.99	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.93			0.94			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1654			1686			5044			4996	
Flt Permitted		0.83			0.89			0.81			0.83	
Satd. Flow (perm)		1409			1529			4078			4141	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	11	96	43	32	64	117	1723	32	32	755	53
RTOR Reduction (vph)	0	45	0	0	21	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	147	0	0	118	0	0	1870	0	0	831	0
Confl. Peds. (#/hr)	18		45	45		18	48		29	29		48
Confl. Bikes (#/hr)			5			8			11			16
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		370			401			2702			2743	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.08			c0.46			0.20	
v/c Ratio		0.40			0.29			0.69			0.30	
Uniform Delay, d1		24.3			23.6			8.4			5.7	
Progression Factor		1.00			1.00			1.33			1.00	
Incremental Delay, d2		3.2			1.9			0.8			0.3	
Delay (s)		27.5			25.4			12.0			6.0	
Level of Service		C			C			B			A	
Approach Delay (s)		27.5			25.4			12.0			6.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	410	310	140	50	170	110	130	1280	70	50	540	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.95			0.95		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1743	3337			3290		1761	3498			4859	
Flt Permitted	0.52	1.00			0.85		0.29	1.00			0.73	
Satd. Flow (perm)	954	3337			2802		538	3498			3583	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	414	313	141	51	172	111	131	1293	71	51	545	131
RTOR Reduction (vph)	0	65	0	0	0	0	0	5	0	0	44	0
Lane Group Flow (vph)	414	389	0	0	334	0	131	1359	0	0	683	0
Confl. Peds. (#/hr)	35		27	27		35	74		83	83		74
Confl. Bikes (#/hr)			11			5			22			16
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	411	1439			1208		321	1640			1344	
v/s Ratio Prot		0.12					0.02	c0.39				
v/s Ratio Perm	c0.43				0.12		0.17				0.19	
v/c Ratio	1.01	0.27			0.28		0.41	0.83			0.51	
Uniform Delay, d1	22.8	14.6			14.7		12.5	18.5			19.3	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.72	
Incremental Delay, d2	46.2	0.5			0.6		3.8	5.0			1.3	
Delay (s)	69.0	15.1			15.3		16.4	23.5			34.6	
Level of Service	E	B			B		B	C			C	
Approach Delay (s)		40.8			15.3			22.8			34.6	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM Average Control Delay	29.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	135.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	30
RTOR Reduction (vph)	19
Lane Group Flow (vph)	11
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.02
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	15.8
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	710	170	130	650	340	270	900	120	260	470	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.93		1.00	1.00	0.98	1.00	1.00	0.84
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4920		1770	4474		1770	3539	1550	1770	3539	1327
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4920		1770	4474		1770	3539	1550	1770	3539	1327
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	747	179	137	684	358	284	947	126	274	495	116
RTOR Reduction (vph)	0	39	0	0	92	0	0	0	64	0	0	86
Lane Group Flow (vph)	189	887	0	137	950	0	284	947	62	274	495	30
Confl. Peds. (#/hr)			2			154			2			125
Confl. Bikes (#/hr)			5			3			8			13
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	11.0	26.1		11.0	26.1		18.9	26.0	26.0	18.9	26.0	26.0
Effective Green, g (s)	11.0	26.1		11.0	26.1		18.9	26.0	26.0	18.9	26.0	26.0
Actuated g/C Ratio	0.11	0.26		0.11	0.26		0.19	0.26	0.26	0.19	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	195	1284		195	1168		335	920	403	335	920	345
v/s Ratio Prot	c0.11	0.18		0.08	c0.21		c0.16	c0.27		0.15	0.14	
v/s Ratio Perm									0.04			0.02
v/c Ratio	0.97	0.69		0.70	0.81		0.85	1.03	0.15	0.82	0.54	0.09
Uniform Delay, d1	44.3	33.3		42.9	34.7		39.2	37.0	28.5	38.9	31.8	28.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	54.6	1.3		9.0	4.2		17.1	37.4	0.8	13.6	2.3	0.5
Delay (s)	98.9	34.6		51.9	38.9		56.2	74.4	29.3	52.5	34.1	28.5
Level of Service	F	C		D	D		E	E	C	D	C	C
Approach Delay (s)		45.5			40.4			66.4			39.1	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	49.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	90	100	160	80	210	150	1720	80	190	1630	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.95			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			0.97	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1630			1740	1529	1770	5047		1770	5078	
Flt Permitted	0.44	1.00			0.57	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	807	1630			1022	1529	1770	5047		1770	5078	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	97	108	172	86	226	161	1849	86	204	1753	11
RTOR Reduction (vph)	0	42	0	0	0	165	0	5	0	0	1	0
Lane Group Flow (vph)	75	163	0	0	258	61	161	1930	0	204	1763	0
Confl. Peds. (#/hr)	19		77	77		19			5			18
Confl. Bikes (#/hr)			14			5			3			3
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	26.9	26.9			26.9	26.9	13.0	42.1		17.5	46.6	
Effective Green, g (s)	26.9	26.9			26.9	26.9	13.0	42.1		17.5	46.6	
Actuated g/C Ratio	0.27	0.27			0.27	0.27	0.13	0.42		0.18	0.47	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	217	438			275	411	230	2125		310	2366	
v/s Ratio Prot		0.10					0.09	c0.38		0.12	c0.35	
v/s Ratio Perm	0.09				c0.25	0.04						
v/c Ratio	0.35	0.37			0.94	0.15	0.70	0.91		0.66	0.75	
Uniform Delay, d1	29.5	29.7			35.7	27.8	41.6	27.1		38.5	21.8	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2			37.2	0.1	7.3	7.2		3.8	2.2	
Delay (s)	29.8	29.9			72.9	27.9	48.9	34.3		42.3	24.0	
Level of Service	C	C			E	C	D	C		D	C	
Approach Delay (s)		29.9			51.9			35.4			25.9	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	1030	200	40	810	140	160	240	50	170	170	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4937		1767	4927		1770	1795		1736	1594	
Flt Permitted	0.95	1.00		0.20	1.00		0.13	1.00		0.58	1.00	
Satd. Flow (perm)	1770	4937		380	4927		251	1795		1052	1594	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	312	1073	208	42	844	146	167	250	52	177	177	406
RTOR Reduction (vph)	0	32	0	0	24	0	0	7	0	0	79	0
Lane Group Flow (vph)	312	1249	0	42	966	0	167	295	0	177	504	0
Confl. Peds. (#/hr)			5	5		18	3		26	26		3
Confl. Bikes (#/hr)			3			8			40			54
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	23.1	54.4		27.3	27.3		40.6	40.6		25.7	25.7	
Effective Green, g (s)	23.1	54.4		27.3	27.3		40.6	40.6		25.7	25.7	
Actuated g/C Ratio	0.22	0.52		0.26	0.26		0.39	0.39		0.25	0.25	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	393	2582		100	1293		257	701		260	394	
v/s Ratio Prot	c0.18	0.25			c0.20		c0.07	0.16			c0.32	
v/s Ratio Perm				0.11			0.19			0.17		
v/c Ratio	0.79	0.48		0.42	0.75		0.65	0.42		0.68	1.28	
Uniform Delay, d1	38.2	15.8		31.8	35.2		24.8	23.1		35.4	39.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.5	0.1		2.8	2.4		5.6	1.9		13.5	143.9	
Delay (s)	48.8	16.0		34.6	37.6		30.4	25.0		48.9	183.0	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		22.4			37.5			26.9			151.8	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	52.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	70	50	40	70	50	40	1050	20	30	1030	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			1.00			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.96			0.96			1.00			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1738			1745			3504			3501	
Flt Permitted		0.77			0.84			0.87			0.89	
Satd. Flow (perm)		1358			1492			3048			3131	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	65	75	54	43	75	54	43	1129	22	32	1108	22
RTOR Reduction (vph)	0	9	0	0	25	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	185	0	0	147	0	0	1193	0	0	1162	0
Confl. Peds. (#/hr)	18		38	38			91		59	59		98
Confl. Bikes (#/hr)			2			3			90			75
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		14.5			14.5			56.5			56.5	
Effective Green, g (s)		14.5			14.5			56.5			56.5	
Actuated g/C Ratio		0.18			0.18			0.71			0.71	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		246			270			2153			2211	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.10			c0.39			0.37	
v/c Ratio		0.75			0.55			14.33dl			0.53	
Uniform Delay, d1		31.0			29.8			5.7			5.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		10.9			1.2			1.0			0.9	
Delay (s)		42.0			31.0			6.7			6.4	
Level of Service		D			C			A			A	
Approach Delay (s)		42.0			31.0			6.7			6.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	115.2%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	260	70
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	280	75
RTOR Reduction (vph)	7	0
Lane Group Flow (vph)	348	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	56.5	
Effective Green, g (s)	56.5	
Actuated g/C Ratio	0.71	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1138	
v/s Ratio Prot	0.22	
v/s Ratio Perm		
v/c Ratio	0.31	
Uniform Delay, d1	4.4	
Progression Factor	1.00	
Incremental Delay, d2	0.7	
Delay (s)	5.1	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	10	40	270	70	200	10	1210	260	100	1080	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.96			0.97		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.92		1.00	0.90			0.97		1.00	0.98	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1673		1681	1517			3351		1770	3389	
Flt Permitted		0.99		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1673		1681	1517			3162		1770	3389	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	21	10	41	278	72	206	10	1247	268	103	1113	165
RTOR Reduction (vph)	0	39	0	0	78	0	0	15	0	0	10	0
Lane Group Flow (vph)	0	33	0	250	228	0	0	1510	0	103	1268	0
Confl. Peds. (#/hr)			2			30	43		30	30		43
Confl. Bikes (#/hr)						8			77			86
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		5.5		18.5	18.5			49.2		8.8	62.5	
Effective Green, g (s)		5.5		18.5	18.5			49.2		8.8	62.5	
Actuated g/C Ratio		0.06		0.18	0.18			0.49		0.09	0.62	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		92		311	281			1556		156	2118	
v/s Ratio Prot		c0.02		0.15	c0.15					0.06	c0.37	
v/s Ratio Perm								c0.48				
v/c Ratio		0.36		0.80	0.81			0.97		0.66	0.60	
Uniform Delay, d1		45.6		39.0	39.1			24.7		44.2	11.2	
Progression Factor		1.00		1.00	1.00			0.63		1.00	1.00	
Incremental Delay, d2		0.9		13.2	15.3			9.8		7.8	1.3	
Delay (s)		46.4		52.2	54.4			25.3		52.0	12.5	
Level of Service		D		D	D			C		D	B	
Approach Delay (s)		46.4			53.4			25.3			15.4	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	112.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	460	680	110	130	420	230	120	790	140	300	1030	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3419		1770	3272		1770	3386		1770	3485	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3419		1770	3272		1770	3386		1770	3485	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	469	694	112	133	429	235	122	806	143	306	1051	61
RTOR Reduction (vph)	0	13	0	0	76	0	0	14	0	0	4	0
Lane Group Flow (vph)	469	793	0	133	588	0	122	935	0	306	1108	0
Confl. Peds. (#/hr)			56			29			69			67
Confl. Bikes (#/hr)			14			19			66			67
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.0	26.2		10.1	24.3		5.0	34.7		12.0	41.7	
Effective Green, g (s)	12.0	26.2		10.1	24.3		5.0	34.7		12.0	41.7	
Actuated g/C Ratio	0.12	0.26		0.10	0.24		0.05	0.35		0.12	0.42	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	896		179	795		89	1175		212	1453	
v/s Ratio Prot	c0.14	c0.23		0.08	0.18		0.07	0.28		c0.17	c0.32	
v/s Ratio Perm												
v/c Ratio	1.14	0.88		0.74	0.74		1.37	0.80		1.44	0.76	
Uniform Delay, d1	44.0	35.4		43.7	34.9		47.5	29.5		44.0	24.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.18	0.72	
Incremental Delay, d2	87.8	10.1		13.5	3.1		222.8	5.6		219.6	3.1	
Delay (s)	131.8	45.6		57.2	38.0		270.3	35.1		271.4	21.0	
Level of Service	F	D		E	D		F	D		F	C	
Approach Delay (s)		77.3			41.2			61.9			75.1	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	66.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	950	30	30	650	40	50	70	30	60	40	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	1.00		1.00	0.99			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1761	3518		1764	3501			1757			1717	
Flt Permitted	0.35	1.00		0.22	1.00			0.87			0.83	
Satd. Flow (perm)	643	3518		415	3501			1549			1451	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	990	31	31	677	42	52	73	31	62	42	42
RTOR Reduction (vph)	0	3	0	0	6	0	0	11	0	0	18	0
Lane Group Flow (vph)	52	1018	0	31	713	0	0	145	0	0	128	0
Confl. Peds. (#/hr)	16		18	18		16	21		11	11		21
Confl. Bikes (#/hr)			13			5			34			40
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	365	1998		236	1988			478			448	
v/s Ratio Prot		c0.29			0.20							
v/s Ratio Perm	0.08			0.07				c0.09			0.09	
v/c Ratio	0.14	0.51		0.13	0.36			0.30			0.29	
Uniform Delay, d1	8.2	10.6		8.2	9.5			21.4			21.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	0.9		1.1	0.5			1.6			1.6	
Delay (s)	9.0	11.6		9.3	10.0			23.0			22.8	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		11.5			10.0			23.0			22.8	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	262	1250	60	30	930	114	40	31	20	255	40	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.95		0.99			0.96	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			0.99	
Frt	1.00	0.99			1.00	0.85		0.97			0.94	
Flt Protected	0.95	1.00			1.00	1.00		0.98			0.98	
Satd. Flow (prot)	1770	3507			3533	1510		1733			3092	
Flt Permitted	0.95	1.00			0.88	1.00		0.65			0.78	
Satd. Flow (perm)	1770	3507			3121	1510		1148			2476	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	270	1289	62	31	959	118	41	32	21	263	41	224
RTOR Reduction (vph)	0	3	0	0	0	42	0	13	0	0	172	0
Lane Group Flow (vph)	270	1348	0	0	990	76	0	81	0	0	356	0
Confl. Peds. (#/hr)			24	24		19	83		21	21		83
Confl. Bikes (#/hr)			11			5			16			26
Turn Type	Prot			Perm		Perm	Perm			Perm		
Protected Phases	1	6			2			4			4	
Permitted Phases				2		2	4			4		
Actuated Green, G (s)	15.6	47.8			29.2	29.2		16.3			16.3	
Effective Green, g (s)	15.6	47.8			29.2	29.2		16.3			16.3	
Actuated g/C Ratio	0.22	0.68			0.42	0.42		0.23			0.23	
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	394	2391			1300	629		267			576	
v/s Ratio Prot	c0.15	0.38										
v/s Ratio Perm					c0.32	0.05		0.07			c0.14	
v/c Ratio	0.69	0.56			0.76	0.12		0.30			0.62	
Uniform Delay, d1	25.0	5.8			17.5	12.6		22.2			24.1	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	4.9	0.3			2.7	0.1		0.6			2.0	
Delay (s)	29.9	6.1			20.2	12.7		22.9			26.1	
Level of Service	C	A			C	B		C			C	
Approach Delay (s)		10.0			19.4			22.9			26.1	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	113.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1390	110	20	1030	10	10	10	20	10	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	1479	117	21	1096	11	11	11	21	11	11	11
Pedestrians		14			2			21			11	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		881			649							
pX, platoon unblocked	0.93			0.82			0.86	0.86	0.82	0.86	0.86	0.93
vC, conflicting volume	1117			1617			2221	2761	821	1965	2814	578
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	986			1322			1748	2377	356	1449	2439	409
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			95			60	59	96	77	55	98
cM capacity (veh/h)	645			420			27	26	518	47	24	542

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	761	856	569	559	43	32
Volume Left	21	0	21	0	11	11
Volume Right	0	117	0	11	21	11
cSH	645	1700	420	1700	50	46
Volume to Capacity	0.03	0.50	0.05	0.33	0.84	0.69
Queue Length 95th (ft)	3	0	4	0	88	67
Control Delay (s)	0.9	0.0	1.5	0.0	209.7	184.7
Lane LOS	A		A		F	F
Approach Delay (s)	0.4		0.8		209.7	184.7
Approach LOS					F	F

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	1330	80	20	1010	10	40	10	110	20	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	1371	82	21	1041	10	41	10	113	21	10	10
Pedestrians		5						22			29	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1205			325							
pX, platoon unblocked	0.87			0.93			0.90	0.90	0.93	0.90	0.90	0.87
vC, conflicting volume	1081			1476			2037	2577	749	1941	2613	560
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	790			1369			1606	2205	592	1500	2245	191
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			4	71	73	47	69	99
cM capacity (veh/h)	700			456			43	36	413	39	34	691

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	696	768	541	531	165	41
Volume Left	10	0	21	0	41	21
Volume Right	0	82	0	10	113	10
cSH	700	1700	456	1700	109	48
Volume to Capacity	0.01	0.45	0.05	0.31	1.52	0.85
Queue Length 95th (ft)	1	0	4	0	304	88
Control Delay (s)	0.4	0.0	1.3	0.0	345.9	218.9
Lane LOS	A		A		F	F
Approach Delay (s)	0.2		0.7		345.9	218.9
Approach LOS					F	F

Intersection Summary			
Average Delay	24.5		
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1130	260	140	760	110	240	70	220	110	60	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			0.99			0.97			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.97			0.98			0.94			0.97	
Flt Protected		1.00			0.99			0.98			0.97	
Satd. Flow (prot)		3405			3436			1868			1735	
Flt Permitted		0.79			0.52			0.75			0.62	
Satd. Flow (perm)		2697			1806			1431			1108	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	1189	274	147	800	116	253	74	232	116	63	42
RTOR Reduction (vph)	0	26	0	0	13	0	0	36	0	0	12	0
Lane Group Flow (vph)	0	1521	0	0	1050	0	0	523	0	0	209	0
Confl. Peds. (#/hr)	26		11			26	38		53	53		38
Confl. Bikes (#/hr)			14			3			5			8
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		25.5			41.5			19.0			19.0	
Effective Green, g (s)		25.5			41.5			19.0			19.0	
Actuated g/C Ratio		0.36			0.59			0.27			0.27	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		982			1373			388			301	
v/s Ratio Prot					c0.14							
v/s Ratio Perm		c0.56			0.31			c0.37			0.19	
v/c Ratio		1.55			0.76			1.35			0.69	
Uniform Delay, d1		22.2			10.6			25.5			22.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		252.0			4.1			172.4			12.4	
Delay (s)		274.3			14.7			197.9			35.3	
Level of Service		F			B			F			D	
Approach Delay (s)		274.3			14.7			197.9			35.3	
Approach LOS		F			B			F			D	

Intersection Summary			
HCM Average Control Delay	164.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	250	110	100	370	310	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.96		1.00	1.00	1.00	0.87
Flpb, ped/bikes	1.00		0.94	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1650		1659	1863	1863	1380
Flt Permitted	0.97		0.49	1.00	1.00	1.00
Satd. Flow (perm)	1650		851	1863	1863	1380
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	278	122	111	411	344	167
RTOR Reduction (vph)	28	0	0	0	0	82
Lane Group Flow (vph)	372	0	111	411	344	85
Confl. Peds. (#/hr)	118	91	109			109
Confl. Bikes (#/hr)		10				5
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	630		433	948	948	703
v/s Ratio Prot	c0.23			c0.22	0.18	
v/s Ratio Perm			0.13			0.06
v/c Ratio	0.59		0.26	0.43	0.36	0.12
Uniform Delay, d1	13.6		7.6	8.5	8.1	7.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0		1.4	1.4	1.1	0.4
Delay (s)	17.6		9.0	9.9	9.2	7.4
Level of Service	B		A	A	A	A
Approach Delay (s)	17.6			9.8	8.6	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	590	840	720	70	20	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.87	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3492		1591	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3492		1591	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	608	866	742	72	21	351
RTOR Reduction (vph)	0	0	11	0	244	0
Lane Group Flow (vph)	608	866	803	0	128	0
Confl. Peds. (#/hr)					5	
Confl. Bikes (#/hr)						10
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	818		485	
v/s Ratio Prot	c0.34	0.24	c0.23		c0.08	
v/s Ratio Perm						
v/c Ratio	1.10	0.41	0.98		0.26	
Uniform Delay, d1	22.0	7.0	24.4		16.8	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	68.3	0.6	27.2		1.3	
Delay (s)	90.3	7.6	51.6		18.1	
Level of Service	F	A	D		B	
Approach Delay (s)		41.7	51.6		18.1	
Approach LOS		D	D		B	

Intersection Summary			
HCM Average Control Delay	41.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	40	60	680	20	80	770
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.92		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1678		1854		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1678		1854		1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	65	731	22	86	828
RTOR Reduction (vph)	57	0	1	0	0	0
Lane Group Flow (vph)	51	0	752	0	86	828
Confl. Bikes (#/hr)				3		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	5.4		24.9		3.0	31.9
Effective Green, g (s)	5.4		24.9		3.0	31.9
Actuated g/C Ratio	0.12		0.54		0.06	0.69
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	196		997		115	1284
v/s Ratio Prot	c0.03		c0.41		0.05	c0.44
v/s Ratio Perm						
v/c Ratio	0.26		0.75		0.75	0.64
Uniform Delay, d1	18.6		8.3		21.3	4.0
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.7		3.3		23.0	1.1
Delay (s)	19.3		11.6		44.3	5.2
Level of Service	B		B		D	A
Approach Delay (s)	19.3		11.6			8.8
Approach LOS	B		B			A

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	30	50	20	20	20	40	60	10	50	500	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.97			0.93					0.99	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.98			0.90					1.00	
Flt Protected			0.98			0.99					0.99	
Satd. Flow (prot)			1538			1378					1621	
Flt Permitted			0.87			0.95					0.88	
Satd. Flow (perm)			1368			1322					1433	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	32	53	21	21	21	42	63	11	53	526	21
RTOR Reduction (vph)	0	0	13	0	0	45	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	104	0	0	102	0	0	0	0	609	0
Confl. Peds. (#/hr)				61				36				132
Confl. Bikes (#/hr)												16
Parking (#/hr)			3			3					3	
Turn Type		Perm			Perm					Perm		
Protected Phases			1			1					2	
Permitted Phases		1			1					2		
Actuated Green, G (s)			14.0			14.0					22.0	
Effective Green, g (s)			14.0			14.0					22.0	
Actuated g/C Ratio			0.23			0.23					0.37	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			319			308					525	
v/s Ratio Prot												
v/s Ratio Perm			0.08			c0.08					c0.43	
v/c Ratio			0.33			0.33					1.16	
Uniform Delay, d1			19.1			19.1					19.0	
Progression Factor			1.00			1.00					1.00	
Incremental Delay, d2			2.7			2.9					91.6	
Delay (s)			21.8			22.0					110.6	
Level of Service			C			C					F	
Approach Delay (s)			21.8			22.0					110.6	
Approach LOS			C			C					F	

Intersection Summary			
HCM Average Control Delay	75.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	70	390	30	40	30	70	50	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.96				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.98				0.94		
Flt Protected		0.99				0.97		
Satd. Flow (prot)		1721				1504		
Flt Permitted		0.81				0.97		
Satd. Flow (perm)		1411				1504		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	411	32	42	32	74	53	42
RTOR Reduction (vph)	0	5	0	0	0	16	0	0
Lane Group Flow (vph)	0	554	0	0	0	185	0	0
Confl. Peds. (#/hr)			75	121				
Confl. Bikes (#/hr)			16	7				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		22.0				12.0		
Effective Green, g (s)		22.0				12.0		
Actuated g/C Ratio		0.37				0.20		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		517				301		
v/s Ratio Prot								
v/s Ratio Perm		0.39				0.12		
v/c Ratio		1.07				0.61		
Uniform Delay, d1		19.0				21.9		
Progression Factor		1.00				1.00		
Incremental Delay, d2		60.1				9.1		
Delay (s)		79.1				31.0		
Level of Service		E				C		
Approach Delay (s)		79.1				31.0		
Approach LOS		E				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	10	10	0	0	0	0	30	30	10	20	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	13	13	13	0	0	0	0	38	38	13	26	0
Pedestrians					11						8	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	8			26			58	53	30	122	59	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	8			26			58	53	30	122	59	8
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	95	96	98	97	100
cM capacity (veh/h)	1602			1589			906	826	1044	779	820	1067

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	38	77	38
Volume Left	13	0	13
Volume Right	13	38	0
cSH	1602	922	805
Volume to Capacity	0.01	0.08	0.05
Queue Length 95th (ft)	1	7	4
Control Delay (s)	2.5	9.3	9.7
Lane LOS	A	A	A
Approach Delay (s)	2.5	9.3	9.7
Approach LOS		A	A

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1210	0	0	700	20	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	1301	0	0	753	22	0	0	11	0	0	0
Pedestrians					2			13			2	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1258			636							
pX, platoon unblocked				0.88			0.88	0.88	0.88	0.88	0.88	
vC, conflicting volume	776			1314			1690	2090	666	1429	2080	389
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	776			1074			1504	1961	333	1205	1949	389
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	836			558			72	54	573	119	55	610

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	867	434	502	272	11
Volume Left	0	0	0	0	0
Volume Right	0	0	0	22	11
cSH	1700	1700	1700	1700	573
Volume to Capacity	0.51	0.26	0.30	0.16	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.4
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1530	990	56	0	82
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1663	1076	61	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		226	1304			
pX, platoon unblocked					0.80	
vC, conflicting volume	1137				1938	568
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1137				1666	568
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	81
cM capacity (veh/h)	610				70	466

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	832	832	717	420	89
Volume Left	0	0	0	0	0
Volume Right	0	0	0	61	89
cSH	1700	1700	1700	1700	466
Volume to Capacity	0.49	0.49	0.42	0.25	0.19
Queue Length 95th (ft)	0	0	0	0	17
Control Delay (s)	0.0	0.0	0.0	0.0	14.6
Lane LOS					B
Approach Delay (s)	0.0		0.0		14.6
Approach LOS					B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	40	10	40	30	20	10	20	30	730	20	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0			4.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.96				0.99			1.00			
Flpb, ped/bikes		1.00				0.99			1.00			
Frt		0.92				0.95			0.99			
Flt Protected		0.98				0.98			1.00			
Satd. Flow (prot)		1616				1700			3496			
Flt Permitted		0.90				0.89			0.88			
Satd. Flow (perm)		1482				1538			3089			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	11	42	32	21	11	21	32	768	21	11	11
RTOR Reduction (vph)	0	21	0	0	0	15	0	0	1	0	0	0
Lane Group Flow (vph)	0	106	0	0	0	38	0	0	831	0	0	0
Confl. Peds. (#/hr)	13		27	19	19		13	14		27	14	14
Confl. Bikes (#/hr)			2	2						5	5	
Turn Type	Perm				Perm			Perm				
Protected Phases		4				4			2			
Permitted Phases	4				4			2				
Actuated Green, G (s)		16.0				16.0			16.0			
Effective Green, g (s)		16.0				16.0			16.0			
Actuated g/C Ratio		0.27				0.27			0.27			
Clearance Time (s)		4.0				4.0			4.0			
Lane Grp Cap (vph)		395				410			824			
v/s Ratio Prot												
v/s Ratio Perm		c0.07				0.02			c0.27			
v/c Ratio		0.27				0.09			1.01			
Uniform Delay, d1		17.4				16.5			22.0			
Progression Factor		0.87				1.00			1.00			
Incremental Delay, d2		1.4				0.4			33.3			
Delay (s)		16.6				17.0			55.3			
Level of Service		B				B			E			
Approach Delay (s)		16.6				17.0			55.3			
Approach LOS		B				B			E			

Intersection Summary			
HCM Average Control Delay	46.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations							
Volume (vph)	30	540	30	10	50	30	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		
Lane Util. Factor		0.95			1.00		
Frpb, ped/bikes		1.00			0.97		
Flpb, ped/bikes		1.00			0.96		
Frt		0.99			0.95		
Flt Protected		1.00			0.97		
Satd. Flow (prot)		3489			1598		
Flt Permitted		0.71			0.97		
Satd. Flow (perm)		2486			1598		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	568	32	11	53	32	11
RTOR Reduction (vph)	0	7	0	0	7	0	0
Lane Group Flow (vph)	0	636	0	0	100	0	0
Confl. Peds. (#/hr)	27		14	19	14	13	14
Confl. Bikes (#/hr)			2			2	2
Turn Type	Perm			Perm			
Protected Phases		6			8		
Permitted Phases	6			8			
Actuated Green, G (s)		16.0			16.0		
Effective Green, g (s)		16.0			16.0		
Actuated g/C Ratio		0.27			0.27		
Clearance Time (s)		4.0			4.0		
Lane Grp Cap (vph)		663			426		
v/s Ratio Prot							
v/s Ratio Perm		0.26			0.06		
v/c Ratio		0.96			0.24		
Uniform Delay, d1		21.7			17.2		
Progression Factor		1.00			1.00		
Incremental Delay, d2		26.4			1.3		
Delay (s)		48.1			18.5		
Level of Service		D			B		
Approach Delay (s)		48.1			18.5		
Approach LOS		D			B		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	270	50	810	390	40	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.94		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1725		3153		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1725		3153		1711	3421
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	290	54	871	419	43	699
RTOR Reduction (vph)	13	0	89	0	0	0
Lane Group Flow (vph)	331	0	1201	0	43	699
Confl. Peds. (#/hr)		87		91	91	
Confl. Bikes (#/hr)		3		8		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.5		23.0		2.0	29.0
Effective Green, g (s)	12.5		23.0		2.0	29.0
Actuated g/C Ratio	0.25		0.46		0.04	0.59
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	436		1465		69	2004
v/s Ratio Prot	c0.19		c0.38		c0.03	0.20
v/s Ratio Perm						
v/c Ratio	0.76		0.82		0.62	0.35
Uniform Delay, d1	17.1		11.5		23.4	5.3
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	6.6		3.5		11.9	0.0
Delay (s)	23.8		15.0		35.3	5.4
Level of Service	C		B		D	A
Approach Delay (s)	23.8		15.0			7.1
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	49.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	430	510	1210	780	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.97	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.98	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3233	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3233	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	453	537	1274	821	147
RTOR Reduction (vph)	0	0	0	0	26	0
Lane Group Flow (vph)	0	453	537	1274	942	0
Confl. Peds. (#/hr)	197		119			119
Confl. Bikes (#/hr)						2
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		21.0	21.0	33.0	26.0	
Effective Green, g (s)		21.0	21.0	33.0	26.0	
Actuated g/C Ratio		0.37	0.37	0.58	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		594	609	1912	1475	
v/s Ratio Prot		0.28	c0.33	c0.39	0.29	
v/s Ratio Perm						
v/c Ratio		0.76	0.88	0.67	0.64	
Uniform Delay, d1		15.8	16.8	8.2	11.9	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		9.0	16.8	0.9	2.1	
Delay (s)		24.8	33.6	9.1	14.0	
Level of Service		C	C	A	B	
Approach Delay (s)	24.8			16.4	14.0	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	20	0	50	7	0	17	20	0	1690	0	17	1190
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	0	53	7	0	18	0	0	1798	0	18	1266
Pedestrians		60			137				5			22
Lane Width (ft)		12.0			12.0				10.0			10.0
Walking Speed (ft/s)		4.0			4.0				4.0			4.0
Percent Blockage		5			11				0			2
Right turn flare (veh)												
Median type									None			None
Median storage veh)												
Upstream signal (ft)									483			264
pX, platoon unblocked	0.84	0.84		0.84	0.84	0.84	0.00				0.84	
vC, conflicting volume	2002	3297	487	2451	3297	758	0	1326			1935	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1522	3066	487	2058	3066	41	0	1326			1443	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			2.2	
p0 queue free %	59	100	89	58	100	98	0	100			95	
cM capacity (veh/h)	52	8	498	18	8	748	0	491			346	

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	74	26	449	899	449	335	633	316
Volume Left	21	7	0	0	0	18	0	0
Volume Right	53	18	0	0	0	0	0	0
cSH	145	58	491	1700	1700	346	1700	1700
Volume to Capacity	0.51	0.44	0.00	0.53	0.26	0.05	0.37	0.19
Queue Length 95th (ft)	62	42	0	0	0	4	0	0
Control Delay (s)	53.3	109.7	0.0	0.0	0.0	1.8	0.0	0.0
Lane LOS	F	F				A		
Approach Delay (s)	53.3	109.7	0.0			0.5		
Approach LOS	F	F						

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Sign Control	
Grade	
Peak Hour Factor	0.94
Hourly flow rate (vph)	0
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	

Direction, Lane #

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	153	0	1560	20	0	1270	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	0	0	0	0	159	0	1625	21	0	1323	0
Pedestrians		30			48			2			3	
Lane Width (ft)		0.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			4			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								295			452	
pX, platoon unblocked	0.81	0.81		0.81	0.81	0.81				0.81		
vC, conflicting volume	2057	3047	363	2006	3026	593	1353			1694		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1477	2702	363	1414	2676	0	1353			1028		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	81	100			100		
cM capacity (veh/h)	55	16	633	73	17	840	505			521		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	159	542	542	542	21	378	378	378	189
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	159	0	0	0	21	0	0	0	0
cSH	840	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.32	0.32	0.32	0.01	0.22	0.22	0.22	0.11
Queue Length 95th (ft)	17	0	0	0	0	0	0	0	0
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	10.3	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	65	1520	225	0	1270
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	69	1617	239	0	1351
Pedestrians	60					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	5					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			174			573
pX, platoon unblocked						
vC, conflicting volume	2134	584			1916	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2134	584			1916	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	84			100	
cM capacity (veh/h)	40	432			290	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	69	462	462	462	470	338	338	338	338
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	69	0	0	0	239	0	0	0	0
cSH	432	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.16	0.27	0.27	0.27	0.28	0.20	0.20	0.20	0.20
Queue Length 95th (ft)	14	0	0	0	0	0	0	0	0
Control Delay (s)	14.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	14.9	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	220	450	130	300	660	540	190	920	290	65	390	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	0.99		1.00	0.98			0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.93			0.97			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	0.99
Satd. Flow (prot)	1770	3378		1770	3225			4731			1420	4434
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.95	0.99
Satd. Flow (perm)	1770	3378		1770	3225			4731			1420	4434
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	234	479	138	319	702	574	202	979	309	69	415	670
RTOR Reduction (vph)	0	24	0	0	44	0	0	43	0	0	0	0
Lane Group Flow (vph)	234	593	0	319	1232	0	0	1447	0	0	281	873
Confl. Peds. (#/hr)	32		37	37		32	35		105	32	105	
Confl. Bikes (#/hr)			2			3			2			
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	15.0	36.0		12.0	33.0			27.5			18.5	18.5
Effective Green, g (s)	15.0	36.0		12.0	33.0			27.5			18.5	18.5
Actuated g/C Ratio	0.14	0.33		0.11	0.30			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	241	1106		193	968			1183			239	746
v/s Ratio Prot	0.13	c0.18		c0.18	c0.38			c0.31			c0.20	0.20
v/s Ratio Perm												
v/c Ratio	0.97	0.54		1.65	1.27			1.22			1.18	1.17
Uniform Delay, d1	47.3	30.2		49.0	38.5			41.2			45.8	45.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	49.6	1.9		315.8	130.8			108.3			114.0	90.6
Delay (s)	96.9	32.0		364.8	169.3			149.5			159.8	136.4
Level of Service	F	C		F	F			F			F	F
Approach Delay (s)		49.9			208.4			149.5				129.6
Approach LOS		D			F			F				F

Intersection Summary			
HCM Average Control Delay	146.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	108.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	190
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.91
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1347
Flt Permitted	1.00
Satd. Flow (perm)	1347
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	202
RTOR Reduction (vph)	47
Lane Group Flow (vph)	155
Confl. Peds. (#/hr)	35
Confl. Bikes (#/hr)	13
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	18.5
Effective Green, g (s)	18.5
Actuated g/C Ratio	0.17
Clearance Time (s)	4.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	227
v/s Ratio Prot	
v/s Ratio Perm	0.12
v/c Ratio	0.68
Uniform Delay, d1	43.0
Progression Factor	1.00
Incremental Delay, d2	15.5
Delay (s)	58.5
Level of Service	E
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	20	210	60	30	80	160	1120	30	50	950	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.94			0.99			1.00			0.99	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.93			0.94			1.00			0.99	
Flt Protected		0.98			0.98			0.99			1.00	
Satd. Flow (prot)		1589			1666			5014			4952	
Flt Permitted		0.73			0.74			0.68			0.81	
Satd. Flow (perm)		1191			1260			3420			4009	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	22	233	67	33	89	178	1244	33	56	1056	111
RTOR Reduction (vph)	0	52	0	0	40	0	0	3	0	0	15	0
Lane Group Flow (vph)	0	381	0	0	149	0	0	1452	0	0	1208	0
Confl. Peds. (#/hr)	24		142	142		24	57		72	72		57
Confl. Bikes (#/hr)			2			3			5			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		313			331			2266			2656	
v/s Ratio Prot												
v/s Ratio Perm		c0.32			0.12			c0.42			0.30	
v/c Ratio		1.22			0.45			0.64			0.45	
Uniform Delay, d1		29.5			24.7			7.9			6.5	
Progression Factor		1.00			1.00			0.64			1.00	
Incremental Delay, d2		122.9			4.4			1.3			0.6	
Delay (s)		152.4			29.1			6.3			7.1	
Level of Service		F			C			A			A	
Approach Delay (s)		152.4			29.1			6.3			7.1	
Approach LOS		F			C			A			A	

Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	210	160	40	120	60	140	820	50	80	840	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.98			0.98		1.00	1.00			0.98	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.94			0.96		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1770	3241			3290		1769	3493			4820	
Flt Permitted	0.60	1.00			0.85		0.12	1.00			0.79	
Satd. Flow (perm)	1122	3241			2829		226	3493			3823	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	305	221	168	42	126	63	147	863	53	84	884	263
RTOR Reduction (vph)	0	94	0	0	0	0	0	5	0	0	61	0
Lane Group Flow (vph)	305	295	0	0	231	0	147	911	0	0	1170	0
Confl. Peds. (#/hr)			49	49		76	73		94	94		73
Confl. Bikes (#/hr)			6			10			11			13
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	484	1398			1220		193	1637			1434	
v/s Ratio Prot		0.09					c0.04	0.26				
v/s Ratio Perm	c0.27				0.08		c0.32				0.31	
v/c Ratio	0.63	0.21			0.19		0.76	0.56			0.82	
Uniform Delay, d1	17.8	14.2			14.1		14.4	15.3			22.5	
Progression Factor	1.00	1.00			1.00		1.00	1.00			0.86	
Incremental Delay, d2	6.1	0.3			0.3		24.3	1.4			4.3	
Delay (s)	23.9	14.6			14.4		38.7	16.6			23.7	
Level of Service	C	B			B		D	B			C	
Approach Delay (s)		18.7			14.4			19.7			23.7	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	143.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	100
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1526
Flt Permitted	1.00
Satd. Flow (perm)	1526
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	105
RTOR Reduction (vph)	66
Lane Group Flow (vph)	39
Confl. Peds. (#/hr)	48
Confl. Bikes (#/hr)	6
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	572
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.07
Uniform Delay, d1	16.0
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	16.3
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	430	120	100	640	380	190	560	60	310	540	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.94		1.00	1.00		1.00	1.00	0.90
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1556	1770	4504		1770	3478		1770	3362	1425
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1556	1770	4504		1770	3478		1770	3362	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	467	130	109	696	413	207	609	65	337	587	109
RTOR Reduction (vph)	0	0	96	0	106	0	0	8	0	0	0	63
Lane Group Flow (vph)	163	467	34	109	1003	0	207	666	0	337	587	46
Confl. Peds. (#/hr)	114		3	3		114	67		3	3		67
Confl. Bikes (#/hr)			2			13			17			17
Parking (#/hr)											0	
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases			4									2
Actuated Green, G (s)	11.6	26.4	26.4	11.6	26.4		17.5	26.5		17.5	26.5	26.5
Effective Green, g (s)	11.6	26.4	26.4	11.6	26.4		17.5	26.5		17.5	26.5	26.5
Actuated g/C Ratio	0.12	0.26	0.26	0.12	0.26		0.18	0.26		0.18	0.26	0.26
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	205	934	411	205	1189		310	922		310	891	378
v/s Ratio Prot	c0.09	0.13		0.06	c0.22		0.12	c0.19		c0.19	0.17	
v/s Ratio Perm			0.02									0.03
v/c Ratio	0.80	0.50	0.08	0.53	0.84		0.67	0.72		1.09	0.66	0.12
Uniform Delay, d1	43.0	31.2	27.7	41.6	34.8		38.5	33.4		41.2	32.7	27.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.7	0.2	0.0	1.3	5.4		4.2	4.9		76.4	3.8	0.7
Delay (s)	60.8	31.4	27.7	43.0	40.2		42.7	38.3		117.6	36.5	28.6
Level of Service	E	C	C	D	D		D	D		F	D	C
Approach Delay (s)		37.0			40.5			39.3			62.1	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	45.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	60	50	50	130	190	10	1180	90	120	1160	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98			1.00	0.96	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	1705			1832	1516	1770	5019		1770	5075	
Flt Permitted	0.51	1.00			0.87	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	943	1705			1616	1516	1770	5019		1770	5075	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	62	52	52	135	198	10	1229	94	125	1208	10
RTOR Reduction (vph)	0	43	0	0	0	164	0	7	0	0	1	0
Lane Group Flow (vph)	42	71	0	0	187	34	10	1316	0	125	1217	0
Confl. Peds. (#/hr)	27		16	16		27	37		16	16		37
Confl. Bikes (#/hr)			11			8			8			5
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	13.7	13.7			13.7	13.7	1.2	40.4		12.4	51.6	
Effective Green, g (s)	13.7	13.7			13.7	13.7	1.2	40.4		12.4	51.6	
Actuated g/C Ratio	0.17	0.17			0.17	0.17	0.01	0.50		0.16	0.65	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	161	292			277	260	27	2535		274	3273	
v/s Ratio Prot		0.04					0.01	c0.26		c0.07	0.24	
v/s Ratio Perm	0.04				c0.12	0.02						
v/c Ratio	0.26	0.24			0.68	0.13	0.37	0.52		0.46	0.37	
Uniform Delay, d1	28.8	28.7			31.1	28.1	39.0	13.3		30.7	6.6	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			5.0	0.1	3.1	0.8		0.4	0.3	
Delay (s)	29.1	28.8			36.1	28.2	42.1	14.0		31.2	7.0	
Level of Service	C	C			D	C	D	B		C	A	
Approach Delay (s)		28.9			32.0			14.3			9.2	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	760	210	40	910	170	210	170	80	120	170	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.95		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4876		1763	4902		1768	1743		1740	1627	
Flt Permitted	0.95	1.00		0.28	1.00		0.17	1.00		0.60	1.00	
Satd. Flow (perm)	1770	4876		515	4902		310	1743		1101	1627	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	306	776	214	41	929	173	214	173	82	122	173	286
RTOR Reduction (vph)	0	59	0	0	28	0	0	16	0	0	59	0
Lane Group Flow (vph)	306	931	0	41	1074	0	214	239	0	122	400	0
Confl. Peds. (#/hr)	32		8	8		32	27		22	22		27
Confl. Bikes (#/hr)			13			6			29			17
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	21.3	55.9		30.6	30.6		35.1	35.1		20.0	20.0	
Effective Green, g (s)	21.3	55.9		30.6	30.6		35.1	35.1		20.0	20.0	
Actuated g/C Ratio	0.21	0.56		0.31	0.31		0.35	0.35		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	377	2726		158	1500		271	612		220	325	
v/s Ratio Prot	c0.17	0.19			c0.22		c0.09	0.14			c0.25	
v/s Ratio Perm				0.08			0.19			0.11		
v/c Ratio	0.81	0.34		0.26	0.72		0.79	0.39		0.55	1.23	
Uniform Delay, d1	37.4	12.0		26.2	30.8		26.2	24.4		36.0	40.0	
Progression Factor	1.00	1.00		1.25	1.21		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.5	0.1		0.5	1.0		14.1	1.9		9.7	127.6	
Delay (s)	49.9	12.1		33.2	38.2		40.4	26.3		45.7	167.6	
Level of Service	D	B		C	D		D	C		D	F	
Approach Delay (s)		21.0			38.0			32.7			142.0	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	48.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	40	20	40	60	70	40	920	50	80	1040	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			0.99			0.99	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.98			0.94			0.99			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1752			1720			3466			3487	
Flt Permitted		0.61			0.89			0.86			0.77	
Satd. Flow (perm)		1097			1549			2972			2705	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	43	22	43	65	76	43	1000	54	87	1130	22
RTOR Reduction (vph)	0	7	0	0	36	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	148	0	0	1095	0	0	1239	0
Confl. Peds. (#/hr)	27		32	32					67	67		116
Confl. Bikes (#/hr)			3			3			59			41
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		11.9			11.9			59.1			59.1	
Effective Green, g (s)		11.9			11.9			59.1			59.1	
Actuated g/C Ratio		0.15			0.15			0.74			0.74	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		163			230			2196			1998	
v/s Ratio Prot												
v/s Ratio Perm		c0.11			0.10			0.37			c0.46	
v/c Ratio		0.76			0.64			6.00dl			0.62	
Uniform Delay, d1		32.7			32.1			4.3			5.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		16.1			4.6			0.8			1.5	
Delay (s)		48.8			36.6			5.1			6.5	
Level of Service		D			D			A			A	
Approach Delay (s)		48.8			36.6			5.1			6.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	122.3%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	280	110
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	304	120
RTOR Reduction (vph)	9	0
Lane Group Flow (vph)	415	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		20
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	59.1	
Effective Green, g (s)	59.1	
Actuated g/C Ratio	0.74	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1190	
v/s Ratio Prot	0.26	
v/s Ratio Perm		
v/c Ratio	0.35	
Uniform Delay, d1	3.7	
Progression Factor	1.00	
Incremental Delay, d2	0.8	
Delay (s)	4.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	10	100	210	60	170	10	900	170	90	680	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.94			0.94		1.00	0.85	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.90		1.00	0.90			0.94		1.00	0.96	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1657		1681	1481			3112		1770	2877	
Flt Permitted		0.99		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (perm)		1657		1681	1481			2946		1770	2877	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.25	0.95	0.95	0.95
Adj. Flow (vph)	21	11	105	221	63	179	11	947	680	95	716	284
RTOR Reduction (vph)	0	98	0	0	82	0	0	102	0	0	35	0
Lane Group Flow (vph)	0	39	0	199	182	0	0	1536	0	95	965	0
Confl. Peds. (#/hr)	51					51	202		38	38		202
Confl. Bikes (#/hr)						10			37			32
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		6.7		16.4	16.4			50.4		8.5	63.4	
Effective Green, g (s)		6.7		16.4	16.4			50.4		8.5	63.4	
Actuated g/C Ratio		0.07		0.16	0.16			0.50		0.08	0.63	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		111		276	243			1485		150	1824	
v/s Ratio Prot		c0.02		0.12	c0.12					0.05	c0.34	
v/s Ratio Perm								c0.52				
v/c Ratio		0.35		0.72	0.75			1.03		0.63	0.53	
Uniform Delay, d1		44.6		39.6	39.8			24.8		44.2	10.1	
Progression Factor		1.00		1.00	1.00			0.65		1.00	1.00	
Incremental Delay, d2		0.7		7.6	10.5			31.4		6.3	1.1	
Delay (s)		45.3		47.3	50.4			47.6		50.5	11.2	
Level of Service		D		D	D			D		D	B	
Approach Delay (s)		45.3			49.0			47.6			14.6	
Approach LOS		D			D			D			B	

Intersection Summary			
HCM Average Control Delay	36.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	500	200	180	640	200	150	620	160	200	750	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.91		1.00	0.98		1.00	0.93		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3079		1770	3354		1770	3206		1770	3459	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3079		1770	3354		1770	3206		1770	3459	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	265	510	204	184	653	204	153	633	163	204	765	41
RTOR Reduction (vph)	0	44	0	0	30	0	0	22	0	0	3	0
Lane Group Flow (vph)	265	670	0	184	827	0	153	774	0	204	803	0
Confl. Peds. (#/hr)	40		258	258		40	207		221	221		207
Confl. Bikes (#/hr)			5			8			43			40
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	25.2		11.0	25.2		5.0	34.8		12.0	41.8	
Effective Green, g (s)	11.0	25.2		11.0	25.2		5.0	34.8		12.0	41.8	
Actuated g/C Ratio	0.11	0.25		0.11	0.25		0.05	0.35		0.12	0.42	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	378	776		195	845		89	1116		212	1446	
v/s Ratio Prot	0.08	0.22		c0.10	c0.25		c0.09	c0.24		c0.12	0.23	
v/s Ratio Perm												
v/c Ratio	0.70	0.86		0.94	0.98		1.72	0.69		0.96	0.55	
Uniform Delay, d1	42.9	35.8		44.2	37.1		47.5	28.0		43.8	22.1	
Progression Factor	0.93	1.23		1.00	1.00		1.00	1.00		1.14	0.74	
Incremental Delay, d2	4.5	9.1		47.8	25.4		366.3	3.6		46.0	1.3	
Delay (s)	44.5	53.1		92.0	62.5		413.8	31.6		95.9	17.5	
Level of Service	D	D		F	E		F	C		F	B	
Approach Delay (s)		50.7			67.7			93.2			33.4	
Approach LOS		D			E			F			C	

Intersection Summary			
HCM Average Control Delay	60.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	730	30	20	920	50	30	50	20	40	40	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1766	3512		1758	3505			1761			1746	
Flt Permitted	0.22	1.00		0.31	1.00			0.90			0.87	
Satd. Flow (perm)	415	3512		573	3505			1617			1546	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	768	32	21	968	53	32	53	21	42	42	21
RTOR Reduction (vph)	0	3	0	0	5	0	0	11	0	0	11	0
Lane Group Flow (vph)	53	797	0	21	1016	0	0	95	0	0	94	0
Confl. Peds. (#/hr)	11		25	25		11	16		16	16		16
Confl. Bikes (#/hr)			5			10			35			48
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	236	1994		325	1990			499			477	
v/s Ratio Prot		0.23			c0.29							
v/s Ratio Perm	0.13			0.04				0.06			c0.06	
v/c Ratio	0.22	0.40		0.06	0.51			0.19			0.20	
Uniform Delay, d1	8.7	9.8		7.8	10.7			20.6			20.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.2	0.6		0.4	0.9			0.8			0.9	
Delay (s)	10.9	10.4		8.2	11.6			21.4			21.5	
Level of Service	B	B		A	B			C			C	
Approach Delay (s)		10.4			11.5			21.4			21.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	238	810	60	60	1140	102	80	35	40	125	66	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			0.95	
Frpb, ped/bikes	1.00	0.99			1.00	0.91		0.99			0.96	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.99			1.00	0.85		0.97			0.91	
Flt Protected	0.95	1.00			1.00	1.00		0.97			0.99	
Satd. Flow (prot)	1770	3484			3527	1449		1717			3057	
Flt Permitted	0.95	1.00			0.86	1.00		0.49			0.80	
Satd. Flow (perm)	1770	3484			3040	1449		872			2470	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	251	853	63	63	1200	107	84	37	42	132	69	288
RTOR Reduction (vph)	0	5	0	0	0	29	0	16	0	0	222	0
Lane Group Flow (vph)	251	911	0	0	1263	78	0	147	0	0	267	0
Confl. Peds. (#/hr)	54		49	49		54	65		29	29		65
Confl. Bikes (#/hr)			6			3			8			6
Turn Type	Prot			Perm		Perm	Perm			Perm		
Protected Phases	1	6			2			4			4	
Permitted Phases				2		2	4			4		
Actuated Green, G (s)	14.9	48.7			30.8	30.8		16.4			16.4	
Effective Green, g (s)	14.9	48.7			30.8	30.8		16.4			16.4	
Actuated g/C Ratio	0.21	0.68			0.43	0.43		0.23			0.23	
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	371	2386			1317	628		201			570	
v/s Ratio Prot	c0.14	0.26										
v/s Ratio Perm					c0.42	0.05		c0.17			0.11	
v/c Ratio	0.68	0.38			0.96	0.12		0.73			0.47	
Uniform Delay, d1	25.9	4.8			19.5	12.1		25.3			23.6	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	4.8	0.1			15.8	0.1		12.8			0.6	
Delay (s)	30.7	4.9			35.4	12.2		38.1			24.2	
Level of Service	C	A			D	B		D			C	
Approach Delay (s)		10.4			33.6			38.1			24.2	
Approach LOS		B			C			D			C	

Intersection Summary			
HCM Average Control Delay	23.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	115.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	910	50	40	1210	10	20	10	40	10	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	958	53	42	1274	11	21	11	42	11	11	11
Pedestrians		16			5			17			11	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked	0.89			0.97			0.90	0.90	0.97	0.90	0.90	0.89
vC, conflicting volume	1295			1028			1859	2486	527	2011	2507	669
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1075			965			1580	2276	449	1748	2299	368
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			94			47	64	92	63	63	98
cM capacity (veh/h)	565			678			40	30	530	29	29	545

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	532	532	679	647	74	32
Volume Left	53	0	42	0	21	11
Volume Right	0	53	0	11	42	11
cSH	565	1700	678	1700	76	42
Volume to Capacity	0.09	0.31	0.06	0.38	0.97	0.76
Queue Length 95th (ft)	8	0	5	0	128	72
Control Delay (s)	2.6	0.0	1.7	0.0	188.5	216.3
Lane LOS	A		A		F	F
Approach Delay (s)	1.3		0.8		188.5	216.3
Approach LOS					F	F

Intersection Summary			
Average Delay	9.3		
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	880	60	50	1110	40	60	10	70	20	20	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.95	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	42	917	62	52	1156	42	62	11	73	21	21	52
Pedestrians		3			3			21			21	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.76						0.76	0.76		0.76	0.76	0.76
vC, conflicting volume	1219			1000			1800	2375	514	1925	2386	623
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			1000			1412	2173	514	1578	2187	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			92			0	64	85	30	27	94
cM capacity (veh/h)	696			676			25	29	496	30	29	803

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	500	521	630	620	146	94
Volume Left	42	0	52	0	62	21
Volume Right	0	62	0	42	73	52
cSH	696	1700	676	1700	48	62
Volume to Capacity	0.06	0.31	0.08	0.36	3.05	1.50
Queue Length 95th (ft)	5	0	6	0	Err	205
Control Delay (s)	1.7	0.0	2.0	0.0	Err	402.2
Lane LOS	A		A		F	F
Approach Delay (s)	0.8		1.0		Err	402.2
Approach LOS					F	F

Intersection Summary			
Average Delay	597.1		
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	500	330	240	880	120	140	180	170	100	70	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.97			0.99			0.98			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.95			0.99			0.95			0.95	
Flt Protected		0.99			0.99			0.99			0.98	
Satd. Flow (prot)		3243			3422			1932			1695	
Flt Permitted		0.61			0.56			0.82			0.67	
Satd. Flow (perm)		1991			1922			1597			1150	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	526	347	253	926	126	147	189	179	105	74	95
RTOR Reduction (vph)	0	119	0	0	15	0	0	35	0	0	35	0
Lane Group Flow (vph)	0	901	0	0	1290	0	0	480	0	0	239	0
Confl. Peds. (#/hr)	37		29	29		37	59		45	45		59
Confl. Bikes (#/hr)			5			8			2			2
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		561			1144			552			397	
v/s Ratio Prot					c0.16							
v/s Ratio Perm		c0.45			0.38			c0.30			0.21	
v/c Ratio		1.61			1.13			0.87			0.60	
Uniform Delay, d1		19.8			14.2			16.8			14.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		280.8			69.2			16.9			6.6	
Delay (s)		300.6			83.4			33.8			21.5	
Level of Service		F			F			C			C	
Approach Delay (s)		300.6			83.4			33.8			21.5	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM Average Control Delay	140.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	111.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	170	110	80	410	310	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.86		1.00	1.00	1.00	0.49
Flpb, ped/bikes	1.00		0.74	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1476		1302	1863	1863	778
Flt Permitted	0.97		0.45	1.00	1.00	1.00
Satd. Flow (perm)	1476		614	1863	1863	778
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	212	138	100	512	388	138
RTOR Reduction (vph)	17	0	0	0	0	68
Lane Group Flow (vph)	333	0	100	512	388	70
Confl. Peds. (#/hr)	146	248	501			501
Confl. Bikes (#/hr)		16				17
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	564		313	948	948	396
v/s Ratio Prot	c0.23			c0.27	0.21	
v/s Ratio Perm			0.16			0.09
v/c Ratio	0.59		0.32	0.54	0.41	0.18
Uniform Delay, d1	13.6		7.9	9.1	8.4	7.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5		2.7	2.2	1.3	1.0
Delay (s)	18.1		10.6	11.3	9.7	8.3
Level of Service	B		B	B	A	A
Approach Delay (s)	18.1			11.2	9.3	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	270	560	810	80	60	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.89	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	3539	3456		1618	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	3539	3456		1618	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	589	853	84	63	305
RTOR Reduction (vph)	0	0	11	0	212	0
Lane Group Flow (vph)	284	589	926	0	156	0
Confl. Peds. (#/hr)	35			35		3
Confl. Bikes (#/hr)				14		2
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	810		493	
v/s Ratio Prot	c0.16	0.17	c0.27		c0.10	
v/s Ratio Perm						
v/c Ratio	0.51	0.28	1.14		0.32	
Uniform Delay, d1	18.0	6.3	24.5		17.1	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.4	0.3	78.7		1.7	
Delay (s)	21.4	6.7	103.2		18.8	
Level of Service	C	A	F		B	
Approach Delay (s)		11.5	103.2		18.8	
Approach LOS		B	F		B	

Intersection Summary			
HCM Average Control Delay	52.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	60	70	850	30	60	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1673		1852		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1673		1852		1770	1863
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	67	79	955	34	67	629
RTOR Reduction (vph)	69	0	2	0	0	0
Lane Group Flow (vph)	77	0	987	0	67	629
Confl. Peds. (#/hr)		2				
Confl. Bikes (#/hr)				16		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	6.2		26.4		3.1	33.5
Effective Green, g (s)	6.2		26.4		3.1	33.5
Actuated g/C Ratio	0.13		0.54		0.06	0.69
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	213		1004		113	1282
v/s Ratio Prot	c0.05		c0.53		0.04	c0.34
v/s Ratio Perm						
v/c Ratio	0.36		0.98		0.59	0.49
Uniform Delay, d1	19.4		10.9		22.2	3.6
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.1		24.2		8.1	0.3
Delay (s)	20.5		35.1		30.3	3.9
Level of Service	C		D		C	A
Approach Delay (s)	20.5		35.1			6.4
Approach LOS	C		D			A

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	48.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	20	20	10	30	10	30	50	10	40	520	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.95			0.61					0.99	
Flpb, ped/bikes			0.78			0.94					0.98	
Frt			0.98			0.91					1.00	
Flt Protected			0.98			0.99					1.00	
Satd. Flow (prot)			1176			857					1580	
Flt Permitted			0.84			0.92					0.94	
Satd. Flow (perm)			1016			802					1497	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	20	20	10	31	10	31	51	10	41	531	20
RTOR Reduction (vph)	0	0	8	0	0	15	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	52	0	0	108	0	0	0	0	600	0
Confl. Peds. (#/hr)	218	161		119	119		218	161	194	218		339
Confl. Bikes (#/hr)				2			5	5				33
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			237			187					624	
v/s Ratio Prot												
v/s Ratio Perm			0.05			c0.13					c0.40	
v/c Ratio			0.22			0.58					0.96	
Uniform Delay, d1			18.6			20.4					17.0	
Progression Factor			1.00			0.95					1.00	
Incremental Delay, d2			2.1			9.9					27.6	
Delay (s)			20.7			29.3					44.6	
Level of Service			C			C					D	
Approach Delay (s)			20.7			29.3					44.6	
Approach LOS			C			C					D	

Intersection Summary			
HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	40	330	30	30	30	20	30	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.93				0.76		
Flpb, ped/bikes		0.99				0.66		
Frt		0.98				0.94		
Flt Protected		1.00				0.97		
Satd. Flow (prot)		1640				758		
Flt Permitted		0.93				0.97		
Satd. Flow (perm)		1528				758		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	337	31	31	31	20	31	10
RTOR Reduction (vph)	0	5	0	0	0	8	0	0
Lane Group Flow (vph)	0	435	0	0	0	84	0	0
Confl. Peds. (#/hr)	339		194	218	101	213	75	122
Confl. Bikes (#/hr)			16	27				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		637				114		
v/s Ratio Prot								
v/s Ratio Perm		0.28				0.11		
v/c Ratio		0.68				0.74		
Uniform Delay, d1		14.3				24.4		
Progression Factor		1.00				1.00		
Incremental Delay, d2		5.9				34.7		
Delay (s)		20.1				59.0		
Level of Service		C				E		
Approach Delay (s)		20.1				59.0		
Approach LOS		C				E		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	10	0	0	0	0	0	10	20	30	10	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	27	13	0	0	0	0	0	13	27	40	13	0
Pedestrians		2			10			2			10	
Lane Width (ft)		12.0			0.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	10			15			77	79	25	120	79	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	10			15			77	79	25	120	79	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	98	97	95	98	100
cM capacity (veh/h)	1596			1600			879	790	1049	800	790	1058

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	40	40	53
Volume Left	27	0	40
Volume Right	0	27	0
cSH	1596	946	797
Volume to Capacity	0.02	0.04	0.07
Queue Length 95th (ft)	1	3	5
Control Delay (s)	4.9	9.0	9.8
Lane LOS	A	A	A
Approach Delay (s)	4.9	9.0	9.8
Approach LOS		A	A

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	810	0	0	1010	10	0	0	20	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	890	0	0	1110	11	0	0	22	0	0	0
Pedestrians					6			13			21	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					1			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1268			632							
pX, platoon unblocked	0.79			0.97			0.80	0.80	0.97	0.80	0.80	0.79
vC, conflicting volume	1142			903			1458	2045	464	1609	2039	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	634			837			902	1635	384	1091	1628	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	96	100	100	100
cM capacity (veh/h)	742			760			183	79	586	129	80	851

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	593	297	740	381	22
Volume Left	0	0	0	0	0
Volume Right	0	0	0	11	22
cSH	1700	1700	1700	1700	586
Volume to Capacity	0.35	0.17	0.44	0.22	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	11.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.4
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	990	1220	100	0	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	1031	1271	104	0	34
Pedestrians					67	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					6	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		217	1314			
pX, platoon unblocked					0.90	
vC, conflicting volume	1442				1906	754
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1442				1777	754
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	90
cM capacity (veh/h)	440				62	332

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	516	516	847	528	34
Volume Left	0	0	0	0	0
Volume Right	0	0	0	104	34
cSH	1700	1700	1700	1700	332
Volume to Capacity	0.30	0.30	0.50	0.31	0.10
Queue Length 95th (ft)	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	17.1
Lane LOS					C
Approach Delay (s)	0.0		0.0		17.1
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	20	10	30	20	10	10	10	10	610	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0			4.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.97				0.99			1.00			
Flpb, ped/bikes		1.00				1.00			1.00			
Frt		0.92				0.95			1.00			
Flt Protected		0.99				0.98			1.00			
Satd. Flow (prot)		1629				1724			3514			
Flt Permitted		0.94				0.93			0.94			
Satd. Flow (perm)		1552				1624			3317			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	11	33	22	11	11	11	11	678	11	11	11
RTOR Reduction (vph)	0	16	0	0	0	8	0	0	1	0	0	0
Lane Group Flow (vph)	0	72	0	0	0	25	0	0	710	0	0	0
Confl. Peds. (#/hr)	17		14		14		17	14		3		
Confl. Bikes (#/hr)										8	8	
Turn Type	Perm				Perm			Perm				
Protected Phases		4				4			2			
Permitted Phases	4				4			2				
Actuated Green, G (s)		16.0				16.0			16.0			
Effective Green, g (s)		16.0				16.0			16.0			
Actuated g/C Ratio		0.27				0.27			0.27			
Clearance Time (s)		4.0				4.0			4.0			
Lane Grp Cap (vph)		414				433			885			
v/s Ratio Prot												
v/s Ratio Perm		c0.05				0.02			0.21			
v/c Ratio		0.17				0.06			0.80			
Uniform Delay, d1		16.9				16.4			20.5			
Progression Factor		0.91				1.00			1.00			
Incremental Delay, d2		0.7				0.3			7.6			
Delay (s)		16.0				16.6			28.1			
Level of Service		B				B			C			
Approach Delay (s)		16.0				16.6			28.1			
Approach LOS		B				B			C			

Intersection Summary			
HCM Average Control Delay	28.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	30	490	20	10	20	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	
Lane Util. Factor		0.95			1.00	
Frpb, ped/bikes		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	
Frt		0.99			0.95	
Flt Protected		1.00			0.97	
Satd. Flow (prot)		3501			1711	
Flt Permitted		0.77			0.97	
Satd. Flow (perm)		2718			1711	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	544	22	11	22	22
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	0	606	0	0	55	0
Confl. Peds. (#/hr)	3		14			
Confl. Bikes (#/hr)			2			
Turn Type	Perm			Perm		
Protected Phases		6			8	
Permitted Phases	6			8		
Actuated Green, G (s)		16.0			16.0	
Effective Green, g (s)		16.0			16.0	
Actuated g/C Ratio		0.27			0.27	
Clearance Time (s)		4.0			4.0	
Lane Grp Cap (vph)		725			456	
v/s Ratio Prot						
v/s Ratio Perm		c0.22			0.03	
v/c Ratio		0.84			0.12	
Uniform Delay, d1		20.8			16.7	
Progression Factor		1.00			1.00	
Incremental Delay, d2		11.0			0.5	
Delay (s)		31.7			17.2	
Level of Service		C			B	
Approach Delay (s)		31.7			17.2	
Approach LOS		C			B	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	200	30	650	200	30	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		0.99		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.96		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1749		3366		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1749		3366		1711	3421
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	215	32	699	215	32	538
RTOR Reduction (vph)	11	0	46	0	0	0
Lane Group Flow (vph)	236	0	868	0	32	538
Confl. Peds. (#/hr)		8		19		
Confl. Bikes (#/hr)		3		11		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	10.4		19.3		1.8	25.1
Effective Green, g (s)	10.4		19.3		1.8	25.1
Actuated g/C Ratio	0.24		0.44		0.04	0.58
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Lane Grp Cap (vph)	418		1493		71	1974
v/s Ratio Prot	c0.14		c0.26		0.02	c0.16
v/s Ratio Perm						
v/c Ratio	0.57		0.58		0.45	0.27
Uniform Delay, d1	14.6		9.1		20.4	4.6
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0		0.4		1.7	0.0
Delay (s)	15.6		9.4		22.0	4.6
Level of Service	B		A		C	A
Approach Delay (s)	15.6		9.4			5.6
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	43.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	380	400	850	630	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1652	3303	3344	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1652	3303	3344	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	413	435	924	685	76
RTOR Reduction (vph)	0	0	0	0	15	0
Lane Group Flow (vph)	0	413	435	924	746	0
Confl. Peds. (#/hr)						32
Confl. Bikes (#/hr)		5				6
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		21.0	21.0	33.0	26.0	
Effective Green, g (s)		21.0	21.0	33.0	26.0	
Actuated g/C Ratio		0.37	0.37	0.58	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		594	609	1912	1525	
v/s Ratio Prot		0.26	c0.26	c0.28	0.22	
v/s Ratio Perm						
v/c Ratio		0.70	0.71	0.48	0.49	
Uniform Delay, d1		15.3	15.4	7.0	10.9	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		6.6	7.0	0.2	1.1	
Delay (s)		21.9	22.4	7.2	12.0	
Level of Service		C	C	A	B	
Approach Delay (s)	21.9			12.1	12.0	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	0	30	0	0	17	18	1210	0	20	990	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	0	32	0	0	18	19	1287	0	21	1053	0
Pedestrians		17			92						16	
Lane Width (ft)		12.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		1			8						1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								483			264	
pX, platoon unblocked												
vC, conflicting volume	1614	2530	368	1843	2530	537	1070			1379		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1614	2530	368	1843	2530	537	1070			1379		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	63	100	95	100	100	96	97			95		
cM capacity (veh/h)	57	23	620	36	23	446	638			455		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	53	18	341	644	322	232	421	421
Volume Left	21	0	19	0	0	21	0	0
Volume Right	32	18	0	0	0	0	0	0
cSH	125	446	638	1700	1700	455	1700	1700
Volume to Capacity	0.43	0.04	0.03	0.38	0.19	0.05	0.25	0.25
Queue Length 95th (ft)	46	3	2	0	0	4	0	0
Control Delay (s)	53.7	13.4	1.0	0.0	0.0	1.9	0.0	0.0
Lane LOS	F	B	A			A		
Approach Delay (s)	53.7	13.4	0.3			0.4		
Approach LOS	F	B						

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	141	0	1090	31	0	1020	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	0	0	0	0	144	0	1112	32	0	1041	0
Pedestrians					30							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					3							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								295			452	
pX, platoon unblocked												
vC, conflicting volume	1555	2215	260	1402	2183	401	1041			1174		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1555	2215	260	1402	2183	401	1041			1174		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	75	100			100		
cM capacity (veh/h)	57	42	739	95	44	584	664			576		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	144	371	371	371	32	297	297	297	149
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	144	0	0	0	32	0	0	0	0
cSH	584	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.25	0.22	0.22	0.22	0.02	0.17	0.17	0.17	0.09
Queue Length 95th (ft)	24	0	0	0	0	0	0	0	0
Control Delay (s)	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	13.2	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	40	1080	164	0	1020
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	43	1161	176	0	1097
Pedestrians	27					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	2					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			174			573
pX, platoon unblocked						
vC, conflicting volume	1551	405			1365	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1551	405			1365	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	93			100	
cM capacity (veh/h)	102	581			488	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	43	332	332	332	342	274	274	274	274
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	43	0	0	0	176	0	0	0	0
cSH	581	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.20	0.20	0.20	0.20	0.16	0.16	0.16	0.16
Queue Length 95th (ft)	6	0	0	0	0	0	0	0	0
Control Delay (s)	11.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	11.7	0.0				0.0			
Approach LOS	B								

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	170	520	60	190	520	470	90	550	170	60	470	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.86	0.86
Frpb, ped/bikes	1.00	1.00		1.00	0.98			0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.93			0.97			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (prot)	1770	3485		1770	3205			4815			1420	4399
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.95	0.98
Satd. Flow (perm)	1770	3485		1770	3205			4815			1420	4399
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	173	531	61	194	531	480	92	561	173	61	480	418
RTOR Reduction (vph)	0	8	0	0	146	0	0	44	0	0	0	0
Lane Group Flow (vph)	173	584	0	194	865	0	0	783	0	0	272	687
Confl. Peds. (#/hr)						35			49			
Confl. Bikes (#/hr)												
Turn Type	Prot			Prot			Split			Split	Split	
Protected Phases	1	6		5	2		8	8		4	4	4
Permitted Phases												
Actuated Green, G (s)	13.9	36.0		12.0	34.1			27.5			18.5	18.5
Effective Green, g (s)	13.9	36.0		12.0	34.1			27.5			18.5	18.5
Actuated g/C Ratio	0.13	0.33		0.11	0.31			0.25			0.17	0.17
Clearance Time (s)	3.0	4.5		3.0	4.5			4.0			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	224	1141		193	994			1204			239	740
v/s Ratio Prot	0.10	0.17		c0.11	c0.27			c0.16			c0.19	0.16
v/s Ratio Perm												
v/c Ratio	0.77	0.51		1.01	0.87			0.65			1.14	1.02dl
Uniform Delay, d1	46.5	29.9		49.0	35.9			36.9			45.8	45.1
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	15.2	1.6		66.1	10.3			2.7			100.5	19.6
Delay (s)	61.7	31.5		115.1	46.2			39.7			146.3	64.7
Level of Service	E	C		F	D			D			F	E
Approach Delay (s)		38.4			57.3			39.7				84.2
Approach LOS		D			E			D				F

Intersection Summary			
HCM Average Control Delay	57.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	80
Ideal Flow (vphpl)	1900
Lane Width	10
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.96
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1415
Flt Permitted	1.00
Satd. Flow (perm)	1415
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	82
RTOR Reduction (vph)	24
Lane Group Flow (vph)	58
Confl. Peds. (#/hr)	8
Confl. Bikes (#/hr)	13
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	18.5
Effective Green, g (s)	18.5
Actuated g/C Ratio	0.17
Clearance Time (s)	4.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	238
v/s Ratio Prot	
v/s Ratio Perm	0.04
v/c Ratio	0.24
Uniform Delay, d1	39.7
Progression Factor	1.00
Incremental Delay, d2	2.4
Delay (s)	42.1
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	10	40	30	20	50	60	710	10	40	590	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.92			0.93			1.00			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1672			1690			5050			5036	
Flt Permitted		0.93			0.92			0.85			0.86	
Satd. Flow (perm)		1570			1577			4288			4352	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	21	10	42	31	21	52	62	740	10	42	615	21
RTOR Reduction (vph)	0	31	0	0	38	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	42	0	0	66	0	0	810	0	0	674	0
Confl. Peds. (#/hr)	11		9	9		11	14		25	25		14
Confl. Bikes (#/hr)			2			3			6			6
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		21.0			21.0			53.0			53.0	
Effective Green, g (s)		21.0			21.0			53.0			53.0	
Actuated g/C Ratio		0.26			0.26			0.66			0.66	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		412			414			2841			2883	
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.04			c0.19			0.15	
v/c Ratio		0.10			0.16			0.29			0.23	
Uniform Delay, d1		22.4			22.7			5.6			5.4	
Progression Factor		1.00			1.00			1.35			1.00	
Incremental Delay, d2		0.5			0.8			0.2			0.2	
Delay (s)		22.9			23.5			7.8			5.6	
Level of Service		C			C			A			A	
Approach Delay (s)		22.9			23.5			7.8			5.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	210	170	30	110	50	90	530	30	50	480	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.98			0.99		1.00	1.00			0.98	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.93			0.96		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1748	3249			3339		1762	3498			4799	
Flt Permitted	0.62	1.00			0.87		0.28	1.00			0.85	
Satd. Flow (perm)	1142	3249			2922		513	3498			4098	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	264	231	187	33	121	55	99	582	33	55	527	176
RTOR Reduction (vph)	0	106	0	0	0	0	0	5	0	0	68	0
Lane Group Flow (vph)	264	312	0	0	209	0	99	610	0	0	690	0
Confl. Peds. (#/hr)	24		22	22		24	71		66	66		71
Confl. Bikes (#/hr)			17			9			27			14
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	492	1401			1260		311	1640			1537	
v/s Ratio Prot		0.10					0.02	c0.17				
v/s Ratio Perm	c0.23				0.07		0.13				c0.17	
v/c Ratio	0.54	0.22			0.17		0.32	0.37			0.45	
Uniform Delay, d1	16.8	14.3			13.9		12.3	13.7			18.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.85	
Incremental Delay, d2	4.2	0.4			0.3		2.7	0.6			0.9	
Delay (s)	21.0	14.7			14.2		15.0	14.3			35.8	
Level of Service	C	B			B		B	B			D	
Approach Delay (s)		17.1			14.2			14.4			35.8	
Approach LOS		B			B			B			D	

Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	33
RTOR Reduction (vph)	21
Lane Group Flow (vph)	12
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.02
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	15.8
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	470	110	70	540	160	110	390	80	240	340	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.97	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4917		1770	4771		1770	3539	1538	1770	3362	1458
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4917		1770	4771		1770	3539	1538	1770	3362	1458
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	90	528	124	79	607	180	124	438	90	270	382	101
RTOR Reduction (vph)	0	37	0	0	51	0	0	0	66	0	0	74
Lane Group Flow (vph)	90	615	0	79	736	0	124	438	24	270	382	27
Confl. Peds. (#/hr)			5			79			8			54
Confl. Bikes (#/hr)			8			19			9			8
Parking (#/hr)											0	
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	9.2	29.4		9.2	29.4		16.9	26.5	26.5	16.9	26.5	26.5
Effective Green, g (s)	9.2	29.4		9.2	29.4		16.9	26.5	26.5	16.9	26.5	26.5
Actuated g/C Ratio	0.09	0.29		0.09	0.29		0.17	0.26	0.26	0.17	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	163	1446		163	1403		299	938	408	299	891	386
v/s Ratio Prot	c0.05	0.13		0.04	c0.15		0.07	c0.12		c0.15	0.11	
v/s Ratio Perm									0.02			0.02
v/c Ratio	0.55	0.43		0.48	0.52		0.41	0.47	0.06	0.90	0.43	0.07
Uniform Delay, d1	43.4	28.5		43.1	29.5		37.1	30.8	27.4	40.7	30.5	27.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.1		0.8	0.2		0.3	1.7	0.3	28.0	1.5	0.3
Delay (s)	45.7	28.6		44.0	29.6		37.5	32.5	27.7	68.7	32.0	27.9
Level of Service	D	C		D	C		D	C	C	E	C	C
Approach Delay (s)		30.6			30.9			32.8			44.6	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	80	60	80	100	150	150	1270	70	150	1440	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			0.99	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1761	1707			1811	1533	1770	5035		1770	5077	
Flt Permitted	0.52	1.00			0.74	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	965	1707			1370	1533	1770	5035		1770	5077	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	53	85	64	85	106	160	160	1351	74	160	1532	11
RTOR Reduction (vph)	0	45	0	0	0	130	0	5	0	0	0	0
Lane Group Flow (vph)	53	104	0	0	191	30	160	1420	0	160	1543	0
Confl. Peds. (#/hr)	9		22	22		9			25			19
Confl. Bikes (#/hr)			16			11			3			9
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	14.9	14.9			14.9	14.9	8.0	39.1		12.5	43.6	
Effective Green, g (s)	14.9	14.9			14.9	14.9	8.0	39.1		12.5	43.6	
Actuated g/C Ratio	0.19	0.19			0.19	0.19	0.10	0.49		0.16	0.55	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	180	318			255	286	177	2461		277	2767	
v/s Ratio Prot		0.06					c0.09	c0.28		0.09	c0.30	
v/s Ratio Perm	0.05				c0.14	0.02						
v/c Ratio	0.29	0.33			0.75	0.10	0.90	0.58		0.58	0.56	
Uniform Delay, d1	28.0	28.2			30.8	27.0	35.6	14.6		31.3	11.9	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			10.1	0.1	40.5	1.0		1.8	0.8	
Delay (s)	28.4	28.4			40.8	27.1	76.1	15.6		33.1	12.7	
Level of Service	C	C			D	C	E	B		C	B	
Approach Delay (s)		28.4			34.6			21.7			14.6	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	720	190	40	680	200	180	190	40	140	210	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4881		1759	4854		1769	1796		1732	1623	
Flt Permitted	0.95	1.00		0.29	1.00		0.16	1.00		0.61	1.00	
Satd. Flow (perm)	1770	4881		536	4854		298	1796		1111	1623	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	302	750	198	42	708	208	188	198	42	146	219	396
RTOR Reduction (vph)	0	61	0	0	59	0	0	7	0	0	64	0
Lane Group Flow (vph)	302	887	0	42	857	0	188	233	0	146	551	0
Confl. Peds. (#/hr)			13	13		14	21		28	28		21
Confl. Bikes (#/hr)			3			6			28			21
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	21.2	52.0		26.8	26.8		39.0	39.0		21.0	21.0	
Effective Green, g (s)	21.2	52.0		26.8	26.8		39.0	39.0		21.0	21.0	
Actuated g/C Ratio	0.21	0.52		0.27	0.27		0.39	0.39		0.21	0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	375	2538		144	1301		322	700		233	341	
v/s Ratio Prot	c0.17	0.18			c0.18		c0.08	0.13			c0.34	
v/s Ratio Perm				0.08			0.15			0.13		
v/c Ratio	0.81	0.35		0.29	0.66		0.58	0.33		0.63	1.62	
Uniform Delay, d1	37.4	14.1		29.1	32.5		23.3	21.4		35.9	39.5	
Progression Factor	1.00	1.00		1.13	1.10		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.9	0.1		1.0	1.1		2.7	1.3		12.1	290.4	
Delay (s)	49.3	14.2		33.9	37.0		26.0	22.7		48.0	329.9	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		22.7			36.9			24.1			275.8	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	83.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	30	30	40	30	40	30	780	30	40	850	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			0.99			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.96			0.95			0.99			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1721			1718			3485			3465	
Flt Permitted		0.78			0.82			0.90			0.88	
Satd. Flow (perm)		1366			1442			3129			3060	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	53	32	32	43	32	43	32	830	32	43	904	32
RTOR Reduction (vph)	0	15	0	0	38	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	102	0	0	80	0	0	893	0	0	979	0
Confl. Peds. (#/hr)	27		32	32					66	66		115
Confl. Bikes (#/hr)			6			2			55			62
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		10.0			10.0			61.0			61.0	
Effective Green, g (s)		10.0			10.0			61.0			61.0	
Actuated g/C Ratio		0.12			0.12			0.76			0.76	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		171			180			2386			2333	
v/s Ratio Prot												
v/s Ratio Perm		c0.07			0.06			0.29			c0.32	
v/c Ratio		0.60			0.45			5.33dl			0.42	
Uniform Delay, d1		33.1			32.4			3.2			3.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.7			0.6			0.5			0.6	
Delay (s)		36.8			33.1			3.6			3.9	
Level of Service		D			C			A			A	
Approach Delay (s)		36.8			33.1			3.6			3.9	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	106.4%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	270	60
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.94	0.94
Adj. Flow (vph)	287	64
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	346	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	61.0	
Effective Green, g (s)	61.0	
Actuated g/C Ratio	0.76	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1228	
v/s Ratio Prot	0.22	
v/s Ratio Perm		
v/c Ratio	0.28	
Uniform Delay, d1	2.9	
Progression Factor	1.00	
Incremental Delay, d2	0.6	
Delay (s)	3.4	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	10	30	150	40	170	10	860	130	110	860	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.95			0.98		1.00	0.96	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.94		1.00	0.89			0.98		1.00	0.97	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1686		1681	1481			3409		1770	3288	
Flt Permitted		0.98		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1686		1681	1481			3211		1770	3288	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	31	10	31	153	41	173	10	878	133	112	878	245
RTOR Reduction (vph)	0	28	0	0	125	0	0	9	0	0	18	0
Lane Group Flow (vph)	0	44	0	138	104	0	0	1012	0	112	1105	0
Confl. Peds. (#/hr)						35	51		35			51
Confl. Bikes (#/hr)			8			6			22			49
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		5.8		12.9	12.9			53.0		10.3	67.8	
Effective Green, g (s)		5.8		12.9	12.9			53.0		10.3	67.8	
Actuated g/C Ratio		0.06		0.13	0.13			0.53		0.10	0.68	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		98		217	191			1702		182	2229	
v/s Ratio Prot		c0.03		c0.08	0.07					c0.06	0.34	
v/s Ratio Perm								c0.32				
v/c Ratio		0.45		0.64	0.54			0.59		0.62	0.50	
Uniform Delay, d1		45.5		41.3	40.8			16.1		43.0	7.8	
Progression Factor		1.00		1.00	1.00			0.53		1.00	1.00	
Incremental Delay, d2		1.2		4.4	1.7			1.2		4.3	0.8	
Delay (s)		46.7		45.8	42.5			9.8		47.2	8.6	
Level of Service		D		D	D			A		D	A	
Approach Delay (s)		46.7			43.7			9.8			12.1	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	270	490	140	120	430	170	110	560	130	260	710	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.93		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3352		1770	3162		1770	3369		1770	3482	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3352		1770	3162		1770	3369		1770	3482	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	278	505	144	124	443	175	113	577	134	268	732	72
RTOR Reduction (vph)	0	28	0	0	44	0	0	19	0	0	7	0
Lane Group Flow (vph)	278	621	0	124	574	0	113	692	0	268	797	0
Confl. Peds. (#/hr)			47			156			63			
Confl. Bikes (#/hr)			19			25			24			38
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.1	23.2		9.9	22.0		5.0	37.9		12.0	44.9	
Effective Green, g (s)	11.1	23.2		9.9	22.0		5.0	37.9		12.0	44.9	
Actuated g/C Ratio	0.11	0.23		0.10	0.22		0.05	0.38		0.12	0.45	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	381	778		175	696		89	1277		212	1563	
v/s Ratio Prot	c0.08	c0.19		0.07	0.18		0.06	0.21		c0.15	c0.23	
v/s Ratio Perm												
v/c Ratio	0.73	0.80		0.71	0.82		1.27	0.54		1.26	0.51	
Uniform Delay, d1	43.0	36.2		43.7	37.2		47.5	24.3		44.0	19.7	
Progression Factor	0.90	1.30		1.00	1.00		1.00	1.00		1.24	0.69	
Incremental Delay, d2	5.6	5.1		10.2	7.5		184.1	1.7		148.1	1.1	
Delay (s)	44.4	52.1		53.9	44.6		231.6	25.9		202.7	14.6	
Level of Service	D	D		D	D		F	C		F	B	
Approach Delay (s)		49.8			46.2			54.1			61.6	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	53.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	720	40	20	690	40	30	40	20	40	40	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.99			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1765	3506		1767	3503			1747			1722	
Flt Permitted	0.33	1.00		0.32	1.00			0.90			0.88	
Satd. Flow (perm)	616	3506		591	3503			1589			1549	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	742	41	21	711	41	31	41	21	41	41	31
RTOR Reduction (vph)	0	5	0	0	5	0	0	13	0	0	17	0
Lane Group Flow (vph)	41	778	0	21	747	0	0	80	0	0	96	0
Confl. Peds. (#/hr)	8		5	5		8	6		32	32		6
Confl. Bikes (#/hr)			6			16			36			41
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	350	1991		336	1989			490			478	
v/s Ratio Prot		c0.22			0.21							
v/s Ratio Perm	0.07			0.04				0.05			c0.06	
v/c Ratio	0.12	0.39		0.06	0.38			0.16			0.20	
Uniform Delay, d1	8.1	9.7		7.8	9.6			20.4			20.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.7	0.6		0.4	0.5			0.7			0.9	
Delay (s)	8.8	10.3		8.2	10.2			21.1			21.6	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		10.2			10.1			21.1			21.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	850	50	30	880	98	50	36	10	256	52	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95	1.00		1.00			0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.95		1.00			0.96	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99			1.00	
Frt	1.00	0.99			1.00	0.85		0.99			0.93	
Flt Protected	0.95	1.00			1.00	1.00		0.97			0.98	
Satd. Flow (prot)	1770	3500			3532	1509		1761			3084	
Flt Permitted	0.95	1.00			0.91	1.00		0.57			0.79	
Satd. Flow (perm)	1770	3500			3206	1509		1030			2480	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	277	885	52	31	917	102	52	38	10	267	54	258
RTOR Reduction (vph)	0	4	0	0	0	40	0	5	0	0	180	0
Lane Group Flow (vph)	277	933	0	0	948	62	0	95	0	0	399	0
Confl. Peds. (#/hr)			28	28		16	95		17	17		95
Confl. Bikes (#/hr)			11			9			17			19
Turn Type	Prot			Perm		Perm	Perm			Perm		
Protected Phases	1	6			2			4			4	
Permitted Phases				2		2	4			4		
Actuated Green, G (s)	16.1	46.7			27.6	27.6		18.2			18.2	
Effective Green, g (s)	16.1	46.7			27.6	27.6		18.2			18.2	
Actuated g/C Ratio	0.23	0.66			0.39	0.39		0.26			0.26	
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	402	2305			1248	587		264			637	
v/s Ratio Prot	c0.16	0.27										
v/s Ratio Perm					c0.30	0.04		0.09			c0.16	
v/c Ratio	0.69	0.40			0.76	0.11		0.36			0.63	
Uniform Delay, d1	25.1	5.6			18.8	13.8		21.6			23.3	
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2	4.9	0.1			2.7	0.1		0.8			1.9	
Delay (s)	30.0	5.7			21.5	13.9		22.4			25.3	
Level of Service	C	A			C	B		C			C	
Approach Delay (s)		11.3			20.7			22.4			25.3	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1050	50	30	1030	10	20	0	30	10	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	21	1094	52	31	1073	10	21	0	31	10	0	10
Pedestrians		14			5			16			9	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked	0.97			0.96			0.97	0.97	0.96	0.97	0.97	0.97
vC, conflicting volume	1092			1162			1801	2332	594	1774	2353	565
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1039			1077			1637	2185	483	1610	2207	497
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			95			63	100	94	82	100	98
cM capacity (veh/h)	642			607			57	39	497	58	38	495

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	568	599	568	547	52	21
Volume Left	21	0	31	0	21	10
Volume Right	0	52	0	10	31	10
cSH	642	1700	607	1700	121	103
Volume to Capacity	0.03	0.35	0.05	0.32	0.43	0.20
Queue Length 95th (ft)	3	0	4	0	47	18
Control Delay (s)	0.9	0.0	1.4	0.0	55.4	48.4
Lane LOS	A		A		F	E
Approach Delay (s)	0.4		0.7		55.4	48.4
Approach LOS					F	E

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	1000	80	30	980	10	50	10	60	20	10	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	1053	84	32	1032	11	53	11	63	21	11	42
Pedestrians		3			3			19			19	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.85						0.85	0.85		0.85	0.85	0.85
vC, conflicting volume	1061			1156			1764	2259	590	1738	2296	543
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	719			1156			1546	2128	590	1515	2172	110
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			0	72	86	51	70	95
cM capacity (veh/h)	735			591			44	38	442	43	35	770

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	537	611	547	526	126	74
Volume Left	11	0	32	0	53	21
Volume Right	0	84	0	11	63	42
cSH	735	1700	591	1700	78	87
Volume to Capacity	0.01	0.36	0.05	0.31	1.62	0.84
Queue Length 95th (ft)	1	0	4	0	263	112
Control Delay (s)	0.4	0.0	1.5	0.0	420.6	141.0
Lane LOS	A		A		F	F
Approach Delay (s)	0.2		0.8		420.6	141.0
Approach LOS					F	F

Intersection Summary			
Average Delay	26.7		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	720	270	200	720	110	220	130	160	90	100	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.98			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.98			0.96			0.96	
Flt Protected		1.00			0.99			0.98			0.98	
Satd. Flow (prot)		3323			3419			1926			1722	
Flt Permitted		0.74			0.56			0.72			0.75	
Satd. Flow (perm)		2455			1937			1422			1307	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	93	742	278	206	742	113	227	134	165	93	103	82
RTOR Reduction (vph)	0	59	0	0	17	0	0	30	0	0	27	0
Lane Group Flow (vph)	0	1054	0	0	1044	0	0	496	0	0	251	0
Confl. Peds. (#/hr)	33		25			33	54		40	40		54
Confl. Bikes (#/hr)			11			5			5			2
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		692			1149			491			452	
v/s Ratio Prot					c0.13							
v/s Ratio Perm		c0.43			0.31			c0.35			0.19	
v/c Ratio		1.52			0.91			1.01			0.55	
Uniform Delay, d1		19.8			13.1			18.0			14.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		242.8			12.1			43.1			4.8	
Delay (s)		262.6			25.2			61.1			19.4	
Level of Service		F			C			E			B	
Approach Delay (s)		262.6			25.2			61.1			19.4	
Approach LOS		F			C			E			B	

Intersection Summary			
HCM Average Control Delay	119.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	116.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	200	80	90	380	330	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.91		1.00	1.00	1.00	0.54
Flpb, ped/bikes	1.00		0.75	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1573		1324	1863	1863	855
Flt Permitted	0.97		0.47	1.00	1.00	1.00
Satd. Flow (perm)	1573		661	1863	1863	855
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	87	98	413	359	196
RTOR Reduction (vph)	24	0	0	0	0	96
Lane Group Flow (vph)	280	0	98	413	359	100
Confl. Peds. (#/hr)	133	224	452			452
Confl. Bikes (#/hr)		11				13
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	601		337	948	948	435
v/s Ratio Prot	c0.18			c0.22	0.19	
v/s Ratio Perm			0.15			0.12
v/c Ratio	0.47		0.29	0.44	0.38	0.23
Uniform Delay, d1	12.8		7.8	8.5	8.2	7.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6		2.2	1.5	1.2	1.2
Delay (s)	15.4		10.0	10.0	9.4	8.7
Level of Service	B		A	A	A	A
Approach Delay (s)	15.4			10.0	9.1	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	330	610	660	40	30	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.88	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	3539	3509		1599	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	3539	3509		1599	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	347	642	695	42	32	263
RTOR Reduction (vph)	0	0	7	0	183	0
Lane Group Flow (vph)	347	642	730	0	112	0
Confl. Peds. (#/hr)					5	
Confl. Bikes (#/hr)						13
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	822		487	
v/s Ratio Prot	c0.20	0.18	c0.21		c0.07	
v/s Ratio Perm						
v/c Ratio	0.63	0.31	0.89		0.23	
Uniform Delay, d1	18.8	6.5	23.7		16.6	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	5.3	0.4	13.7		1.1	
Delay (s)	24.1	6.8	37.4		17.7	
Level of Service	C	A	D		B	
Approach Delay (s)		12.9	37.4		17.7	
Approach LOS		B	D		B	

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	30	70	570	40	70	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.98		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.91		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1625		1843		1770	1863
Flt Permitted	0.99		1.00		0.95	1.00
Satd. Flow (perm)	1625		1843		1770	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	74	600	42	74	558
RTOR Reduction (vph)	68	0	3	0	0	0
Lane Group Flow (vph)	38	0	639	0	74	558
Confl. Peds. (#/hr)		6				
Confl. Bikes (#/hr)				5		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	3.5		21.3		2.6	27.9
Effective Green, g (s)	3.5		21.3		2.6	27.9
Actuated g/C Ratio	0.09		0.53		0.06	0.69
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	141		972		114	1287
v/s Ratio Prot	c0.02		c0.35		0.04	c0.30
v/s Ratio Perm						
v/c Ratio	0.27		0.66		0.65	0.43
Uniform Delay, d1	17.3		6.9		18.5	2.8
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0		1.6		12.0	0.2
Delay (s)	18.3		8.5		30.5	3.0
Level of Service	B		A		C	A
Approach Delay (s)	18.3		8.5			6.2
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	40.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	30	10	10	10	10	20	40	10	20	380	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.98			0.98					1.00	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.98			0.90					1.00	
Flt Protected			0.97			0.99					1.00	
Satd. Flow (prot)			1535			1449					1632	
Flt Permitted			0.80			0.97					0.95	
Satd. Flow (perm)			1271			1413					1555	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	32	11	11	11	11	22	43	11	22	409	11
RTOR Reduction (vph)	0	0	8	0	0	33	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	57	0	0	54	0	0	0	0	451	0
Confl. Peds. (#/hr)				33				1				94
Confl. Bikes (#/hr)				3								2
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			297			330					648	
v/s Ratio Prot												
v/s Ratio Perm			c0.04			0.04					0.29	
v/c Ratio			0.19			0.16					0.70	
Uniform Delay, d1			18.5			18.3					14.4	
Progression Factor			1.00			0.87					1.00	
Incremental Delay, d2			1.4			1.0					6.1	
Delay (s)			19.9			17.0					20.5	
Level of Service			B			B					C	
Approach Delay (s)			19.9			17.0					20.5	
Approach LOS			B			B					C	

Intersection Summary			
HCM Average Control Delay	23.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	50	380	30	50	20	30	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.97				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.98				0.92		
Flt Protected		1.00				0.98		
Satd. Flow (prot)		1730				1483		
Flt Permitted		0.93				0.98		
Satd. Flow (perm)		1623				1483		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	409	32	54	22	32	32	54
RTOR Reduction (vph)	0	6	0	0	0	37	0	0
Lane Group Flow (vph)	0	543	0	0	0	103	0	0
Confl. Peds. (#/hr)			67	92				
Confl. Bikes (#/hr)			2	2				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		676				222		
v/s Ratio Prot								
v/s Ratio Perm		c0.33				0.07		
v/c Ratio		0.80				0.46		
Uniform Delay, d1		15.3				23.3		
Progression Factor		1.00				1.00		
Incremental Delay, d2		9.8				6.8		
Delay (s)		25.1				30.1		
Level of Service		C				C		
Approach Delay (s)		25.1				30.1		
Approach LOS		C				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	10	10	0	0	0	0	10	10	10	20	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	0	15	15	0	0	0	0	15	15	15	29	0
Pedestrians					5						6	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	6			29			37	28	27	55	35	6
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	6			29			37	28	27	55	35	6
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	98	97	100
cM capacity (veh/h)	1607			1584			940	861	1048	909	853	1071

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	29	29	44
Volume Left	0	0	15
Volume Right	15	15	0
cSH	1607	945	871
Volume to Capacity	0.00	0.03	0.05
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	8.9	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	8.9	9.4
Approach LOS		A	A

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	740	10	0	670	20	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	831	11	0	753	22	0	0	11	0	0	0
Pedestrians					2			19				
Lane Width (ft)					12.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			2				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1268			632							
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	775			862			1232	1631	442	1193	1626	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	775			821			1199	1605	393	1158	1599	388
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	836			776			135	101	584	143	102	611

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	554	288	502	273	11
Volume Left	0	0	0	0	0
Volume Right	0	11	0	22	11
cSH	1700	1700	1700	1700	584
Volume to Capacity	0.33	0.17	0.30	0.16	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.3
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1120	950	107	0	54
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1217	1033	116	0	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		217	1314			
pX, platoon unblocked					0.88	
vC, conflicting volume	1149				1699	574
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1149				1523	574
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	87
cM capacity (veh/h)	604				96	462

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	609	609	688	461	59
Volume Left	0	0	0	0	0
Volume Right	0	0	0	116	59
cSH	1700	1700	1700	1700	462
Volume to Capacity	0.36	0.36	0.40	0.27	0.13
Queue Length 95th (ft)	0	0	0	0	11
Control Delay (s)	0.0	0.0	0.0	0.0	13.9
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.9
Approach LOS					B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix M

LOS Calculation Worksheets
2035 Plus Project Conditions

FEHR & PEERS

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	90	20	100	20	35	30	20	30	1287	45	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0				3.0			5.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.98				0.99			1.00			
Flpb, ped/bikes		1.00				1.00			1.00			
Frt		0.93				0.97			0.99			
Flt Protected		0.98				0.98			1.00			
Satd. Flow (prot)		1663				1751			3509			
Flt Permitted		0.87				0.86			0.93			
Satd. Flow (perm)		1469				1544			3262			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	94	21	104	21	36	31	21	31	1341	47	10	10
RTOR Reduction (vph)	0	5	0	0	0	16	0	0	0	0	0	0
Lane Group Flow (vph)	0	235	0	0	0	72	0	0	1429	0	0	0
Confl. Peds. (#/hr)	18		8		8		18	14				
Confl. Bikes (#/hr)							5			11	11	
Turn Type	Perm				Perm			Perm				Perm
Protected Phases		4				4			2			
Permitted Phases	4				4			2				6
Actuated Green, G (s)		14.4				14.4			31.9			
Effective Green, g (s)		14.4				14.4			31.9			
Actuated g/C Ratio		0.24				0.24			0.53			
Clearance Time (s)		3.0				3.0			5.0			
Vehicle Extension (s)		3.0				3.0			3.0			
Lane Grp Cap (vph)		353				371			1734			
v/s Ratio Prot												
v/s Ratio Perm		c0.16				0.05			c0.44			
v/c Ratio		0.67				0.19			0.82			
Uniform Delay, d1		20.6				18.2			11.7			
Progression Factor		1.00				1.00			1.00			
Incremental Delay, d2		4.7				0.3			4.6			
Delay (s)		25.3				18.4			16.3			
Level of Service		C				B			B			
Approach Delay (s)		25.3				18.4			16.3			
Approach LOS		C				B			B			

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	80	577	30	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			3.0	
Lane Util. Factor		0.95			1.00	
Frpb, ped/bikes		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	
Frt		0.99			0.95	
Flt Protected		0.99			0.97	
Satd. Flow (prot)		3489			1718	
Flt Permitted		0.60			0.97	
Satd. Flow (perm)		2117			1718	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.92
Adj. Flow (vph)	83	601	31	10	10	11
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	0	722	0	0	31	0
Confl. Peds. (#/hr)			14			
Confl. Bikes (#/hr)			2			
Turn Type	Perm			Perm		
Protected Phases		6			8	
Permitted Phases	6			8		
Actuated Green, G (s)		31.9			2.7	
Effective Green, g (s)		31.9			2.7	
Actuated g/C Ratio		0.53			0.05	
Clearance Time (s)		5.0			3.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1126			77	
v/s Ratio Prot						
v/s Ratio Perm		0.34			0.02	
v/c Ratio		0.64			0.40	
Uniform Delay, d1		10.0			27.9	
Progression Factor		1.00			1.00	
Incremental Delay, d2		1.3			3.4	
Delay (s)		11.2			31.3	
Level of Service		B			C	
Approach Delay (s)		11.2			31.3	
Approach LOS		B			C	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	227	40	1262	457	50	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	*1.00
Frpb, ped/bikes	0.99		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.96		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1734		3331		1711	3601
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1734		3331		1711	3601
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	232	41	1288	466	51	512
RTOR Reduction (vph)	13	0	53	0	0	0
Lane Group Flow (vph)	260	0	1701	0	51	512
Confl. Peds. (#/hr)		48		19	19	
Confl. Bikes (#/hr)		6		21		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.3		28.2		2.5	34.7
Effective Green, g (s)	12.3		28.2		2.5	34.7
Actuated g/C Ratio	0.22		0.51		0.05	0.63
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		3.0	2.0
Lane Grp Cap (vph)	388		1708		78	2272
v/s Ratio Prot	c0.15		c0.51		c0.03	0.14
v/s Ratio Perm						
v/c Ratio	0.67		1.00		0.65	0.23
Uniform Delay, d1	19.5		13.3		25.8	4.4
Progression Factor	1.00		1.43		1.00	1.00
Incremental Delay, d2	3.4		17.2		18.0	0.2
Delay (s)	22.9		36.3		43.8	4.6
Level of Service	C		D		D	A
Approach Delay (s)	22.9		36.3			8.1
Approach LOS	C		D			A

Intersection Summary			
HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	463	498	1729	668	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3319	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3319	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	472	508	1764	682	61
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	0	472	508	1764	732	0
Confl. Peds. (#/hr)						123
Confl. Bikes (#/hr)						3
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		19.5	19.5	41.5	25.5	
Effective Green, g (s)		19.5	19.5	41.5	25.5	
Actuated g/C Ratio		0.35	0.35	0.75	0.46	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		571	607	2492	1539	
v/s Ratio Prot		0.29	c0.30	c0.53	0.22	
v/s Ratio Perm						
v/c Ratio		0.83	0.84	0.71	0.48	
Uniform Delay, d1		16.2	16.3	3.6	10.1	
Progression Factor		1.00	1.09	1.98	1.14	
Incremental Delay, d2		9.5	2.6	0.4	1.0	
Delay (s)		25.7	20.4	7.5	12.5	
Level of Service		C	C	A	B	
Approach Delay (s)	25.7			10.4	12.5	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	40	96	0	281	0	1914	235	148	984	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.93			0.96		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.91		1.00	0.85			0.98		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1649		1770	1471			3246		1652	3539	
Flt Permitted		0.54		0.76	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		906		1418	1471			3246		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	0	41	98	0	287	0	1953	240	151	1004	0
RTOR Reduction (vph)	0	34	0	0	101	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	27	0	98	186	0	0	2186	0	151	1004	0
Confl. Peds. (#/hr)						48	42		93	93		42
Confl. Bikes (#/hr)			3			2			21			29
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		18.9		18.9	18.9			69.1		7.0	81.1	
Effective Green, g (s)		18.9		18.9	18.9			69.1		7.0	81.1	
Actuated g/C Ratio		0.17		0.17	0.17			0.63		0.06	0.74	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		156		244	253			2039		105	2609	
v/s Ratio Prot					c0.13			c0.67		c0.09	0.28	
v/s Ratio Perm		0.03		0.07								
v/c Ratio		0.17		0.40	0.74			1.07		1.44	0.38	
Uniform Delay, d1		38.9		40.5	43.2			20.5		51.5	5.3	
Progression Factor		1.05		1.00	1.00			0.51		0.98	0.86	
Incremental Delay, d2		0.5		1.1	10.6			33.6		235.2	0.3	
Delay (s)		41.5		41.6	53.7			44.1		285.4	4.9	
Level of Service		D		D	D			D		F	A	
Approach Delay (s)		41.5			50.6			44.1			41.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	43.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	320	931	90	223	525	523	130	1298	261	437	530	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3483		1711	3209		1711	3299		3319	3286	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3483		1711	3209		1711	3299		3319	3286	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	327	950	92	228	536	534	133	1324	266	446	541	155
RTOR Reduction (vph)	0	7	0	0	149	0	0	15	0	0	24	0
Lane Group Flow (vph)	327	1035	0	228	921	0	133	1575	0	446	672	0
Confl. Peds. (#/hr)			11			26			46			10
Confl. Bikes (#/hr)			10			5			8			8
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.8	35.2		13.3	34.7		11.9	35.0		10.5	33.6	
Effective Green, g (s)	13.8	35.2		13.3	34.7		11.9	35.0		10.5	33.6	
Actuated g/C Ratio	0.13	0.32		0.12	0.32		0.11	0.32		0.10	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	222	1115		207	1012		185	1050		317	1004	
v/s Ratio Prot	c0.18	c0.30		0.13	0.29		0.08	c0.48		c0.13	0.20	
v/s Ratio Perm												
v/c Ratio	1.47	0.93		1.10	0.91		0.72	1.50		1.41	0.67	
Uniform Delay, d1	48.1	36.2		48.4	36.2		47.4	37.5		49.8	33.4	
Progression Factor	1.00	1.00		0.78	0.37		0.95	0.89		0.95	0.94	
Incremental Delay, d2	235.6	13.0		82.3	8.9		10.6	229.2		200.1	3.4	
Delay (s)	283.7	49.2		120.1	22.2		55.7	262.4		247.6	34.6	
Level of Service	F	D		F	C		E	F		F	C	
Approach Delay (s)		105.2			39.4			246.5			117.8	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM Average Control Delay	136.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	120.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	10	90	40	30	60	110	1653	30	30	744	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.97			0.98			1.00			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.93			0.94			1.00			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1644			1677			5041			4981	
Flt Permitted		0.69			0.83			0.79			0.82	
Satd. Flow (perm)		1163			1405			4010			4073	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	89	10	92	41	31	61	112	1687	31	31	759	58
RTOR Reduction (vph)	0	39	0	0	19	0	0	1	0	0	4	0
Lane Group Flow (vph)	0	152	0	0	115	0	0	1829	0	0	844	0
Confl. Peds. (#/hr)	18		45	45		18	48		29	29		48
Confl. Bikes (#/hr)			5			8			11			16
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		17.5			17.5			86.5			86.5	
Effective Green, g (s)		17.5			17.5			86.5			86.5	
Actuated g/C Ratio		0.16			0.16			0.79			0.79	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		185			224			3153			3203	
v/s Ratio Prot												
v/s Ratio Perm		c0.13			0.08			c0.46			0.21	
v/c Ratio		0.82			0.51			0.58			0.26	
Uniform Delay, d1		44.8			42.3			4.6			3.2	
Progression Factor		1.00			1.00			1.00			0.34	
Incremental Delay, d2		24.6			2.0			0.8			0.1	
Delay (s)		69.4			44.3			5.4			1.2	
Level of Service		E			D			A			A	
Approach Delay (s)		69.4			44.3			5.4			1.2	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	420	310	140	50	170	112	130	1288	70	52	549	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.99			0.99		1.00	1.00			0.99	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.95			0.95		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1743	3337			3288		1762	3498			4848	
Flt Permitted	0.52	1.00			0.85		0.28	1.00			0.73	
Satd. Flow (perm)	951	3337			2801		519	3498			3546	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	424	313	141	51	172	113	131	1301	71	53	555	142
RTOR Reduction (vph)	0	65	0	0	0	0	0	5	0	0	48	0
Lane Group Flow (vph)	424	389	0	0	336	0	131	1367	0	0	702	0
Confl. Peds. (#/hr)	35		27	27		35	74		83	83		74
Confl. Bikes (#/hr)			11			5			22			16
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	410	1439			1208		313	1640			1330	
v/s Ratio Prot		0.12					0.02	c0.39				
v/s Ratio Perm	c0.45				0.12		0.17				0.20	
v/c Ratio	1.03	0.27			0.28		0.42	0.83			0.53	
Uniform Delay, d1	22.8	14.6			14.7		12.6	18.5			19.5	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	53.5	0.5			0.6		4.1	5.1			1.5	
Delay (s)	76.3	15.1			15.3		16.7	23.7			21.0	
Level of Service	E	B			B		B	C			C	
Approach Delay (s)		44.7			15.3			23.1			21.0	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	135.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	30
RTOR Reduction (vph)	19
Lane Group Flow (vph)	11
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.02
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	15.8
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	710	170	130	650	341	270	902	120	261	472	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	11	11	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.93		1.00	1.00	0.98	1.00	1.00	0.84
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4920		1770	4473		1652	3421	1498	1711	3421	1283
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4920		1770	4473		1652	3421	1498	1711	3421	1283
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	195	747	179	137	684	359	284	949	126	275	497	121
RTOR Reduction (vph)	0	39	0	0	93	0	0	0	64	0	0	90
Lane Group Flow (vph)	195	887	0	137	950	0	284	949	62	275	497	31
Confl. Peds. (#/hr)			2			154			2			125
Confl. Bikes (#/hr)			5			3			8			13
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	11.0	25.6		11.0	25.6		19.4	26.0	26.0	19.4	26.0	26.0
Effective Green, g (s)	11.0	25.6		11.0	25.6		19.4	26.0	26.0	19.4	26.0	26.0
Actuated g/C Ratio	0.11	0.26		0.11	0.26		0.19	0.26	0.26	0.19	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	195	1260		195	1145		320	889	389	332	889	334
v/s Ratio Prot	c0.11	0.18		0.08	c0.21		c0.17	c0.28		0.16	0.15	
v/s Ratio Perm									0.04			0.02
v/c Ratio	1.00	0.70		0.70	0.83		0.89	1.07	0.16	0.83	0.56	0.09
Uniform Delay, d1	44.5	33.8		42.9	35.1		39.2	37.0	28.6	38.7	32.0	28.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	64.5	1.5		9.0	4.9		23.7	49.9	0.9	14.8	2.5	0.6
Delay (s)	109.0	35.2		51.9	40.0		62.9	86.9	29.5	53.5	34.6	28.6
Level of Service	F	D		D	D		E	F	C	D	C	C
Approach Delay (s)		48.1			41.4			76.5			39.6	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	53.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	96	100	170	87	218	150	1720	89	197	1630	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.95			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			0.97	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1636			1742	1530	1770	5043		1770	5078	
Flt Permitted	0.42	1.00			0.57	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	779	1636			1027	1530	1770	5043		1770	5078	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	103	108	183	94	234	161	1849	96	212	1753	11
RTOR Reduction (vph)	0	39	0	0	0	168	0	5	0	0	1	0
Lane Group Flow (vph)	75	172	0	0	277	66	161	1940	0	212	1763	0
Confl. Peds. (#/hr)	19		77	77		19			5			18
Confl. Bikes (#/hr)			14			5			3			3
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	28.4	28.4			28.4	28.4	13.0	40.6		17.5	45.1	
Effective Green, g (s)	28.4	28.4			28.4	28.4	13.0	40.6		17.5	45.1	
Actuated g/C Ratio	0.28	0.28			0.28	0.28	0.13	0.41		0.18	0.45	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	221	465			292	435	230	2047		310	2290	
v/s Ratio Prot		0.10					0.09	c0.38		0.12	c0.35	
v/s Ratio Perm	0.10				c0.27	0.04						
v/c Ratio	0.34	0.37			0.95	0.15	0.70	0.95		0.68	0.77	
Uniform Delay, d1	28.4	28.6			35.1	26.8	41.6	28.7		38.7	23.1	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			38.3	0.1	7.3	10.9		4.9	2.6	
Delay (s)	28.7	28.8			73.3	26.9	48.9	39.5		43.6	25.7	
Level of Service	C	C			E	C	D	D		D	C	
Approach Delay (s)		28.8			52.1			40.3			27.6	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	35.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	106.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	1053	200	40	835	151	160	240	50	180	170	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4939		1767	4921		1770	1795		1736	1594	
Flt Permitted	0.95	1.00		0.20	1.00		0.14	1.00		0.58	1.00	
Satd. Flow (perm)	1770	4939		371	4921		253	1795		1052	1594	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	312	1097	208	42	870	157	167	250	52	188	177	406
RTOR Reduction (vph)	0	31	0	0	25	0	0	7	0	0	79	0
Lane Group Flow (vph)	312	1274	0	42	1002	0	167	295	0	188	504	0
Confl. Peds. (#/hr)			5	5		18	3		26	26		3
Confl. Bikes (#/hr)			3			8			40			54
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	23.1	54.8		27.7	27.7		40.2	40.2		25.5	25.5	
Effective Green, g (s)	23.1	54.8		27.7	27.7		40.2	40.2		25.5	25.5	
Actuated g/C Ratio	0.22	0.53		0.27	0.27		0.39	0.39		0.25	0.25	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	393	2602		99	1311		254	694		258	391	
v/s Ratio Prot	c0.18	0.26			c0.20		c0.07	0.16			c0.32	
v/s Ratio Perm				0.11			0.19			0.18		
v/c Ratio	0.79	0.49		0.42	0.76		0.66	0.43		0.73	1.29	
Uniform Delay, d1	38.2	15.7		31.6	35.1		25.0	23.4		36.1	39.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.5	0.1		2.9	2.7		6.0	1.9		16.5	147.8	
Delay (s)	48.8	15.8		34.5	37.9		31.1	25.3		52.6	187.1	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		22.2			37.7			27.4			154.3	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	53.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	70	50	40	70	50	40	1061	20	30	1042	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			1.00			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.96			0.96			1.00			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1738			1745			3504			3501	
Flt Permitted		0.77			0.85			0.87			0.89	
Satd. Flow (perm)		1362			1494			3046			3131	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	65	75	54	43	75	54	43	1141	22	32	1120	22
RTOR Reduction (vph)	0	8	0	0	24	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	186	0	0	148	0	0	1205	0	0	1174	0
Confl. Peds. (#/hr)	18		38	38			91		59	59		98
Confl. Bikes (#/hr)			2			3			90			75
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		14.6			14.6			56.4			56.4	
Effective Green, g (s)		14.6			14.6			56.4			56.4	
Actuated g/C Ratio		0.18			0.18			0.70			0.70	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		249			273			2147			2207	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.10			c0.40			0.38	
v/c Ratio		0.75			0.54			14.33dl			0.53	
Uniform Delay, d1		30.9			29.7			5.8			5.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		10.2			1.2			1.1			0.9	
Delay (s)		41.1			30.9			6.8			6.5	
Level of Service		D			C			A			A	
Approach Delay (s)		41.1			30.9			6.8			6.5	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	115.5%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	260	70
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	280	75
RTOR Reduction (vph)	7	0
Lane Group Flow (vph)	348	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	56.4	
Effective Green, g (s)	56.4	
Actuated g/C Ratio	0.70	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1136	
v/s Ratio Prot	0.22	
v/s Ratio Perm		
v/c Ratio	0.31	
Uniform Delay, d1	4.4	
Progression Factor	1.00	
Incremental Delay, d2	0.7	
Delay (s)	5.1	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	10	40	270	70	200	10	1218	260	100	1087	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.96			0.97		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.92		1.00	0.90			0.97		1.00	0.98	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1673		1681	1517			3352		1770	3390	
Flt Permitted		0.99		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1673		1681	1517			3163		1770	3390	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	21	10	41	278	72	206	10	1256	268	103	1121	165
RTOR Reduction (vph)	0	39	0	0	78	0	0	15	0	0	10	0
Lane Group Flow (vph)	0	33	0	250	228	0	0	1519	0	103	1276	0
Confl. Peds. (#/hr)			2			30	43		30	30		43
Confl. Bikes (#/hr)						8			77			86
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		5.5		18.5	18.5			49.2		8.8	62.5	
Effective Green, g (s)		5.5		18.5	18.5			49.2		8.8	62.5	
Actuated g/C Ratio		0.06		0.18	0.18			0.49		0.09	0.62	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		92		311	281			1556		156	2119	
v/s Ratio Prot		c0.02		0.15	c0.15					0.06	c0.38	
v/s Ratio Perm								c0.48				
v/c Ratio		0.36		0.80	0.81			0.98		0.66	0.60	
Uniform Delay, d1		45.6		39.0	39.1			24.8		44.2	11.3	
Progression Factor		1.00		1.00	1.00			0.62		1.00	1.00	
Incremental Delay, d2		0.9		13.2	15.3			9.9		7.8	1.3	
Delay (s)		46.4		52.2	54.4			25.4		52.0	12.6	
Level of Service		D		D	D			C		D	B	
Approach Delay (s)		46.4			53.4			25.4			15.5	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	460	713	110	150	456	238	120	790	159	307	1030	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3424		1770	3280		1770	3369		1770	3485	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3424		1770	3280		1770	3369		1770	3485	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	469	728	112	153	465	243	122	806	162	313	1051	61
RTOR Reduction (vph)	0	12	0	0	69	0	0	17	0	0	4	0
Lane Group Flow (vph)	469	828	0	153	639	0	122	951	0	313	1108	0
Confl. Peds. (#/hr)			56			29			69			67
Confl. Bikes (#/hr)			14			19			66			67
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.0	26.7		10.5	25.2		5.0	33.8		12.0	40.8	
Effective Green, g (s)	12.0	26.7		10.5	25.2		5.0	33.8		12.0	40.8	
Actuated g/C Ratio	0.12	0.27		0.10	0.25		0.05	0.34		0.12	0.41	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	914		186	827		89	1139		212	1422	
v/s Ratio Prot	c0.14	c0.24		0.09	0.19		0.07	0.28		c0.18	c0.32	
v/s Ratio Perm												
v/c Ratio	1.14	0.91		0.82	0.77		1.37	0.84		1.48	0.78	
Uniform Delay, d1	44.0	35.4		43.8	34.7		47.5	30.5		44.0	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.16	0.73	
Incremental Delay, d2	87.8	12.0		23.4	4.1		222.8	7.3		233.7	3.4	
Delay (s)	131.8	47.5		67.3	38.9		270.3	37.8		284.6	22.2	
Level of Service	F	D		E	D		F	D		F	C	
Approach Delay (s)		77.7			43.9			63.9			79.8	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	68.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	94.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	1020	30	35	724	43	50	70	35	63	40	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1762	3520		1764	3502			1751			1718	
Flt Permitted	0.31	1.00		0.20	1.00			0.87			0.83	
Satd. Flow (perm)	576	3520		370	3502			1546			1459	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	1062	31	36	754	45	52	73	36	66	42	42
RTOR Reduction (vph)	0	3	0	0	5	0	0	13	0	0	17	0
Lane Group Flow (vph)	52	1090	0	36	794	0	0	148	0	0	133	0
Confl. Peds. (#/hr)	16		18	18		16	21		11	11		21
Confl. Bikes (#/hr)			13			5			34			40
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	327	1999		210	1989			477			450	
v/s Ratio Prot		c0.31			0.23							
v/s Ratio Perm	0.09			0.10				c0.10			0.09	
v/c Ratio	0.16	0.55		0.17	0.40			0.31			0.29	
Uniform Delay, d1	8.3	11.0		8.4	9.8			21.4			21.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.0	1.1		1.8	0.6			1.7			1.7	
Delay (s)	9.4	12.0		10.1	10.4			23.1			23.0	
Level of Service	A	B		B	B			C			C	
Approach Delay (s)		11.9			10.4			23.1			23.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	356	1217	60	30	896	192	40	47	20	334	57	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	14	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			1.00	0.88
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.98	1.00
Frt	1.00	0.99		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.96	1.00
Satd. Flow (prot)	3204	3498		1711	3308			1742			1757	1396
Flt Permitted	0.95	1.00		0.95	1.00			0.67			0.68	1.00
Satd. Flow (perm)	3204	3498		1711	3308			1189			1247	1396
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	363	1242	61	31	914	196	41	48	20	341	58	339
RTOR Reduction (vph)	0	3	0	0	16	0	0	8	0	0	0	220
Lane Group Flow (vph)	363	1300	0	31	1094	0	0	101	0	0	399	119
Confl. Peds. (#/hr)			24			19	83		21	21		83
Confl. Bikes (#/hr)			11			5			16			26
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	16.6	57.5		2.4	43.3			38.1			38.1	38.1
Effective Green, g (s)	16.6	57.5		2.4	43.3			38.1			38.1	38.1
Actuated g/C Ratio	0.15	0.52		0.02	0.39			0.35			0.35	0.35
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	484	1829		37	1302			412			432	484
v/s Ratio Prot	0.11	c0.37		0.02	c0.33							
v/s Ratio Perm								0.09			c0.32	0.09
v/c Ratio	0.75	0.71		0.84	0.84			0.25			0.92	0.25
Uniform Delay, d1	44.7	19.9		53.6	30.2			25.7			34.6	25.7
Progression Factor	0.57	0.25		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.6	0.2		84.7	6.6			0.3			25.3	0.3
Delay (s)	26.1	5.3		138.3	36.9			26.0			59.9	26.0
Level of Service	C	A		F	D			C			E	C
Approach Delay (s)		9.8			39.6			26.0			44.3	
Approach LOS		A			D			C			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1434	111	20	1071	10	11	10	20	10	10	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	1526	118	21	1139	11	12	11	21	11	11	12
Pedestrians		14			2			21			11	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		881			649							
pX, platoon unblocked	0.93			0.72			0.76	0.76	0.72	0.76	0.76	0.93
vC, conflicting volume	1161			1665			2291	2852	845	2032	2905	600
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1012			1143			1618	2358	3	1275	2429	406
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			95			58	55	97	80	50	98
cM capacity (veh/h)	624			429			28	24	762	54	21	539

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	784	881	591	580	44	33
Volume Left	21	0	21	0	12	11
Volume Right	0	118	0	11	21	12
cSH	624	1700	429	1700	49	46
Volume to Capacity	0.03	0.52	0.05	0.34	0.90	0.72
Queue Length 95th (ft)	3	0	4	0	94	70
Control Delay (s)	1.0	0.0	1.5	0.0	230.6	191.0
Lane LOS	A		A		F	F
Approach Delay (s)	0.5		0.8		230.6	191.0
Approach LOS					F	F

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	1371	83	20	1048	10	43	10	110	20	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	1413	86	21	1080	10	44	10	113	21	10	10
Pedestrians		5						22			29	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1205			325							
pX, platoon unblocked	0.86			0.77			0.84	0.84	0.77	0.84	0.84	0.86
vC, conflicting volume	1120			1521			2101	2660	771	2002	2697	579
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818			1074			1182	1850	98	1064	1895	191
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			52	81	84	79	80	98
cM capacity (veh/h)	678			486			92	56	708	97	52	685

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	717	792	561	551	168	41
Volume Left	10	0	21	0	44	21
Volume Right	0	86	0	10	113	10
cSH	678	1700	486	1700	203	97
Volume to Capacity	0.02	0.47	0.04	0.32	0.83	0.43
Queue Length 95th (ft)	1	0	3	0	151	44
Control Delay (s)	0.4	0.0	1.2	0.0	73.9	67.3
Lane LOS	A		A		F	F
Approach Delay (s)	0.2		0.6		73.9	67.3
Approach LOS					F	F

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	1152	278	140	781	110	257	70	220	110	60	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			0.99			0.97			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.97			0.98			0.95			0.97	
Flt Protected		1.00			0.99			0.98			0.97	
Satd. Flow (prot)		3400			3438			1871			1735	
Flt Permitted		0.79			0.52			0.74			0.64	
Satd. Flow (perm)		2683			1804			1419			1136	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	1213	293	147	822	116	271	74	232	116	63	43
RTOR Reduction (vph)	0	28	0	0	13	0	0	34	0	0	12	0
Lane Group Flow (vph)	0	1563	0	0	1072	0	0	543	0	0	210	0
Confl. Peds. (#/hr)	26		11			26	38		53	53		38
Confl. Bikes (#/hr)			14			3			5			8
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		25.5			41.5			19.0			19.0	
Effective Green, g (s)		25.5			41.5			19.0			19.0	
Actuated g/C Ratio		0.36			0.59			0.27			0.27	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		977			1373			385			308	
v/s Ratio Prot					c0.14							
v/s Ratio Perm		c0.58			0.32			c0.38			0.18	
v/c Ratio		1.60			0.78			1.41			0.68	
Uniform Delay, d1		22.2			10.8			25.5			22.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		274.7			4.5			199.3			11.5	
Delay (s)		297.0			15.3			224.8			34.3	
Level of Service		F			B			F			C	
Approach Delay (s)		297.0			15.3			224.8			34.3	
Approach LOS		F			B			F			C	

Intersection Summary			
HCM Average Control Delay	180.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	124.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	251	110	100	374	314	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.96		1.00	1.00	1.00	0.87
Flpb, ped/bikes	1.00		0.94	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1650		1660	1863	1863	1380
Flt Permitted	0.97		0.48	1.00	1.00	1.00
Satd. Flow (perm)	1650		844	1863	1863	1380
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	279	122	111	416	349	169
RTOR Reduction (vph)	28	0	0	0	0	83
Lane Group Flow (vph)	373	0	111	416	349	86
Confl. Peds. (#/hr)	118	91	109			109
Confl. Bikes (#/hr)		10				5
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	630		430	948	948	703
v/s Ratio Prot	c0.23			c0.22	0.19	
v/s Ratio Perm			0.13			0.06
v/c Ratio	0.59		0.26	0.44	0.37	0.12
Uniform Delay, d1	13.6		7.6	8.5	8.2	7.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0		1.5	1.5	1.1	0.4
Delay (s)	17.6		9.1	10.0	9.3	7.4
Level of Service	B		A	B	A	A
Approach Delay (s)	17.6			9.8	8.7	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	602	847	727	70	20	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.87	
Flt Protected	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1770	3539	3493		1591	
Flt Permitted	0.95	1.00	1.00		1.00	
Satd. Flow (perm)	1770	3539	3493		1591	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	621	873	749	72	21	362
RTOR Reduction (vph)	0	0	11	0	252	0
Lane Group Flow (vph)	621	873	810	0	131	0
Confl. Peds. (#/hr)					5	
Confl. Bikes (#/hr)						10
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	819		485	
v/s Ratio Prot	c0.35	0.25	c0.23		c0.08	
v/s Ratio Perm						
v/c Ratio	1.12	0.42	0.99		0.27	
Uniform Delay, d1	22.0	7.0	24.4		16.9	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	76.8	0.6	28.8		1.4	
Delay (s)	98.8	7.6	53.2		18.2	
Level of Service	F	A	D		B	
Approach Delay (s)		45.5	53.2		18.2	
Approach LOS		D	D		B	

Intersection Summary			
HCM Average Control Delay	44.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	40	60	680	20	80	770
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.92		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1678		1854		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1678		1854		1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	65	731	22	86	828
RTOR Reduction (vph)	57	0	1	0	0	0
Lane Group Flow (vph)	51	0	752	0	86	828
Confl. Bikes (#/hr)				3		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	5.4		24.9		3.0	31.9
Effective Green, g (s)	5.4		24.9		3.0	31.9
Actuated g/C Ratio	0.12		0.54		0.06	0.69
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	196		997		115	1284
v/s Ratio Prot	c0.03		c0.41		0.05	c0.44
v/s Ratio Perm						
v/c Ratio	0.26		0.75		0.75	0.64
Uniform Delay, d1	18.6		8.3		21.3	4.0
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.7		3.3		23.0	1.1
Delay (s)	19.3		11.6		44.3	5.2
Level of Service	B		B		D	A
Approach Delay (s)	19.3		11.6			8.8
Approach LOS	B		B			A

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	30	50	20	20	20	40	60	10	53	508	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.97			0.93					0.99	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.98			0.90					1.00	
Flt Protected			0.98			0.99					0.99	
Satd. Flow (prot)			1538			1378					1621	
Flt Permitted			0.87			0.95					0.87	
Satd. Flow (perm)			1368			1322					1418	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	32	53	21	21	21	42	63	11	56	535	21
RTOR Reduction (vph)	0	0	13	0	0	45	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	104	0	0	102	0	0	0	0	621	0
Confl. Peds. (#/hr)				61				36				132
Confl. Bikes (#/hr)												16
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			14.0			14.0					22.0	
Effective Green, g (s)			14.0			14.0					22.0	
Actuated g/C Ratio			0.23			0.23					0.37	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			319			308					520	
v/s Ratio Prot												
v/s Ratio Perm			0.08			c0.08					c0.44	
v/c Ratio			0.33			0.33					1.19	
Uniform Delay, d1			19.1			19.1					19.0	
Progression Factor			1.00			1.00					1.00	
Incremental Delay, d2			2.7			2.9					105.2	
Delay (s)			21.8			22.0					124.2	
Level of Service			C			C					F	
Approach Delay (s)			21.8			22.0					124.2	
Approach LOS			C			C					F	

Intersection Summary			
HCM Average Control Delay	83.1	HCM Level of Service	F
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	70	398	30	40	30	70	53	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.96				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.98				0.94		
Flt Protected		0.99				0.97		
Satd. Flow (prot)		1723				1503		
Flt Permitted		0.81				0.97		
Satd. Flow (perm)		1408				1503		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	419	32	42	32	74	56	42
RTOR Reduction (vph)	0	5	0	0	0	15	0	0
Lane Group Flow (vph)	0	562	0	0	0	189	0	0
Confl. Peds. (#/hr)			75	121				
Confl. Bikes (#/hr)			16	7				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		22.0				12.0		
Effective Green, g (s)		22.0				12.0		
Actuated g/C Ratio		0.37				0.20		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		516				301		
v/s Ratio Prot								
v/s Ratio Perm		0.40				0.13		
v/c Ratio		1.09				0.63		
Uniform Delay, d1		19.0				22.0		
Progression Factor		1.00				1.00		
Incremental Delay, d2		66.0				9.5		
Delay (s)		85.0				31.5		
Level of Service		F				C		
Approach Delay (s)		85.0				31.5		
Approach LOS		F				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	10	10	0	0	0	0	30	30	10	20	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	13	13	13	0	0	0	0	38	38	13	26	0
Pedestrians					11						8	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					372							
pX, platoon unblocked												
vC, conflicting volume	8			26			58	53	30	122	59	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	8			26			58	53	30	122	59	8
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	95	96	98	97	100
cM capacity (veh/h)	1602			1589			906	826	1044	779	820	1067

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	38	77	38
Volume Left	13	0	13
Volume Right	13	38	0
cSH	1602	922	805
Volume to Capacity	0.01	0.08	0.05
Queue Length 95th (ft)	1	7	4
Control Delay (s)	2.5	9.3	9.7
Lane LOS	A	A	A
Approach Delay (s)	2.5	9.3	9.7
Approach LOS		A	A

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1291	0	0	787	20	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	1388	0	0	846	22	0	0	11	0	0	0
Pedestrians					2			13			2	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1282			613							
pX, platoon unblocked				0.85			0.85	0.85	0.85	0.85	0.85	
vC, conflicting volume	870			1401			1824	2271	709	1566	2260	436
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	870			1111			1611	2139	294	1306	2126	436
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	771			523			58	41	587	97	41	568

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	925	463	564	304	11
Volume Left	0	0	0	0	0
Volume Right	0	0	0	22	11
cSH	1700	1700	1700	1700	587
Volume to Capacity	0.54	0.27	0.33	0.18	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.2
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.2
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1575	1034	56	0	82
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1712	1124	61	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		226	1304			
pX, platoon unblocked					0.71	
vC, conflicting volume	1185				2010	592
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1185				1615	592
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	80
cM capacity (veh/h)	585				68	449

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	856	856	749	436	89
Volume Left	0	0	0	0	0
Volume Right	0	0	0	61	89
cSH	1700	1700	1700	1700	449
Volume to Capacity	0.50	0.50	0.44	0.26	0.20
Queue Length 95th (ft)	0	0	0	0	18
Control Delay (s)	0.0	0.0	0.0	0.0	15.0
Lane LOS					B
Approach Delay (s)	0.0		0.0		15.0
Approach LOS					B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	40	10	40	30	28	10	20	30	739	26	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0			4.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.96				0.99			1.00			
Flpb, ped/bikes		1.00				0.99			1.00			
Frt		0.92				0.95			0.99			
Flt Protected		0.98				0.98			1.00			
Satd. Flow (prot)		1616				1706			3491			
Flt Permitted		0.90				0.86			0.87			
Satd. Flow (perm)		1479				1495			3059			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	11	42	32	29	11	21	32	778	27	11	11
RTOR Reduction (vph)	0	21	0	0	0	15	0	0	1	0	0	0
Lane Group Flow (vph)	0	106	0	0	0	46	0	0	847	0	0	0
Confl. Peds. (#/hr)	13		27	19	19		13	14		27	14	14
Confl. Bikes (#/hr)			2	2						5	5	
Turn Type	Perm				Perm			Perm				
Protected Phases		4				4			2			
Permitted Phases	4				4			2				
Actuated Green, G (s)		16.0				16.0			16.0			
Effective Green, g (s)		16.0				16.0			16.0			
Actuated g/C Ratio		0.27				0.27			0.27			
Clearance Time (s)		4.0				4.0			4.0			
Lane Grp Cap (vph)		394				399			816			
v/s Ratio Prot												
v/s Ratio Perm		c0.07				0.03			c0.28			
v/c Ratio		0.27				0.11			1.04			
Uniform Delay, d1		17.4				16.6			22.0			
Progression Factor		0.88				1.00			1.00			
Incremental Delay, d2		1.4				0.6			41.6			
Delay (s)		16.7				17.2			63.6			
Level of Service		B				B			E			
Approach Delay (s)		16.7				17.2			63.6			
Approach LOS		B				B			E			

Intersection Summary			
HCM Average Control Delay	52.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations							
Volume (vph)	30	552	30	12	61	33	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		
Lane Util. Factor		0.95			1.00		
Frpb, ped/bikes		1.00			0.97		
Flpb, ped/bikes		1.00			0.96		
Frt		0.99			0.95		
Flt Protected		1.00			0.97		
Satd. Flow (prot)		3490			1602		
Flt Permitted		0.70			0.97		
Satd. Flow (perm)		2457			1602		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	581	32	13	64	35	11
RTOR Reduction (vph)	0	6	0	0	6	0	0
Lane Group Flow (vph)	0	650	0	0	117	0	0
Confl. Peds. (#/hr)	27		14	19	14	13	14
Confl. Bikes (#/hr)			2			2	2
Turn Type	Perm			Perm			
Protected Phases		6			8		
Permitted Phases	6			8			
Actuated Green, G (s)		16.0			16.0		
Effective Green, g (s)		16.0			16.0		
Actuated g/C Ratio		0.27			0.27		
Clearance Time (s)		4.0			4.0		
Lane Grp Cap (vph)		655			427		
v/s Ratio Prot							
v/s Ratio Perm		0.26			0.07		
v/c Ratio		0.99			0.27		
Uniform Delay, d1		21.9			17.4		
Progression Factor		1.00			1.00		
Incremental Delay, d2		33.4			1.6		
Delay (s)		55.3			19.0		
Level of Service		E			B		
Approach Delay (s)		55.3			19.0		
Approach LOS		E			B		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	281	50	825	398	40	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.93		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.95		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1725		3132		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1725		3132		1711	3421
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	302	54	887	428	43	720
RTOR Reduction (vph)	13	0	88	0	0	0
Lane Group Flow (vph)	343	0	1227	0	43	720
Confl. Peds. (#/hr)		87		91	91	
Confl. Bikes (#/hr)		3		8		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	14.2		26.8		2.0	32.8
Effective Green, g (s)	14.2		26.8		2.0	32.8
Actuated g/C Ratio	0.26		0.49		0.04	0.60
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		3.0	2.0
Lane Grp Cap (vph)	445		1526		62	2040
v/s Ratio Prot	c0.20		c0.39		c0.03	0.21
v/s Ratio Perm						
v/c Ratio	0.77		0.80		0.69	0.35
Uniform Delay, d1	18.9		11.9		26.2	5.7
Progression Factor	1.00		0.55		1.00	1.00
Incremental Delay, d2	7.4		3.3		28.5	0.5
Delay (s)	26.3		9.8		54.7	6.2
Level of Service	C		A		D	A
Approach Delay (s)	26.3		9.8			8.9
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	452	525	1231	794	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.97	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.98	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3239	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3239	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	476	553	1296	836	147
RTOR Reduction (vph)	0	0	0	0	23	0
Lane Group Flow (vph)	0	476	553	1296	960	0
Confl. Peds. (#/hr)	197		119			119
Confl. Bikes (#/hr)						2
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		23.3	23.3	31.0	21.7	
Effective Green, g (s)		23.3	23.3	31.0	21.7	
Actuated g/C Ratio		0.42	0.42	0.56	0.39	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		682	725	1862	1278	
v/s Ratio Prot		0.30	c0.32	c0.39	0.30	
v/s Ratio Perm						
v/c Ratio		0.70	0.76	0.70	0.75	
Uniform Delay, d1		13.0	13.5	8.6	14.3	
Progression Factor		1.00	1.22	1.30	0.75	
Incremental Delay, d2		3.1	1.7	0.8	3.8	
Delay (s)		16.1	18.2	12.0	14.4	
Level of Service		B	B	B	B	
Approach Delay (s)	16.1			13.9	14.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	50	112	0	281	0	1464	296	156	1105	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.95			0.92		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.90		1.00	0.85			0.97		1.00	1.00	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1632		1761	1509			3078		1652	3539	
Flt Permitted		0.27		0.72	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		447		1328	1509			3078		1652	3539	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	0	53	119	0	299	0	1557	315	166	1176	0
RTOR Reduction (vph)	0	46	0	0	222	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	28	0	119	77	0	0	1860	0	166	1176	0
Confl. Peds. (#/hr)	22		5	5		22	60		137	137		60
Confl. Bikes (#/hr)						6			10			17
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		15.3		15.3	15.3			64.7		15.0	84.7	
Effective Green, g (s)		15.3		15.3	15.3			64.7		15.0	84.7	
Actuated g/C Ratio		0.14		0.14	0.14			0.59		0.14	0.77	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		62		185	210			1810		225	2725	
v/s Ratio Prot					0.05			c0.60		c0.10	0.33	
v/s Ratio Perm		0.06		c0.09								
v/c Ratio		0.46		0.64	0.37			1.03		0.74	0.43	
Uniform Delay, d1		43.5		44.8	43.0			22.6		45.6	4.4	
Progression Factor		1.01		1.00	1.00			0.66		0.91	0.66	
Incremental Delay, d2		5.3		7.4	1.1			15.3		8.9	0.4	
Delay (s)		49.0		52.2	44.0			30.1		50.6	3.2	
Level of Service		D		D	D			C		D	A	
Approach Delay (s)		49.0			46.4			30.1			9.1	
Approach LOS		D			D			C			A	

Intersection Summary			
HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	272	540	130	327	724	544	190	952	327	395	653	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3403		1711	3248		1711	3185		3319	3240	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3403		1711	3248		1711	3185		3319	3240	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	289	574	138	348	770	579	202	1013	348	420	695	241
RTOR Reduction (vph)	0	20	0	0	123	0	0	31	0	0	31	0
Lane Group Flow (vph)	289	692	0	348	1226	0	202	1330	0	420	905	0
Confl. Peds. (#/hr)	32		37	37		32	35		105	105		35
Confl. Bikes (#/hr)			2			3			2			13
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	28.4		19.6	34.0		12.0	31.0		15.0	34.0	
Effective Green, g (s)	14.0	28.4		19.6	34.0		12.0	31.0		15.0	34.0	
Actuated g/C Ratio	0.13	0.26		0.18	0.31		0.11	0.28		0.14	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	879		305	1004		187	898		453	1001	
v/s Ratio Prot	c0.16	0.20		0.20	c0.38		0.12	c0.42		0.13	c0.28	
v/s Ratio Perm												
v/c Ratio	1.28	0.79		1.14	1.22		1.08	1.48		0.93	0.90	
Uniform Delay, d1	48.0	38.0		45.2	38.0		49.0	39.5		47.0	36.4	
Progression Factor	1.00	1.00		0.78	0.70		1.07	1.38		1.05	1.06	
Incremental Delay, d2	157.4	4.7		82.4	104.4		73.6	220.1		23.7	12.2	
Delay (s)	205.4	42.7		117.6	131.0		126.0	274.5		72.8	50.9	
Level of Service	F	D		F	F		F	F		E	D	
Approach Delay (s)		89.7			128.3			255.3			57.7	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM Average Control Delay	139.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	116.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	20	210	60	30	80	160	1176	30	50	991	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.93			0.98			1.00			0.99	
Flpb, ped/bikes		0.99			0.98			1.00			1.00	
Frt		0.93			0.94			1.00			0.99	
Flt Protected		0.98			0.98			0.99			1.00	
Satd. Flow (prot)		1561			1655			5012			4932	
Flt Permitted		0.74			0.76			0.65			0.77	
Satd. Flow (perm)		1186			1274			3271			3826	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	191	22	233	67	33	89	178	1307	33	56	1101	122
RTOR Reduction (vph)	0	35	0	0	19	0	0	2	0	0	11	0
Lane Group Flow (vph)	0	411	0	0	170	0	0	1516	0	0	1268	0
Confl. Peds. (#/hr)	24		142	142		24	57		72	72		57
Confl. Bikes (#/hr)			2			3			5			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		40.7			40.7			63.3			63.3	
Effective Green, g (s)		40.7			40.7			63.3			63.3	
Actuated g/C Ratio		0.37			0.37			0.58			0.58	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		439			471			1882			2202	
v/s Ratio Prot												
v/s Ratio Perm		c0.35			0.13			c0.46			0.33	
v/c Ratio		0.94			0.36			1.02dl			0.58	
Uniform Delay, d1		33.4			25.2			18.5			14.8	
Progression Factor		1.00			1.00			1.00			0.79	
Incremental Delay, d2		27.5			0.5			3.8			0.5	
Delay (s)		60.9			25.7			22.3			12.2	
Level of Service		E			C			C			B	
Approach Delay (s)		60.9			25.7			22.3			12.2	
Approach LOS		E			C			C			B	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	308	210	160	40	120	63	140	835	50	82	851	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.98			0.98		1.00	1.00			0.98	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.94			0.96		1.00	0.99			0.97	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1770	3241			3283		1769	3494			4813	
Flt Permitted	0.60	1.00			0.85		0.12	1.00			0.78	
Satd. Flow (perm)	1118	3241			2826		226	3494			3782	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	324	221	168	42	126	66	147	879	53	86	896	277
RTOR Reduction (vph)	0	93	0	0	0	0	0	5	0	0	64	0
Lane Group Flow (vph)	324	296	0	0	234	0	147	927	0	0	1195	0
Confl. Peds. (#/hr)			49	49		76	73		94	94		73
Confl. Bikes (#/hr)			6			10			11			13
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	482	1398			1219		193	1638			1418	
v/s Ratio Prot		0.09					c0.04	0.27				
v/s Ratio Perm	c0.29				0.08		0.32				c0.32	
v/c Ratio	0.67	0.21			0.19		0.76	0.57			0.84	
Uniform Delay, d1	18.2	14.2			14.1		14.5	15.4			22.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	7.3	0.3			0.4		24.3	1.4			6.3	
Delay (s)	25.5	14.6			14.5		38.8	16.8			29.1	
Level of Service	C	B			B		D	B			C	
Approach Delay (s)		19.6			14.5			19.8			29.1	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	143.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	100
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1526
Flt Permitted	1.00
Satd. Flow (perm)	1526
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	105
RTOR Reduction (vph)	66
Lane Group Flow (vph)	39
Confl. Peds. (#/hr)	48
Confl. Bikes (#/hr)	6
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	572
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.07
Uniform Delay, d1	16.0
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	16.3
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	430	120	100	640	382	190	564	60	312	543	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	11	11	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.94		1.00	1.00	0.97	1.00	1.00	0.90
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4900		1770	4503		1652	3421	1485	1711	3250	1377
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4900		1770	4503		1652	3421	1485	1711	3250	1377
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	467	130	109	696	415	207	613	65	339	590	115
RTOR Reduction (vph)	0	50	0	0	106	0	0	0	48	0	0	85
Lane Group Flow (vph)	174	547	0	109	1005	0	207	613	17	339	590	30
Confl. Peds. (#/hr)	114		3	3		114	67		3	3		67
Confl. Bikes (#/hr)			2			13			17			17
Parking (#/hr)											0	
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	11.9	26.1		11.9	26.1		17.5	26.5	26.5	17.5	26.5	26.5
Effective Green, g (s)	11.9	26.1		11.9	26.1		17.5	26.5	26.5	17.5	26.5	26.5
Actuated g/C Ratio	0.12	0.26		0.12	0.26		0.18	0.26	0.26	0.18	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	211	1279		211	1175		289	907	394	299	861	365
v/s Ratio Prot	c0.10	0.11		0.06	c0.22		0.13	0.18		c0.20	c0.18	
v/s Ratio Perm									0.01			0.02
v/c Ratio	0.82	0.43		0.52	0.85		0.72	0.68	0.04	1.13	0.69	0.08
Uniform Delay, d1	43.0	30.7		41.3	35.1		38.9	32.9	27.3	41.2	33.0	27.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.3	0.1		0.9	6.0		6.9	4.0	0.2	93.2	4.4	0.4
Delay (s)	64.4	30.8		42.2	41.2		45.8	36.9	27.5	134.4	37.4	28.1
Level of Service	E	C		D	D		D	D	C	F	D	C
Approach Delay (s)		38.4			41.3			38.3			67.9	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	47.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	71	50	62	138	199	10	1180	107	133	1160	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98			1.00	0.96	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1744	1721			1828	1517	1770	5008		1770	5075	
Flt Permitted	0.48	1.00			0.85	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	879	1721			1578	1517	1770	5008		1770	5075	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	74	52	65	144	207	10	1229	111	139	1208	10
RTOR Reduction (vph)	0	42	0	0	0	168	0	10	0	0	1	0
Lane Group Flow (vph)	42	84	0	0	209	39	10	1330	0	139	1217	0
Confl. Peds. (#/hr)	27		16	16		27	37		16	16		37
Confl. Bikes (#/hr)			11			8			8			5
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	15.0	15.0			15.0	15.0	1.2	35.8		15.7	50.3	
Effective Green, g (s)	15.0	15.0			15.0	15.0	1.2	35.8		15.7	50.3	
Actuated g/C Ratio	0.19	0.19			0.19	0.19	0.01	0.45		0.20	0.63	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	165	323			296	284	27	2241		347	3191	
v/s Ratio Prot		0.05					0.01	c0.27		0.08	c0.24	
v/s Ratio Perm	0.05				c0.13	0.03						
v/c Ratio	0.25	0.26			0.71	0.14	0.37	0.59		0.40	0.38	
Uniform Delay, d1	27.7	27.8			30.4	27.1	39.0	16.6		28.0	7.3	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			6.1	0.1	3.1	1.2		0.3	0.3	
Delay (s)	28.0	27.9			36.6	27.2	42.1	17.8		28.3	7.6	
Level of Service	C	C			D	C	D	B		C	A	
Approach Delay (s)		27.9			31.9			18.0			9.7	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	800	210	40	939	183	210	170	80	138	170	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.95		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4886		1765	4902		1768	1743		1740	1627	
Flt Permitted	0.95	1.00		0.27	1.00		0.17	1.00		0.60	1.00	
Satd. Flow (perm)	1770	4886		494	4902		310	1743		1101	1627	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	306	816	214	41	958	187	214	173	82	141	173	286
RTOR Reduction (vph)	0	56	0	0	30	0	0	16	0	0	59	0
Lane Group Flow (vph)	306	974	0	41	1115	0	214	239	0	141	400	0
Confl. Peds. (#/hr)	32		8	8		32	27		22	22		27
Confl. Bikes (#/hr)			13			6			29			17
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	21.3	56.5		31.2	31.2		34.5	34.5		20.0	20.0	
Effective Green, g (s)	21.3	56.5		31.2	31.2		34.5	34.5		20.0	20.0	
Actuated g/C Ratio	0.21	0.56		0.31	0.31		0.34	0.34		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	377	2761		154	1529		260	601		220	325	
v/s Ratio Prot	c0.17	0.20			c0.23		c0.09	0.14			c0.25	
v/s Ratio Perm				0.08			0.20			0.13		
v/c Ratio	0.81	0.35		0.27	0.73		0.82	0.40		0.64	1.23	
Uniform Delay, d1	37.4	11.8		25.8	30.6		26.7	24.9		36.7	40.0	
Progression Factor	1.00	1.00		1.27	1.22		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.5	0.1		0.5	1.0		18.6	2.0		13.5	127.6	
Delay (s)	49.9	11.9		33.2	38.3		45.3	26.8		50.2	167.6	
Level of Service	D	B		C	D		D	C		D	F	
Approach Delay (s)		20.6			38.1			35.2			140.0	
Approach LOS		C			D			D			F	

Intersection Summary			
HCM Average Control Delay	48.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	40	20	40	60	92	54	939	50	80	1054	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			0.99			0.99	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.98			0.94			0.99			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1753			1704			3466			3488	
Flt Permitted		0.58			0.91			0.81			0.77	
Satd. Flow (perm)		1039			1569			2816			2689	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	43	22	43	65	100	59	1021	54	87	1146	22
RTOR Reduction (vph)	0	7	0	0	33	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	175	0	0	1132	0	0	1255	0
Confl. Peds. (#/hr)	27		32	32					67	67		116
Confl. Bikes (#/hr)			3			3			59			41
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		13.2			13.2			57.8			57.8	
Effective Green, g (s)		13.2			13.2			57.8			57.8	
Actuated g/C Ratio		0.16			0.16			0.72			0.72	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		171			259			2035			1943	
v/s Ratio Prot												
v/s Ratio Perm		c0.12			0.11			0.40			c0.47	
v/c Ratio		0.72			0.67			7.38dl			0.65	
Uniform Delay, d1		31.7			31.4			5.1			5.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		11.9			5.4			1.1			1.7	
Delay (s)		43.6			36.7			6.3			7.4	
Level of Service		D			D			A			A	
Approach Delay (s)		43.6			36.7			6.3			7.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	124.0%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
! Phase conflict between lane groups.
c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	280	110
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	304	120
RTOR Reduction (vph)	9	0
Lane Group Flow (vph)	415	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		20
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	57.8	
Effective Green, g (s)	57.8	
Actuated g/C Ratio	0.72	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1164	
v/s Ratio Prot	0.26	
v/s Ratio Perm		
v/c Ratio	0.36	
Uniform Delay, d1	4.1	
Progression Factor	1.00	
Incremental Delay, d2	0.9	
Delay (s)	5.0	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	10	100	210	60	170	10	910	170	90	693	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.94			0.94		1.00	0.85	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.90		1.00	0.90			0.94		1.00	0.96	
Flt Protected		0.99		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1657		1681	1481			3114		1770	2886	
Flt Permitted		0.99		0.95	1.00			0.95		0.95	1.00	
Satd. Flow (perm)		1657		1681	1481			2948		1770	2886	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.25	0.95	0.95	0.95
Adj. Flow (vph)	21	11	105	221	63	179	11	958	680	95	729	284
RTOR Reduction (vph)	0	98	0	0	82	0	0	101	0	0	34	0
Lane Group Flow (vph)	0	39	0	199	182	0	0	1548	0	95	979	0
Confl. Peds. (#/hr)	51					51	202		38	38		202
Confl. Bikes (#/hr)						10			37			32
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		6.7		16.4	16.4			50.4		8.5	63.4	
Effective Green, g (s)		6.7		16.4	16.4			50.4		8.5	63.4	
Actuated g/C Ratio		0.07		0.16	0.16			0.50		0.08	0.63	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		111		276	243			1486		150	1830	
v/s Ratio Prot		c0.02		0.12	c0.12					0.05	c0.34	
v/s Ratio Perm								c0.53				
v/c Ratio		0.35		0.72	0.75			1.04		0.63	0.54	
Uniform Delay, d1		44.6		39.6	39.8			24.8		44.2	10.1	
Progression Factor		1.00		1.00	1.00			0.65		1.00	1.00	
Incremental Delay, d2		0.7		7.6	10.5			33.5		6.3	1.1	
Delay (s)		45.3		47.3	50.4			49.5		50.5	11.3	
Level of Service		D		D	D			D		D	B	
Approach Delay (s)		45.3			49.0			49.5			14.6	
Approach LOS		D			D			D			B	

Intersection Summary			
HCM Average Control Delay	37.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	558	200	203	682	209	150	620	193	213	750	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.92		1.00	0.98		1.00	0.92		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3114		1770	3357		1770	3154		1770	3459	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3114		1770	3357		1770	3154		1770	3459	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	265	569	204	207	696	213	153	633	197	217	765	41
RTOR Reduction (vph)	0	37	0	0	29	0	0	29	0	0	4	0
Lane Group Flow (vph)	265	736	0	207	880	0	153	801	0	217	802	0
Confl. Peds. (#/hr)	40		258	258		40	207		221	221		207
Confl. Bikes (#/hr)			5			8			43			40
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	26.1		11.0	26.1		5.0	33.9		12.0	40.9	
Effective Green, g (s)	11.0	26.1		11.0	26.1		5.0	33.9		12.0	40.9	
Actuated g/C Ratio	0.11	0.26		0.11	0.26		0.05	0.34		0.12	0.41	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	378	813		195	876		89	1069		212	1415	
v/s Ratio Prot	0.08	0.24		c0.12	c0.26		c0.09	c0.25		c0.12	0.23	
v/s Ratio Perm												
v/c Ratio	0.70	0.91		1.06	1.00		1.72	0.75		1.02	0.57	
Uniform Delay, d1	42.9	35.8		44.5	37.0		47.5	29.3		44.0	22.7	
Progression Factor	0.93	1.24		1.00	1.00		1.00	1.00		1.12	0.74	
Incremental Delay, d2	4.5	12.6		81.7	31.6		366.3	4.8		63.1	1.4	
Delay (s)	44.5	56.9		126.2	68.5		413.8	34.1		112.3	18.3	
Level of Service	D	E		F	E		F	C		F	B	
Approach Delay (s)		53.7			79.2			93.2			38.3	
Approach LOS		D			E			F			D	

Intersection Summary			
HCM Average Control Delay	66.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	852	30	25	1007	54	30	50	28	45	40	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1766	3516		1760	3506			1744			1747	
Flt Permitted	0.19	1.00		0.26	1.00			0.91			0.85	
Satd. Flow (perm)	356	3516		476	3506			1608			1522	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	897	32	26	1060	57	32	53	29	47	42	21
RTOR Reduction (vph)	0	3	0	0	5	0	0	15	0	0	10	0
Lane Group Flow (vph)	53	926	0	26	1112	0	0	99	0	0	100	0
Confl. Peds. (#/hr)	11		25	25		11	16		16	16		16
Confl. Bikes (#/hr)			5			10			35			48
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	202	1997		270	1991			496			470	
v/s Ratio Prot		0.26			c0.32							
v/s Ratio Perm	0.15			0.05				0.06			c0.07	
v/c Ratio	0.26	0.46		0.10	0.56			0.20			0.21	
Uniform Delay, d1	8.9	10.3		8.0	11.1			20.6			20.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.1	0.8		0.7	1.1			0.9			1.0	
Delay (s)	12.0	11.0		8.7	12.2			21.5			21.7	
Level of Service	B	B		A	B			C			C	
Approach Delay (s)		11.1			12.1			21.5			21.7	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	408	773	60	60	1102	215	80	63	40	216	86	407
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.99			1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.98	1.00
Frt	1.00	0.99		1.00	0.98			0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	1.00
Satd. Flow (prot)	3204	3342		1711	3293			1721			1771	1444
Flt Permitted	0.95	1.00		0.95	1.00			0.56			0.64	1.00
Satd. Flow (perm)	3204	3342		1711	3293			986			1181	1444
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	429	814	63	63	1160	226	84	66	42	227	91	428
RTOR Reduction (vph)	0	4	0	0	13	0	0	10	0	0	0	252
Lane Group Flow (vph)	429	873	0	63	1373	0	0	182	0	0	318	176
Confl. Peds. (#/hr)	54		49	49		54	65		29	29		65
Confl. Bikes (#/hr)			6			3			8			6
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	17.8	56.8		6.4	45.4			34.8			34.8	34.8
Effective Green, g (s)	17.8	56.8		6.4	45.4			34.8			34.8	34.8
Actuated g/C Ratio	0.16	0.52		0.06	0.41			0.32			0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	518	1726		100	1359			312			374	457
v/s Ratio Prot	c0.13	0.26		0.04	c0.42							
v/s Ratio Perm								0.18			c0.27	0.12
v/c Ratio	0.83	0.51		0.63	1.01			0.58			0.85	0.39
Uniform Delay, d1	44.6	17.4		50.6	32.3			31.5			35.2	29.3
Progression Factor	0.72	0.38		1.05	0.85			1.00			1.00	1.00
Incremental Delay, d2	3.4	0.3		7.0	20.7			2.8			16.7	0.5
Delay (s)	35.4	6.9		60.0	48.1			34.3			51.8	29.8
Level of Service	D	A		E	D			C			D	C
Approach Delay (s)		16.3			48.6			34.3			39.2	
Approach LOS		B			D			C			D	

Intersection Summary			
HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	960	51	40	1282	10	22	10	40	10	10	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	54	1011	54	42	1349	11	23	11	42	11	11	13
Pedestrians		16			5			17			11	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked	0.85			0.86			0.92	0.92	0.86	0.92	0.92	0.85
vC, conflicting volume	1371			1081			1955	2617	554	2115	2639	707
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1091			767			1183	1900	154	1357	1923	313
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			94			75	80	94	85	79	98
cM capacity (veh/h)	537			714			93	52	730	68	51	569

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	559	559	717	685	76	34
Volume Left	54	0	42	0	23	11
Volume Right	0	54	0	11	42	13
cSH	537	1700	714	1700	149	88
Volume to Capacity	0.10	0.33	0.06	0.40	0.51	0.38
Queue Length 95th (ft)	8	0	5	0	61	38
Control Delay (s)	2.8	0.0	1.6	0.0	51.7	69.8
Lane LOS	A		A		F	F
Approach Delay (s)	1.4		0.8		51.7	69.8
Approach LOS					F	F

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	928	63	50	1176	40	64	10	70	20	20	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.95	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	42	967	66	52	1225	42	67	11	73	21	21	52
Pedestrians		3			3			21			21	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.74			0.91			0.78	0.78	0.91	0.78	0.78	0.74
vC, conflicting volume	1288			1053			1886	2496	540	2019	2508	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	673			868			1069	1852	306	1240	1867	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			92			8	78	88	68	55	93
cM capacity (veh/h)	661			692			72	48	617	65	47	782

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	525	549	665	654	150	94
Volume Left	42	0	52	0	67	21
Volume Right	0	66	0	42	73	52
cSH	661	1700	692	1700	119	112
Volume to Capacity	0.06	0.32	0.08	0.38	1.26	0.83
Queue Length 95th (ft)	5	0	6	0	243	122
Control Delay (s)	1.7	0.0	2.0	0.0	238.2	115.6
Lane LOS	A		A		F	F
Approach Delay (s)	0.8		1.0		238.2	115.6
Approach LOS					F	F

Intersection Summary			
Average Delay	18.5		
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	141	526	351	240	917	120	169	180	170	100	70	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.97			0.99			0.98			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.95			0.99			0.96			0.95	
Flt Protected		0.99			0.99			0.98			0.98	
Satd. Flow (prot)		3241			3428			1933			1695	
Flt Permitted		0.60			0.56			0.78			0.67	
Satd. Flow (perm)		1949			1928			1536			1155	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	148	554	369	253	965	126	178	189	179	105	74	96
RTOR Reduction (vph)	0	124	0	0	14	0	0	32	0	0	35	0
Lane Group Flow (vph)	0	947	0	0	1330	0	0	514	0	0	240	0
Confl. Peds. (#/hr)	37		29	29		37	59		45	45		59
Confl. Bikes (#/hr)			5			8			2			2
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		549			1147			531			399	
v/s Ratio Prot					c0.17							
v/s Ratio Perm		c0.49			0.39			c0.33			0.21	
v/c Ratio		1.73			1.16			0.97			0.60	
Uniform Delay, d1		19.8			14.2			17.7			14.9	
Progression Factor		1.06			1.00			1.00			1.00	
Incremental Delay, d2		333.6			81.8			31.9			6.5	
Delay (s)		354.5			96.1			49.6			21.4	
Level of Service		F			F			D			C	
Approach Delay (s)		354.5			96.1			49.6			21.4	
Approach LOS		F			F			D			C	

Intersection Summary			
HCM Average Control Delay	167.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	116.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	175	110	80	417	315	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.87		1.00	1.00	1.00	0.49
Flpb, ped/bikes	1.00		0.74	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1482		1307	1863	1863	778
Flt Permitted	0.97		0.44	1.00	1.00	1.00
Satd. Flow (perm)	1482		610	1863	1863	778
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	219	138	100	521	394	140
RTOR Reduction (vph)	17	0	0	0	0	69
Lane Group Flow (vph)	340	0	100	521	394	71
Confl. Peds. (#/hr)	146	248	501			501
Confl. Bikes (#/hr)		16				17
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	566		311	948	948	396
v/s Ratio Prot	c0.23			c0.28	0.21	
v/s Ratio Perm			0.16			0.09
v/c Ratio	0.60		0.32	0.55	0.42	0.18
Uniform Delay, d1	13.6		7.9	9.2	8.4	7.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7		2.7	2.3	1.3	1.0
Delay (s)	18.3		10.6	11.5	9.7	8.3
Level of Service	B		B	B	A	A
Approach Delay (s)	18.3			11.4	9.4	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	284	569	822	80	60	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.89	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	3539	3457		1616	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	3539	3457		1616	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	299	599	865	84	63	326
RTOR Reduction (vph)	0	0	11	0	227	0
Lane Group Flow (vph)	299	599	938	0	162	0
Confl. Peds. (#/hr)	35			35		3
Confl. Bikes (#/hr)				14		2
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	810		492	
v/s Ratio Prot	c0.17	0.17	c0.27		c0.10	
v/s Ratio Perm						
v/c Ratio	0.54	0.29	1.16		0.33	
Uniform Delay, d1	18.2	6.4	24.5		17.2	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	3.8	0.3	84.5		1.8	
Delay (s)	22.0	6.7	109.0		19.0	
Level of Service	C	A	F		B	
Approach Delay (s)		11.8	109.0		19.0	
Approach LOS		B	F		B	

Intersection Summary			
HCM Average Control Delay	54.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	60	70	850	30	61	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.93		1.00		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1673		1852		1770	1863
Flt Permitted	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1673		1852		1770	1863
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	67	79	955	34	69	629
RTOR Reduction (vph)	69	0	2	0	0	0
Lane Group Flow (vph)	77	0	987	0	69	629
Confl. Peds. (#/hr)		2				
Confl. Bikes (#/hr)				16		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	6.2		26.4		3.1	33.5
Effective Green, g (s)	6.2		26.4		3.1	33.5
Actuated g/C Ratio	0.13		0.54		0.06	0.69
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	213		1004		113	1282
v/s Ratio Prot	c0.05		c0.53		0.04	c0.34
v/s Ratio Perm						
v/c Ratio	0.36		0.98		0.61	0.49
Uniform Delay, d1	19.4		10.9		22.2	3.6
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.1		24.2		9.4	0.3
Delay (s)	20.5		35.1		31.6	3.9
Level of Service	C		D		C	A
Approach Delay (s)	20.5		35.1			6.6
Approach LOS	C		D			A

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	48.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	20	20	10	30	10	30	50	10	44	530	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.95			0.61					0.99	
Flpb, ped/bikes			0.78			0.94					0.98	
Frt			0.98			0.91					1.00	
Flt Protected			0.98			0.99					1.00	
Satd. Flow (prot)			1176			857					1580	
Flt Permitted			0.84			0.92					0.94	
Satd. Flow (perm)			1016			802					1489	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	20	20	10	31	10	31	51	10	45	541	20
RTOR Reduction (vph)	0	0	8	0	0	15	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	52	0	0	108	0	0	0	0	614	0
Confl. Peds. (#/hr)	218	161		119	119		218	161	194	218		339
Confl. Bikes (#/hr)				2			5	5				33
Parking (#/hr)			3			3					3	
Turn Type		Perm			Perm					Perm		
Protected Phases			1			1					2	
Permitted Phases		1			1					2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			237			187					620	
v/s Ratio Prot												
v/s Ratio Perm			0.05			c0.14					c0.41	
v/c Ratio			0.22			0.58					0.99	
Uniform Delay, d1			18.6			20.4					17.4	
Progression Factor			1.00			1.00					1.00	
Incremental Delay, d2			2.1			10.0					34.0	
Delay (s)			20.7			30.5					51.3	
Level of Service			C			C					D	
Approach Delay (s)			20.7			30.5					51.3	
Approach LOS			C			C					D	

Intersection Summary			
HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	40	343	30	30	30	20	36	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.93				0.74		
Flpb, ped/bikes		0.99				0.68		
Frt		0.98				0.94		
Flt Protected		1.00				0.97		
Satd. Flow (prot)		1646				760		
Flt Permitted		0.93				0.97		
Satd. Flow (perm)		1533				760		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	350	31	31	31	20	37	10
RTOR Reduction (vph)	0	5	0	0	0	7	0	0
Lane Group Flow (vph)	0	448	0	0	0	91	0	0
Confl. Peds. (#/hr)	339		194	218	101	213	75	122
Confl. Bikes (#/hr)			16	27				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		639				114		
v/s Ratio Prot								
v/s Ratio Perm		0.29				0.12		
v/c Ratio		0.70				0.80		
Uniform Delay, d1		14.4				24.6		
Progression Factor		1.00				1.00		
Incremental Delay, d2		6.3				42.8		
Delay (s)		20.8				67.4		
Level of Service		C				E		
Approach Delay (s)		20.8				67.4		
Approach LOS		C				E		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	10	0	0	0	0	0	10	20	30	10	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	27	13	0	0	0	0	0	13	27	40	13	0
Pedestrians		2			10			2			10	
Lane Width (ft)		12.0			0.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					380							
pX, platoon unblocked												
vC, conflicting volume	10			15			77	79	25	120	79	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	10			15			77	79	25	120	79	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	98	97	95	98	100
cM capacity (veh/h)	1596			1600			879	790	1049	800	790	1058

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	40	40	53
Volume Left	27	0	40
Volume Right	0	27	0
cSH	1596	946	797
Volume to Capacity	0.02	0.04	0.07
Queue Length 95th (ft)	1	3	5
Control Delay (s)	4.9	9.0	9.8
Lane LOS	A	A	A
Approach Delay (s)	4.9	9.0	9.8
Approach LOS		A	A

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	952	0	0	1112	10	0	0	20	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	1046	0	0	1222	11	0	0	22	0	0	0
Pedestrians					6			13			21	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					1			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1247			648							
pX, platoon unblocked	0.76			0.91			0.80	0.80	0.91	0.80	0.80	0.76
vC, conflicting volume	1254			1059			1670	2313	542	1800	2308	637
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	702			874			856	1657	307	1017	1650	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	96	100	100	100
cM capacity (veh/h)	677			693			198	77	619	147	78	824

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	697	349	815	418	22
Volume Left	0	0	0	0	0
Volume Right	0	0	0	11	22
cSH	1700	1700	1700	1700	619
Volume to Capacity	0.41	0.21	0.48	0.25	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	11.0
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.0
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1042	1296	100	0	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	1085	1350	104	0	34
Pedestrians					67	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					6	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		241	1290			
pX, platoon unblocked					0.84	
vC, conflicting volume	1521				2012	794
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1521				1818	794
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	89
cM capacity (veh/h)	410				55	312

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	543	543	900	554	34
Volume Left	0	0	0	0	0
Volume Right	0	0	0	104	34
cSH	1700	1700	1700	1700	312
Volume to Capacity	0.32	0.32	0.53	0.33	0.11
Queue Length 95th (ft)	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	17.9
Lane LOS					C
Approach Delay (s)	0.0		0.0		17.9
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL2
Lane Configurations												
Volume (vph)	20	10	30	20	18	10	10	10	618	17	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0				4.0			4.0			
Lane Util. Factor		1.00				1.00			0.95			
Frpb, ped/bikes		0.97				0.99			1.00			
Flpb, ped/bikes		1.00				0.99			1.00			
Frt		0.92				0.96			0.99			
Flt Protected		0.99				0.98			1.00			
Satd. Flow (prot)		1629				1730			3507			
Flt Permitted		0.94				0.88			0.94			
Satd. Flow (perm)		1549				1563			3311			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	11	33	22	20	11	11	11	687	19	11	11
RTOR Reduction (vph)	0	16	0	0	0	8	0	0	1	0	0	0
Lane Group Flow (vph)	0	72	0	0	0	34	0	0	727	0	0	0
Confl. Peds. (#/hr)	17		14		14		17	14		3		
Confl. Bikes (#/hr)										8	8	
Turn Type	Perm				Perm			Perm				
Protected Phases		4				4			2			
Permitted Phases	4				4			2				
Actuated Green, G (s)		16.0				16.0			16.0			
Effective Green, g (s)		16.0				16.0			16.0			
Actuated g/C Ratio		0.27				0.27			0.27			
Clearance Time (s)		4.0				4.0			4.0			
Lane Grp Cap (vph)		413				417			883			
v/s Ratio Prot												
v/s Ratio Perm		c0.05				0.02			0.22			
v/c Ratio		0.17				0.08			0.82			
Uniform Delay, d1		16.9				16.5			20.7			
Progression Factor		0.93				1.00			1.00			
Incremental Delay, d2		0.7				0.4			8.5			
Delay (s)		16.3				16.9			29.2			
Level of Service		B				B			C			
Approach Delay (s)		16.3				16.9			29.2			
Approach LOS		B				B			C			

Intersection Summary			
HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations						
Volume (vph)	30	502	20	10	20	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	
Lane Util. Factor		0.95			1.00	
Frpb, ped/bikes		1.00			1.00	
Flpb, ped/bikes		1.00			1.00	
Frt		0.99			0.95	
Flt Protected		1.00			0.97	
Satd. Flow (prot)		3502			1711	
Flt Permitted		0.76			0.97	
Satd. Flow (perm)		2688			1711	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	558	22	11	22	22
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	0	620	0	0	55	0
Confl. Peds. (#/hr)	3		14			
Confl. Bikes (#/hr)			2			
Turn Type	Perm			Perm		
Protected Phases		6			8	
Permitted Phases	6			8		
Actuated Green, G (s)		16.0			16.0	
Effective Green, g (s)		16.0			16.0	
Actuated g/C Ratio		0.27			0.27	
Clearance Time (s)		4.0			4.0	
Lane Grp Cap (vph)		717			456	
v/s Ratio Prot						
v/s Ratio Perm		c0.23			0.03	
v/c Ratio		0.86			0.12	
Uniform Delay, d1		21.0			16.7	
Progression Factor		1.00			1.00	
Incremental Delay, d2		13.1			0.5	
Delay (s)		34.1			17.2	
Level of Service		C			B	
Approach Delay (s)		34.1			17.2	
Approach LOS		C			B	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	214	30	665	208	30	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.98		0.96		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	1750		3359		1711	3421
Flt Permitted	0.96		1.00		0.95	1.00
Satd. Flow (perm)	1750		3359		1711	3421
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	218	31	679	212	31	531
RTOR Reduction (vph)	10	0	42	0	0	0
Lane Group Flow (vph)	239	0	849	0	31	531
Confl. Peds. (#/hr)		8		19	19	
Confl. Bikes (#/hr)		3		11		
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	11.8		28.7		2.5	35.2
Effective Green, g (s)	11.8		28.7		2.5	35.2
Actuated g/C Ratio	0.21		0.52		0.05	0.64
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	2.0		2.0		3.0	2.0
Lane Grp Cap (vph)	375		1753		78	2189
v/s Ratio Prot	c0.14		c0.25		c0.02	0.16
v/s Ratio Perm						
v/c Ratio	0.64		0.48		0.40	0.24
Uniform Delay, d1	19.7		8.4		25.5	4.2
Progression Factor	1.00		0.47		1.00	1.00
Incremental Delay, d2	2.6		0.9		3.3	0.3
Delay (s)	22.3		4.8		28.8	4.5
Level of Service	C		A		C	A
Approach Delay (s)	22.3		4.8			5.8
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	402	416	873	662	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	10	11	11
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frpb, ped/bikes		1.00	1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	
Frt		0.86	1.00	1.00	0.99	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1711	3303	3348	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1711	3303	3348	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	410	424	891	676	71
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	0	410	424	891	735	0
Confl. Peds. (#/hr)						32
Confl. Bikes (#/hr)		5				6
Turn Type		Over	Prot			
Protected Phases		1	1	6	2	
Permitted Phases						
Actuated Green, G (s)		20.2	20.2	31.0	24.8	
Effective Green, g (s)		20.2	20.2	31.0	24.8	
Actuated g/C Ratio		0.37	0.37	0.56	0.45	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		592	628	1862	1510	
v/s Ratio Prot		c0.25	0.25	c0.27	0.22	
v/s Ratio Perm						
v/c Ratio		0.69	0.68	0.48	0.49	
Uniform Delay, d1		14.8	14.6	7.2	10.6	
Progression Factor		1.00	1.23	0.87	0.78	
Incremental Delay, d2		3.5	2.2	0.7	1.1	
Delay (s)		18.3	20.2	6.9	9.4	
Level of Service		B	C	A	A	
Approach Delay (s)	18.3			11.2	9.4	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	5.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	30	101	0	244	0	1021	251	178	886	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	10	12	10
Total Lost time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00			0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.97			0.94		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.92		1.00	0.85			0.97		1.00	1.00	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1670		1770	1535			3111		1652	3539	
Flt Permitted		0.36		0.80	1.00			1.00		0.95	1.00	
Satd. Flow (perm)		619		1489	1535			3111		1652	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	0	31	103	0	249	0	1042	256	182	904	0
RTOR Reduction (vph)	0	27	0	0	218	0	0	14	0	0	0	0
Lane Group Flow (vph)	0	24	0	103	31	0	0	1284	0	182	904	0
Confl. Peds. (#/hr)	16					16			92	92		17
Confl. Bikes (#/hr)									16			24
Turn Type	Perm			Perm						Prot		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		13.9		13.9	13.9			66.1		15.0	86.1	
Effective Green, g (s)		13.9		13.9	13.9			66.1		15.0	86.1	
Actuated g/C Ratio		0.13		0.13	0.13			0.60		0.14	0.78	
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		78		188	194			1869		225	2770	
v/s Ratio Prot					0.02			c0.41		c0.11	0.26	
v/s Ratio Perm		0.04		c0.07								
v/c Ratio		0.31		0.55	0.16			0.69		0.81	0.33	
Uniform Delay, d1		43.7		45.1	42.9			14.9		46.1	3.5	
Progression Factor		0.99		1.00	1.00			0.47		0.98	0.76	
Incremental Delay, d2		2.2		3.2	0.4			0.8		17.0	0.3	
Delay (s)		45.2		48.3	43.3			7.9		62.0	2.9	
Level of Service		D		D	D			A		E	A	
Approach Delay (s)		45.2			44.7			7.9			12.8	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	222	610	60	217	584	474	90	582	206	448	433	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12	11	11	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3492		1711	3234		1711	3232		3319	3292	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3492		1711	3234		1711	3232		3319	3292	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	227	622	61	221	596	484	92	594	210	457	442	119
RTOR Reduction (vph)	0	8	0	0	133	0	0	33	0	0	21	0
Lane Group Flow (vph)	227	676	0	221	947	0	92	771	0	457	540	0
Confl. Peds. (#/hr)						35			49			8
Confl. Bikes (#/hr)												13
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	27.5		20.5	34.0		8.9	30.2		15.8	37.1	
Effective Green, g (s)	14.0	27.5		20.5	34.0		8.9	30.2		15.8	37.1	
Actuated g/C Ratio	0.13	0.25		0.19	0.31		0.08	0.27		0.14	0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	873		319	1000		138	887		477	1110	
v/s Ratio Prot	c0.13	0.19		0.13	c0.29		0.05	c0.24		c0.14	0.16	
v/s Ratio Perm												
v/c Ratio	1.01	0.77		0.69	0.95		0.67	0.87		0.96	0.49	
Uniform Delay, d1	48.0	38.4		41.8	37.1		49.1	38.0		46.8	28.9	
Progression Factor	1.00	1.00		0.72	0.62		0.93	0.95		0.98	1.00	
Incremental Delay, d2	62.3	4.3		4.2	12.5		11.4	11.2		29.7	1.5	
Delay (s)	110.3	42.7		34.4	35.3		57.3	47.1		75.5	30.4	
Level of Service	F	D		C	D		E	D		E	C	
Approach Delay (s)		59.5			35.1			48.2			50.7	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM Average Control Delay	47.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	10	40	30	20	50	60	766	10	40	631	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.93			0.93			1.00			0.99	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1680			1682			5050			5024	
Flt Permitted		0.73			0.85			0.83			0.85	
Satd. Flow (perm)		1248			1446			4220			4284	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	33	10	41	31	20	51	61	782	10	41	644	30
RTOR Reduction (vph)	0	37	0	0	47	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	47	0	0	55	0	0	853	0	0	714	0
Confl. Peds. (#/hr)	11		9	9		11	14		25	25		14
Confl. Bikes (#/hr)			2			3			6			6
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		9.5			9.5			94.5			94.5	
Effective Green, g (s)		9.5			9.5			94.5			94.5	
Actuated g/C Ratio		0.09			0.09			0.86			0.86	
Clearance Time (s)		3.0			3.0			3.0			3.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		108			125			3625			3680	
v/s Ratio Prot												
v/s Ratio Perm		0.04			c0.04			c0.20			0.17	
v/c Ratio		0.43			0.44			0.24			0.19	
Uniform Delay, d1		47.7			47.7			1.4			1.3	
Progression Factor		1.00			1.00			1.00			0.26	
Incremental Delay, d2		2.7			2.5			0.2			0.1	
Delay (s)		50.4			50.2			1.5			0.4	
Level of Service		D			D			A			A	
Approach Delay (s)		50.4			50.2			1.5			0.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	210	170	30	110	53	90	545	30	52	491	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	0.95			0.91	
Frpb, ped/bikes	1.00	0.98			0.99		1.00	1.00			0.98	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00			1.00	
Frt	1.00	0.93			0.96		1.00	0.99			0.96	
Flt Protected	0.95	1.00			0.99		0.95	1.00			1.00	
Satd. Flow (prot)	1748	3249			3333		1763	3500			4789	
Flt Permitted	0.62	1.00			0.87		0.26	1.00			0.85	
Satd. Flow (perm)	1138	3249			2919		490	3500			4073	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	284	231	187	33	121	58	99	599	33	57	540	190
RTOR Reduction (vph)	0	106	0	0	0	0	0	5	0	0	72	0
Lane Group Flow (vph)	284	312	0	0	212	0	99	627	0	0	715	0
Confl. Peds. (#/hr)	24		22	22		24	71		66	66		71
Confl. Bikes (#/hr)			17			9			27			14
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		3			3		1	6			2	
Permitted Phases	3			3			6			2		
Actuated Green, G (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Effective Green, g (s)	34.5	34.5			34.5		37.5	37.5			30.0	
Actuated g/C Ratio	0.43	0.43			0.43		0.47	0.47			0.38	
Clearance Time (s)	3.0	3.0			3.0		3.0	5.0			5.0	
Lane Grp Cap (vph)	491	1401			1259		301	1641			1527	
v/s Ratio Prot		0.10					0.02	c0.18				
v/s Ratio Perm	c0.25				0.07		0.14				c0.18	
v/c Ratio	0.58	0.22			0.17		0.33	0.38			0.47	
Uniform Delay, d1	17.2	14.3			14.0		12.4	13.8			19.0	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	4.9	0.4			0.3		2.9	0.7			1.0	
Delay (s)	22.1	14.7			14.2		15.3	14.4			20.0	
Level of Service	C	B			B		B	B			B	
Approach Delay (s)		17.7			14.2			14.5			20.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SWR2
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1611
Flt Permitted	1.00
Satd. Flow (perm)	1611
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	33
RTOR Reduction (vph)	21
Lane Group Flow (vph)	12
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	custom
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	30.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Lane Grp Cap (vph)	604
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.02
Uniform Delay, d1	15.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	15.8
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	470	110	70	540	162	110	394	80	242	343	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	11	11	11	11	11
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.97	1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4917		1770	4768		1652	3421	1487	1711	3250	1410
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4917		1770	4768		1652	3421	1487	1711	3250	1410
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	101	528	124	79	607	182	124	443	90	272	385	108
RTOR Reduction (vph)	0	37	0	0	52	0	0	0	66	0	0	79
Lane Group Flow (vph)	101	615	0	79	737	0	124	443	24	272	385	29
Confl. Peds. (#/hr)			5			79			8			54
Confl. Bikes (#/hr)			8			19			9			8
Parking (#/hr)											0	
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	3	4		3	4		1	2		1	2	
Permitted Phases									2			2
Actuated Green, G (s)	9.7	28.7		9.7	28.7		17.1	26.5	26.5	17.1	26.5	26.5
Effective Green, g (s)	9.7	28.7		9.7	28.7		17.1	26.5	26.5	17.1	26.5	26.5
Actuated g/C Ratio	0.10	0.29		0.10	0.29		0.17	0.26	0.26	0.17	0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	172	1411		172	1368		282	907	394	293	861	374
v/s Ratio Prot	c0.06	0.13		0.04	c0.15		0.08	c0.13		c0.16	0.12	
v/s Ratio Perm									0.02			0.02
v/c Ratio	0.59	0.44		0.46	0.54		0.44	0.49	0.06	0.93	0.45	0.08
Uniform Delay, d1	43.2	29.1		42.7	30.1		37.2	31.0	27.5	40.8	30.6	27.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.1		0.7	0.2		0.4	1.9	0.3	33.4	1.7	0.4
Delay (s)	46.5	29.1		43.4	30.3		37.6	32.9	27.7	74.3	32.3	28.0
Level of Service	D	C		D	C		D	C	C	E	C	C
Approach Delay (s)		31.5			31.5			33.1			46.6	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	35.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	91	60	92	108	160	150	1270	87	163	1440	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98			1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			0.99	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1761	1720			1810	1535	1770	5023		1770	5077	
Flt Permitted	0.49	1.00			0.72	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	906	1720			1324	1535	1770	5023		1770	5077	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	53	97	64	98	115	170	160	1351	93	173	1532	11
RTOR Reduction (vph)	0	38	0	0	0	135	0	7	0	0	0	0
Lane Group Flow (vph)	53	123	0	0	213	35	160	1437	0	173	1543	0
Confl. Peds. (#/hr)	9		22	22		9			25			19
Confl. Bikes (#/hr)			16			11			3			9
Turn Type	Perm			Perm		Perm	Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)	16.3	16.3			16.3	16.3	8.0	37.7		12.5	42.2	
Effective Green, g (s)	16.3	16.3			16.3	16.3	8.0	37.7		12.5	42.2	
Actuated g/C Ratio	0.20	0.20			0.20	0.20	0.10	0.47		0.16	0.53	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	185	350			270	313	177	2367		277	2678	
v/s Ratio Prot		0.07					c0.09	c0.29		0.10	c0.30	
v/s Ratio Perm	0.06				c0.16	0.02						
v/c Ratio	0.29	0.35			0.79	0.11	0.90	0.61		0.62	0.58	
Uniform Delay, d1	26.9	27.3			30.2	25.9	35.6	15.7		31.6	12.8	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2			13.1	0.1	40.5	1.2		3.1	0.9	
Delay (s)	27.2	27.5			43.3	26.0	76.1	16.8		34.7	13.7	
Level of Service	C	C			D	C	E	B		C	B	
Approach Delay (s)		27.5			35.7			22.7			15.8	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	760	190	40	709	213	180	190	40	158	210	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4892		1761	4855		1768	1796		1732	1622	
Flt Permitted	0.95	1.00		0.28	1.00		0.16	1.00		0.61	1.00	
Satd. Flow (perm)	1770	4892		514	4855		301	1796		1111	1622	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	302	792	198	42	739	222	188	198	42	165	219	396
RTOR Reduction (vph)	0	55	0	0	59	0	0	7	0	0	64	0
Lane Group Flow (vph)	302	935	0	42	902	0	188	233	0	165	551	0
Confl. Peds. (#/hr)			13	13		14	21		28	28		21
Confl. Bikes (#/hr)			3			6			28			21
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	21.2	53.1		27.9	27.9		37.9	37.9		20.7	20.7	
Effective Green, g (s)	21.2	53.1		27.9	27.9		37.9	37.9		20.7	20.7	
Actuated g/C Ratio	0.21	0.53		0.28	0.28		0.38	0.38		0.21	0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	375	2598		143	1355		308	681		230	336	
v/s Ratio Prot	c0.17	0.19			c0.19		c0.08	0.13			c0.34	
v/s Ratio Perm				0.08			0.15			0.15		
v/c Ratio	0.81	0.36		0.29	0.67		0.61	0.34		0.72	1.64	
Uniform Delay, d1	37.4	13.6		28.3	31.9		24.0	22.2		36.9	39.6	
Progression Factor	1.00	1.00		1.15	1.12		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.9	0.1		1.0	1.1		3.6	1.4		17.5	300.8	
Delay (s)	49.3	13.7		33.5	36.7		27.5	23.5		54.4	340.4	
Level of Service	D	B		C	D		C	C		D	F	
Approach Delay (s)		22.0			36.6			25.3			279.9	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM Average Control Delay	84.0	HCM Level of Service	F
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	30	30	40	30	40	30	799	30	40	864	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			0.99			0.99	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.96			0.95			0.99			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1721			1718			3487			3466	
Flt Permitted		0.78			0.82			0.90			0.88	
Satd. Flow (perm)		1366			1442			3130			3058	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	53	32	32	43	32	43	32	850	32	43	919	32
RTOR Reduction (vph)	0	15	0	0	38	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	102	0	0	80	0	0	913	0	0	994	0
Confl. Peds. (#/hr)	27		32	32					66	66		115
Confl. Bikes (#/hr)			6			2			55			62
Turn Type	Perm			Perm						custom		
Protected Phases		4			4			2				
Permitted Phases	4			4						6	6!	
Actuated Green, G (s)		10.0			10.0			61.0			61.0	
Effective Green, g (s)		10.0			10.0			61.0			61.0	
Actuated g/C Ratio		0.12			0.12			0.76			0.76	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.0			2.0			2.0			2.0	
Lane Grp Cap (vph)		171			180			2387			2332	
v/s Ratio Prot												
v/s Ratio Perm		c0.07			0.06			0.29			c0.33	
v/c Ratio		0.60			0.45			5.33dl			0.43	
Uniform Delay, d1		33.1			32.4			3.2			3.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.7			0.6			0.5			0.6	
Delay (s)		36.8			33.1			3.7			3.9	
Level of Service		D			C			A			A	
Approach Delay (s)		36.8			33.1			3.7			3.9	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

! Phase conflict between lane groups.

c Critical Lane Group

Movement	SER	SER2
Lane Configurations		
Volume (vph)	270	60
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1611	
Flt Permitted	1.00	
Satd. Flow (perm)	1611	
Peak-hour factor, PHF	0.94	0.94
Adj. Flow (vph)	287	64
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	346	0
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	61.0	
Effective Green, g (s)	61.0	
Actuated g/C Ratio	0.76	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1228	
v/s Ratio Prot	0.22	
v/s Ratio Perm		
v/c Ratio	0.28	
Uniform Delay, d1	2.9	
Progression Factor	1.00	
Incremental Delay, d2	0.6	
Delay (s)	3.4	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	10	30	150	40	170	10	869	130	110	873	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.95			0.98		1.00	0.96	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.94		1.00	0.89			0.98		1.00	0.97	
Flt Protected		0.98		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1686		1681	1481			3410		1770	3290	
Flt Permitted		0.98		0.95	1.00			0.94		0.95	1.00	
Satd. Flow (perm)		1686		1681	1481			3212		1770	3290	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	31	10	31	153	41	173	10	887	133	112	891	245
RTOR Reduction (vph)	0	28	0	0	125	0	0	9	0	0	18	0
Lane Group Flow (vph)	0	44	0	138	104	0	0	1021	0	112	1118	0
Confl. Peds. (#/hr)						35	51		35			51
Confl. Bikes (#/hr)			8			6			22			49
Turn Type	Split			Split			Perm			Prot		
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases							2					
Actuated Green, G (s)		5.8		12.9	12.9			53.0		10.3	67.8	
Effective Green, g (s)		5.8		12.9	12.9			53.0		10.3	67.8	
Actuated g/C Ratio		0.06		0.13	0.13			0.53		0.10	0.68	
Clearance Time (s)		4.5		4.5	4.5			4.5		4.5	4.5	
Vehicle Extension (s)		2.0		2.0	2.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		98		217	191			1702		182	2231	
v/s Ratio Prot		c0.03		c0.08	0.07					c0.06	0.34	
v/s Ratio Perm								c0.32				
v/c Ratio		0.45		0.64	0.54			0.60		0.62	0.50	
Uniform Delay, d1		45.5		41.3	40.8			16.2		43.0	7.9	
Progression Factor		1.00		1.00	1.00			0.51		1.00	1.00	
Incremental Delay, d2		1.2		4.4	1.7			1.2		4.3	0.8	
Delay (s)		46.7		45.8	42.5			9.5		47.2	8.7	
Level of Service		D		D	D			A		D	A	
Approach Delay (s)		46.7			43.7			9.5			12.1	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	270	578	140	143	472	179	110	560	163	273	710	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.94		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3376		1770	3173		1770	3335		1770	3482	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3376		1770	3173		1770	3335		1770	3482	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	278	596	144	147	487	185	113	577	168	281	732	72
RTOR Reduction (vph)	0	22	0	0	41	0	0	26	0	0	7	0
Lane Group Flow (vph)	278	718	0	147	631	0	113	719	0	281	797	0
Confl. Peds. (#/hr)			47			156			63			
Confl. Bikes (#/hr)			19			25			24			38
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.1	24.9		10.4	24.2		5.0	35.7		12.0	42.7	
Effective Green, g (s)	11.1	24.9		10.4	24.2		5.0	35.7		12.0	42.7	
Actuated g/C Ratio	0.11	0.25		0.10	0.24		0.05	0.36		0.12	0.43	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	381	841		184	768		89	1191		212	1487	
v/s Ratio Prot	0.08	c0.21		c0.08	0.20		0.06	c0.22		c0.16	0.23	
v/s Ratio Perm												
v/c Ratio	0.73	0.85		0.80	0.82		1.27	0.60		1.33	0.54	
Uniform Delay, d1	43.0	35.8		43.8	35.9		47.5	26.4		44.0	21.3	
Progression Factor	0.91	1.29		1.00	1.00		1.00	1.00		1.19	0.71	
Incremental Delay, d2	5.5	7.7		19.8	6.7		184.1	2.3		172.7	1.2	
Delay (s)	44.4	54.1		63.6	42.6		231.6	28.6		225.2	16.3	
Level of Service	D	D		E	D		F	C		F	B	
Approach Delay (s)		51.5			46.4			55.4			70.4	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM Average Control Delay	56.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	842	40	26	777	44	30	40	28	46	40	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	0.99		1.00	0.99			0.96			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1766	3511		1768	3504			1727			1723	
Flt Permitted	0.29	1.00		0.26	1.00			0.90			0.87	
Satd. Flow (perm)	540	3511		493	3504			1579			1522	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	868	41	27	801	45	31	41	29	47	41	31
RTOR Reduction (vph)	0	4	0	0	5	0	0	18	0	0	16	0
Lane Group Flow (vph)	41	905	0	27	841	0	0	83	0	0	103	0
Confl. Peds. (#/hr)	8		5	5		8	6		32	32		6
Confl. Bikes (#/hr)			6			16			36			41
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Effective Green, g (s)	46.0	46.0		46.0	46.0			25.0			25.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.31			0.31	
Clearance Time (s)	5.5	5.5		5.5	5.5			4.5			4.5	
Lane Grp Cap (vph)	307	1994		280	1990			487			470	
v/s Ratio Prot		c0.26			0.24							
v/s Ratio Perm	0.08			0.05				0.05			c0.07	
v/c Ratio	0.13	0.45		0.10	0.42			0.17			0.22	
Uniform Delay, d1	8.2	10.2		8.0	9.9			20.4			20.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	0.7		0.7	0.7			0.8			1.1	
Delay (s)	9.1	10.9		8.7	10.6			21.2			21.8	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		10.9			10.5			21.2			21.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	406	815	50	30	844	209	50	64	10	345	72	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00			1.00	0.87
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	1.00
Frt	1.00	0.99		1.00	0.97			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.96	1.00
Satd. Flow (prot)	3204	3369		1711	3295			1769			1766	1382
Flt Permitted	0.95	1.00		0.95	1.00			0.61			0.67	1.00
Satd. Flow (perm)	3204	3369		1711	3295			1110			1239	1382
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	414	832	51	31	861	213	51	65	10	352	73	384
RTOR Reduction (vph)	0	4	0	0	19	0	0	3	0	0	0	242
Lane Group Flow (vph)	414	879	0	31	1055	0	0	123	0	0	425	142
Confl. Peds. (#/hr)			28			16	96		17	17		95
Confl. Bikes (#/hr)			11			9			17			19
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	18.6	53.7		3.6	38.7			40.7			40.7	40.7
Effective Green, g (s)	18.6	53.7		3.6	38.7			40.7			40.7	40.7
Actuated g/C Ratio	0.17	0.49		0.03	0.35			0.37			0.37	0.37
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	542	1645		56	1159			411			458	511
v/s Ratio Prot	c0.13	0.26		0.02	c0.32							
v/s Ratio Perm								0.11			c0.34	0.10
v/c Ratio	0.76	0.53		0.55	0.91			0.30			0.93	0.28
Uniform Delay, d1	43.6	19.5		52.4	34.0			24.5			33.2	24.3
Progression Factor	0.64	0.26		1.04	0.89			1.00			1.00	1.00
Incremental Delay, d2	3.7	0.7		6.8	7.8			0.4			24.9	0.3
Delay (s)	31.5	5.8		61.2	38.1			25.0			58.2	24.6
Level of Service	C	A		E	D			C			E	C
Approach Delay (s)		14.0			38.8			25.0			42.3	
Approach LOS		B			D			C			D	

Intersection Summary			
HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	1100	51	30	1102	10	22	0	30	10	0	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	22	1146	53	31	1148	10	23	0	31	10	0	12
Pedestrians		14			5			16			9	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		882			649							
pX, platoon unblocked	0.94			0.85			0.88	0.88	0.85	0.88	0.88	0.94
vC, conflicting volume	1167			1215			1895	2462	620	1878	2483	602
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1053			908			1449	2091	211	1429	2115	453
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			95			68	100	95	86	100	98
cM capacity (veh/h)	614			628			71	41	666	73	40	512

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	595	626	605	584	54	23
Volume Left	22	0	31	0	23	10
Volume Right	0	53	0	10	31	12
cSH	614	1700	628	1700	147	137
Volume to Capacity	0.04	0.37	0.05	0.34	0.37	0.17
Queue Length 95th (ft)	3	0	4	0	39	14
Control Delay (s)	1.0	0.0	1.4	0.0	43.2	36.5
Lane LOS	A		A		E	E
Approach Delay (s)	0.5		0.7		43.2	36.5
Approach LOS					E	E

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	1048	83	30	1046	10	54	10	60	20	10	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	1103	87	32	1101	11	57	11	63	21	11	42
Pedestrians		3			3			19			19	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1206			325							
pX, platoon unblocked	0.83			0.89			0.88	0.88	0.89	0.88	0.88	0.83
vC, conflicting volume	1131			1210			1851	2381	617	1833	2419	578
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	754			999			1166	1765	337	1145	1808	90
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			95			43	84	89	78	83	95
cM capacity (veh/h)	698			606			99	66	579	97	62	777

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	562	639	582	561	131	74
Volume Left	11	0	32	0	57	21
Volume Right	0	87	0	11	63	42
cSH	698	1700	606	1700	155	168
Volume to Capacity	0.02	0.38	0.05	0.33	0.84	0.44
Queue Length 95th (ft)	1	0	4	0	141	50
Control Delay (s)	0.4	0.0	1.4	0.0	92.9	42.2
Lane LOS	A		A		F	E
Approach Delay (s)	0.2		0.7		92.9	42.2
Approach LOS					F	E

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	746	291	200	757	110	249	130	160	90	100	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	16	12	12	12	12
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.98			0.96			0.96	
Flt Protected		1.00			0.99			0.98			0.98	
Satd. Flow (prot)		3318			3424			1927			1721	
Flt Permitted		0.73			0.56			0.71			0.75	
Satd. Flow (perm)		2439			1942			1395			1316	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	769	300	206	780	113	257	134	165	93	103	84
RTOR Reduction (vph)	0	63	0	0	16	0	0	27	0	0	28	0
Lane Group Flow (vph)	0	1100	0	0	1083	0	0	529	0	0	252	0
Confl. Peds. (#/hr)	33		25			33	54		40	40		54
Confl. Bikes (#/hr)			11			5			5			2
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		1		4	3			2			2	
Permitted Phases	1			3			2			2		
Actuated Green, G (s)		15.5			26.5			19.0			19.0	
Effective Green, g (s)		15.5			26.5			19.0			19.0	
Actuated g/C Ratio		0.28			0.48			0.35			0.35	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Lane Grp Cap (vph)		687			1151			482			455	
v/s Ratio Prot					c0.14							
v/s Ratio Perm		c0.45			0.32			c0.38			0.19	
v/c Ratio		1.60			0.94			1.10			0.55	
Uniform Delay, d1		19.8			13.5			18.0			14.6	
Progression Factor		1.07			1.00			1.00			1.00	
Incremental Delay, d2		276.3			15.7			69.8			4.8	
Delay (s)		297.5			29.2			87.8			19.4	
Level of Service		F			C			F			B	
Approach Delay (s)		297.5			29.2			87.8			19.4	
Approach LOS		F			C			F			B	

Intersection Summary			
HCM Average Control Delay	139.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	123.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	203	80	90	387	335	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.91		1.00	1.00	1.00	0.54
Flpb, ped/bikes	1.00		0.75	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1576		1328	1863	1863	855
Flt Permitted	0.97		0.47	1.00	1.00	1.00
Satd. Flow (perm)	1576		656	1863	1863	855
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	87	98	421	364	198
RTOR Reduction (vph)	23	0	0	0	0	97
Lane Group Flow (vph)	285	0	98	421	364	101
Confl. Peds. (#/hr)	133	224	452			452
Confl. Bikes (#/hr)		11				13
Turn Type			Perm			Perm
Protected Phases	2			1	1	
Permitted Phases			1			1
Actuated Green, G (s)	21.0		28.0	28.0	28.0	28.0
Effective Green, g (s)	21.0		28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.38		0.51	0.51	0.51	0.51
Clearance Time (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	602		334	948	948	435
v/s Ratio Prot	c0.18			c0.23	0.20	
v/s Ratio Perm			0.15			0.12
v/c Ratio	0.47		0.29	0.44	0.38	0.23
Uniform Delay, d1	12.8		7.8	8.6	8.2	7.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6		2.2	1.5	1.2	1.2
Delay (s)	15.5		10.0	10.1	9.4	8.8
Level of Service	B		B	B	A	A
Approach Delay (s)	15.5			10.1	9.2	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	344	619	672	40	30	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.5	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.88	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	3539	3509		1597	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	3539	3509		1597	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	362	652	707	42	32	284
RTOR Reduction (vph)	0	0	7	0	197	0
Lane Group Flow (vph)	362	652	742	0	119	0
Confl. Peds. (#/hr)					5	
Confl. Bikes (#/hr)						13
Turn Type	Prot					
Protected Phases	1	6	2		4	
Permitted Phases						
Actuated Green, G (s)	20.0	38.0	15.0		19.5	
Effective Green, g (s)	20.0	38.0	15.0		19.5	
Actuated g/C Ratio	0.31	0.59	0.23		0.30	
Clearance Time (s)	3.0	3.0	3.0		3.5	
Lane Grp Cap (vph)	553	2101	822		487	
v/s Ratio Prot	c0.20	0.18	c0.21		c0.07	
v/s Ratio Perm						
v/c Ratio	0.65	0.31	0.90		0.24	
Uniform Delay, d1	19.0	6.5	23.8		16.7	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	5.9	0.4	15.1		1.2	
Delay (s)	25.0	6.9	38.9		17.9	
Level of Service	C	A	D		B	
Approach Delay (s)		13.3	38.9		17.9	
Approach LOS		B	D		B	

Intersection Summary			
HCM Average Control Delay	23.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	30	70	570	40	71	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		5.0		4.0	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.98		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.91		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1625		1843		1770	1863
Flt Permitted	0.99		1.00		0.95	1.00
Satd. Flow (perm)	1625		1843		1770	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	74	600	42	75	558
RTOR Reduction (vph)	68	0	3	0	0	0
Lane Group Flow (vph)	38	0	639	0	75	558
Confl. Peds. (#/hr)		6				
Confl. Bikes (#/hr)				5		
Turn Type					Prot	
Protected Phases	8		6		5	2
Permitted Phases						
Actuated Green, G (s)	3.5		21.3		2.6	27.9
Effective Green, g (s)	3.5		21.3		2.6	27.9
Actuated g/C Ratio	0.09		0.53		0.06	0.69
Clearance Time (s)	4.0		5.0		4.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	141		972		114	1287
v/s Ratio Prot	c0.02		c0.35		0.04	c0.30
v/s Ratio Perm						
v/c Ratio	0.27		0.66		0.66	0.43
Uniform Delay, d1	17.3		6.9		18.5	2.8
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.0		1.6		12.9	0.2
Delay (s)	18.3		8.5		31.4	3.0
Level of Service	B		A		C	A
Approach Delay (s)	18.3		8.5			6.4
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	40.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	30	10	10	10	10	20	40	10	24	390	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.98			0.98					1.00	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.98			0.90					1.00	
Flt Protected			0.97			0.99					1.00	
Satd. Flow (prot)			1535			1449					1632	
Flt Permitted			0.80			0.97					0.94	
Satd. Flow (perm)			1271			1413					1546	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	32	11	11	11	11	22	43	11	26	419	11
RTOR Reduction (vph)	0	0	8	0	0	33	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	57	0	0	54	0	0	0	0	466	0
Confl. Peds. (#/hr)				33				1				94
Confl. Bikes (#/hr)				3								2
Parking (#/hr)			3			3					3	
Turn Type		Perm			Perm					Perm		
Protected Phases			1			1					2	
Permitted Phases		1			1					2		
Actuated Green, G (s)			14.0			14.0					25.0	
Effective Green, g (s)			14.0			14.0					25.0	
Actuated g/C Ratio			0.23			0.23					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			297			330					644	
v/s Ratio Prot												
v/s Ratio Perm			c0.04			0.04					0.30	
v/c Ratio			0.19			0.16					0.72	
Uniform Delay, d1			18.5			18.3					14.6	
Progression Factor			1.00			0.86					1.00	
Incremental Delay, d2			1.4			1.0					6.9	
Delay (s)			19.9			16.7					21.5	
Level of Service			B			B					C	
Approach Delay (s)			19.9			16.7					21.5	
Approach LOS			B			B					C	

Intersection Summary			
HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	50	393	30	50	20	30	36	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.97				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.98				0.91		
Flt Protected		1.00				0.98		
Satd. Flow (prot)		1733				1481		
Flt Permitted		0.93				0.98		
Satd. Flow (perm)		1625				1481		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	423	32	54	22	32	39	54
RTOR Reduction (vph)	0	6	0	0	0	35	0	0
Lane Group Flow (vph)	0	557	0	0	0	112	0	0
Confl. Peds. (#/hr)			67	92				
Confl. Bikes (#/hr)			2	2				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		25.0				9.0		
Effective Green, g (s)		25.0				9.0		
Actuated g/C Ratio		0.42				0.15		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		677				222		
v/s Ratio Prot								
v/s Ratio Perm		c0.34				0.08		
v/c Ratio		0.82				0.51		
Uniform Delay, d1		15.5				23.5		
Progression Factor		1.00				1.00		
Incremental Delay, d2		10.8				8.0		
Delay (s)		26.4				31.4		
Level of Service		C				C		
Approach Delay (s)		26.4				31.4		
Approach LOS		C				C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	10	10	0	0	0	0	10	10	10	20	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	0	15	15	0	0	0	0	15	15	15	29	0
Pedestrians					5						6	
Lane Width (ft)					0.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					380							
pX, platoon unblocked												
vC, conflicting volume	6			29			37	28	27	55	35	6
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	6			29			37	28	27	55	35	6
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	98	97	100
cM capacity (veh/h)	1607			1584			940	861	1048	909	853	1071

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	29	29	44
Volume Left	0	0	15
Volume Right	15	15	0
cSH	1607	945	871
Volume to Capacity	0.00	0.03	0.05
Queue Length 95th (ft)	0	2	4
Control Delay (s)	0.0	8.9	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	8.9	9.4
Approach LOS		A	A

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	882	10	0	772	20	0	0	10	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	991	11	0	867	22	0	0	11	0	0	0
Pedestrians					2			19				
Lane Width (ft)					12.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			2				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1247			648							
pX, platoon unblocked				0.93			0.93	0.93	0.93	0.93	0.93	
vC, conflicting volume	890			1021			1449	1906	522	1387	1900	445
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	890			861			1324	1817	322	1257	1811	445
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	757			707			102	70	613	114	71	561

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	661	342	578	312	11
Volume Left	0	0	0	0	0
Volume Right	0	11	0	22	11
cSH	1700	1700	1700	1700	613
Volume to Capacity	0.39	0.20	0.34	0.18	0.02
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	11.0
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.0
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	1172	1026	107	0	54
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1274	1115	116	0	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		241	1290			
pX, platoon unblocked					0.82	
vC, conflicting volume	1232				1810	616
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1232				1557	616
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	86
cM capacity (veh/h)	562				85	434

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	637	637	743	488	59
Volume Left	0	0	0	0	0
Volume Right	0	0	0	116	59
cSH	1700	1700	1700	1700	434
Volume to Capacity	0.37	0.37	0.44	0.29	0.14
Queue Length 95th (ft)	0	0	0	0	12
Control Delay (s)	0.0	0.0	0.0	0.0	14.6
Lane LOS					B
Approach Delay (s)	0.0		0.0		14.6
Approach LOS					B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	460	713	110	150	456	238	120	790	159	307	1030	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3424		1770	3277		1770	3368		1770	3484	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3424		1770	3277		1770	3368		1770	3484	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	469	728	112	153	465	243	122	806	162	313	1051	61
RTOR Reduction (vph)	0	13	0	0	68	0	0	17	0	0	4	0
Lane Group Flow (vph)	469	827	0	153	640	0	122	951	0	313	1108	0
Confl. Peds. (#/hr)			56			29			69			67
Confl. Bikes (#/hr)			14			19			66			67
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	14.5	26.4		9.5	21.4		9.0	32.6		14.5	38.1	
Effective Green, g (s)	14.5	26.4		9.5	21.4		9.0	32.6		14.5	38.1	
Actuated g/C Ratio	0.14	0.26		0.10	0.21		0.09	0.33		0.14	0.38	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	498	904		168	701		159	1098		257	1327	
v/s Ratio Prot	c0.14	c0.24		0.09	0.20		0.07	0.28		c0.18	c0.32	
v/s Ratio Perm												
v/c Ratio	0.94	0.92		0.91	0.91		0.77	0.87		1.22	0.83	
Uniform Delay, d1	42.3	35.7		44.8	38.4		44.5	31.7		42.8	28.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.17	0.75	
Incremental Delay, d2	26.1	13.4		43.8	16.1		17.9	9.2		123.0	5.1	
Delay (s)	68.4	49.1		88.6	54.5		62.3	40.9		173.2	26.1	
Level of Service	E	D		F	D		E	D		F	C	
Approach Delay (s)		56.0			60.6			43.3			58.4	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM Average Control Delay	54.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	94.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	1152	278	140	781	110	257	70	220	110	60	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			0.99			0.97			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.97			0.98			0.95			0.97	
Flt Protected		1.00			0.99			0.98			0.97	
Satd. Flow (prot)		3403			3438			1651			1736	
Flt Permitted		0.77			0.50			0.74			0.64	
Satd. Flow (perm)		2641			1738			1256			1135	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	1213	293	147	822	116	271	74	232	116	63	43
RTOR Reduction (vph)	0	23	0	0	13	0	0	34	0	0	11	0
Lane Group Flow (vph)	0	1568	0	0	1072	0	0	543	0	0	212	0
Confl. Peds. (#/hr)	26		11			26	38		53	53		38
Confl. Bikes (#/hr)			14			3			5			8
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		1		4	3		5	2			6	
Permitted Phases	1			3			2			6		
Actuated Green, G (s)		39.5			39.5			21.0			21.0	
Effective Green, g (s)		39.5			39.5			21.0			21.0	
Actuated g/C Ratio		0.56			0.56			0.30			0.30	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1490			981			377			341	
v/s Ratio Prot												
v/s Ratio Perm		0.59			c0.62			c0.43			0.19	
v/c Ratio		1.05			1.24dl			1.44			0.62	
Uniform Delay, d1		15.2			15.2			24.5			21.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		38.5			57.4			212.4			3.5	
Delay (s)		53.8			72.7			236.9			24.6	
Level of Service		D			E			F			C	
Approach Delay (s)		53.8			72.7			236.9			24.6	
Approach LOS		D			E			F			C	

Intersection Summary			
HCM Average Control Delay	88.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	124.4%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	30	50	20	20	20	40	60	10	53	508	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			4.0			4.0					4.0	
Lane Util. Factor			1.00			1.00					1.00	
Frpb, ped/bikes			0.97			0.91					0.99	
Flpb, ped/bikes			1.00			1.00					1.00	
Frt			0.98			0.90					1.00	
Flt Protected			0.98			0.99					0.99	
Satd. Flow (prot)			1525			1351					1618	
Flt Permitted			0.87			0.95					0.88	
Satd. Flow (perm)			1351			1300					1433	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	32	53	21	21	21	42	63	11	56	535	21
RTOR Reduction (vph)	0	0	10	0	0	34	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	107	0	0	113	0	0	0	0	621	0
Confl. Peds. (#/hr)				61				36				132
Confl. Bikes (#/hr)												16
Parking (#/hr)			3			3					3	
Turn Type	Perm	Perm			Perm				Perm	Perm		
Protected Phases			1			1					2	
Permitted Phases	1	1			1				2	2		
Actuated Green, G (s)			20.0			20.0					34.0	
Effective Green, g (s)			20.0			20.0					34.0	
Actuated g/C Ratio			0.25			0.25					0.42	
Clearance Time (s)			4.0			4.0					4.0	
Lane Grp Cap (vph)			338			325					609	
v/s Ratio Prot												
v/s Ratio Perm			0.08			c0.09					c0.43	
v/c Ratio			0.32			0.35					1.02	
Uniform Delay, d1			24.4			24.6					23.0	
Progression Factor			1.00			1.00					1.00	
Incremental Delay, d2			2.5			2.9					41.6	
Delay (s)			26.9			27.6					64.6	
Level of Service			C			C					E	
Approach Delay (s)			26.9			27.6					64.6	
Approach LOS			C			C					E	

Intersection Summary			
HCM Average Control Delay	50.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	SEL2	SEL	SER	SER2
Lane Configurations								
Volume (vph)	70	398	30	40	30	70	53	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12
Total Lost time (s)		4.0				4.0		
Lane Util. Factor		1.00				1.00		
Frpb, ped/bikes		0.95				1.00		
Flpb, ped/bikes		1.00				1.00		
Frt		0.98				0.94		
Flt Protected		0.99				0.97		
Satd. Flow (prot)		1703				1503		
Flt Permitted		0.83				0.97		
Satd. Flow (perm)		1421				1503		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	419	32	42	32	74	56	42
RTOR Reduction (vph)	0	3	0	0	0	12	0	0
Lane Group Flow (vph)	0	564	0	0	0	192	0	0
Confl. Peds. (#/hr)			75	121				
Confl. Bikes (#/hr)			16	7				
Parking (#/hr)		6				3		
Turn Type	Perm				Perm			
Protected Phases		2				4		
Permitted Phases	2				4			
Actuated Green, G (s)		34.0				14.0		
Effective Green, g (s)		34.0				14.0		
Actuated g/C Ratio		0.42				0.18		
Clearance Time (s)		4.0				4.0		
Lane Grp Cap (vph)		604				263		
v/s Ratio Prot								
v/s Ratio Perm		0.40				0.13		
v/c Ratio		0.93				0.73		
Uniform Delay, d1		21.9				31.2		
Progression Factor		1.00				1.00		
Incremental Delay, d2		23.4				16.4		
Delay (s)		45.3				47.7		
Level of Service		D				D		
Approach Delay (s)		45.3				47.7		
Approach LOS		D				D		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	760	190	40	709	213	180	190	40	158	210	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4892		1761	4855		1770	1796		1732	1630	
Flt Permitted	0.95	1.00		0.28	1.00		0.12	1.00		0.61	1.00	
Satd. Flow (perm)	1770	4892		514	4855		219	1796		1111	1630	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	302	792	198	42	739	222	188	198	42	165	219	396
RTOR Reduction (vph)	0	49	0	0	59	0	0	7	0	0	65	0
Lane Group Flow (vph)	302	941	0	42	902	0	188	233	0	165	550	0
Confl. Peds. (#/hr)			13	13		14	21		28	28		21
Confl. Bikes (#/hr)			3			6			28			21
Turn Type	Prot			Perm			pm+pt			Perm		
Protected Phases	2	3			4		5	1			6	
Permitted Phases				4			1			6		
Actuated Green, G (s)	15.0	46.9		27.9	27.9		44.1	44.1		30.0	30.0	
Effective Green, g (s)	15.0	46.9		27.9	27.9		44.1	44.1		30.0	30.0	
Actuated g/C Ratio	0.15	0.47		0.28	0.28		0.44	0.44		0.30	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	266	2294		143	1355		253	792		333	489	
v/s Ratio Prot	c0.17	0.19			c0.19		c0.07	0.13			c0.34	
v/s Ratio Perm				0.08			0.25			0.15		
v/c Ratio	1.14	0.41		0.29	0.67		0.74	0.29		0.50	1.12	
Uniform Delay, d1	42.5	17.5		28.3	31.9		22.5	18.0		28.8	35.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	96.7	0.1		1.0	1.1		11.2	0.9		5.2	79.5	
Delay (s)	139.2	17.6		29.5	33.1		33.7	18.9		34.0	114.5	
Level of Service	F	B		C	C		C	B		C	F	
Approach Delay (s)		46.0			33.0			25.4			97.4	
Approach LOS		D			C			C			F	

Intersection Summary			
HCM Average Control Delay	51.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	270	578	140	143	472	179	110	560	163	273	710	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.94		1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3375		1770	3173		1770	3335		1770	3481	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3375		1770	3173		1770	3335		1770	3481	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	278	596	144	147	487	185	113	577	168	281	732	72
RTOR Reduction (vph)	0	21	0	0	40	0	0	26	0	0	7	0
Lane Group Flow (vph)	278	719	0	147	632	0	113	719	0	281	797	0
Confl. Peds. (#/hr)			47			156			63			
Confl. Bikes (#/hr)			19			25			24			38
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.2	22.6		10.7	23.1		10.2	32.6		17.1	39.5	
Effective Green, g (s)	10.2	22.6		10.7	23.1		10.2	32.6		17.1	39.5	
Actuated g/C Ratio	0.10	0.23		0.11	0.23		0.10	0.33		0.17	0.40	
Clearance Time (s)	3.5	5.0		3.5	5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	350	763		189	733		181	1087		303	1375	
v/s Ratio Prot	0.08	c0.21		0.08	c0.20		0.06	c0.22		c0.16	0.23	
v/s Ratio Perm												
v/c Ratio	0.79	0.94		0.78	0.86		0.62	0.66		0.93	0.58	
Uniform Delay, d1	43.9	38.1		43.5	36.9		43.1	29.0		40.8	23.7	
Progression Factor	0.88	1.09		1.00	1.00		1.00	1.00		1.18	0.73	
Incremental Delay, d2	10.4	18.8		16.6	9.9		4.8	3.2		30.2	1.6	
Delay (s)	48.8	60.4		60.1	46.8		47.8	32.1		78.2	19.0	
Level of Service	D	E		E	D		D	C		E	B	
Approach Delay (s)		57.2			49.2			34.2			34.3	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM Average Control Delay	43.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	746	291	200	757	110	249	130	160	90	100	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.98			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.98			0.96			0.96	
Flt Protected		1.00			0.99			0.98			0.98	
Satd. Flow (prot)		3314			3418			1692			1713	
Flt Permitted		0.70			0.54			0.68			0.74	
Satd. Flow (perm)		2324			1855			1181			1294	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	769	300	206	780	113	257	134	165	93	103	84
RTOR Reduction (vph)	0	39	0	0	13	0	0	21	0	0	18	0
Lane Group Flow (vph)	0	1124	0	0	1086	0	0	535	0	0	262	0
Confl. Peds. (#/hr)	33		25			33	54		40	40		54
Confl. Bikes (#/hr)			11			5			5			2
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		1		4	3		5	2			6	
Permitted Phases	1			3			2			6		
Actuated Green, G (s)		37.5			37.5			23.0			23.0	
Effective Green, g (s)		37.5			37.5			23.0			23.0	
Actuated g/C Ratio		0.54			0.54			0.33			0.33	
Clearance Time (s)		5.5			5.5			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1245			994			388			425	
v/s Ratio Prot												
v/s Ratio Perm		0.48			c0.59			c0.45			0.20	
v/c Ratio		0.90			1.14dl			1.38			0.62	
Uniform Delay, d1		14.6			16.2			23.5			19.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		10.7			57.4			185.4			2.7	
Delay (s)		25.3			73.6			208.9			22.4	
Level of Service		C			E			F			C	
Approach Delay (s)		25.3			73.6			208.9			22.4	
Approach LOS		C			E			F			C	

Intersection Summary			
HCM Average Control Delay	75.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	123.3%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Appendix N
CMP Analysis Calculations

51st-Broadway Center DEIR
MTS Roadway System Analysis Summary - 2015 PM

Link Location	Segment Limits		No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Freeway Segments										
I-80 Eastbound										
Between	Toll Plaza	I-580/I-880	13,045	13,047	1.09	1.09	F	F	No	no change
Between	I-580/I-880	Powell Street	8,298	8,299	0.83	0.83	D	D	No	no change
I-80 Westbound										
Between	Powell Street	I-580/I-880	7,770	7,771	0.78	0.78	D	D	No	no change
Between	I-580/I-880	Toll Plaza	8,309	8,311	0.59	0.59	C	C	No	no change
I-580 Eastbound										
Between	I-580/I-880	I-980/SR 24	8,259	8,261	0.83	0.83	D	D	No	no change
Between	I-980/SR 24	Oakland Avenue	8,270	8,271	0.83	0.83	D	D	No	no change
I-580 Westbound										
Between	Oakland Avenue	I-980/SR 24	6,416	6,417	0.64	0.64	C	C	No	no change
Between	I-980/SR 24	I-580/I-880	3,690	3,691	0.61	0.62	C	C	No	no change
I-980 Eastbound										
Between	27th Street	I-580	6,102	6,103	0.76	0.76	D	D	No	no change
I-980 Westbound										
Between	I-580	27th Street	3,295	3,296	0.55	0.55	B	B	No	no change
SR 13 Northbound										
Between	Broadway Terrace	SR 24	3,859	3,860	0.64	0.64	C	C	No	no change
SR 13 Southbound										
Between	SR 24	Broadway Terrace	3,845	3,846	0.64	0.64	C	C	No	no change
SR 24 Eastbound										
Between	I-580	Telegraph Avenue	7,471	7,472	0.93	0.93	E	E	No	no change
Between	Telegraph Avenue	Broadway	7,678	7,679	0.96	0.96	E	E	No	no change
Between	Broadway	SR 13	8,201	8,205	0.82	0.82	D	D	No	no change
SR 24 Westbound										
Between	SR 13	Broadway	4,310	4,313	0.43	0.43	B	B	No	no change
Between	Broadway	Telegraph Avenue	3,897	3,898	0.49	0.49	B	B	No	no change
Between	Telegraph Avenue	I-580	4,604	4,605	0.58	0.58	B	B	No	no change
Arterials										
51st Street Eastbound										
Between	MLK Jr. Way	Shattuck Avenue	268	291	0.34	0.36	A	B	No	change
Between	Shattuck Avenue	Telegraph Avenue	821	854	0.51	0.53	B	B	No	no change
Between	Telegraph Avenue	Broadway	1,071	1,141	0.67	0.71	C	C	Yes	no change

51st-Broadway Center DEIR MTS Roadway System Analysis Summary - 2015 PM										
Link Location	Segment Limits		No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
51st Street Westbound										
Between	Broadway	Telegraph Avenue	824	898	0.52	0.56	B	B	Yes	no change
Between	Telegraph Avenue	Shattuck Avenue	602	638	0.38	0.40	B	B	No	no change
Between	Shattuck Avenue	MLK Jr. Way	294	319	0.37	0.40	B	B	No	no change
Pleasant Valley Avenue Eastbound										
Between	Broadway	Piedmont Avenue	1,164	1,205	0.73	0.75	C	C	No	no change
Between	Piedmont Avenue	Grand Avenue	1,499	1,521	0.94	0.95	E	E	No	no change
Pleasant Valley Avenue Westbound										
Between	Grand Avenue	Piedmont Avenue	766	787	0.48	0.49	B	B	No	no change
Between	Piedmont Avenue	Broadway	636	674	0.40	0.42	B	B	No	no change
Grand Avenue Eastbound										
Between	Pleasant Valley Avenu	Oakland Avenue	1,206	1,210	0.75	0.76	C	D	No	change
Between	Oakland Avenue	I-580	1,291	1,293	0.81	0.81	D	D	No	no change
Grand Avenue Westbound										
Between	I-580	Oakland Avenue	672	674	0.42	0.42	B	B	No	no change
Between	Oakland Avenue	Pleasant Valley Avenu	622	626	0.39	0.39	B	B	No	no change
MacArthur Boulevard Eastbound										
Between	Telegraph Avenue	Broadway	1,747	1,752	0.73	0.73	C	C	No	no change
Between	Broadway	Piedmont Avenue	2,128	2,129	0.89	0.89	D	D	No	no change
MacArthur Boulevard Westbound										
Between	Piedmont Avenue	Broadway	1,443	1,444	0.60	0.60	C	C	No	no change
Between	Broadway	Telegraph Avenue	1,276	1,281	0.53	0.53	B	B	No	no change
San Pablo Avenue Northbound										
Between	MacArthur Blvd	40th Street	1,453	1,454	0.61	0.61	C	C	No	no change
Between	40th Street	Stanford Avenue	1,397	1,397	0.87	0.87	D	D	No	no change
Between	Stanford Avenue	Alcatraz Avenue	1,310	1,310	0.82	0.82	D	D	No	no change
San Pablo Avenue Southbound										
Between	Alcatraz Avenue	Stanford Avenue	1,292	1,292	0.81	0.81	D	D	No	no change
Between	Stanford Avenue	40th Street	1,609	1,609	1.01	1.01	F	F	No	no change
Between	40th Street	MacArthur Blvd	2,373	2,374	0.99	0.99	E	E	No	no change
Martin Luther King Jr Way Northbound										
Between	40th Street	52nd Street	1,556	1,565	0.97	0.98	E	E	No	no change
Between	52nd Street	Adeline Street	1,795	1,803	1.12	1.13	F	F	No	no change
Martin Luther King Jr Way Southbound										

51st-Broadway Center DEIR
MTS Roadway System Analysis Summary - 2015 PM

Link Location	Segment Limits		No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Between	Adeline Street	52nd Street	1,750	1,757	1.09	1.10	F	F	No	no change
Between	52nd Street	40th Street	1,551	1,561	0.97	0.98	E	E	No	no change
Shattuck Avenue Northbound										
Between	Telegraph Avenue	52nd Street	271	271	0.34	0.34	A	A	No	no change
Between	52nd Street	Alcatraz Avenue	935	945	1.17	1.18	F	F	No	no change
Shattuck Avenue Southbound										
Between	Alcatraz Avenue	52nd Street	899	909	1.12	1.14	F	F	No	no change
Between	52nd Street	Telegraph Avenue	97	97	0.12	0.12	A	A	No	no change
Telegraph Avenue Northbound										
Between	40th Street	Shattuck Avenue	1,579	1,590	0.99	0.99	E	E	No	no change
Between	Shattuck Avenue	51st Street	1,334	1,353	0.83	0.85	D	D	No	no change
Between	51st Street	Claremont Avenue	1,670	1,678	0.70	0.70	C	C	No	no change
Between	Claremont Avenue	Alcatraz Avenue	1,547	1,555	0.97	0.97	E	E	No	no change
Telegraph Avenue Southbound										
Between	Alcatraz Avenue	Claremont Avenue	1,795	1,802	1.12	1.13	F	F	No	no change
Between	Claremont Avenue	51st Street	830	837	0.35	0.35	B	B	No	no change
Between	51st Street	Shattuck Avenue	433	453	0.27	0.28	A	A	No	no change
Between	Shattuck Avenue	40th Street	527	539	0.33	0.34	A	A	No	no change
Broadway Northbound										
Between	27th Street	MacArthur Boulevard	685	687	0.29	0.29	A	A	No	no change
Between	MacArthur Boulevard	40th Street	850	858	0.35	0.36	B	B	No	no change
Between	40th Street	51st Street	1,065	1,098	0.44	0.46	B	B	No	no change
Between	51st Street	College Avenue	1,325	1,358	0.55	0.57	B	B	No	no change
Between	College Avenue	SR 24	722	734	0.45	0.46	B	B	No	no change
Broadway Southbound										
Between	SR 24	College Avenue	509	521	0.32	0.33	A	A	No	no change
Between	College Avenue	51st Street	946	977	0.39	0.41	B	B	No	no change
Between	51st Street	40th Street	456	491	0.19	0.20	A	A	No	no change
Between	40th Street	MacArthur Boulevard	477	486	0.20	0.20	A	A	No	no change
Between	MacArthur Boulevard	27th Street	249	251	0.10	0.10	A	A	No	no change
College Avenue Northbound										
Between	Broadway	SR 24	246	254	0.31	0.32	A	A	No	no change
Between	SR 24	Claremont Avenue	295	299	0.37	0.37	B	B	No	no change

51st-Broadway Center DEIR
MTS Roadway System Analysis Summary - 2015 PM

Link Location	Segment Limits		No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
College Avenue Southbound										
Between	Claremont Avenue	SR 24	371	374	0.46	0.47	B	B	No	no change
Between	SR 24	Broadway	304	312	0.38	0.39	B	B	No	no change
Claremont Avenue Northbound										
Between	SR 24	College Avenue	1,297	1,298	0.81	0.81	D	D	No	no change
Between	College Avenue	Ashby Avenue	1,122	1,124	0.70	0.70	C	C	No	no change
Claremont Avenue Southbound										
Between	Ashby Avenue	College Avenue	1,185	1,187	0.74	0.74	C	C	No	no change
Between	College Avenue	SR 24	902	903	0.56	0.56	B	B	No	no change

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51st-Broadway Center DEIR
MTS Roadway System Analysis Summary - 2035 PM

Link Location	Segment Limits		No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Freeway Segments										
I-80 Eastbound										
Between	Toll Plaza	I-580/I-880	16,270	16,272	1.36	1.36	F	F	No	no change
Between	I-580/I-880	Powell Street	9,039	9,040	0.90	0.90	D	D	No	no change
I-80 Westbound										
Between	Powell Street	I-580/I-880	9,023	9,024	0.90	0.90	D	D	No	no change
Between	I-580/I-880	Toll Plaza	9,382	9,384	0.67	0.67	C	C	No	no change
I-580 Eastbound										
Between	I-580/I-880	I-980/SR 24	9,289	9,291	0.93	0.93	E	E	No	no change
Between	I-980/SR 24	Oakland Avenue	9,340	9,341	0.93	0.93	E	E	No	no change
I-580 Westbound										
Between	Oakland Avenue	I-980/SR 24	6,626	6,627	0.66	0.66	C	C	No	no change
Between	I-980/SR 24	I-580/I-880	3,902	3,903	0.65	0.65	C	C	No	no change
I-980 Eastbound										
Between	27th Street	I-580	6,933	6,934	0.87	0.87	D	D	No	no change
I-980 Westbound										
Between	I-580	27th Street	4,164	4,165	0.69	0.69	C	C	No	no change
SR 13 Northbound										
Between	Broadway Terrace	SR 24	4,476	4,477	0.75	0.75	C	C	No	no change
SR 13 Southbound										
Between	SR 24	Broadway Terrace	5,136	5,137	0.86	0.86	D	D	No	no change
SR 24 Eastbound										
Between	I-580	Telegraph Avenue	8,330	8,331	1.04	1.04	F	F	No	no change
Between	Telegraph Avenue	Broadway	8,942	8,943	1.12	1.12	F	F	No	no change
Between	Broadway	SR 13	9,426	9,430	0.94	0.94	E	E	No	no change
SR 24 Westbound										
Between	SR 13	Broadway	6,690	6,693	0.67	0.67	C	C	No	no change
Between	Broadway	Telegraph Avenue	5,614	5,615	0.70	0.70	C	C	No	no change
Between	Telegraph Avenue	I-580	5,902	5,903	0.74	0.74	C	C	No	no change
Arterials										
51st Street Eastbound										
Between	MLK Jr. Way	Shattuck Avenue	478	501	0.60	0.63	C	C	No	no change
Between	Shattuck Avenue	Telegraph Avenue	1,110	1,143	0.69	0.71	C	C	No	no change
Between	Telegraph Avenue	Broadway	1,244	1,314	0.78	0.82	D	D	Yes	no change

51st-Broadway Center DEIR
MTS Roadway System Analysis Summary - 2035 PM

Link Location	Segment Limits		No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
51st Street Westbound										
Between	Broadway	Telegraph Avenue	1,069	1,143	0.67	0.71	C	C	Yes	no change
Between	Telegraph Avenue	Shattuck Avenue	941	977	0.59	0.61	C	C	No	no change
Between	Shattuck Avenue	MLK Jr. Way	307	332	0.38	0.42	B	B	Yes	no change
Pleasant Valley Avenue Eastbound										
Between	Broadway	Piedmont Avenue	1,569	1,610	0.98	1.01	E	E	No	no change
Between	Piedmont Avenue	Grand Avenue	1,822	1,844	1.14	1.15	F	F	No	no change
Pleasant Valley Avenue Westbound										
Between	Grand Avenue	Piedmont Avenue	1,095	1,116	0.68	0.70	C	C	No	no change
Between	Piedmont Avenue	Broadway	923	961	0.58	0.60	B	C	No	change
Grand Avenue Eastbound										
Between	Pleasant Valley Avenu	Oakland Avenue	1,488	1,492	0.93	0.93	E	E	No	no change
Between	Oakland Avenue	I-580	1,582	1,584	0.99	0.99	E	E	No	no change
Grand Avenue Westbound										
Between	I-580	Oakland Avenue	1,087	1,089	0.68	0.68	C	C	No	no change
Between	Oakland Avenue	Pleasant Valley Avenu	965	969	0.60	0.61	C	C	No	no change
MacArthur Boulevard Eastbound										
Between	Telegraph Avenue	Broadway	2,107	2,112	0.88	0.88	D	D	No	no change
Between	Broadway	Piedmont Avenue	2,306	2,307	0.96	0.96	E	E	No	no change
MacArthur Boulevard Westbound										
Between	Piedmont Avenue	Broadway	1,940	1,941	0.81	0.81	D	D	No	no change
Between	Broadway	Telegraph Avenue	1,698	1,703	0.71	0.71	C	C	No	no change
San Pablo Avenue Northbound										
Between	MacArthur Blvd	40th Street	2,514	2,515	1.05	1.05	F	F	No	no change
Between	40th Street	Stanford Avenue	1,878	1,878	1.17	1.17	F	F	No	no change
Between	Stanford Avenue	Alcatraz Avenue	1,878	1,878	1.17	1.17	F	F	No	no change
San Pablo Avenue Southbound										
Between	Alcatraz Avenue	Stanford Avenue	1,726	1,726	1.08	1.08	F	F	No	no change
Between	Stanford Avenue	40th Street	1,861	1,861	1.16	1.16	F	F	No	no change
Between	40th Street	MacArthur Blvd	2,684	2,685	1.12	1.12	F	F	No	no change
Martin Luther King Jr Way Northbound										
Between	40th Street	52nd Street	1,504	1,513	0.94	0.95	E	E	No	no change
Between	52nd Street	Adeline Street	1,764	1,772	1.10	1.11	F	F	No	no change
Martin Luther King Jr Way Southbound										

51st-Broadway Center DEIR MTS Roadway System Analysis Summary - 2035 PM										
Link Location	Segment Limits		No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Between	Adeline Street	52nd Street	1,788	1,795	1.12	1.12	F	F	No	no change
Between	52nd Street	40th Street	1,383	1,393	0.86	0.87	D	D	No	no change
Shattuck Avenue Northbound										
Between	Telegraph Avenue	52nd Street	298	298	0.37	0.37	B	B	No	no change
Between	52nd Street	Alcatraz Avenue	1,014	1,024	1.27	1.28	F	F	No	no change
Shattuck Avenue Southbound										
Between	Alcatraz Avenue	52nd Street	879	889	1.10	1.11	F	F	No	no change
Between	52nd Street	Telegraph Avenue	196	196	0.25	0.25	A	A	No	no change
Telegraph Avenue Northbound										
Between	40th Street	Shattuck Avenue	1,888	1,899	1.18	1.19	F	F	No	no change
Between	Shattuck Avenue	51st Street	1,618	1,637	1.01	1.02	F	F	No	no change
Between	51st Street	Claremont Avenue	2,185	2,193	0.91	0.91	E	E	No	no change
Between	Claremont Avenue	Alcatraz Avenue	1,895	1,903	1.18	1.19	F	F	No	no change
Telegraph Avenue Southbound										
Between	Alcatraz Avenue	Claremont Avenue	1,703	1,710	1.06	1.07	F	F	No	no change
Between	Claremont Avenue	51st Street	1,220	1,227	0.51	0.51	B	B	No	no change
Between	51st Street	Shattuck Avenue	733	753	0.46	0.47	B	B	No	no change
Between	Shattuck Avenue	40th Street	920	932	0.58	0.58	B	B	No	no change
Broadway Northbound										
Between	27th Street	MacArthur Boulevard	1,353	1,355	0.56	0.56	B	B	No	no change
Between	MacArthur Boulevard	40th Street	1,785	1,793	0.74	0.75	C	C	No	no change
Between	40th Street	51st Street	2,064	2,097	0.86	0.87	D	D	No	no change
Between	51st Street	College Avenue	2,194	2,227	0.91	0.93	E	E	No	no change
Between	College Avenue	SR 24	1,126	1,138	0.70	0.71	C	C	No	no change
Broadway Southbound										
Between	SR 24	College Avenue	918	930	0.57	0.58	B	B	No	no change
Between	College Avenue	51st Street	1,506	1,537	0.63	0.64	C	C	No	no change
Between	51st Street	40th Street	762	797	0.32	0.33	A	A	No	no change
Between	40th Street	MacArthur Boulevard	732	741	0.31	0.31	A	A	No	no change
Between	MacArthur Boulevard	27th Street	528	530	0.22	0.22	A	A	No	no change
College Avenue Northbound										
Between	Broadway	SR 24	371	379	0.46	0.47	B	B	No	no change
Between	SR 24	Claremont Avenue	639	643	0.80	0.80	D	D	No	no change

51st-Broadway Center DEIR
MTS Roadway System Analysis Summary - 2035 PM

Link Location	Segment Limits		No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
College Avenue Southbound										
Between	Claremont Avenue	SR 24	438	441	0.55	0.55	B	B	No	no change
Between	SR 24	Broadway	404	412	0.50	0.51	B	B	No	no change
Claremont Avenue Northbound										
Between	SR 24	College Avenue	1,790	1,791	1.12	1.12	F	F	No	no change
Between	College Avenue	Ashby Avenue	1,801	1,803	1.13	1.13	F	F	No	no change
Claremont Avenue Southbound										
Between	Ashby Avenue	College Avenue	1,470	1,472	0.92	0.92	E	E	No	no change
Between	College Avenue	SR 24	1,219	1,220	0.76	0.76	D	D	No	no change

Fehr & Peers, 2012.

Appendix O

Queuing Analysis Summary

FEHR PEERS

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Table O-1
95th Percentile Queuing Summary
Existing Conditions

#	Study Intersection	Movement[1]	Storage (Feet)[2]	Weekday PM Peak Hour[3]			Saturday Midday Peak Hour[3]			Saturday PM Peak Hour[3]		
				Existing No Project (Feet)	Existing Plus Project (Feet)	Existing Plus Project (Mitigated) (Feet)	Existing No Project (Feet)	Existing Plus Project (Feet)	Existing Plus Project (Mitigated) (Feet)	Existing No Project (Feet)	Existing Plus Project (Feet)	Existing Plus Project (Mitigated) (Feet)
2	Broadway/Broadway Terrace	NB-Thru	160	**285**	**395**		130	**255**		95	150	
3	Broadway/College Avenue	NB-Left	200/ 180	m 175	165		195	150		170	170	
		NB-Thru	350	m 60	150		100	185		75	85	
		SB-Thru	160	70	35		95	90		80	70	
4	Broadway/Coronado Avenue/ North Project Driveway	NB-Thru	390	n/a	m 130		n/a	m 270		n/a	m150	
		SB-Left	180	n/a	**m#270**		n/a	**# 220**		n/a	**# 250**	
		SB-Thru	180	n/a	140		n/a	90		n/a	75	
7	Broadway/51st Street/ Pleasant Valley Avenue	EB-Left	120	**# 290**	**# 390**		**# 255**	**# 365**		**160**	**#265**	
		EB-Thru	300	**330**	**360**		190	245		180	240	
		WB-Left	300/ 200	# 204	**# 235**		**# 355**	**# 375**		# 197	200	
		WB-Thru	520	250	125		# 405	# 455		270	350	
		NB-Left	140	n/a	110		n/a	**# 245**		n/a	75	
		NB-Thru	280	**# 320**	**# 345**		280	**# 390**		150	175	
		SB-Left	275	**# 410**	# 255		**# 360**	220		**# 430**	# 250	
		SB-Thru	390	180	135		195	215		165	120	
12	Shattuck Avenue/ 52nd Street	SB-Left	150	150	**160**	**160**	110	125	125	120	135	120

FEHR PEERS

15	Telegraph Avenue/51st Street	WB-Left	180	100	120	# 140	# 150	**# 190**		95	120	
		NB-Thru	220	**235**	**240**	**240**	190	200		160	175	
		SB-Left	180	**# 425**	**# 435**	**# 405**	**# 255**	**# 275**		**# 350**	**# 375**	
17	Project Driveway/ Gilbert Street/ Pleasant Valley Avenue	EB-Left	180/ 200	**200**	m 135		**190**	**m# 210**		**225**	m #200	
		EB-Thru	520	175	m 65		105	m 120		130	m 50	
		WB-Left	100	n/a	40		n/a	m 45		n/a	m 20	
20	Piedmont Avenue/ Pleasant Valley Avenue	EB-Thru	250	**# 455**	**# 480**	**265**	# 235	**# 410**		**# 275**	**# 445**	m100
		WB-Thru	280	105	110	165	140	145		110	**120**	# 200
		NB-Thru	140	**# 325**	**# 350**	**# 340**	**165**	**# 225**		**# 220**	**# 255**	**# 255**

Notes: **Bold** queues longer than available storage
1. NB = Northbound; SB = Southbound, EB = Eastbound, WB = Westbound.
2. Available storage for no project and plus project conditions.
3. 95th percentile queue as estimated by Synchro.
   #= 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
   m = Volume for 95th percentile queue is metered by upstream signal.

Source: Fehr & Peers, 2012.

FEHR & PEERS

Table O-2
95th Percentile Queuing Summary
2015 Conditions

#	Study Intersection	Movement[1]	Storage (Feet)[2]	Weekday PM Peak Hour[3]			Saturday Midday Peak Hour[3]			Saturday PM Peak Hour[3]		
				2015 No Project (Feet)	2015 Plus Project (Feet)	2015 Plus Project (Mitigated) (Feet)	2015 No Project (Feet)	2015 Plus Project (Feet)	2015 Plus Project (Mitigated) (Feet)	2015 No Project (Feet)	2015 Plus Project (Feet)	2015 Plus Project (Mitigated) (Feet)
2	Broadway/Broadway Terrace	NB-Thru	160	**# 305**	**# 415**		160	**180**		25	**175**	
3	Broadway/College Avenue	NB-Left	200/ 180	m 180	170		**# 240**	**m 300**		190	**185**	
		NB-Thru	350	m 60	165		115	180		80	110	
		SB-Thru	160	75	65		110	95		85	75	
4	Broadway/Coronado Avenue/ North Project Driveway	NB-Thru	390	n/a	m 150		n/a	m 160		n/a	m170	
		SB-Left	180	n/a	**m# 270**		n/a	**# 235**		n/a	**# 250**	
		SB-Thru	180	n/a	140		n/a	**190**		n/a	75	
7	Broadway/ 51st Street/ Pleasant Valley Avenue	EB-Left	120	**#300**	**# 435**		**# 265**	**# 375**		**# 175**	**#285**	
		EB-Thru	300	**370**	**400**		200	255		210	260	
		WB-Left	300/ 200	# 235	**# 280**		**# 380**	**m# 385**		# 215	**m# 220**	
		WB-Thru	520	# 315	100		# 480	# 470		295	370	
		NB-Left	140	n/a	115		n/a	**# 255**		n/a	80	
		NB-Thru	280	**# 365**	**# 545**		**# 315**	**# 515**		155	235	
		SB-Left	275	**m# 365**	# 250		**# 365**	# 220		**# 390**	#220	
		SB-Thru	390	195	195		# 235	100		170	140	
12	Shattuck Avenue/ 52nd Street	SB-Left	150	**155**	**165**	**165**	110	130		125	140	120

15	Telegraph Avenue/ 51st Street	WB-Left	180	120	# 150	# 165	# 165	**# 205**		110	# 140	
		NB-Thru	220	**255**	**265**	**265**	210	**220**		175	190	
		SB-Left	180	**# 430**	**# 445**	**# 415**	**# 265**	**# 285**		**#355**	**# 375**	
17	Project Driveway/ Gilbert Street/ Pleasant Valley Avenue	EB-Left	180/ 200	**210**	m 130		**195**	**m# 200**		**230**	**m# 210**	
		EB-Thru	520	200	m 70		115	m 80		140	m70	
		WB-Left	100	n/a	40		n/a	m 40		n/a	m 25	
20	Piedmont Avenue/ Pleasant Valley Avenue	EB-Thru	250	**# 490**	**# 515**	**295**	**# 250**	**# 455**	**265**	**# 295**	**m# 495**	m 240
		WB-Thru	280	120	125	205	# 190	# 220	# 265	125	# 145	**# 240**
		NB-Thru	140	**# 365**	**# 390**	**# 380**	**# 195**	**# 250**	**# 275**	**# 250**	**# 280**	**# 275**

Notes: **Bold** queues longer than available storage
4. NB = Northbound; SB = Southbound, EB = Eastbound, WB = Westbound.
5. Available storage for no project and plus project conditions.
6. 95th percentile queue as estimated by Synchro.
#= 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m = Volume for 95th percentile queue is metered by upstream signal.

Source: Fehr & Peers, 2012.

FEHR PEERS

Table O-3
95th Percentile Queuing Summary
2035 Conditions

#	Study Intersection	Movement[1]	Storage (Feet)[2]	Weekday PM Peak Hour[3]			Saturday Midday Peak Hour[3]			Saturday PM Peak Hour[3]		
				2035 No Project (Feet)	2035 Plus Project (Feet)	2035 Plus Project (Mitigated) (Feet)	2035 No Project (Feet)	2035 Plus Project (Feet)	2035 Plus Project (Mitigated) (Feet)	2035 No Project (Feet)	2035 Plus Project (Feet)	2035 Plus Project (Mitigated) (Feet)
2	Broadway/Broadway Terrace	NB-Thru	160	**# 720**	**# 860**		**# 345**	**# 350**		**175**	**255**	
3	Broadway/College Avenue	NB-Left	200/ 180	m 180	m 165		**# 335**	m 150		**# 245**	**180**	
		NB-Thru	350	m 65	**m 500**		195	m **380**		120	230	
		SB-Thru	160	90	145		**175**	# 280		125	95	
4	Broadway/Coronado Avenue/ North Project Driveway	NB-Thru	390	n/a	m 165		n/a	m 265		n/a	m 289	
		SB-Left	180	n/a	**m#255**		n/a	m# 175		n/a	**# 235**	
		SB-Thru	180	n/a	**220**		n/a	105		n/a	80	
7	Broadway/ 51st Street/ Pleasant Valley Avenue	EB-Left	120	**# 370**	**# 505**		**# 325**	**# 430**		**# 215**	**# 325**	
		EB-Thru	300	**# 435**	**# 500**		235	290		230	280	
		WB-Left	300/ 200	**# 310**	**m# 300**		**# 505**	**m# 415**		# 290	**m# 245**	
		WB-Thru	520	# 475	# 425		**# 720**	**m# 630**		# 425	# 480	
		NB-Left	140	n/a	**# 170**		n/a	**m# 240**		n/a	100	
		NB-Thru	280	**# 670**	**# 965**		**# 560**	**# 840**		230	**# 370**	
		SB-Left	275	**m# 425**	**# 320**		**# 470**	# 250		**# 455**	**# 280**	
		SB-Thru	390	# 335	300		# 380	**# 445**		# 270	235	
12	Shattuck Avenue/ 52nd Street	SB-Left	150	**# 205**	**# 225**	**190**	130	**# 165**		**# 170**	**# 205**	**150**

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15	Telegraph Avenue/ 51st Street	WB-Left	180	# 165	**# 200**	**# 220**	**# 250**	**# 290**	**# 260**	# 150	**# 190**	**# 185**
		NB-Thru	220	**# 380**	**# 410**	**# 415**	**300**	**315**	**315**	**255**	**270**	**275**
		SB-Left	180	**m# 440**	**m# 455**	**m# 420**	**# 280**	**# 300**	**# 295**	**# 390**	**# 410**	**# 340**
17	Project Driveway/ Gilbert Street/ Pleasant Valley Avenue	EB-Left	180/ 200	**215**	m 105		**205**	m 170		**230**	m 185	
		EB-Thru	520	270	m 105		165	m 185		175	m 155	
		WB-Left	100	n/a	# 65		n/a	m 60		n/a	m 30	
20	Piedmont Avenue/ Pleasant Valley Avenue	EB-Thru	250	**# 635**	**# 660**	**# 530**	**# 345**	**# 690**	**# 380**	**# 380**	**# 740**	**# 360**
		WB-Thru	280	165	170	**# 400**	**# 400**	**# 415**	**# 525**	# 260	**# 280**	**# 405**
		NB-Thru	140	**# 490**	**# 510**	**# 515**	**# 305**	**# 340**	**# 465**	**# 340**	**# 370**	**# 500**

Notes: **Bold** queues longer than available storage

7. NB = Northbound; SB = Southbound, EB = Eastbound, WB = Westbound.
8. Available storage for no project and plus project conditions.
9. 95th percentile queue as estimated by Synchro.
   #= 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
   m = Volume for 95th percentile queue is metered by upstream signal.

Source: Fehr & Peers, 2012.