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REVISED KAISER CENTER PROJECT

CEQA Addendum/Checklist

1. General Project Information

1.1 Project Title:

Revised Kaiser Center Office Project

1.2 Case Number:

PUD08-103-R01

1.3 Lead Agency Name and Address:

City of Oakland
Bureau of Planning
250 Frank H. Ogawa Plaza, Suite 2114
Oakland, CA 94612

1.4 Contact Person and Phone Number:

Pete Vollmann, City Planner
Planning and Zoning Division
250 Frank H. Ogawa Plaza, Suite 2114
Oakland, CA 94612
(510) 238-6417
pvollmann@oaklandca.gov

1.5 Project Location:

300 Lakeside Drive
Assessor's Parcel No. 008-0652-001-05

1.6 Project Applicant's Name and Address:

The Swig Company
Attn: Tomas Schoenberg
300 Lakeside Drive, Suite 1975
Oakland, CA 94612

1.7 Existing General Plan Designations:

Central Business District

1.8 Existing Zoning:

Central Business District General Commercial (CBD-C); Central Business District Height Areas 6 and 7 (no limit)

1.9 Requested Permits:

Revision to the Planned Unit Development (PUD); Tree Protection Permit; Planned Unit Development (PUDF) (future)

2. Executive Summary

The proposed Revised Kaiser Center Office Project (Revised Project) proposes modifications to the Kaiser Center Office Project (or 2011 Project) approved in 2011 for development on approximately 2.2 acres at the westernmost portion of the 7.2-acre Kaiser Center property at 300 Lakeside Drive. The Revised Project amends this proposal to instead develop an approximately 415-foot-tall office tower and two options for a second structure: a 240-foot-tall office building or a 413-foot-tall residential tower. Retail uses would be provided on the ground floors of both towers. The Revised Project would include the demolition of the existing Webster Street Mall and 20th Street Mall buildings, and portions of the existing rooftop garden. Two options for construction are proposed as part of the Revised Project: Master Plan I and Master Plan II. Master Plan I would include construction of an office tower on the Webster Street site and an office building on the 20th Street site. Master Plan II would include construction of a residential tower on the 20th Street site and the same office tower on the Webster Street site.

The project site for the Revised Project is the same project site analyzed for the 2011 Project. The City certified an Environmental Impact Report (EIR) for the 2011 Project in May 2011 (2011 EIR), pursuant to the California Environmental Quality Act (CEQA).[1,2] The 2011 EIR analyzed the environmental impacts of implementation of the 2011 Project which would develop a 469-foot and a 573-foot-tall commercial/retail towers at the existing Kaiser Center Office site. The Revised Project would entail minor revisions to the 2011 Project analyzed by the 2011 EIR, providing the basis for use of an Addendum. State CEQA Guideline Section 15164 states that an Addendum to a certified EIR is allowed when minor changes or additions are necessary and none of the conditions for preparation of a subsequent EIR or negative declaration, per Section 15162, are satisfied. As discussed in detail in Section 7 of this document, none of the conditions stated in Section 15162 are satisfied. In addition, none of the events stated in Public Resources Code Section 21166 requiring a subsequent EIR are satisfied. Therefore, an addendum is appropriate and no further review or analysis under CEQA is required.

[1] Kaiser Center Office Project Final EIR, Certified May 4, 2011. SCH No. 2008052103. Oakland Case No. ER08-003, PUD 08-103, TPM 98948.

[2] Throughout this document, except where necessary for clarity, "2011 EIR" encompasses the Draft EIR and Final EIR for the Kaiser Center Office Project.

3. Background

3.1 Planning and CEQA Context

The project site is the same project site analyzed for the 2011 Project, for which the City of Oakland certified the 2011 EIR, pursuant to CEQA.

The analysis in this environmental review document supports determinations that the Revised Project qualifies for an addendum pursuant to CEQA Guidelines Section 15164 (Addendum to an EIR) as none of the conditions requiring a subsequent EIR, as specified in Public Resources Code section 21166 and CEQA Guidelines Section 15162 (Subsequent EIRs) are present.

3.1.1 Kaiser Center Office Project EIR

The analysis in the 2011 EIR applies to the Revised Project and provides the basis for its qualification for the aforementioned CEQA Addendum. The 2011 EIR is hereby incorporated by reference and can be obtained from the City of Oakland Bureau of Planning at 250 Frank H. Ogawa Plaza, Suite 2114, Oakland, California 94612, and/or located at http://www2.oaklandnet.com/Government/o/PBN/OurServices/Application/DOWD009158.

This CEQA Checklist is an addendum to the 2011 EIR which evaluates the potential significant environmental impacts that could result from redevelopment of approximately 2.2 acres at the westernmost portion of the 7.2-acre project site. The 2011 Project would demolish approximately 280,002 square feet of office and commercial/retail uses and construct approximately 1.47 million square feet of office and commercial/retail uses in two new high-rise towers. The 2011 Project would demolish the existing 20th Street Mall and Webster Street Mall buildings, along with a portion of the roof garden, which would be replaced. The first tower to be constructed, in Phase I of the 2011 Project, would be 34 stories in height and replace the existing 20th Street Mall. The second tower to be constructed, in Phase II of the 2011 Project, would be 42 stories in height and replace the Webster Street Mall. Both towers would be primarily for office use and would also include street level retail spaces. A comparison of the 2011 Project and the Revised Project is included in Section 3.2.

3.1.1.1 Environmental Effects Summary – 2011 EIR

The 2011 EIR determined that development of the 2011 Project would result in impacts that would be **reduced to a less-than-significant level with the implementation of mitigation measures and/or standard conditions of approval** (described in Section 4): aesthetics (new light or glare); air quality and greenhouse gases (fugitive dust, criteria pollutant emissions – except for PM_{10}, greenhouse gas emissions, conflict with greenhouse gas plans or policies); biological resources (impacts to birds, conflict with local policies, cumulative impacts); cultural resources (archaeological, human remains, paleontological); geology, soils and seismicity; hazards and hazardous materials (exposure, transportation, use/storage); hydrology and water quality (water quality, runoff in excess of existing capacity); noise (construction noise, traffic noise); public services and recreation facilities (fire protection and emergency services/facilities); transportation and circulation (roadway segment

operations, site access, construction impacts); and utilities and service systems (impacts on existing stormwater, solid waste, and wastewater facilities).

Less-than-significant impacts were identified for the following resources in the 2011 EIR: aesthetics, wind, and shadow (scenic vistas, visual character, shadow, conflict with existing policies); air quality (odors, exposure to toxic air contaminants and $PM_{2.5}$); biological resources (special-status species, sensitive natural communities, habitat conservation plans); cultural resources (shadow impacts on historical structures, eligibility of nearby historic resources, cumulative impacts); hazards and hazardous materials (cumulative impacts); hydrology and water quality (groundwater, drainage patterns, flooding, cumulative impacts); land use, plans, and policies; noise (generation in excess of standards); population, employment, and housing; public services and recreation facilities (police, school, parks, and recreation services/facilities, cumulative impacts); and utilities and service systems (water supply, energy, cumulative impacts).

No impacts were identified for: agricultural or forestry resources; hazards and hazardous materials (emissions near school, hazardous sites list, interfere with airstrip/airport, emergency response/evacuation plan); and mineral resources.

Significant unavoidable impacts were identified for the following environmental resources in the 2011 EIR: aesthetics, wind, and shadow (wind hazards, cumulative wind impacts); air quality and greenhouse gases (PM_{10} emissions, cumulative PM_{10} emission impacts); cultural resources (changes to historic resources); noise (cumulative traffic noise); and transportation and circulation (roadway segment operations). Due to the potential for significant unavoidable impacts, a Statement of Overriding Considerations was adopted as part of the City's approvals.

3.2 2011 Project and Revised Project Comparison

The 2011 Project would include a 573-foot-tall office tower on the Webster Street site and a 469-foot-tall office tower on the 20th Street site. The Revised Project would include an approximately 415-foot-tall office tower (approximately 160 feet shorter than the approved office tower) on Webster Street with approximately 865,540 square feet of office use. Two options are under consideration for the 20th Street site: an approximately 240-foot-tall office tower with 467,340 square feet of office use (Master Plan I) or a 413-foot-tall residential tower with approximately 512,800 square feet of residential use (580 units) (Master Plan II). As with the 2011 Project, the Revised Project would include the demolition of the existing Webster Street Mall and 20th Street Mall buildings, and portions of the existing rooftop garden. A comparison of the 2011 Project and Revised Project Elements is provided in **Table 1**.

TABLE 1
2011 PROJECT AND REVISED PROJECT COMPARISON

	2011 Project	Revised Project Master Plan I	*Change from 2011 Project*	Revised Project Master Plan II	*Change from 2011 Project*
Webster Street Site					
Stories	42	28	*-14*	28	*-14*
Height	573 ft.	415 ft.	*-158*	415 ft.	*-158*
Office (sf)	768,100	865,540	*+97,440*	865,540	*+97,440*
Retail (sf)	18,800	5,700	*-13,100*	5,700	*-13,100*
20th Street Site					
Stories	34	15	*-19*	40	*+6*
Height	469 ft.	240 ft.	*-229*	413 ft.	*-56*
Office (sf)	551,940	467,340	*-84,600*	n/a	*-551,940*
Retail (sf)	27,400	9,600	*-17,800*	13,150	*-14,250*
Residential (sf)	n/a	n/a	*n/a*	512,800 (580 units)	*+512,800 (580 units)*
Parking (net new)	697	79	*-618*	79	*-618*
Roof Garden Area Demolished	38,350	38,350	*n/a*	38,350	*n/a*
Roof Garden Area Existing to Remain	88,400	88,400	*n/a*	88,400	*n/a*
Demolished Roof Garden Area Replaced	12,875	17,800	*+4,925*	17,800	*+4,925*
Roof Garden Area Added	25,895	25,770	*-125*	32,634	*+6,739*
Total Garden Area	**127,120**	**131,970**	***+4,850***	**138,564**	***+11,444***[a]

NOTES: a. See Figure 16 in Section 7.1, Aesthetics

ft. = feet
sf = square feet

4. Purpose and Summary of this Document

The purpose of this document is to evaluate CEQA compliance of the Revised Project. The 2011 EIR analyzed the environmental impacts of development located within the Revised Project boundaries. The Revised Project would entail minor revisions to the 2011 Project analyzed by the 2011 EIR. An addendum is considered suitable for the Revised Project, as demonstrated by the CEQA Checklist presented in Section 7, herein. Public Resources Code Section 21166 and CEQA Guidelines Sections 15162 and 15164 (Subsequent EIRs, Supplements and Addenda to an EIR or Negative Declaration) state that an addendum to a certified EIR is allowed when minor changes or additions are necessary, and none of the conditions for preparation of a subsequent EIR or Negative Declaration per Sections 15162 and 15164 are satisfied. The analysis in the 2011 EIR directly applied to the Revised Project, providing the basis for use of an addendum.

4.1 Previous Mitigation Measures and Current Standard Conditions of Approval (SCAs)

The CEQA Checklist provided in Section 7 of this document evaluates the potential project-specific environmental effects of the Revised Project, and evaluates whether such impacts were adequately covered by the 2011 EIR to allow the use of a CEQA Addendum. The analysis conducted incorporates by reference the information contained in the 2011 EIR. The Revised Project is legally required to incorporate and/or comply with the applicable requirements of the mitigation measures identified in the 2011 EIR. Therefore, the mitigation measures are herein assumed to be included as part of the Revised Project, including those that have been modified to reflect the City's current standard language and requirements, as discussed below.

4.1.1 SCA Application in General

The City established its *Standard Conditions of Approval and Uniformly Applied Development Standards* (SCAs) in 2008, and they have since been amended and revised several times.[3] The City's SCAs are incorporated into new and changed projects as conditions of approval regardless of a project's environmental determination. The SCAs incorporate policies and standards from various adopted plans, policies, and ordinances (such as the Oakland Planning and Municipal Codes, Oakland Creek Protection Ordinance, Stormwater Water Management and Discharge Control Ordinance, Oakland Protected Trees Ordinance, Oakland Grading Regulations, National Pollutant Discharge Elimination System [NPDES] permit requirements, California Building Code and Uniform Fire Code, among others), which have been found to substantially mitigate environmental effects. The SCAs are adopted as requirements of an individual project when it is approved by the City and are designed to, and will, substantially mitigate environmental effects.

4.1.2 SCA Application in this CEQA Checklist

Mitigation measures and SCAs identified in the 2011 EIR that would apply to the Revised Project are listed in Attachment A to this document, which is incorporated by reference into this CEQA

[3] A revised set of SCAs was recently published by the City of Oakland on November 5, 2018.

Checklist. Because the SCAs are mandatory City requirements, the impact analysis for the Revised Project assumes that they will be imposed and implemented, which the Project Applicant has agreed to do or ensure as part of the Project. If this CEQA Checklist or its attachments inaccurately identifies or fails to list a mitigation measure or SCA, the applicability of that mitigation measure or SCA to the Revised Project is not affected.

Most of the SCAs that are identified for the Revised Project were also identified in the 2011 EIR. As discussed specifically in Attachment A to this document, since certification of the 2011 EIR, the City of Oakland has revised its SCAs, and the most current SCAs are identified in this CEQA Checklist. All mitigation measures identified in the 2011 EIR that would apply to the Revised Project are also identified in Attachment A to this document.

4.1.3 Revised Kaiser Center Office Project CEQA Compliance

The analysis conducted in this document indicates that, pursuant to CEQA Guidelines Section 15164, an addendum to the 2011 EIR is appropriate. The Revised Project would entail minor revisions to the 2011 Project analyzed by the 2011 EIR that do not warrant preparation of a subsequent environmental impact report pursuant to Public Resources Code Section 21166 or CEQA Guidelines Section 15162. Therefore, the Revised Project meets the requirements for an addendum, as evidenced in Attachment B to this document, and this CEQA Checklist is considered to be the addendum.

Overall, based on an examination of the analysis, findings, and conclusions of the 2011 EIR—all of which are summarized in the CEQA Checklist in Section 7 of this document—the potential environmental impacts associated with the Revised Project have been adequately analyzed and covered in the 2011 EIR. Therefore, no further review or analysis under CEQA is required.

5. Project Description

5.1 Project Setting

5.1.1 Project Location and Planning Context

The Kaiser Center Office project site (project site) is located at the corners of Webster and 20th Streets, and Webster and 21st Streets, in the vicinity of downtown Oakland (see **Figure 1**). The project site is approximately 4.79 acres and comprised of one parcel owned by SIC-Lakeside Drive, LLC, an affiliate of The Swig Company, LLC (the Project Applicant) (Assessor's Parcel Number 008-0652-001-05).

The project site is within the Central Business District (CBD) land use designation identified in the Oakland General Plan. The project site is zoned Central Business District General Commercial Zone (CBD-C), in CBD Height Areas 6 and 7. The entire project site is also located within the Lake Merritt Historic District. The intent of the CBD-C zone is to create, maintain, and enhance areas of the CBD appropriate for a wide range of ground-floor retail, office, and other commercial activities. Upper-story spaces are intended to be available for a wide range of residential and office or other commercial activities.

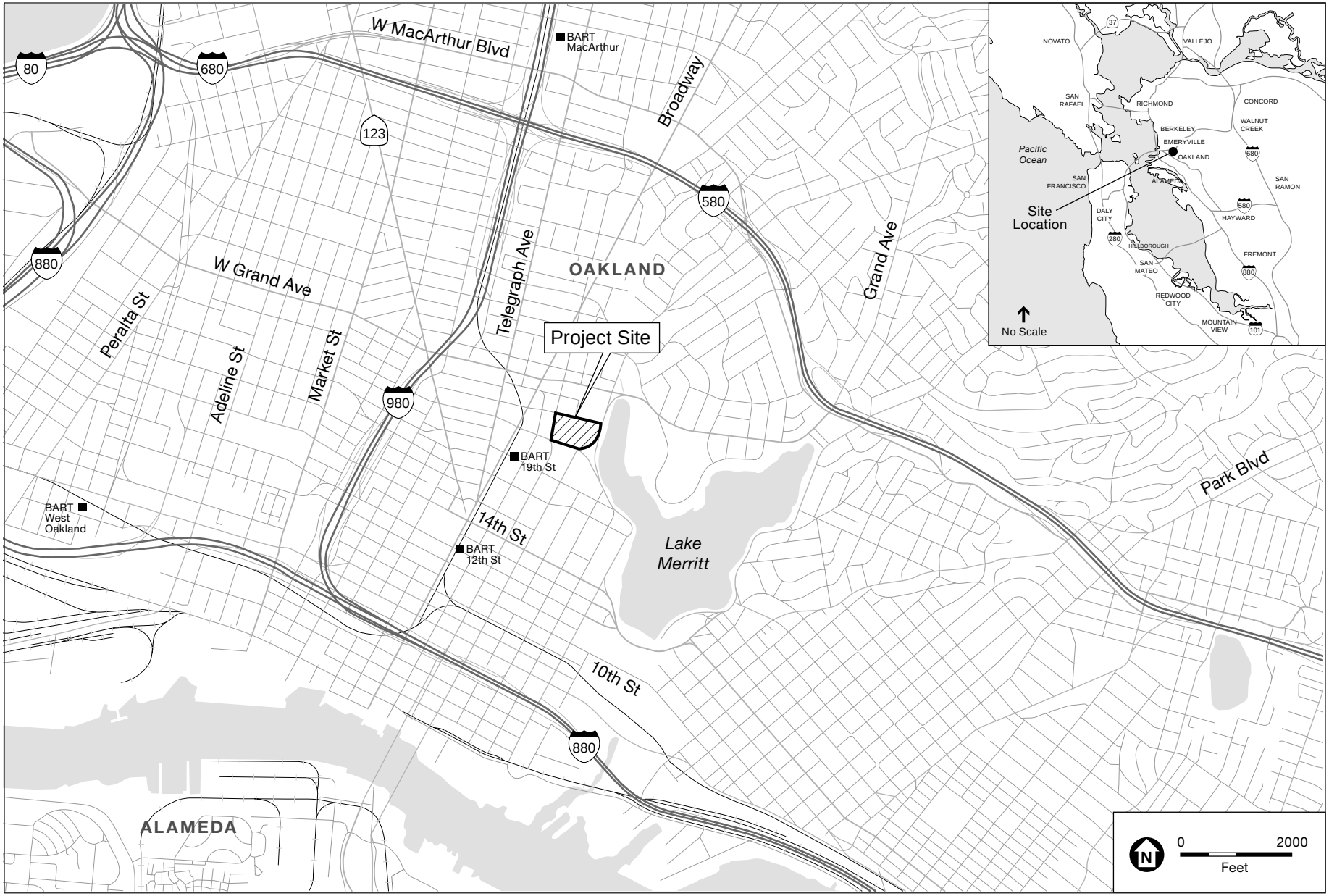
5.1.2 Existing Site Conditions

The project site is occupied by the existing Kaiser Center development, which consists of a single office tower with 29 stories, two 3-story commercial/office buildings known as the "20th Street Mall" and the "Webster Mall," and a 5-level parking garage with a rooftop garden.

The Kaiser Center office tower is currently comprised of approximately 13,200 square feet of retail uses (Bank of America, FedEx, and a café) on the ground floor, and 753,000 square feet of office uses for various tenants throughout the upper floors of the tower. The office tower will not be physically affected by development proposed on the project site.

The 20th Street Mall is a 3-story retail/office building that fronts Webster and 20th Streets. The Webster Street Mall is a 3-story building along Webster Street and below the westernmost portion of the rooftop garden. The 20th Street and Webster Mall buildings currently provide approximately 48,100 square feet retail use (retail drug store, health club, and banking) and a vacant 1,600 square foot former restaurant space on the ground floor. Approximately 25,800 square feet of office space currently exists on the upper two floors of the 20th Street Mall building. The 20th Street Mall provides approximately 43,400 square feet of workshare uses.

A 5-story parking garage exists in the central portion of the project site, below the rooftop garden, and has approximately 1,340 spaces to serve the existing 20th Street and Webster Mall buildings, the existing Kaiser Center office tower, and the Ordway Building (subject to the terms of a parking lease between the owner of the Ordway Building and the owner of the project site) across 21st Street to the north of the project site. There is vehicular access to the existing garage from 20th and 21st Streets.



SOURCE: ESA, 2018

Revised Kaiser Center Project

Figure 1
Project Location

As mentioned previously, an approximately 122,600 square foot private rooftop garden spans the roofs of the parking garage and Webster Mall. The rooftop garden contains pathways, benches, a pond with a bridge, and landscaping, including grass lawns, trees, and other plantings. The garden is accessible by visitors to the Kaiser Center during business hours via interior escalators from the street level of the 20th Street Mall and from the parking garage.

The Kaiser Center complex has never been formally designated a City of Oakland Landmark and is not listed in the National Register of Historic Places (National Register). However, it is listed in the Oakland Cultural Heritage Survey with a status code of "A1+," which indicates that the property has an "A"-rating, defined as a property of "Highest Importance." According to the OCHS, the Kaiser Center complex, including the rooftop garden, appears to be eligible for listing in the National Register both individually and as a potential contributor to the Lake Merritt Historic District, an Area of Primary Importance. Further, according to the Historic Resource Evaluation completed in 2009 to support the 2011 EIR, the Kaiser Center complex meets the criteria for listing in the California Register of Historical Resources.

5.1.3 Surrounding Context

The area immediately surrounding the project site contains primarily office, retail, institutional, recreational, and open space land uses. Office, retail, and institutional uses are located directly north of the project site. Office uses immediately north of the project site include an approximately 27-story office tower (the Ordway Building) that houses the Kaiser Permanente Corporate offices along 21st Street, an approximately 10-story office building currently undergoing renovations at the corner of 21st Street and Kaiser Plaza, a 15-story building housing the California Department of Transportation (CalTrans) District 4 headquarters, and an approximately 10-story office building with ground floor retail uses. The 148-foot tall Cathedral of Christ the Light is located on the block to the north of the project site at Grand Avenue and Harrison Street. The cathedral site includes underground parking, an accessory office building along Harrison Street, an approximately 4-story accessory office building along 21st Street, a rooftop garden, and café. A surface parking lot is also located immediately north of the project site along 21st Street, and an enclosed pedestrian footbridge connects the parking garage on the project site to the Ordway Building across 21st Street.

The 4.2-acre Snow Park is located southeast of the project site, across Harrison and 20th Streets. The park is currently closed for improvements that will include a new tot lot and children's play area, renovated bathroom and putting green, and a new pedestrian promenade plaza with pathway lighting. Uses south of the project site, across 20th Street, include the 27-story Lake Merritt Plaza tower and low-rise street-level retail uses. Directly east of the project site is the 3.4-acre Lake Merritt and surrounding Lakeside Park. Recreational uses around the lake include a walking promenade around the perimeter of the lake, the Fairyland amusement park, tennis facilities, and a local boating center where visitors can rent kayaks and other non-motorized boats. To the west, across Webster Street, existing land uses include surface parking lots along with low- to mid-rise commercial buildings occupied primarily by financial institutions and commercial offices.

The Bay Area Rapid Transit District (BART) 19th Street station is located 0.18 miles from the project site, at 19th Street and Broadway. The Alameda-Contra Costa County Transit District (AC Transit)

provides bus stops adjacent to the project site along 20th Street and on Harrison Street across from 21st Street for the 33, 611, and 805 lines. Principal roadways that provide local access to the project site include 20th Street, Webster Street, Harrison Street, Lakeside Drive and Grand Avenue. Regional access to the project site is provided by Interstate 580 (I-580), Interstate 880 (I-880), Interstate 980 (I-980), and State Route 24 (SR 24). The nearest access point to and from the regional network (via I-580) is approximately 1.5 miles east of the project site at Grand Avenue.

5.2 Project Characteristics

5.2.1 Overview

The project analyzed in Section 7, CEQA Checklist, is referred to as the Revised Kaiser Center Office Project (or Revised Project). The Project Applicant proposes modifications to the Kaiser Center Office Project (or 2011 Project) approved in 2011 for development on approximately 2.2 acres at the westernmost portion of the 7.2-acre Kaiser Center property at 300 Lakeside Drive. The 2011 Project would develop two 469-foot and 573-foot-tall commercial/retail towers at the existing Kaiser Center Office site. The Revised Project amends this proposal to instead develop an approximately 415-foot-tall office tower and two options for a second structure: a 240-foot-tall office building or a 413-foot-tall residential tower. Retail uses would be provided on the ground floors of both towers (see Section 3, Background, for a detailed discussion).

The Revised Project would include the demolition of the existing Webster Street Mall and 20th Street Mall buildings, and portions of the existing rooftop garden. Two options for construction are proposed as part of the Revised Project: Master Plan I and Master Plan II. Master Plan I would include construction of office towers on the Webster Street Mall and 20th Street sites, as shown on **Figure 2**. Master Plan II would include construction of a residential tower on the 20th Street site and the same office tower on the Webster Street site, as shown in **Figure 3**.

5.2.2 Revised Project Components

The Revised Project would include an approximately 415-foot-tall office tower (approximately 160 feet shorter than the approved office tower) on Webster Street with approximately 865,540 square feet of office use. Two options are under consideration for the 20th Street site: an approximately 240-foot-tall office tower with 467,340 square feet of office use (Master Plan I) or a 413-foot-tall residential tower with approximately 512,800 square feet of residential use (580 units) (Master Plan II). An overview of the Revised Project components is provided in **Table 2**.



SOURCE: Gensler

Revised Kaiser Center Project

Figure 2
Master Plan I Site Plan

ESA



SOURCE: Gensler

Revised Kaiser Center Project

Figure 3
Master Plan II Site Plan

ESA

TABLE 2
REVISED PROJECT COMPONENTS

	Revised Project Master Plan I	Revised Project Master Plan II
Webster Street Site		
Stories	28	28
Height	415 ft.	415 ft.
Office (sf)[a]	865,540	865,540
Amenity (sf)	30,000	30,000
Retail (sf)	5,700	5,700
20th Street Site		
Stories	15	40
Height	240 ft.	413 ft.
Office (sf)	467,340	n/a
Amenity (sf)	29,800	9,100 (included in the sf of residential space)
Retail (sf)	9,600	13,150
Residential (sf)	n/a	512,800 (580 units)
Parking (net new)	79	79
Roof Garden Area Demolished	38,350	38,350
Roof Garden Area Replaced	17,800	17,800
Roof Open Space/Garden Area Added	25,770	32,364
Total Open Space/Garden Area	131,970	138,564

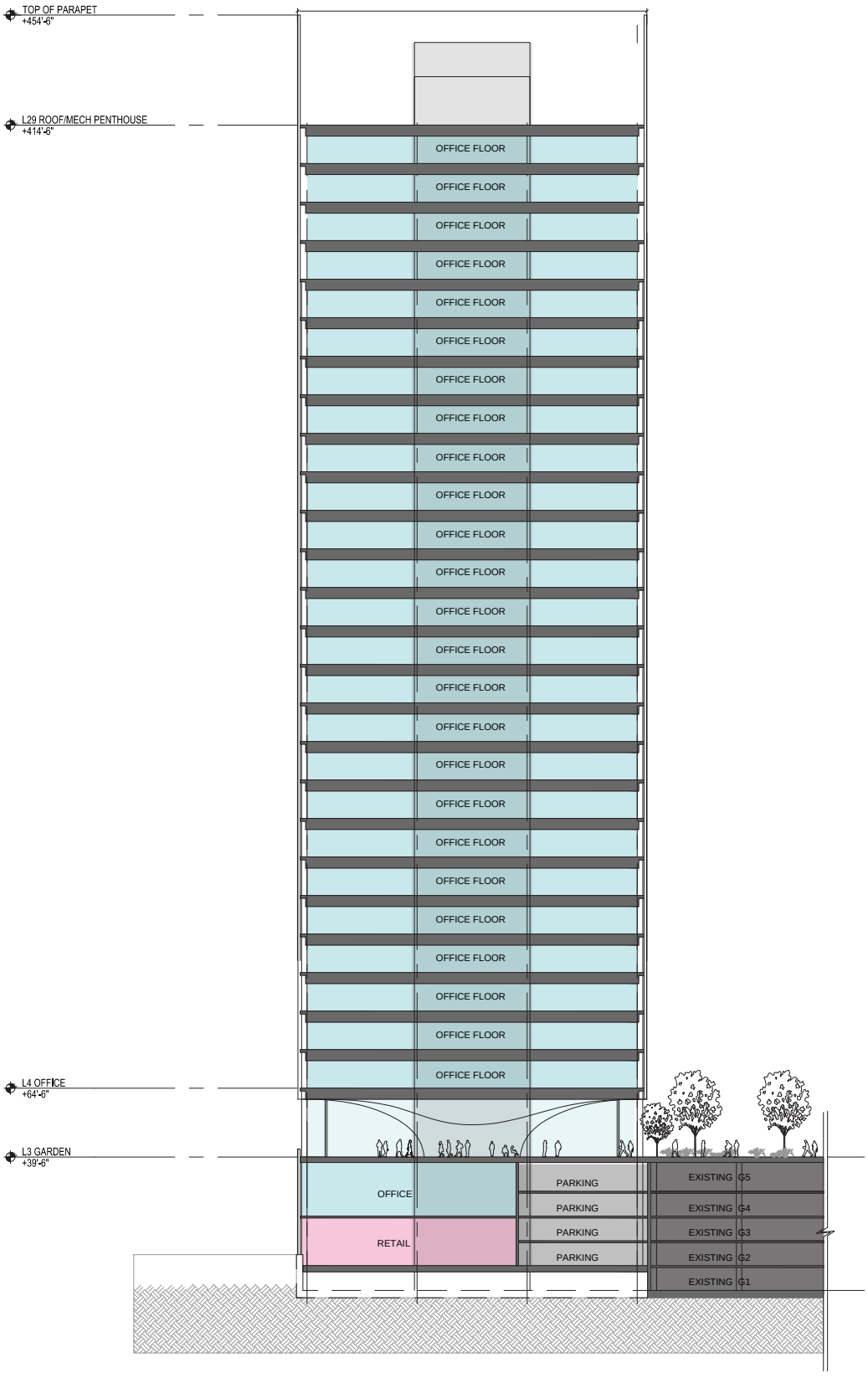
NOTES: ft. = feet; sf = square feet

[a] For the purposes of a conservative analysis, this CEQA checklist assumes approximately 16,680 square feet of this parking area would be occupied by approximately 8,340 square feet of office uses for a total of 865,540 square feet of office in the Webster Street Tower.

5.2.2.1 Webster Street Office Tower

Under both Master Plan I and Master Plan II, the Revised Project would include a 28-story Webster Street office tower providing approximately 5,700 square feet of retail use and a 10,800 square foot office lobby on the ground floor with approximately 857,200 square feet of office space in the upper floors. Currently unprogrammed space that could be additional parking, totaling 47,360 square feet, would be provided on 4 levels, adjoining the existing garage on the G2 through G5 levels (see **Figure 4**). For the purposes of a conservative analysis, this CEQA Checklist assumes approximately 16,680 square feet of this parking area would be occupied by approximately 8,340 square feet of office uses for a total of 865,540 square feet of office in the Webster Street Tower.

Approximately 19,200 square feet of lobby/amenity space would be located on the 3rd level connecting to the rooftop garden. This floor would provide open air corridors around an oval-shaped closed lobby/amenity space that would allow a light and air connection into the rooftop garden as illustrated in Figure 4. In addition to approximately 17,200 square feet of office space on



SOURCE: Gensler

Revised Kaiser Center Project

Figure 4
Webster Street Office Tower Elevations

the 2nd floor, the 4th through 28th floors would provide approximately 33,600 square feet of office use on each floor. The tower would measure approximately 415 feet from the ground floor to the roof and 455 feet to the top of the parapet. Figure 4 shows the Webster Street tower's elevations.

5.2.3.2 20th Street Office Building – Master Plan I

Master Plan I proposes a 15-story building on 20th Street involving approximately 443,500 square feet of office space in the upper levels. Approximately 9,600 square feet of retail space and a 10,600 square foot office lobby would be located on the ground floor. The 2nd floor would include 20,300 square feet of office space with a 20,000 square foot mezzanine. Currently un-programmed space that could be used as parking, totaling 59,850 square feet would be provided in an adjoining garage on a subbasement level, the ground floor, and 2nd level. For the purposes of a conservative analysis, this CEQA Checklist assumes approximately 47,680 square feet of this parking area would be occupied by approximately 23,840 square feet of office uses for a total of 467,340 square feet of office in the 20th Street Office Building.

Approximately 19,200 square feet of lobby/amenity space would be located on the 3rd level connecting to the rooftop garden. In addition to approximately 40,300 square feet of office space on 2nd floor and mezzanine, the 4th through 15th floors would each include approximately 33,600 square feet of office space. The building height would total approximately 240 feet to the foot, and 260 feet to the top of the parapet **Figures 5** through **8**, show the proposed floor plans for Master Plan I, and **Figure 9** shows elevations for the 20th Street office building.

5.2.2.3 20th Street Residential Tower – Master Plan II

Master Plan II would include a 40-story tower on 20th Street providing approximately 512,800 square feet of residential use with up to 580 units. The ground floor would include approximately 13,150 square feet of retail use and a 3,100 square foot residential lobby. Seven residential units would be located on both the 2nd and 3rd floors, and six units on the 4th floor. Parking, totaling 60,000 square feet would be provided on 4 levels, adjoining the existing garage on levels G2 through G5 (see **Figure 10**). An approximately 6,000 square foot amenity area on the 5th floor would connect to the rooftop garden.[4] Similar to that office design for this building, the oval-shaped amenity structure would allow for air and light connections to the rooftop garden as shown in Figure 10. The 6th through 40th floors would each contain 16 residential units. The tower would measure approximately 413 feet to the roof and 429 feet to the top of the parapet. **Figures 11** through **14**, show the proposed floor plans for Master Plan II, and Figure 10 shows elevations for the 20th Street residential tower.

[4] Note residential lobbies and amenity space are included in the approximately 512,800 square feet of residential space.

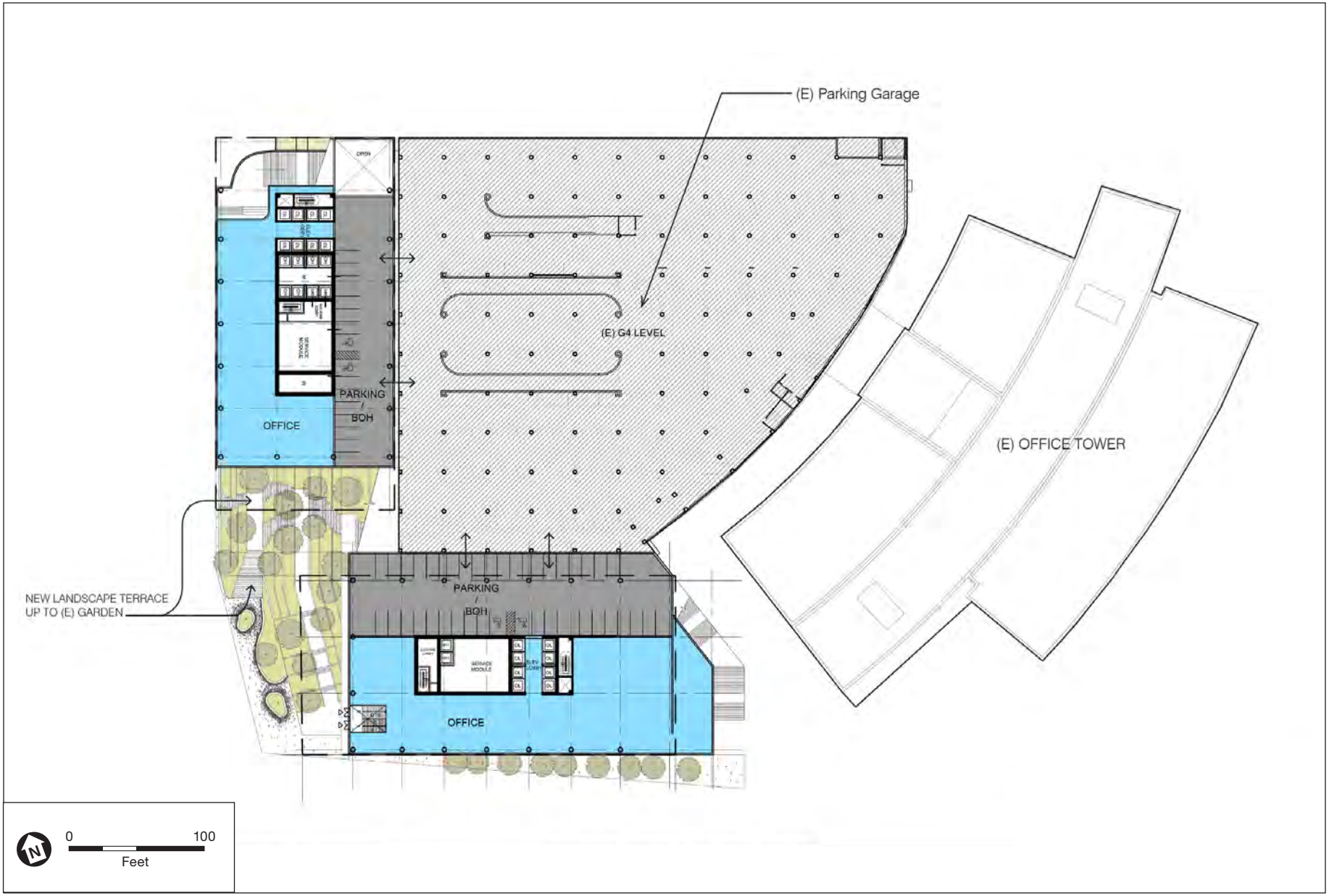


SOURCE: Gensler

Revised Kaiser Center Project

Figure 5
Master Plan I – Ground Floor Plan

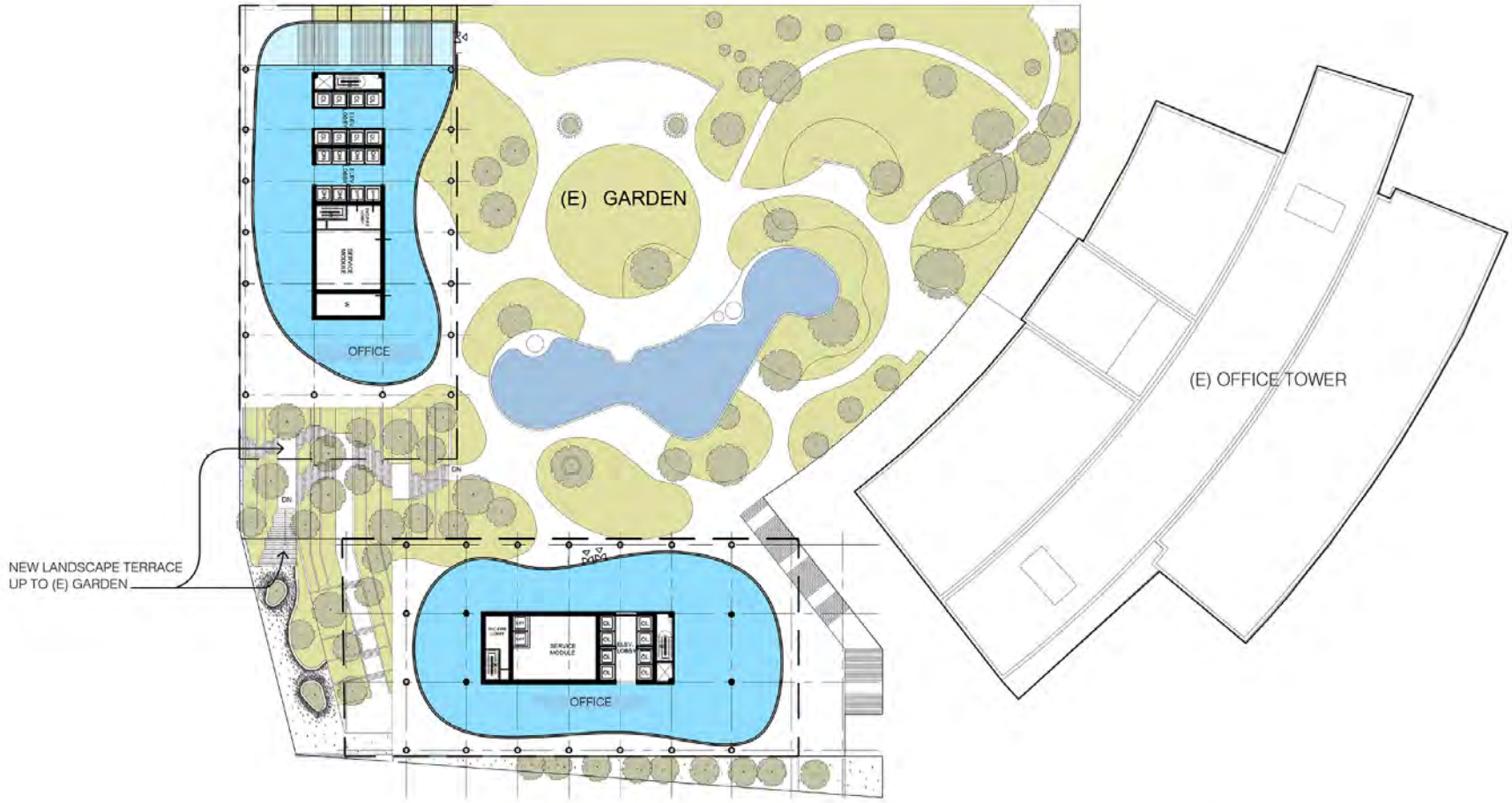
ESA



SOURCE: Gensler

Revised Kaiser Center Project

Figure 6
Master Plan I – Second Floor Plan



SOURCE: Gensler

Revised Kaiser Center Project

Figure 7
Master Plan I – Podium Landscape Garden Plan

ESA

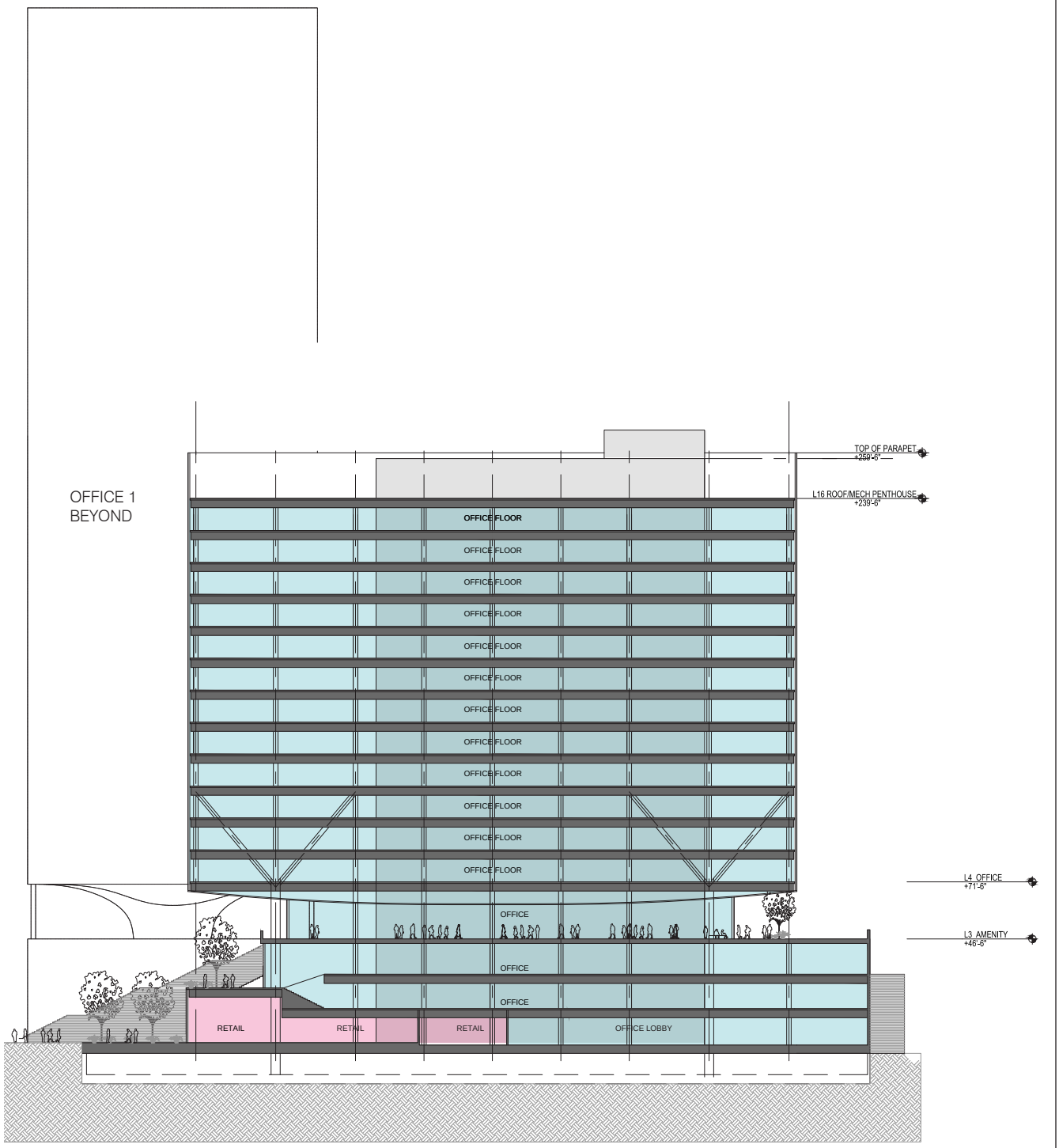


SOURCE: Gensler

Revised Kaiser Center Project

Figure 8
Master Plan I – Upper Floor Plan

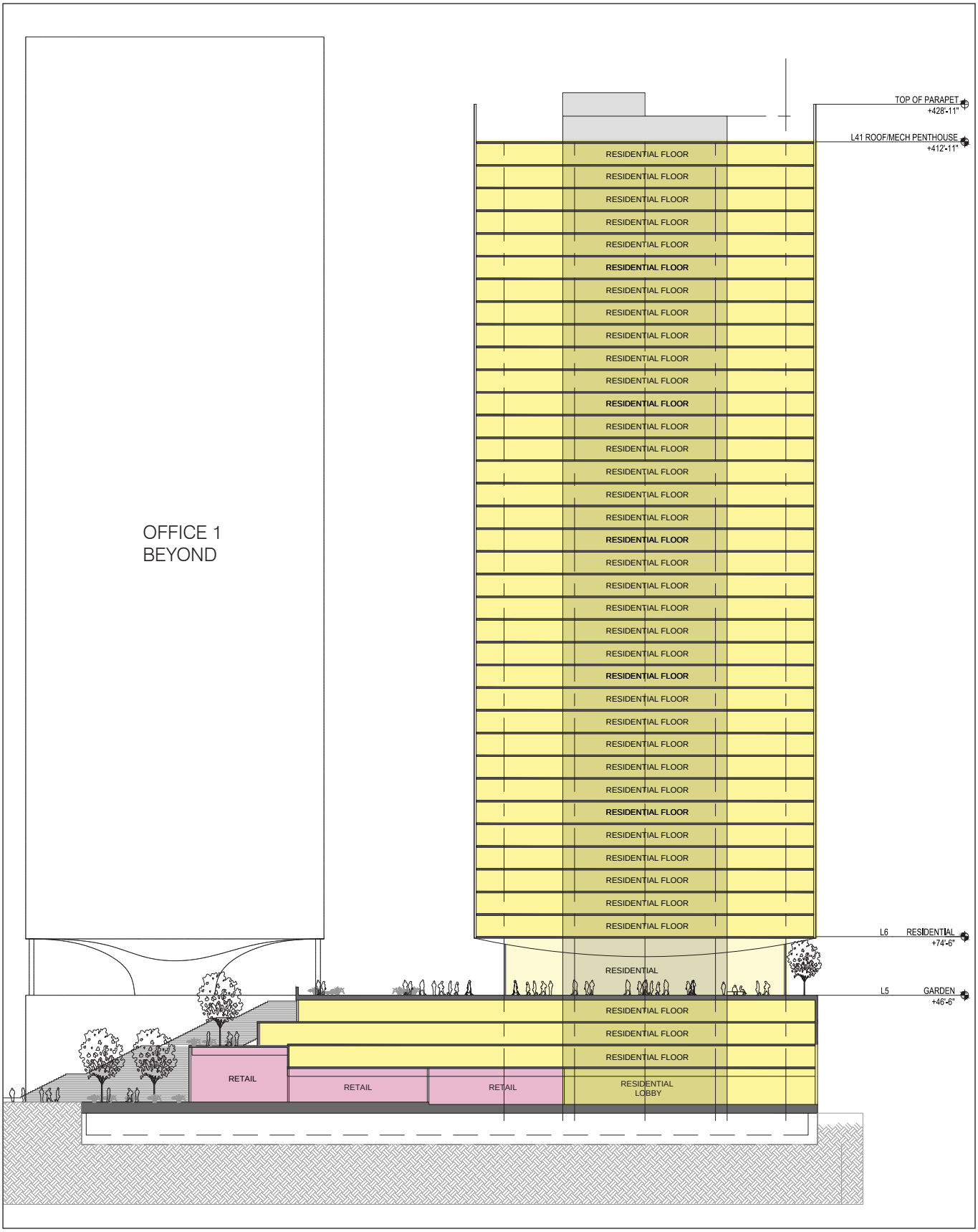
ESA



SOURCE: Gensler

Revised Kaiser Center Project

Figure 9
Master Plan I – 20th Street Office Building Elevations

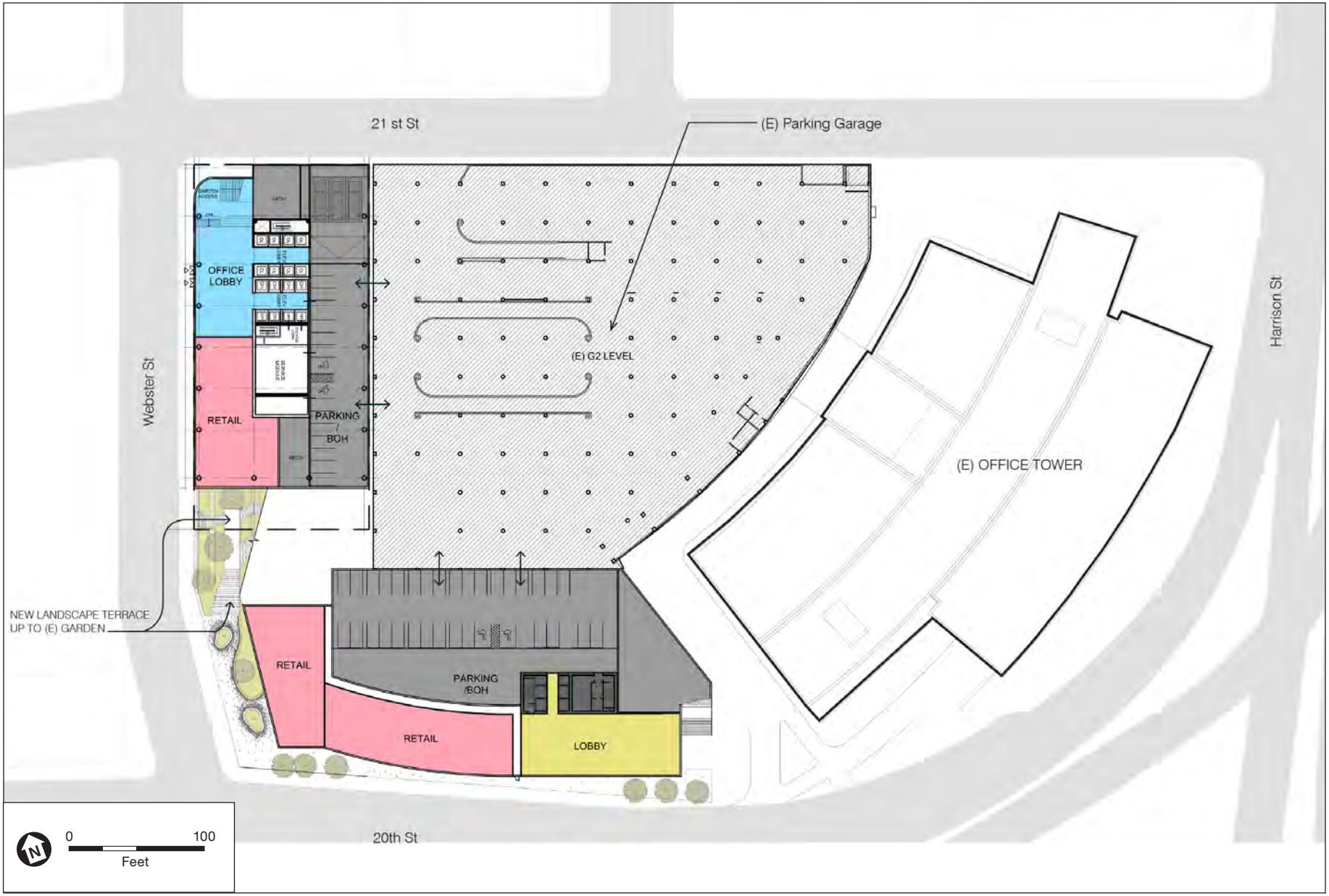


SOURCE: Gensler

Revised Kaiser Center Project

Figure 10
Master Plan II - 20th Street Residential Tower Elevations

ESA



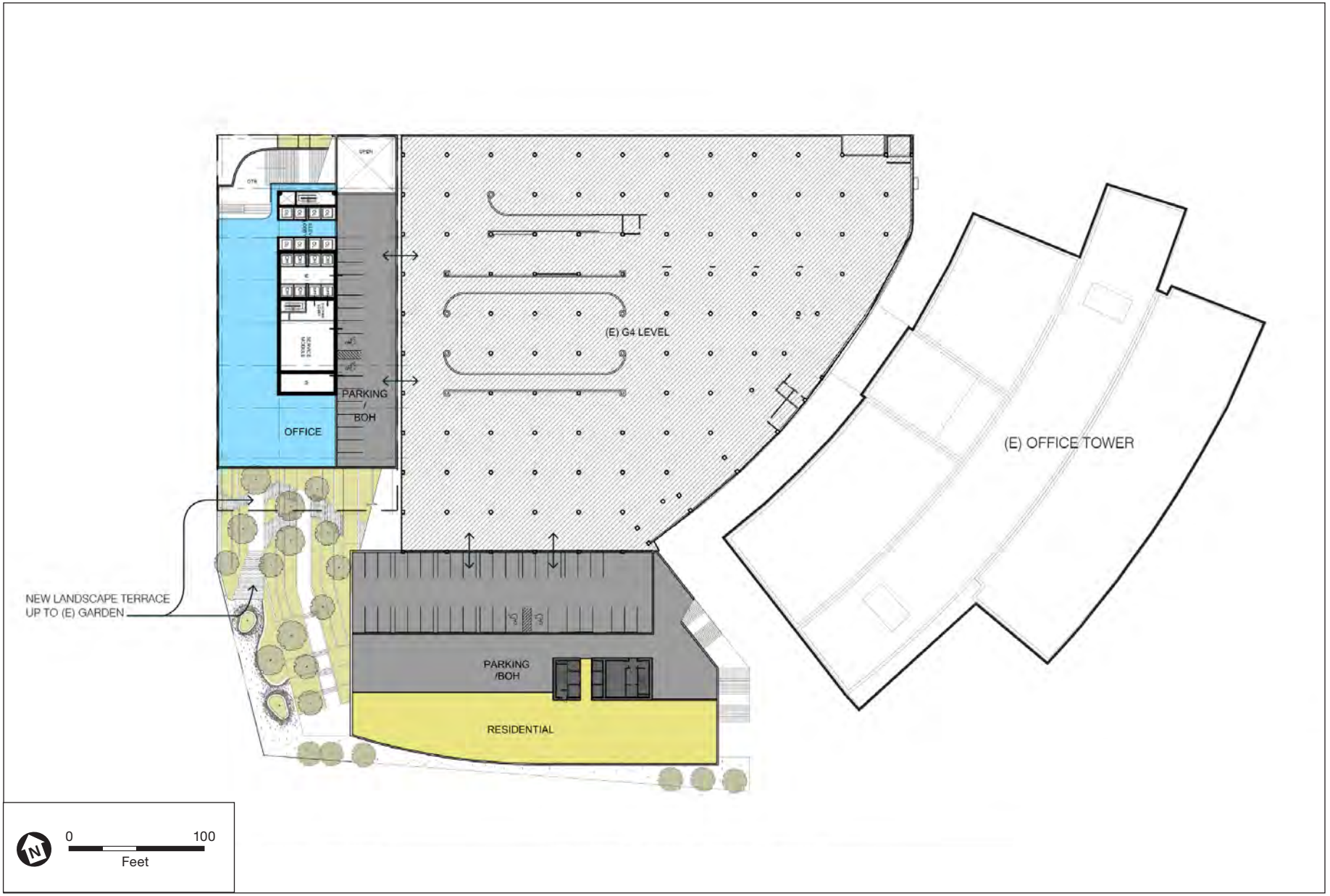
SOURCE: Gensler

Revised Kaiser Center Project

Figure 11

Master Plan II – Ground Floor Plan

ESA



SOURCE: Gensler

Revised Kaiser Center Project

Figure 12

Master Plan II – 2nd through 4th Floor Plan

ESA



SOURCE: Gensler

Revised Kaiser Center Project

Figure 13

Master Plan II – Podium Landscape Garden Plan

ESA



SOURCE: Gensler

Revised Kaiser Center Project

Figure 14

Master Plan II – Upper Floor Plan

ESA

5.2.3 Other Characteristics of the Project

5.2.3.1 Landscaping, Open Space, and Tree Removal

The existing Kaiser Center rooftop garden is located on top of the parking garage and Webster Street Mall, and contains paths, benches, a reflecting pool, wooden bridge, and landscaping. The Revised Project would remove approximately 38,350 square feet, and replace approximately 17,800 square feet of the garden. Master Plan I would add approximately 25,770 square feet of new garden and Master Plan II would add approximately 32,364 square feet. Under either scenario, the Revised Project would result in a larger rooftop garden compared with the existing garden or 2011 Project. The new garden area would include a grand landscape stair feature that would connect to the existing garden from Webster Street as shown in Figure 7 and Figure 13. Additionally, Master Plan II would include an extension of the existing garden's pathways and additional landscaping on the 5th floor adjacent to the 20th Street residential tower.

In addition to providing open space via the rooftop garden, approximately 19,200 square feet of lobby/amenity space would be provided on the 3rd floor of the Webster Street office tower that would connect to the rooftop garden. Master Plan I would also provide approximately 19,200 square feet of lobby/amenity space on the 3rd floor of the 20th Street office building (see Figure 7), while Master Plan II would provide approximately 6,000 square feet of lobby/amenity space on the 5th floor of the 20th Street residential tower as a separate courtyard for residents (see Figure 13). Each would connect to the rooftop garden.

There are approximately 66 protected trees on the project site, with 59 located in the rooftop garden and 7 located at street-level. In order to accommodate construction of the Revised Project, approximately 20 protected trees could be removed, as needed. In addition, the Revised Project would install new street trees, as required, along all of the street frontages.

5.2.3.2 Parking and Circulation

Vehicular Access

Parking garage ingress and egress driveways would continue to be located along 21st Street and at the intersection of Harrison Street and 20th Street/ Thomas L. Berkeley Way. The Project would utilize existing curb cuts, and expand the existing parking garage.

The Kaiser Center currently provides 1,340 existing parking spaces. The Revised Project would remove 155 of the existing parking spaces and potentially construct 234 new spaces, yielding 1,419 parking spaces, or a net gain of 79 parking spaces. Currently, unprogrammed space is proposed on four levels adjoining the existing garage on levels G2 through G5 but could be used as parking for both project buildings, under both Master Plan I and Master Plan II. Parking in the existing garage is not expected to be affected by construction of the Revised Project.

A loading area for the Webster Street office tower would be provided on the ground floor of the tower with a combined loading entry and exit off of 21st Street. A loading area for the 20th Street building (office or residential) would also be provided on the ground floor of the building with a

combined loading entry and exit off of the 21st Street driveway as shown in **Figure 15**. The Revised Project site plans do not identify the location or number of long-term and short-term bicycle parking spaces although the requirements are discussed in Section 7.13, below.

Pedestrian Access

Primary pedestrian access to the Revised Project would be via Webster Street and via 20th Street. Primary public access to the rooftop garden would be located at the corner of Webster Street and 20th Street via a new landscaped grand stair, a second point of access to the rooftop garden would be via a new stairway on 20th Street towards Snow Park. Access to the garden would also still be available from the existing elevator in the parking garage.

5.2.4 Sustainability and Efficiency

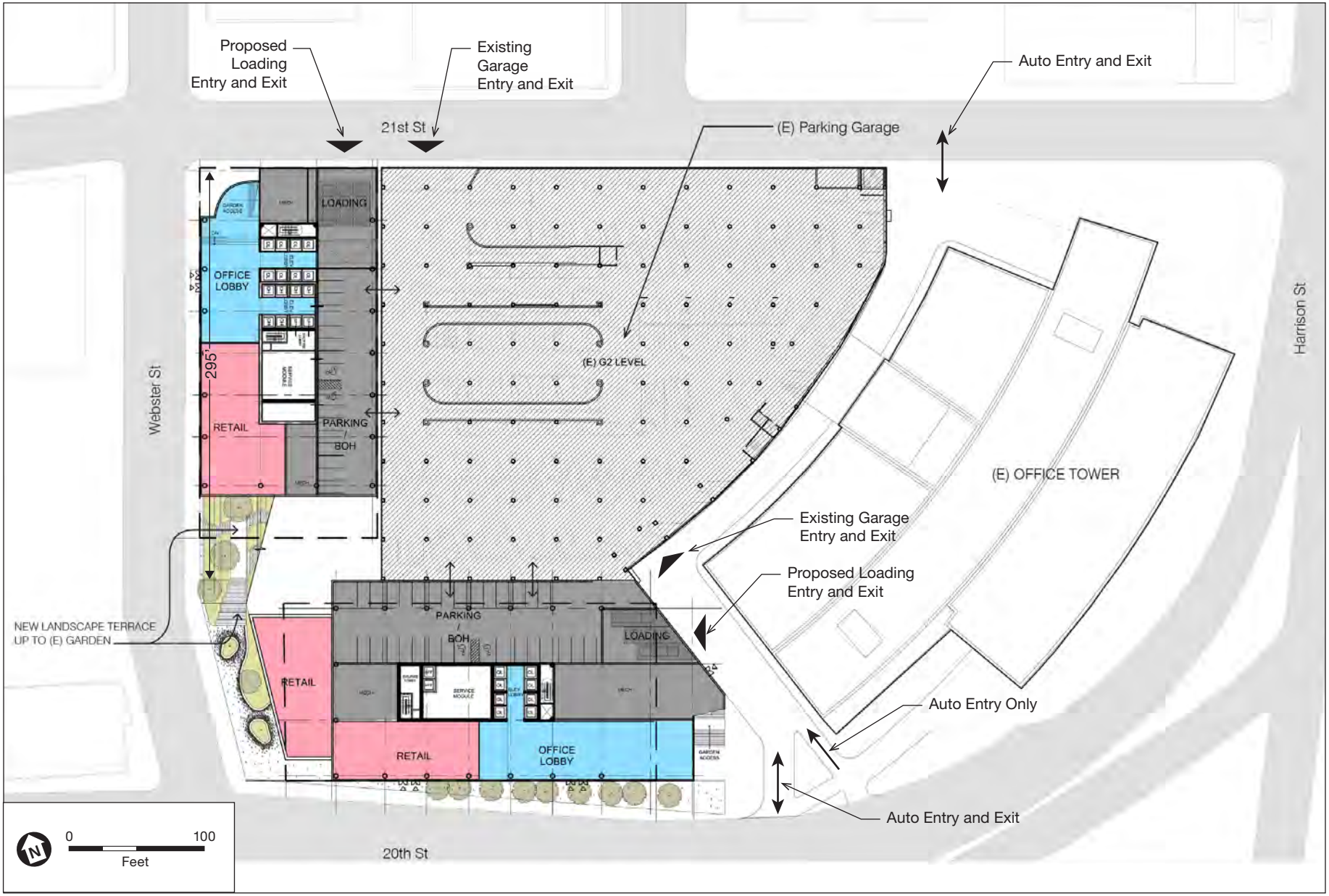
The Project Applicant would comply with the Green Building ordinance and requirements, such as reduction in indoor and outdoor water use. Through the building retrofits, the Revised Project would optimize the efficiency of its building envelope, and through the use of efficient lighting and HVAC systems it would reduce domestic energy use. The Revised Project would meet or exceed the implemented Building Energy Efficiency Standards (LEED Silver for new office uses and GreenPoint Rated for new residential uses).

5.2.5 Construction and Phasing

The Revised Project's construction-related activities would take place over a period of 30 months for the simultaneous construction scenarios or 60 months for the sequential construction scenarios under both Master Plans I and II. Construction activities on the project site would consist of demolition of the existing Webster Street Mall and 20th Street Mall buildings, demolition of portions of the rooftop garden, construction of Master Plan I or Master Plan II elements, landscaping, and finishing interiors.

As noted above, the Project Applicant is considering project buildout (two towers) with two options for the 20th Street tower. This analysis assumes a phased development, for each Master Plan option, with the potential for either tower to be developed first. Therefore, the following project scenarios are evaluated in this CEQA Checklist:

1. Webster Street Building (office) alone
2. 20th Street Building (office) alone
3. 20th Street Building (residential) alone
4. Master Plan I (office + office)
5. Master Plan I (office + office) + cumulative
6. Master Plan II (office + residential)
7. Master Plan II (office + residential) + cumulative
8. Webster Street Building (office) alone + cumulative
9. 20th Street Building (office) alone + cumulative
10. 20th Street Building (residential) alone + cumulative



SOURCE: Gensler

Revised Kaiser Center Project

Figure 15
Site Circulation

ESA

Within each topic area, the worst case or cases are identified and analyzed so that all scenarios listed above are covered under the analysis conclusions if not directly analyzed.

5.3 Discretionary Project Approvals Requested

The Project Applicant seeks approval of a revision to the previously approved Planned Unit Development (PUD), for which it is required to prepare and obtain approval for an overall Preliminary Development Plan (PDP) for the entire project site and, subsequently, one or more Final Development Plan(s) (FDPs) (which include Design Review) prior to implementation of each site during phased development. The Project Applicant would be required to prepare the FDP that provides more detailed building and landscaping plans and elevations; plans for street improvements; grading or earth-moving plans; the location of water, sewer, and drainage facilities; among other detailed documents regarding site development. The FDP process provides flexibility in making design adjustments and responding to market conditions as the project develops. The Planning Commission would be required to review the amended PDP and FDP and conduct Final Design Review(s).

The Project Applicant requests, and the Revised Project would require, a number of discretionary actions/approvals, as well as ministerial permits/approvals. At the time this CEQA Checklist was prepared, the actions and other considerations and approvals anticipated to be required for the Revised Project include, but are not limited to, those listed below.

5.3.1 Actions by the City of Oakland

- **Building and other Discretionary Development Permits**: Grading and other related onsite and offsite work permits, and minor encroachment permits.
- **Revision to the PUD, Design Review:** The Revised Project would be subject to approval according to the City's design criteria that are utilized as a part of the City's design review process.
- **Final PUD/Design Review(s) (future)**

5.3.2 Actions by Other Agencies

- **Bay Area Air Quality Management District (BAAQMD)**: Issuance of permits for installation and operation of the emergency generators.
- **Regional Water Quality Control Board, San Francisco Bay Region (RWQCB)**: Acceptance of a Notice of Intent to obtain coverage under the General Construction Activity Storm Water Permit, and Notice of Termination after construction is complete. Granting of required clearances to confirm that all applicable standards, regulations, and conditions for all previous contamination at the site have been met.

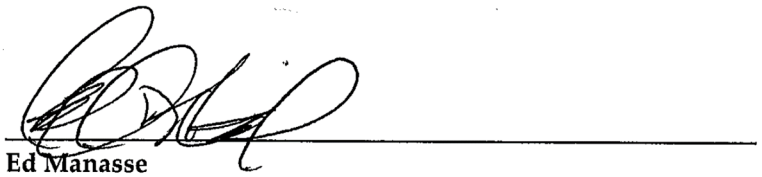
6. Summary of Findings

An evaluation of the Revised Project is provided in the CEQA Checklist in Section 7 that follows. This evaluation concludes that the Revised Project qualifies for an addendum. It is consistent with the development density and land use characteristics established by the City of Oakland General Plan, and any potential environmental impacts associated with its development were adequately analyzed and covered by the analysis in the 2011 EIR.

The Revised Project would be required to comply with the applicable mitigation measures and City of Oakland SCAs identified in the 2011 EIR and presented in Attachment A to this document. With implementation of the applicable mitigation measures and SCAs, the Revised Project would not result in a substantial increase in the severity of previously identified significant impacts in the 2011 EIR, or in any new significant impacts that were not previously identified in the 2011 EIR.

In accordance with CEQA Guidelines Section 15164, and as set forth in the CEQA Checklist below, the Revised Project qualifies for an addendum because the following findings can be made: The Revised Project would not result in substantial changes or involve new information not already analyzed in the 2011 EIR. The Revised Project would not cause new significant impacts not previously identified in the 2011 EIR, or result in a substantial increase in the severity of previously identified significant impacts. No new mitigation measures would be necessary to reduce significant impacts. No changes have occurred with respect to circumstances surrounding the 2011 EIR that would cause significant environmental impacts to which the Revised Project would contribute considerably, and no new information has been put forward that shows that the Revised Project would cause new or more severe significant environmental impacts. Therefore, a subsequent environmental impact report is not required in accordance with Public Resources Code Section 21166 and CEQA Guidelines Section 15162.

Overall, based on an examination of the analysis, findings, and conclusions of the 2011 EIR—which is summarized in the CEQA Checklist in Section 7 of this document—the potential environmental impacts associated with the Revised Project have been adequately analyzed and covered in the 2011 EIR. Therefore, no further review or analysis under CEQA is required.



Ed Manasse
Environmental Review Officer

4/22/19
Date

7. CEQA Checklist

The analysis in this CEQA Checklist provides a summary of the potential environmental impacts that may result from the Revised Project. The analysis in this CEQA Checklist also summarizes the impacts and findings of the certified 2011 EIR. Several SCAs would apply to the Revised Project because of the Revised Project's characteristics; the SCAs are triggered because the City is considering discretionary actions for the Revised Project.

This CEQA Checklist hereby incorporates by reference the discussion and analysis of all potential environmental impact topics as presented in the certified 2011 EIR. This CEQA Checklist provides a determination of whether the Revised Project would result in:

- Equal or Less Severity of Impact Previously Identified in the 2011 EIR;
- Substantial Increase in Severity of Previously Identified Significant Impact in the 2011 EIR; and/or
- New Significant Impact.

Where the severity of the impacts of the Revised Project would be the same as or less than the severity of the impacts described in the 2011 EIR, the checkbox for "Equal or Less Severity of Impact Previously Identified in Previous EIR" is checked.

If the checkbox for "Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR" or "New Significant Impact" were checked, there would be significant impacts that are:

- Peculiar to project or project site (per CEQA Guidelines Sections 15183 or 15183.3);
- Not identified in the previous 2011 EIR (per CEQA Guidelines Sections 15183 or 15183.3), including offsite and cumulative impacts (per CEQA Guidelines Section 15183);
- Due to substantial changes in the Revised Project (per CEQA Guidelines Section 15162 and 15168);
- Due to substantial changes in circumstances under which the Revised Project will be undertaken (per CEQA Guidelines Sections 15162 and 15168); and/or
- Due to substantial new information not known at the time the 2011 EIR was certified (per CEQA Guidelines Sections 15162, 15168, 15183, or 15183.3).

None of the aforementioned conditions were found for the Revised Project, as demonstrated throughout the following CEQA Checklist and in its supporting attachments (Attachments A through B) that specifically describe how the Revised Project meets the criteria and standards specified in the CEQA Guidelines sections identified above.

7.1 Aesthetics, Shadow, and Wind

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Have a substantial adverse effect on a public scenic vista; substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, located within a state or locally designated scenic highway; substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare which would substantially and adversely affect day or nighttime views in the area;	☒	☐	☐
b. Introduce landscape that would now or in the future cast substantial shadows on existing solar collectors (in conflict with California Public Resource Code sections 25980-25986); or cast shadow that substantially impairs the function of a building using passive solar heat collection, solar collectors for hot water heating, or photovoltaic solar collectors;	☒	☐	☐
c. Cast shadow that substantially impairs the beneficial use of any public or quasi-public park, lawn, garden, or open space; or, cast shadow on an historical resource, as defined by CEQA Guidelines Section 15064.5(a), such that the shadow would materially impair the resource's historic significance;	☒	☐	☐
d. 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 provision of adequate light related to appropriate uses; or	☒	☐	☐
e. Create winds that exceed 36 mph for more than one hour during daylight hours during the year. 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.	☒	☐	☐

7.1.1 2011 EIR Findings

The 2011 EIR found less-than-significant impacts to scenic vistas and scenic resources. The 2011 EIR also determined that the 2011 Project would not substantially degrade the existing visual character or quality of the project site or its surroundings. The 2011 EIR cited applicable City of Oakland SCAs that would ensure the less-than-significant light and glare effects, and determined that the 2011 Project would not adversely affect day or nighttime views in the area. The 2011 EIR identified less-than-significant impacts related to shadow.

The 2011 EIR identified **2011 EIR Mitigation Measure AES-1**, which would require the Project Applicant to prepare a wind reduction plan that reduces wind hazards to the maximum feasible extent. However, the 2011 EIR identified significant and unavoidable impacts relating to wind hazards and cumulative wind hazards with the implementation of this mitigation measure. Because wind speeds would exceed the wind speed hazard threshold on the roof garden, a significant impact would result. There are structural and landscape design features that could be included in the tower design and/or installed on the roof garden that would either re-direct winds away from the roof garden or reduce wind speeds there. However, until such protective design features are tested and proved using the wind model (per the 2011 EIR **Mitigation Measure AES-1**), results cannot be quantified to determine if wind speeds would actually be reduced below the City wind threshold. Therefore, impacts resulting from wind were determined to remain significant and unavoidable until such time that the design features can be tested.

7.1.2 Project Analysis

7.1.2.1 Aesthetics (Criterion 1a)

The Revised Project would develop an approximately 415-foot-tall, 28-story office tower and two options for a second structure: a 413-foot-tall, 40-story residential tower or a 240-foot-tall, 15-story office building. Urban development with high-rise towers surround the project site; therefore, scenic resources and views at and through the site and vicinity are generally limited to short-range views of Lake Merritt to the east and long-range views of the Oakland hills to the north. As discussed in Section 5.1.3, Surrounding Context, existing and under-renovation buildings ranging between approximately 10 to 27-stories are located to the north of the project site. Uses south of the project site, across 20th Street, include the 27-story Lake Merritt Plaza tower and low-rise street-level retail uses. To the west, across Webster Street, existing land uses include surface parking lots along with low- to mid-rise commercial buildings. Additionally, an existing 29-story office tower is currently present on the project site, closest to Lake Merritt, and would not be physically affected by development proposed on the project site. By constructing a 28-story office tower and either 15-story office building or a 40-story residential tower, the Revised Project would limit certain short-range views of Lake Merritt and certain long-range views of the Oakland-Berkeley Hills from areas at and surrounding the site. However, because such views are already limited, this impact would not be considered substantial as views of these resources would continue to be available. Additionally, although the height of the Revised Project structures may be much taller than some of the mid- and low-rise adjacent buildings, the Revised Project buildings would occur within an urban downtown setting and the structures would be within the context of the site's surroundings. Given the relative height of the Revised Project buildings compared to varied building heights of Downtown Oakland in general, as well as the limited views in the area because of the dense, multi-story development adjacent to the project site, the Revised Project would not obstruct views of any scenic vistas.

A segment of I-580 is designated as a State Scenic Highway within the City per the California Department of Transportation's Scenic Highway Program.[5] As described in Section 5.1.3, the nearest access point to and from I-580 is approximately 1.5 miles east of the project site at Grand

[5] California Department of Transportation (Caltrans), 2018. Scenic Highways Program. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm. Accessed October 9, 2018.

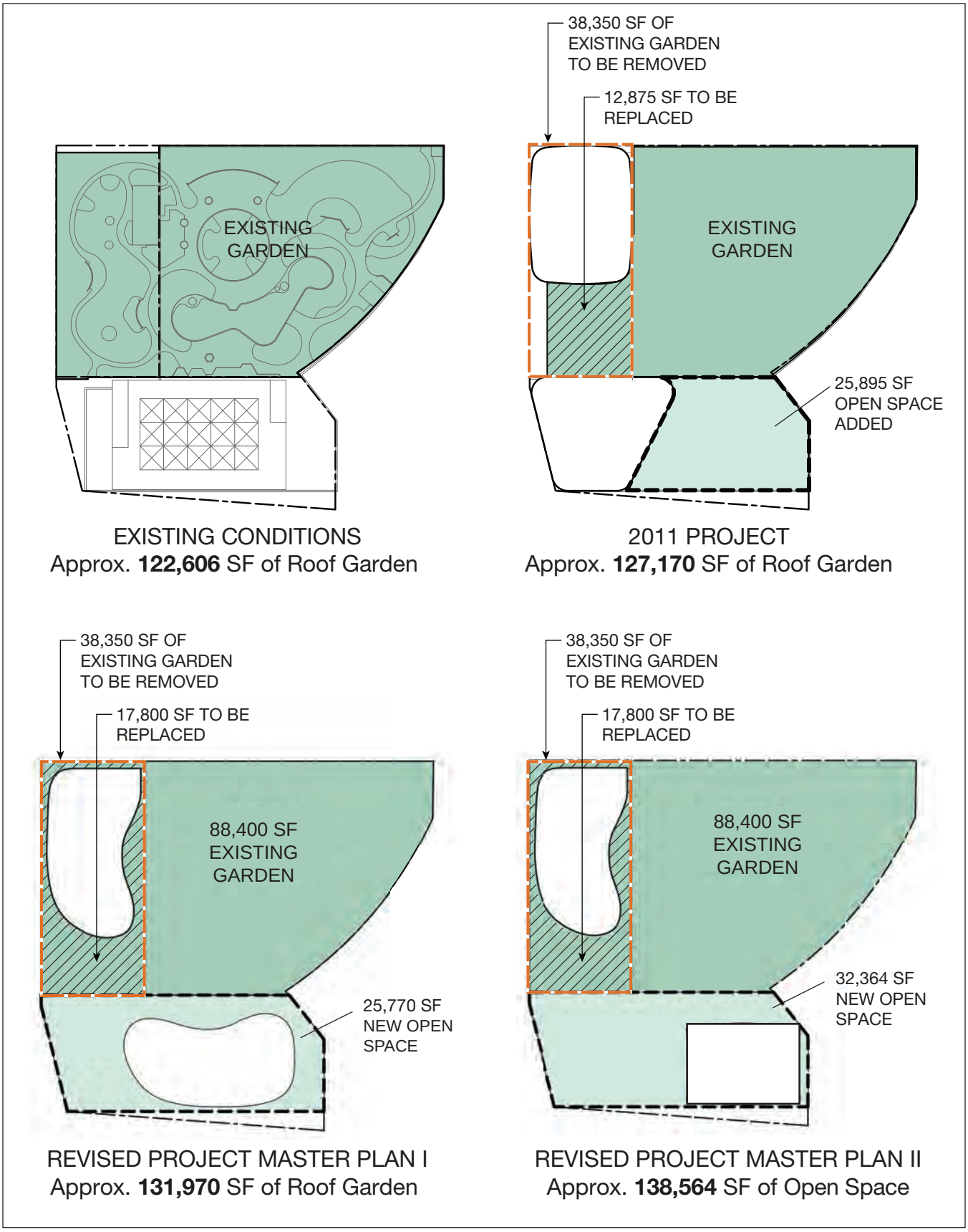
Avenue. However, the project site is not located in the I-580 scenic corridor, intended to protect the area most critical to the scenic quality of I-580, as defined in the Scenic Highways Element of the Oakland General Plan. Although the project site is not within the area designated as a scenic corridor, it would be visible from the segment of I-580 closest to the site. However, as noted above, the project site is within an existing developed urban environment with other high-rise towers nearby. Therefore, while the Revised Project would be noticeable from I-580 and may minimally obscure some long-range views from this freeway, impacts resulting from the Revised Project would be considered less than significant, because the Revised Project buildings would not disrupt or alter these views substantially.

As shown in the Revised Project plans in **Figures 2, 3, 4, 9,** and **14**, the Revised Project buildings and site layout of Master Plan I and II would result in development that is compatible with the visual character and patterns of development in this portion of Downtown Oakland, as several other high-rise buildings in the vicinity have similar height and massing. Therefore, the Revised Project would not substantially degrade the existing visual character or quality of the site and its surroundings.

The Revised Project would remove approximately 38,350 square feet, and replace approximately 17,800 square feet of the garden. Master Plan I would add approximately 25,770 square feet of new garden and Master Plan II would add approximately 32,364 square feet. Under either scenario, the Revised Project would result in a larger rooftop garden compared with the existing garden or 2011 Project (see **Figure 16**).

The new rooftop garden area under both Master Plan I and II would include a new grand landscape stair feature that would connect to the existing garden from Webster Street as shown in **Figure 7** that would increase connectivity from the street level to the rooftop garden. Since the Revised Project is located adjacent to Snow Park, Lake Merritt, and Lakeside Park, the Revised Project would also be required to incorporate City of Oakland **SCA REC-1, Access to Parks and Open Space**, which would require the Project Applicant to submit a plan for City review and approval to enhance bicycle and pedestrian access from the project site to these areas. Access improvements would help to activate public spaces surrounding the project site; therefore, the Revised Project would benefit the existing visual character or quality of the site and its surroundings.

The Revised Project also would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. The Project would utilize nighttime lighting for operational and security purposes, and would result in similar levels of light and glare as typical developments of this scale, such as the existing office tower on the project site, the Ordway building adjacent to the north, and the Lake Merritt Plaza tower adjacent to the south. While the Revised Project's height and mass would make light from the Revised Project noticeable from off-site locations, it would be absorbed into the overall lighting patterns that already exist in the area. Additionally, **SCA AES-4, Lighting** would be implemented by the Project Applicant and ensure that new exterior lighting fixtures are adequately shielded to prevent unnecessary glare onto adjacent properties. **SCA BIO-1, Bird Collision Reduction Measures**, would also be required and would further reduce less-than-significant impacts with regard to light and glare.



SOURCE: Gensler

Revised Kaiser Center Project

Figure 16
Design Parameters for Roof Garden Area

The potential impacts of the Revised Project regarding scenic vistas, scenic resources and visual character would be less than significant. Development of the Revised Project also would be required to comply with the City of Oakland **SCA AES-1, Trash and Blight Removal; SCA AES-2, Graffiti Control**; **SCA AES-3**, **Landscape Plan**; and **SCA AES-5, Public Art for Private Development** related to landscaping, street frontages, landscape maintenance, public right-of-way improvements, graffiti control, and public art to enhance aesthetics. Therefore, the visual impacts of the Revised Project would be less than significant.

7.1.2.2 Shadow (Criteria 1b through 1d)

Methodology and Analysis

Consistent with the City of Oakland methodology for shadow analyses, PreVision Design prepared a shadow analysis for the Revised Project. Using a virtual 3D model, PreVision simulated and rendered the shadow for Master Plan I (office tower and office building) and Master Plan II (office tower and residential tower) in the existing shading conditions, as well as in the cumulative shading conditions (including other proposed projects in the vicinity). Graphical depictions of the shadows that would be cast by each Master Plan scenario at 9:00 AM, 12:00 PM, and 3:00 PM for the summer solstice (June 21st), spring/fall equinoxes (March 20th and September 22nd), and winter solstice (December 21st) were prepared (see Appendix A).

The shadow analysis demonstrates that between the hours of 9:00 AM and 3:00 PM, Master Plan I would cast net new shadow throughout the year westward towards the intersection of Telegraph Avenue and 21st Street, northwest across 23rd Street between Telegraph and Northgate Avenues, northward across Grand Avenue just short of 23rd Street, and northeast close to the intersection of Harrison and 24st Streets. Master Plan II would result in a similar reach of shadow to the west, northwest, and north; however, the residential tower would cast shadows further to the eastward across Harrison Street.

The proposed buildings of Master Plan I and II would each generate net new shadow that would at various times shade solar collectors, historic resources, or public parks in the vicinity. Neither Master Plan scenario would introduce landscape that would cast shadows on existing solar collectors.

Solar Collectors

Compared with existing conditions, the Revised Project would cast minimal new shadow on the rooftop solar collectors at 420 West Grand Avenue. The same effects would be seen under both Master Plan scenarios and would result in the same less-than-significant effects disclosed in the 2011 EIR. New shading would be cast on rooftop panels from late November through mid-January between approximately 9:30 AM and 10:15 AM during the winter months. Peak coverage would occur around 10 AM, when approximately one third of the rooftop panels would be cast in new Revised Project shadow. Cumulative projects would add new shadow to these rooftop panels but would not overlap with the project shadows. No other known solar collectors in the vicinity would be affected by net new shadow from the Revised Project.

In general, solar collectors collect sun power during the period from two hours prior and two hours post solar noon—the time at which the sun is directly south. Due to daylight savings, this period ranges from approximately 11:00 AM to 3:00 PM during spring and fall months. Considering new Revised Project shading would occur for short periods of time during the morning hours, prior to 11:00 AM, and over only about one and a half months a year at times when solar panel efficiency would already be lower than at other times of the year due to the low angle of the sun, the presence of new Revised Project shading would not substantially impair the functioning of the solar collectors or compromise their effectiveness. Therefore, new Revised Project shading would not result in a substantial loss of power, income, or use from the collectors and, as such, would not be considered a significant impact.

Parks/Public Open Spaces

Two public parks or open spaces would be affected by new shadow from the Revised Project:

- **Adams Park.** No net new shadow at Adams Park would be cast under Master Plan I. Under Master Plan II, new shading would be cast from mid-November though late January between approximately 2:50 PM and 3:00 PM during the winter. Between one-third and one-half of the park area would be cast in shadow for a short time before 3:00 PM. In mid-November and later January, the southeast corner of the park would be affected, whereas closer to the winter solstice (December 21), the northwest corner would be affected instead. No shading from cumulative projects would fall on Adams Park.
- **Franklin Plaza.** Under Master Plan I and II, new shading would be cast from early November through early February between approximately 10:30 AM and 11:00 AM. Approximately one quarter of the plaza along the western side adjacent Broadway would receive shadow for approximately 15-20 minutes. Two cumulative projects would add shadow to Franklin Plaza, some of which would overlap with the project shadow.

Net new shadow under Master Plan II would be present over approximately one and a half months near the winter solstice, affecting the Adams Park for only a very short duration in the late afternoon. Adams Park features affected include grassy areas, trees, a paved pedestrian walkway and exposed portions of Glen Echo Creek. However, the short duration of such coverage would not substantially impair the beneficial use of Adams Park. Therefore, consistent with the 2011 EIR, shadow impacts from the Revised Project would be considered a less-than-significant.

The Revised Project's net new shadow on Franklin Plaza under Master Plan I and II would be present for a short duration in the late morning throughout the winter period. The area cast in shadow would include a portion of a raised planter and concrete pedestrian paths. The short duration of such coverage would not substantially impair the beneficial use of Franklin Plaza and would be considered a less-than-significant impact.

No other parks and/or public open spaces in the vicinity would be affected by net new shadow from the Revised Project.

Historic Resources

The Revised Project would add new shading on four historic buildings:

- **2101 Telegraph (YMCA)**. Under Master Plan I and II, shading would be cast between approximately 9:00 AM and 9:10 AM in October and from mid-February through early March. Early morning shadows would be cast on the eastern-facing street façade of the building at 9:00 AM, and would move off the building completely no later than 9:10 AM. Shadow cast from 2100 Telegraph, a cumulative project, would partially overlap with project shadow. Other cumulative project would add non-overlapping shadows to this building.

- **523 22nd Street (Residential Building)**. Under Master Plan I and II, shading would be cast from approximately 9:00 AM and 9:15 AM mid-October though early November and from mid-February through early March. Early morning shadows would be cast on the rooftop and eastern-facing building elevation at 9:00 AM, and would move off the building completely no later than 9:15 AM. Shadow cast from 2100 Telegraph, a cumulative project, would completely overlap with project shadow.

- **2025 Broadway (Paramount Theatre)**. Under Master Plan I, shading would be cast between approximately 9:00 AM and 9:40 AM from early August through mid-October and late February through early May. Under Master Plan II, shading would be cast during the same timeframe from early August through early November and mid-February through early May. During the summer (late May and early August), a small amount of new shadow would be cast over a portion of the eastern-facing street façade (including the theatre marquee) but would move off the building no later than 9:15 AM. New shadow would occur in early to mid-fall as well as in mid to late spring. In early mornings, shadow would be cast on the rooftop of the theater as well as the eastern-facing street façade and theatre marquee. Shadow would move off the building to the northeast no later than 9:40 AM. Cumulative project would add overlapping and non-overlapping shadow to this building.

- **2333 Harrison Street (Seventh Church of Christ Scientist)**. Under Master Plan I and II, shading would be cast between approximately 2:45 PM through 3:00 PM from approximately mid-November through late January. The western quarter of the roof would receive up to 15 minutes of net new shadow in the late afternoon. None of the cumulative projects would add shadow to this resource.

In terms of historic resources, the City of Oakland's CEQA thresholds of significance state that a significant impact would occur if a project were to shade designated historic resources such that the new shadow would "materially impair" the resource's historic significance. While access to light is not typically an important characteristic of most historic buildings, it may be of historic places of worship where the light, specifically the light through stained glass windows, contributes to its architectural historical significance.[6]

Since the shadows cast by the Revised Project would be cast for a short period of the day, on limited portions of three historic buildings for which light is not an important historical characteristic (YMCA, the residential building at 523 22nd Street, or the Paramount Theater), the presence of new shadow would not materially alter the physical characteristics that convey historical significance for any of the three historic resources.

[6] Shadow impacts of the Revised Project on the project site's rooftop garden is discussed in Section 7.4.2.3 below.

New shading on the Seventh Church of Christ Scientist was analyzed in the Broadway Valdez District Specific Plan EIR (BVDSP EIR) in 2014. Based on observations, this church contains a relatively small amount of clear glass doors and windows within an entry vestibule along its eastern façade, rather than large areas of stained glass windows on any one facade. As such, access to light is not an important characteristic nor a characteristic which conveys the historical significance of this building, in particular. Consistent with the findings in the BVDSP EIR, new Revised Project shadow on the glass doors and windows would not materially impair the resource's historic significance and new shading would not adversely affect the building's historic status.

Overall, new Revised Project shadow would not result in a significant impact with respect to any of the four historic resources. No other historic resources in the vicinity would be affected by net new shadow from the Revised Project.

Conclusion

The presence of new shading from the Revised Project would not substantially impair the functioning of solar collectors in the vicinity of the project site. The presence of new shading at Adams Park and Franklin Plaza would not substantially impair the beneficial use of the open spaces, and the presence of new shadow on historic buildings in the Revised Project vicinity would not materially alter the character defining features of those resources. Therefore, the Revised Project would result in a less-than-significant impact relating to shadow.

7.1.2.3 Wind (Criterion 1e)

Methodology and Analysis

Since the Revised Project would be greater than 100 feet in height and is located adjacent to Lake Merritt, wind engineering experts, RWDI, conducted a wind study for the Revised Project to assess the wind environment around the project site under the following project scenarios (see Appendix B):

A. existing conditions;

B. existing + Webster Street Tower (office) alone;

C. existing + 20th Street Building (office) alone;

D. existing + 20th Street Tower (residential) alone;

E. existing + Master Plan I (office + office);

F. existing + Master Plan II (office + residential);

G. Webster Street Tower (office) alone + cumulative;

H. 20th Street Building (office) alone + cumulative;

I. 20th Street Tower (residential) alone + cumulative;

J. Master Plan I (office + office) + cumulative;

K. Master Plan II (office + residential) + cumulative.

The analysis measured changes to the wind environment in terms of the criterion for wind hazards, as described above. Although not a CEQA threshold, for informational purposes, the analysis also measured changes to the wind environment in terms of the criterion for pedestrian comfort, as described below. For the purposes of comparison, the 28 test point locations were chosen to match those measured in the 2011 EIR. This includes 25 test locations in public areas surrounding the project site and 3 test locations on the roof garden.[7] The results are shown in **Table 7.1-1** and described below.

Wind Hazard

The wind hazard criterion is exceeded at 6 test locations for 10 hours per year as measured in public access areas (ground level) under existing conditions (scenario A). As shown in Table 7.1-1 above, wind conditions would improve under scenarios B and C. The wind hazard criterion would be exceeded an additional 3, 4, and 5 hours per year under scenarios D through F respectively. With the 20th Street residential tower (scenario D) or either master plan buildout (scenarios E and F) conditions would get windier around the intersection of Webster and 21st Streets and generally improve in the area between the project site and the existing Kaiser Center office tower. Under cumulative conditions, in all scenarios (scenarios G through K), wind conditions would improve as hours per year of wind hazard exceedances were reduced by between 6 and 8 hours. These results are consistent with the general findings for the 2011 Project. However, the 2011 Project was found to result in 67 additional hours per year of wind hazard exceedance compared with existing conditions. Therefore, the Revised Project, in any arrangement (scenarios B through K) would not be considered to result in a new or more severe significant impact than the impact disclosed in the 2011 EIR. Nonetheless, implementation of Mitigation Measure AES-1 would be required, as described above.

Three test locations were selected for the above grade areas (rooftop garden). The hazard criterion was not exceeded at any location in any scenario with the exception of scenario F, Master Plan II, where 2 of the 3 locations were measured to exceed the wind hazard criterion for a total of 4 hours per year. Note, the 2011 Project was estimated to increase the wind hazard threshold exceedance on the rooftop garden by 29 hours per year compared with the 2011 existing conditions. For both the 2011 Project and the Revised Project, wind hazard conditions generally improve with the addition of cumulative buildings. As with the 2011 Project, Mitigation Measure AES-1 would be implemented prior to construction pursuant to a Final Development Plan and would require the Project Applicant to reduce wind hazards at the street level and roof garden to the maximum extent feasible.

Implementation of the Revised Project would contribute to exceedances of the wind hazard criterion. Therefore, the Revised Project would have a significant impact with respect to wind hazard impacts and Mitigation Measure AES-1 would be applicable. However, as demonstrated above, the Revised Project would not result in a new or more severe significant impact with respect to wind.

[7] As shown in Appendix B, test point location 27 was not included in existing conditions (scenario A) since it would be a new area of roof garden under the project scenarios (see Appendix B).

TABLE 7.1-1
SUMMARY OF RESULTS

Configuration	Wind comfort				Wind hazard			
	Average (mph)	Average (%)	Speed Change (mph)	Total	Average (mph)	Total Hours	Hours Change	Excedances/ Test Locations
Public Spaces								
A - Existing	13	19	-	18/25	31	10	-	6/25
B - Existing + Webster Street Office Tower	13	20	0	17/25	31	7	-3	5/25
C - Existing + 20th Street Office Tower	13	20	0	20/25	31	4	-6	2/25
D - Existing + 20th Street Residential Tower	14	21	1	21/25	32	13	3	7/25
E - Existing + Webster Street Office Tower & 20th Street Office Tower	13	21	0	18/25	32	14	4	6/25
F - Existing + Webster Street Office Tower & 20th Street Residential Tower	14	21	1	18/25	33	15	5	9/25
G - Cumulative + Webster Street Office Tower	11	13	-2	11/25	30	3	-7	2/25
H - Cumulative + 20th Street Office Tower	12	14	-1	13/25	30	2	-8	1/25
I - Cumulative + 20th Street Residential Tower	12	15	-1	15/25	30	2	-8	1/25
J - Cumulative + Webster Street Office Tower & 20th Street Office Tower	11	13	-2	10/25	30	4	-6	2/25
K - Cumulative + Webster Street Office Tower and 20th Street Residential Tower	12	15	-1	12/25	30	4	-6	2/25
Above Grade								
A - Existing	7	4	-	0/3	19	0	-	0/3
B - Existing + Webster Street Office Tower	14	25	7	3/3	34	0	0	0/3
C - Existing + 20th Street Office Tower	10	9	3	1/3	25	0	0	0/3
D - Existing + 20th Street Residential Tower	11	15	4	2/3	28	0	0	0/3
E - Existing + Webster Street Office Tower & 20th Street Office Tower	12	19	5	2/3	30	0	0	0/3
F - Existing + Webster Street Office Tower & 20th Street Residential Tower	17	33	10	3/3	36	4	4	2/3
G - Cumulative + Webster Street Office Tower	11	11	4	1/3	30	0	0	0/3
H - Cumulative + 20th Street Office Tower	10	11	3	1/3	28	0	0	0/3
I - Cumulative + 20th Street Residential Tower	12	19	5	2/3	30	0	0	0/3
J - Cumulative + Webster Street Office Tower & 20th Street Office Tower	10	8	3	1/3	26	0	0	0/3
K - Cumulative + Webster Street Office Tower and 20th Street Residential Tower	13	21	6	2/3	30	0	0	0/3

NOTES:
1) Wind Comfort = Wind speeds exceeding 11 mph for 10% of the time
2) Wind Hazard = Wind speeds exceeding 36 mph for 1hour/year

General Wind Conditions

Although not included in the City's CEQA significance thresholds, general wind conditions for pedestrians, as measured by an 11 mile per hour (mph) or higher wind speed exceeded more than 10 percent of the time, was discussed in the 2011 EIR and, therefore, included in the Revised Project wind study. Of the 25 public area locations tested, 18 locations exceeded the wind comfort criterion under existing conditions (scenario A). Conditions would be slightly windier with either 20th Street building (residential or office) in place prior to development of the Webster Street building (scenarios C and D); however, average wind speeds would increase no more than 1 mph. Conditions would remain generally the same as existing conditions with full development of either master plan (scenarios E and F). With the addition of the cumulative buildings, wind conditions would improve as measured by both average wind speeds and the number of test locations where the wind comfort criterion would be exceeded.

None of the three above grade (rooftop garden) test locations showed a wind comfort criterion exceedance under existing conditions. Scenarios B through F show between 3 and 10 mph increases average wind speeds with wind comfort criterion exceedances measured at least 1 location in each scenario. Compared with the Revised Project scenarios, wind conditions would improve under the cumulative conditions but would still be windier than existing conditions. In scenarios G through K, compared with existing conditions, average wind speeds would increase by between 3 and 6 mph with either 1 or 2 test point locations showing a wind comfort criterion exceedance. However, implementation of Mitigation Measure AES-1, as required due to wind hazard criterion exceedances, would further improve general wind conditions for pedestrians.

Conclusion

The results of the wind study show that the Revised Project would result in a significant impact with respect to wind hazards. There are structural and landscape design features that could be included in the tower design and/or installed on the roof garden that would either re-direct winds or reduce wind speeds. As noted above, the Revised Project would comply with **2011 EIR Mitigation Measure AES-1**, which would require the Project Applicant to prepare a wind reduction plan that reduces wind hazards to the maximum feasible extent. However, until such protective design features are tested and shown to mitigate wind hazard impacts using the wind model, results cannot be quantified to determine if wind speeds would actually be reduced to meeting the City's wind hazard significance threshold. Therefore, as with the 2011 Project, the Revised Project is conservatively deemed to significant and unavoidable with respect to wind hazards until such time that the design features can be tested.

7.1.2.4 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts related to aesthetics and shadow with the implementation of applicable City of Oakland SCAs. As discussed in Section 7.1.2.1, the Revised Project would adhere to City of Oakland SCAs and therefore would have a less-than-significant impact with respect to aesthetics, as identified in the 2011 EIR. As discussed in Section 7.1.2.2, the Revised Project would have a less-than-significant impact with respect to shadow, as also identified in the 2011 EIR. Therefore, the Revised Project would not

result in any new or more severe significant impacts related to aesthetics and shadow than those identified in the 2011 EIR.

The 2011 EIR conservatively deemed wind hazard impacts significant and unavoidable with the implementation of mitigation measures. The Revised Project would also have a significant impact with respect to wind hazards, that could potentially be mitigated with the incorporation of structural and landscape design features per **2011 EIR Mitigation Measure AES-1**. However, since these design features remain untested, the Revised Project's impact with regard to wind hazards would conservatively remain significant and unavoidable. The Revised Project would not result in any new or more severe significant impacts related to wind hazards than those identified in the 2011 EIR.

7.1.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, implementation of the Revised Project would not substantially increase the severity of significant impacts identified in the 2011 EIR, nor would it result in new significant impacts related to aesthetics, shadow, or wind that were not identified in the 2011 EIR. Implementation of **SCA AES-1, Trash and Blight Removal; SCA AES-2, Graffiti Control**; **SCA AES-3**, **Landscape Plan**; **SCA AES-4 Lighting**; **SCA AES-5, Public Art for Private Development**; **SCA BIO-1, Bird Collision Reduction Measures**; and **SCA REC-1, Access to Parks and Open Space** (see Attachment A) would be applicable to and would be implemented by the Revised Project and would further ensure that aesthetics-related impacts are less than significant. The Revised Project would also be required to implement **2011 EIR Mitigation Measure AES-1** to address impacts related to wind hazards.

7.2 Air Quality

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. 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}; 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}; 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}; or	☒	☐	☐
b. For new sources of Toxic Air Contaminants (TACs), during either project construction or project operation expose sensitive receptors to substantial levels of TACs under project conditions resulting in (a) an increase in cancer risk level greater than 10 in one million, (b) a noncancer risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average $PM_{2.5}$ of greater than 0.3 microgram per cubic meter; or, under cumulative conditions, resulting in (a) a cancer risk level greater than 100 in a million, (b) a noncancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average $PM_{2.5}$ of greater than 0.8 microgram per cubic meter; or expose new sensitive receptors to substantial ambient levels of Toxic Air Contaminants (TACs) resulting in (a) a cancer risk level greater than 100 in a million, (b) a noncancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average $PM_{2.5}$ of greater than 0.8 microgram per cubic meter.	☒	☐	☐

7.2.1 2011 EIR Findings

7.2.1.1 Construction Dust

The 2011 EIR identified effective SCAs to address potentially significant effects regarding dust. This impact was identified as Less than Significant.

7.2.1.2 Construction Emissions of Criteria Air pollutants

The 2011 EIR found that emissions associated with construction resulting from increased criteria pollutants would result in significant emissions of reactive organic gases (ROG) even with implementation of SCAs. The 2011 EIR also identified Mitigation Measure AIR-1 requiring low VOC architectural coating to mitigate construction ROG impacts to a less-than-significant level.

7.2.1.3 Operational Emissions of Criteria Air pollutants

The 2011 EIR identified significant and unavoidable effects regarding increased PM_{10} operational emissions at Project buildout, and therefore significant and unavoidable project-level air quality impacts.

7.2.1.4 Criteria Pollutant Concentrations in the proposed Parking Garage

The 2011 EIR found that existing requirements under Section 406.4.2 of the California Building Code (Title 24, Part 2) would be sufficient to ensure a less than significant impact with respect to ensuring sufficient ventilation and air circulation within the parking garage to avoid pollutant accumulation.

7.2.1.5 Carbon Monoxide Concentrations along Roadways

The 2011 EIR identified less than significant impacts with respect to localized carbon monoxide (CO) concentrations from project traffic based on modeling.

7.2.1.6 Creation of Objectionable Odors

The 2011 EIR identified less-than-significant impacts as a result of odors.

7.2.1.7 Toxic Air Contaminants

The 2011 EIR identified less-than-significant impacts regarding TACs, $PM_{2.5}$ concentrations, and cumulative health risks based on the fact that no new sources of TACs were identified in the project description and no sensitive receptors were proposed by the project.

7.2.1.8 Cumulative Emissions of Criteria Air Pollutants

The 2011 EIR identified significant and unavoidable effects regarding increased PM_{10} operational emissions at Project buildout, and therefore a significant and unavoidable cumulative air quality impact.

7.2.2 Project Analysis

The air quality existing setting is similar to that provided in the 2011 EIR. The San Francisco Bay Area Air Basin in which the Project is located is still designated as a non-attainment area with respect to the state and federal ozone standards and particulate standards. For the purposes of a conservative analysis, operational emission estimates prepared for this analysis reflect the operations associated with development under the simultaneous construction scenario which would be completed and occupied the soonest. This represents the worst case scenario as it would have the highest vehicle emission factors at occupancy.

7.2.2.1 Construction Dust (Criterion 2a)

The Bay Area Air Quality Management District (BAAQMD) recommends that analyses focus on implementation of dust control measures rather than comparing estimated levels of fugitive dust to a quantitative significance threshold. The BAAQMD considers implementation of the BAAQMD-recommended mitigation measures for fugitive dust sufficient to ensure that construction-related fugitive dust is reduced to a less-than-significant level.

SCA AIR-1 (Construction-Related Air Pollution Controls - Dust and Equipment Emissions) would be implemented as part of the Project to reduce fugitive dust. SCA AIR-1 includes the BAAQMD's Best Management Practices for fugitive dust control and would be required for all construction activities associated with the Project. Consequently, SCA AIR-1 would ensure that potential construction-related impacts from the generation of fugitive dust would be less than significant. This is the same finding as identified in the 2011 EIR.

7.2.2.2 Construction Emissions of Criteria Air pollutants (Criterion 2b)

Methodology and Assumptions

Impacts related to project construction are evaluated by comparing estimated construction emissions to the City's significance thresholds, which for short-term construction emissions are 54 pounds per day for ROG, NOX, and $PM_{2.5}$; and 82 pounds per day for PM_{10}. Only the exhaust portion of $PM_{2.5}$ and PM_{10} emissions are compared against the construction thresholds.

Project-related construction would generate air pollutant emissions through the use of heavy-duty construction equipment, from truck trips hauling materials, and from construction workers traveling to and from the project site. Mobile source emissions, primarily NO_x, would be generated from the use of equipment such as excavators, bulldozers, wheeled loaders, and cranes during the grading and construction phases. During the finishing phases, paving operations and the application of asphalt, architectural coatings (i.e., paints) and other building materials would release ROG. The assessment of construction air quality impacts considers each of these sources. The assessment also reflects reduced ROG emissions in paints and architectural coatings as a result of BAAQMD's adoption of more stringent regulations for these products.

The Project could be developed either with simultaneous construction of both proposed towers over approximately two and a half years or with sequential construction of each tower, totaling approximately three and a half years. Therefore, the following four construction scenarios have been analyzed below.

- Simultaneous construction of Master Plan I
- Sequential construction of Master Plan I with construction of the 20th Street office tower followed by the Webster Street office tower.
- Simultaneous construction of Master Plan II
- Sequential construction of Master Plan II with construction of the 20th Street residential tower followed by the Webster Street office tower.

According to construction details provided by the Project Applicant, under the simultaneous construction scenarios, construction would commence in 2020 and full buildout and operation would be in June of 2022. Under the sequential construction scenarios, construction would commence in 2020 and full buildout and operation would be in May of 2024. Both scenarios would involve up to 43,000 cubic yards of excavation and fill export and import, as well as demolition of approximately 280,000 square feet of structures.

Emissions from construction of the Project were estimated using the CalEEMod land use emissions model (version 2016.3.2). Emissions were estimated separately for each of the construction phases of the Project. Under each CalEEMod run, the construction process is separated into stages: demolition, grading, paving, structural building, and architectural coating. The grading phase is separated into emissions from fugitive dust, off-road equipment, and worker vehicle trips. The paving phase estimates emissions from off-road equipment, on-road trucks, worker vehicle trips, as well as off-gassing of ROG emissions from asphalt (primarily parking lot and roadway surfaces).[8] Emissions from the structural building phase consists of off-road equipment emissions, worker vehicle trips and vendor vehicle trips. Grading activities were assumed to have been conducted prior to the other activities. The construction duration for each stage and other project specific assumptions are detailed in CalEEMod outputs, which are included in Appendix C.

Analysis

Average daily construction-related criteria pollutant emissions resulting from Project construction are presented in **Table 7.2-1** for both Master Plan options under both a simultaneous construction scenario and a sequential construction scenario. The table shows daily emissions averaged over all phases of Project construction. The daily emissions averaged over all phases are used for comparison with the significance thresholds (which are in terms of average daily emissions) to determine the impact significance. As shown, the combined average daily project emissions for both Master Plan options would not exceed the BAAQMD significance thresholds for NOx, PM_{10} or $PM_{2.5}$ or ROG emissions. Nor would the BAAQMD significance thresholds for ROG, NOx, PM_{10} or $PM_{2.5}$ be exceeded under either of the construction sequencing scenarios. Therefore, Mitigation Measure AIR-1 would not be required for the Revised Project.

Additionally, **SCA AIR-1, Construction-Related Air Pollution Controls - Dust and Equipment Emissions**, would be implemented as part of the Project to reduce fugitive dust as well as construction equipment exhaust emissions. SCA AIR-1 requires all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM. Table 7.2-1 shows reduced Project construction emissions using equipment with Tier 4 engines, which are below BAAQMD thresholds. Further, the Project would be required to implement **SCA AIR-2, Criteria Air Pollutant Controls – Construction Related**; and **SCA AIR-3, Diesel Particulate Matter Controls – Construction Related**; during construction, which would further reduce emissions from criteria air pollutants.

Thus, the Revised Project would not result in new or more severe significant impact with respect to construction emissions of criterial air pollutants compared to the findings of the 2011 EIR.

[8] "Off-gassing" refers to the release of gaseous compounds from a solid material such as asphalt.

TABLE 7.2-1
AVERAGE DAILY CONSTRUCTION EMISSIONS

	Average Daily Construction Emissions (lb/day)			
	ROG	**NO_x**	**PM_{10}**	**$PM_{2.5}$**
Simultaneous Construction Scenario Master Plan I (Office + Office)				
Average Daily Emissions	27.0	34.8	1.3	1.2
Threshold	54	54	82	54
Exceeds Threshold?	No	No	No	No
Average Daily Emissions using Tier 4 Equipment	24.3	18.5	0.1	0.1
Exceeds Threshold?	No	No	No	No
Sequential Construction Scenario Master Plan I (Office +Office)				
Average Daily Emissions	29.7	40.5	1.4	1.4
Threshold	54	54	82	54
Exceeds Threshold?	No	No	No	No
Average Daily Emissions using Tier 4 Equipment	26.5	22.1	0.1	0.1
Exceeds Threshold?	No	No	No	No
Simultaneous Construction Scenario Master Plan II (Office + Residential)				
Average Daily Emissions	29.6	32.3	1.2	1.1
Threshold	54	54	82	54
Exceeds Threshold?	No	No	No	No
Average Daily Emissions using Tier 4 Equipment	27.0	18.3	0.1	0.1
Exceeds Threshold?	No	No	No	No
Sequential Construction Scenario Master Plan II (Office + Residential)				
Average Daily Emissions	31.5	42.0	1.5	1.4
Threshold	54	54	82	54
Exceeds Threshold?	No	No	No	No
Average Daily Emissions using Tier 4 Equipment	27.8	23.5	0.1	0.1
Exceeds Threshold?	No	No	No	No

SOURCE: ESA, 2018; Technical Detail in Appendix C

7.2.2.3 Operational Emissions of Criteria Air pollutants (Criterion 2c)

Methodology and Assumptions

The analysis presented below used the following assumptions to calculate the daily operational emissions associated with the revised Project:

- The vehicle trip generation rates include a reduction of 46.9 percent based on the City's Guidelines for development in an urban environment within 0.5 miles of a BART station and on Census commute data for Alameda County from the 2014 5-Year Estimates of the American Community Survey. In addition, a further reduction in trips is assumed to account for pass-by trips associated with the proposed retail uses (see Section 7.13, Transportation and Circulation, below);

- Default energy consumption rates reflect the 2016 update to Title 24, which became effective on January 1, 2017;
- All wastewater generated was assumed to be aerobically processed at EBMUD plant. Septic and lagoons contributions were set to a zero percentage;
- Twenty percent reduction in indoor water use was assumed for all uses to account for required compliance with the California Green Building Standards Code (CALGreen); and
- All other inputs in CalEEMod were based on model default values.

Analysis

The daily operational emissions for the Project, based on the assumptions above, are presented in **Table 7.2-2**. Emission estimates presented in Table 7.2-2 reflect the operations associated with development under the simultaneous construction scenario, which would be completed and occupied the soonest and therefore have the highest vehicle emission factors at occupancy. As shown in the table, annual average daily emissions for the Project would not exceed the City's thresholds for ROG, NOx, PM_{10} or $PM_{2.5}$. Therefore, the Project would have less than significant project-level impacts with respect to operational emissions of criteria pollutants and thus would not result in a new or more severe significant impact compared with the findings of the 2011 EIR.

7.2.2.4 Criteria Pollutant Concentrations in the propose Parking Garage (Criterion 2d)

Section 406.4.2 of the California Building Code (Title 24, Part 2) is still applicable to the Revised Project and would therefore ensure that localized pollutant concentrations within the proposed parking structures would be less than significant. Thus, the Revised Project would not result in a new or more severe significant impact with respect to criteria air pollutant concentrations compared with the findings of the 2011 EIR.

7.2.2.5 Carbon Monoxide Concentrations along Roadways (Criterion 2e)

Methodology and Assumptions

Regional concentrations of carbon monoxide (CO) in the Bay Area have not exceeded the state standards in the past 24 years. Consequently, the Bay Area is in attainment with respect to state and federal CO standards. The primary source of CO emissions from development projects is vehicle traffic.

Since adoption of the 2011 EIR, the BAAQMD has adopted a new methodology for assessing impacts related to vehicle trips resulting in increases is localized CO concentrations along roadways. BAAQMD has demonstrated, based on modeling, that to exceed the California ambient air quality standard of 9.0 ppm (eight-hour average) or 20.0 ppm (one-hour average) for CO, project traffic in addition to existing traffic would need to exceed 44,000 vehicles per hour at affected intersections (or 24,000 vehicles per hour where vertical and/or horizontal mixing is limited).

TABLE 7.2-2
EMISSIONS FROM OPERATION (lbs per day)[a]

Source	ROG	NO_x	PM_{10}	$PM_{2.5}$
Master Plan I (Office + Office)				
New Project Sources				
Area Source Emissions (lbs/day)	+37.4	<0.1	< 0.1	< 0.1
Energy Emissions (lbs/day)	+0.8	+6.9	+ 0.5	+ 0.5
Project Mobile Source Emissions[b] (lbs/day)	+7.1	+31.5	+27.5	+7.5
Backup Generator	+0.8	+3.7	+0.1	+0.1
Existing Sources to be Removed				
Existing Area Sources	-3.2	<0.1	< 0.1	< 0.1
Existing Energy Sources	-0.1	-0.5	-0.04	-0.04
Existing Mobile Sources	-2.0	-9.1	-4.9	-1.4
Net Increase in Average Daily Emissions (lbs/day)	**+40.8**	**+32.5**	**+23.3**	**+6.8**
City of Oakland Thresholds	54	54	82	54
Significant (Yes or No)?	**No**	**No**	**No**	**No**
Net Increase in Annual Emissions (tons/year)	**+7.4**	**+5.9**	**+4.3**	**+1.2**
City of Oakland Thresholds	10	10	15	10
Significant (Yes or No)?	**No**	**No**	**No**	**No**
Master Plan II (Office + Residential)				
New Project Sources				
Area Source Emissions (lbs/day)	+40.7	+0.6	+0.2	+ 0.2
Energy Emissions (lbs/day)	+0.6	+5.8	+ 0.4	+ 0.4
Project Mobile Source Emissions[b] (lbs/day)	+6.4	+28.5	+24.7	+6.8
Backup Generator	+0.8	+3.7	+0.1	+0.1
Existing Sources to be Removed				
Existing Area Sources	-3.2	<0.1	< 0.1	< 0.1
Existing Energy Sources	-0.1	-0.5	< 0.1	< 0.1
Existing Mobile Sources	-2.0	-9.1	-4.9	-1.4
Net Increase in Average Daily Emissions (lbs/day)	**+43.3**	**+28.9**	**+20.6**	**+6.1**
City of Oakland Thresholds	54	54	82	54
Significant (Yes or No)?	**No**	**No**	**No**	**No**
Net Increase in Annual Emissions (tons/year)	**+7.9**	**+5.3**	**+3.8**	**+1.1**
City of Oakland Thresholds	10	10	15	10
Significant (Yes or No)?	**No**	**No**	**No**	**No**

NOTE: Totals may not add up due to rounding.

[a] Project operational emissions estimates were made using CalEEMod, version 2016.3.2.
[b] The vehicle trip rates used to calculate the emissions accounts for mode split and internal capture as recommended by the City of Oakland for projects located in dense, urban environments such as the Project site. Trips rates were also reduced to account for pass-by trips (see Section 7.13, *Transportation and Circulation*, below).

SOURCE: ESA, 2018.

Analysis

The 2011 EIR examined the level of service of 48 intersections in the year 2030 cumulative scenario including the 2011 Project, which had greater trip generation than the Revised Project. Of these 48 intersections, the one with the greatest vehicle volumes was Grand Avenue and Harrison Street with a total of 6,688 vehicles per hour. This worst-case volume is well below the 44,000 vehicles per hour threshold recommended by the BAAQMD. Consequently, the Revised Project would have a less than significant impact with respect to localized increases in CO concentrations along roadways. Thus, the Revised Project would not result in a new or more severe significant impact with respect to CO concentrations compared with those of the 2011 EIR.

7.2.2.6 Creation of Objectionable Odors (Criterion 2f)

Methodology and Assumptions

The air district's CEQA Guidelines contain a methodology for evaluating odor impacts (i.e., an evaluation of the exposure of existing receptors to new odor sources or the exposure of new receptors to existing odor sources). This analysis evaluates whether the Revised Project would create objectionable odors that would affect a substantial number of people (e.g., by introducing new land uses that are typically associated with odor complaints).

Analysis

Existing uses on the project site are two, 3-story commercial/office buildings and not an existing odor source according to review of the City's inventory of odor sources. During construction, the various diesel-powered vehicles and equipment in use on site would create localized odors. These odors would be temporary and depend on specific construction activities occurring at certain times, and are not likely to be noticeable for extended periods of time beyond the boundaries of the project site. Therefore, the potential for diesel odor impacts is considered less than significant.

Although there may be some potential for small-scale, localized odor issues to emerge around project sources, such as solid waste collection and food preparation, etc., substantial odor sources and consequent effects on onsite and offsite sensitive receptors would be unlikely. The BAAQMD Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds and applies to restaurants that employ more than five persons. Therefore, because the project would be required to implement odor controls as required by applicable regulations, the generation of odors affecting a substantial number of people would be a less than significant impact. Thus, the revised project would not result in a new or more severe significant impact with respect to odor emissions than those of the 2011 EIR.

7.2.2.7 Toxic Air Contaminants (Criterion 2g)

Toxic Air Contaminants (TACs) are types of air pollutants that can cause health risks. TACs do not have ambient air quality standards, but are regulated using a risk-based approach. This approach uses a health risk assessment to determine what sources and pollutants to control as well as the degree of control. Such an assessment evaluates chronic, long-term effects, calculating the increased risk of cancer as a result of exposure to one or more TACs.

TACs generated during Project construction and operation are evaluated below. The City's CEQA significance thresholds require that new projects containing sensitive receptors (such as residences, schools, etc.) also be evaluated to determine whether those receptors would be exposed to health risks from nearby sources of TACs.[9] When siting new sensitive receptors, existing TAC sources located within 1,000 feet including, but not limited to, stationary sources, freeways, and major roadways (10,000 or greater vehicles per day) should be considered. The BAAQMD provides a publicly available inventory of TAC-related health risks for permitted stationary sources throughout the San Francisco Bay Area Air Basin as well as for freeways and major roadways. The inventory presents community risk and hazards from screening tools and tables that are intentionally conservative. The screening-level risk factors derived from the BAAQMD's tools are intended to indicate whether additional review related to the impact is necessary and are not intended to be used to assess actual risk for all projects.

Analysis

Construction TAC Emissions

Project construction activities would produce TACs primarily as diesel particulate matter (DPM) and $PM_{2.5}$ emissions from the exhaust of diesel fueled construction equipment such as loaders, backhoes, cranes, etc., as well as heavy duty truck trips. These emissions could result in elevated concentrations of DPM and $PM_{2.5}$ at nearby receptors. Exposure of receptors in the vicinity of the project site to these elevated concentrations could lead to an increase in the risk of cancer or other health impacts. The 2011 EIR also determined that sensitive receptors in proximity to construction-related DPM emissions (generally within 200 meters) could be subject to increased cancer risk, although these risk increases would be less than significant.

The Revised Project's construction-related activities would take place over a period of 30 months for the simultaneous construction scenarios or 60 months for the sequential construction scenarios under both Master Plans I and II. Construction activities would result in the generation of DPM from on-road heavy-duty trucks and off-road equipment. Due to the variable nature of construction activity, the generation of TAC emissions in most cases would be temporary, especially considering the short amount of time such equipment is typically within an influential distance that would result in the exposure of sensitive receptors to substantial concentrations.

Regarding construction TACs emissions, BAAQMD recommends that a Health Risk Assessment (HRA) be conducted when sensitive receptors are located within 1,000 feet of project construction activities. There are no sensitive receptors in the immediate vicinity of the project site. The area immediately surrounding the project site contains primarily office, retail, institutional, recreational, and open space land uses. Residential and other sensitive uses are far and few. Open space areas and the Children's Fairyland are located to the east and downwind of the project site. The nearest residential uses are located approximately 850 feet to the northwest and southwest of the site at 438 West Grand Avenue and 1768 Broadway, respectively. Consequently, a HRA was conducted to

[9] A California Supreme Court decision clarified that CEQA requires the analysis of potential adverse effects of a project on the environment; potential effects of the environment on a project are legally not required to be analyzed or mitigated under CEQA. However, this analysis assesses potential effects of "the environment on the project" in order to provide information to decision-makers.

determine the level of risk generated by construction-related TACs at nearby receptors. The HRA also satisfies requirements of SCA AIR-3a(i).

As detailed in Appendix C, the following two worst case construction scenarios were modeled to evaluate the potential health risks to nearby receptors from project construction emissions.

1. **Simultaneous construction of Master Plan I** – This scenario had the highest emission rate of all four scenarios.
2. **Sequential construction of Master Plan II** – This scenario had the higher emission rate of the two sequential construction scenarios and also introduces sensitive uses to the project site.

The following scenario was also modeled to evaluate the potential health risks to residents of the proposed Residential Tower from construction of the Office Tower assuming the Residential Tower is constructed and occupied.

1. **Construction of Office Tower Only**

All scenarios were modeled as "uncontrolled" assuming no mitigations or SCAs are imposed. Where a significant impact would result, a "controlled" or mitigated scenario was modeled assuming implementation of SCA AIR-3(a)(ii).

2. **Construction of Office Tower Only** – This scenario was modeled assuming Tier 4 Construction Equipment as required by SCA AIR-3(a)(ii).

In accordance with OEHHA's 2015 *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments,* for each of the above scenarios, the HRA applied the highest estimated concentrations of TACs at the receptors analyzed to established cancer potency factors and acceptable reference concentrations for non-cancer health effects. The maximum offsite DPM concentration as modeled using USEPA's AERMOD dispersion model occurred at the residential receptors at 438 West Grand Avenue northwest of the Project site for both analyzed scenarios. Increased cancer risks were calculated using the modeled maximum DPM concentrations and OEHHA-recommended methodologies for infant (3rd trimester through two years of age), child, and adult exposure.

As shown in the **Table 7.2-3**, health risks (cancer risk, chronic Hazard Index (HI) and $PM_{2.5}$ concentration) to receptors of all age groups resulting from project construction would be less than the City's CEQA significance thresholds for both Master Plan I simultaneous construction and Master Plan II sequential construction scenarios. As noted above and detailed in Appendix C, sequential construction of Master Plan I and simultaneous construction of Master Plan II would have lower emission rates than those modeled herein. Therefore it can be deduced that health risks from these scenarios would also be less than significant.

However, under Master Plan II, if the Revised Project is constructed sequentially with the residential tower constructed and occupied prior to start of construction of the office tower, cancer risk to the receptors of the residential tower from exposure to construction activities of the office tower would be significant for the infant age group. This impact would be reduced to a less than significant level by using all Tier 4 equipment for the office tower construction consistent with SCA AIR-3(a)(ii). Alternately, constructing the office tower first in the sequential scenario would avoid this impact.

TABLE 7.2-3
MAXIMUM HEALTH RISKS FROM PROJECT CONSTRUCTION

Health Risk at MEIR	Maximum Cancer Risk (in a million)	Chronic Risk (Hazard Index)	Maximum $PM_{2.5}$ concentration
1. Master Plan I – Simultaneous Construction Scenario – Uncontrolled Emissions			
Residential Receptor - Infant	1.5	0.001	0.005
Residential Receptor - Child	<0.1	0.001	0.005
Residential Receptor - Adult	<0.1	0.001	0.005
Project-level Threshold	10	1.0	0.3
Significant?	**No**	**No**	**No**
2. **Master Plan II – Sequential Construction Scenario – Uncontrolled Emissions**[a]			
Residential Receptor - Infant	1	0.0006	0.0027
Residential Receptor - Child	<0.1	0.0006	0.0027
Residential Receptor - Adult	<0.1	0.0006	0.0027
Project-level Threshold	10	1.0	0.3
Significant?	**No**	**No**	**No**
3. Master Plan II – Construction of Office Tower only – Uncontrolled Emissions[b]			
Residential Receptor - Infant	**17.8**	0.0114	0.055
Residential Receptor - Child	3.5	0.0114	0.055
Residential Receptor - Adult	0.5	0.0114	0.055
Project-level Threshold	10	1.0	0.3
Significant?	**Yes**	**No**	**No**
4. Master Plan II – Construction of Office Tower only – Tier 4 Construction Equipment			
Residential Receptor - Infant	1.2	0.001	0.004
Residential Receptor - Child	0.2	0.001	0.004
Residential Receptor - Adult	<0.1	0.001	0.004
Project-level Threshold	10	1.0	0.3
Significant?	**No**	**No**	**No**

NOTES:
[a] Consistent with the construction schedule provided by the Project Applicant, the Master Plan II Sequential Construction Scenario assumes that the Residential Tower will be constructed first.
[b] To evaluate the potential health risks to residents of the proposed Residential Tower, this analysis evaluates emissions from construction of the Office Tower assuming the Residential Tower is constructed and occupied.

SOURCE: ESA, 2018.

The Revised Project would also include demolition of the existing buildings totaling an area of approximately 280,000 square feet. The existing buildings may contain Asbestos Containing Materials (ACM) which could pose a health risk to workers and nearby receptors during demolition. Consistent with **SCA AIR-6**, **Asbestos in Structures**, the Revised Project would comply with all applicable laws and regulations regarding demolition and renovation of ACM. Therefore, with the implementation of SCAs, the TAC impact of project construction on existing receptors would be less than significant for all construction scenarios.

Operational TAC Emissions

The backup diesel generators assumed for the Revised Project (as previously described under *Assumptions for Operational Emissions*) would be the only new source of TACs. Stationary sources complying with applicable BAAQMD permit requirements generally would not be considered to have an individual significant air quality impact. The BAAQMD's permit requirements as stipulated in Regulation 2, Rule 1 would be enforced as a condition of approval and the BAAQMD would deny an Authority to Construct or would deny a Permit to Operate any new or modified source of TACs that exceeds a cancer risk of 10 in one million or a chronic or acute hazard index of 1.0. This would also be enforced by the implementation of **SCA AIR-5**, **Stationary Sources of Air Pollution (Toxic Air Contaminants)**, which requires projects including stationary sources of TACs to incorporate appropriate measures into project design in order to reduce the potential health risk to nearby and project receptors. Therefore, the health risks impact of the Project's operational sources on nearby receptors would be less than significant.

Impact to Project Receptors.

The following includes a worst case health risk analysis for project receptors. The Revised Project would introduce sensitive receptors in the form of residential uses only under Master Plan II. Between the simultaneous and sequential construction scenarios for Master Plan II, the potential for exposure of project receptors to health risks is greatest under the sequential construction scenario when the residential tower is assumed to be first constructed and occupied before the office tower is constructed. Occupants of the residential tower would not only be exposed to health risk from existing stationary and mobile sources, but would also be exposed to risks from construction activities associated with the Webster Street office tower.

Therefore, consistent with the requirements of **SCA AIR-4, Exposure to Air Pollution (Toxic Air Contaminants),** the analysis presented below includes a screening level assessment of the cumulative risk to the occupants of the residential tower from construction activities of the Webster Street office tower, existing and proposed sources of TACs within 1,000 feet of the project site including BAAQMD permitted stationary sources, highways, roadways with greater than an annual average daily traffic of 10,000, and any future sources. [10] The BAAQMD recommends using their online screening tools to evaluate existing TAC emissions from stationary and mobile sources. These screening tools provide conservative estimates of how much existing TAC sources would contribute to cancer risk, chronic HI, and $PM_{2.5}$ concentrations in a community. The individual health risks associated with each source are summed to find the cumulative impact at these receptors.

According to the BAAQMD's Stationary Source Screening Analysis Tool for Alameda County, there are sixteen stationary TAC sources within 1,000 feet of the project site. Though the screening tools provide conservative risk values, refined risks were estimated based on current emissions data from BAAQMD using the BAAQMD's Risk and Hazards Emissions Screening Calculator (Beta Version 1.3). The BAAQMD's Diesel Internal Combustion Engine Distance Multiplier Tool was then used to further adjust the calculated risks of sources that include diesel engines to account for

[10] CEQA requires the analysis of potential adverse effects of a project on the environment. Potential effects of the environment on a project are legally not required to be analyzed or mitigated under CEQA. However, this analysis nevertheless analyzes potential effects of "the environment on the project" in order to provide information to the public and decision-makers.

distance between receptors on the project site and the stationary TAC sources. **Table 7.2-4** presents the results of this refined, project-specific effort that also includes the risks posed by the Project's backup diesel generators (assumed to be maximum allowable 10 in a million), as well as construction emissions from the Webster Street Office Tower (assuming the residential tower is constructed and occupied prior to start of construction of the office tower). There are no highways within 1,000 feet of the project site. Broadway is the only major roadway with annual average daily traffic of 10,000 or greater and is located 650 feet west of the project site. As shown in Table 7.2.4, the cumulative cancer risks, Hazard Index and $PM_{2.5}$ concentration that the occupants of the 20th Street residential tower under Master Plan II would be exposed to would be below the City's significance criteria. Therefore, the cumulative TAC impact on Project receptors would be less than significant.

7.2.2.8 Cumulative Emissions of Criteria Air Pollutants

The contribution of a project's individual air emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from past, present, and reasonably foreseeable future projects in the region also have or will contribute to adverse regional air quality impacts on a cumulative basis, resulting in a potentially significant cumulative air quality impact. No single project by itself would be sufficient in size to result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality conditions.[11] As described above, the project-level thresholds for criteria air pollutants are based on levels by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. Therefore, because the Revised Project's emissions would not exceed the project-level thresholds as explained in Sections 7.2.2.2 and 7.2.2.3, the project would not result in a considerable contribution to cumulative regional air quality impacts. Further, the Revised Project would be required to implement SCA AIR-1, Dust Controls – Construction-Related; SCA AIR-2, Criteria Air Pollutant Controls – Construction Related; and SCA AIR-3, Diesel Particulate Matter Controls – Construction Related during construction, which would further reduce emissions from criteria air pollutants. Thus, the Revised Project would not result in a new or more severe significant impact with respect to cumulative emissions of criteria air pollutants than those of the 2011 EIR.

7.2.2.9 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts from construction-related dust emissions, criteria pollutant concentrations within the proposed parking garage, CO concentrations along roadway, creation of objectionable odors and emissions of toxic air contaminants. As discussed above, the Revised Project would also have less-than-significant impacts with respect to these same potential air quality impacts.

The 2011 EIR found that the 2011 Project would result in construction-related emissions of criteria pollutants (ROG) that would be significant during the first phase of construction but that, with identified mitigation measures, would be reduced to less than significant. As discussed above, construction-related emissions of criteria pollutants under the Revised Project would be less than significant, which reflects reduced ROG emissions in paints and architectural coatings as a result of BAAQMD's adoption of more stringent regulations for these products.

[11] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017, p. 2-1.

TABLE 7.2-4
CUMULATIVE HEALTH IMPACTS TO PROJECT RECEPTORS IN THE 20th STREET RESIDENTIAL TOWER

Source	Source Type	Distance from Project (feet)	Cancer Risk (persons per million)	Chronic Hazard Impact	$PM_{2.5}$ Concentration (µg/m3)
Existing Stationary Sources (BAAQMD Plant Number) within 1,000 feet [a]					
CIM Group/Ordway (20095)	Generator, Fire Pump, Boiler	590	0.33	0.005	0.0006
Catholic Cathedral Corporation of the East Bay (18451)	Generator	830	0.05	0.001	0.0001
Oakland Center 21 (19514)	Fire Pump, Generator	290	3.18	0.011	0.0056
Verizon Business (14711)	Generator	160	1.86	0.004	0.0032
DWFIU (19997)	Fire Pump, Generator	160	18.00	0.033	0.0313
Golden Bay Gas & Food (G11475)	Gasoline Dispensing Facility	900	0.36	0.002	0.0000
State of California Dept of Transportation (14195)	Generator	920	0.22	0.005	0.0004
Brandywine Realty Trust (19467)	Generator	920	0.15	0.003	0.0003
CalSTEARS 180 Grand, LLC (16640)	Generator, Fire Pump	900	0.19	0.004	0.0003
Pacific Gas and Electric (14173)	Generator	500	0.50	0.004	0.0009
CIM Group Properties (20248)	Generator, Fire Pump	620	1.85	0.009	0.0034
AT&T Corp (18668)	Generator	0	0.00	0.000	0.0000
2150 Webster Holdings VII (24024, originally 19999)	Fire Pump	180	1.66	0.002	0.0030
Major Roadways (with more than 10,000 AADT) within 1,000 feet [b]					
Broadway[c]	Roadway	650	1.3	0	0.027
		Project Generators [a]	10	0.004	0.018
		Construction of Webster Street office tower [b]	17.8 [f]	0.011	0.055
		Cumulative Impacts [c]	57.5	0.098	0.149
		City of Oakland Cumulative Significance Criteria (new receptors)	100	**10**	**0.08**
		Potentially Significant Impact?	No	No	No

NOTES:

[a] Risks posed by the generators at the residential tower are conservatively assumed to be at the maximum permitted value but will likely be less.

[b] Represents cancer risk to an infant at the 20th Street residential tower if the tower is constructed without using Tier 4 equipment. Cancer risks to children and adults would be 3.5 and 0.5, respectively.

[c] Cumulative totals may not add up due to rounding.

SOURCE: BAAQMD, 2012; BAAQMD, 2015; BAAQMD, 2017; ESA, 2018.

The 2011 EIR found that the 2011 Project would result in operational emissions of criteria pollutants (PM_{10}) that would be significant and unavoidable. As discussed above, operational emissions of criteria pollutants under the Revised Project would be less than significant, which reflects reduced vehicle trip generation compared to that estimated for the 2011 Project as well as reduced emission factors reflecting a cleaner overall passenger vehicle fleet within the Bay Area.

Therefore, the Revised Project would not result in any new or more severe significant impacts related to air quality than those identified in the 2011 EIR.

7.2.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, implementation of the Revised Project (construction and operation) would not substantially increase the severity of significant impacts identified in the 2011 EIR, nor would it result in new significant impacts related to air quality that were not identified in the 2011 EIR. Implementation of **SCA AIR-1, Dust Controls – Construction-Related; SCA AIR-2, Criteria Air Pollutant Controls - Construction Related; SCA AIR-3, Diesel Particulate Matter Controls-Construction Related; SCA AIR-4, Exposure to Air Pollution (Toxic Air Contaminants); SCA AIR-5, Stationary Sources of Air Pollution (Toxic Air Contaminants); and SCA AIR-6, Asbestos in Structures** (see Attachment A) would be applicable to and implemented by the Revised Project and would further ensure that, to the extent feasible, air quality impacts associated with the Project are less than significant. Therefore, no mitigation measures are required.

7.3 Biological Resources

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. 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 Wildlife or U.S. Fish and Wildlife Service; 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 U.S. Fish and Wildlife Service; 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; Substantially interfere 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;	☒	☐	☐
b. 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; or Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect biological resources.	☒	☐	☐

7.3.1 2011 EIR Findings

The 2011 EIR identified less-than-significant impacts related to biological resources, identifying applicable City of Oakland SCAs. No mitigation measures were necessary. The 2011 EIR found less-than-significant impacts with regard to special-status species, sensitive natural communities, and adopted Habitat Conservation Plans. The 2011 EIR also identified less than significant impacts to wetlands, with implementation of applicable SCAs. The 2011 EIR determined that construction and operations have the potential to affect migratory and breeding birds, and wildlife, corridors, and nursery sites, through building collisions, increases in night lighting, increases in noise pollution due to construction, shading of existing habitat, and vegetation removal; however, with implementation of applicable SCAs, these potential impacts would be reduced to less than significant levels. The 2011 EIR found that the 2011 Project would not adversely affect biological resources governed by the City's Tree Preservation or Removal Ordinance. The 2011 EIR also determined that construction activity and operations, in conjunction with other past, present,

pending and reasonably foreseeable development in downtown Oakland and the Lake Merritt shoreline, would not result in impacts on special-status species, wetlands, and other waters of the U.S.

7.3.2 Project Analysis

7.3.2.1 Special-Status Species, Wildlife Corridors, Riparian and Sensitive Habitat, Wetlands, Tree and Creek Protection (Criteria 3a and 3b)

The project site is covered fully by existing buildings, a parking garage, and rooftop garden. Therefore, the project site does not contain vegetation and hydrology conditions suitable for sustaining wetlands, nor are any known special status species, or riparian or sensitive habitats present on the site. In addition, the Revised Project is not located within an area mapped as critical habitat for the Alameda Whipsnake by the U.S. Fish and Wildlife Service. Due to the presence of existing urban development and immediate adjacency to city streets, the Revised Project footprint does not contain significant biological resources that would require mitigation, or that could significantly influence the Revised Project design. Although the adjacent Lake Merritt and Lakeside Park support a well-known bird refuge and both wintering and breeding habitat for migratory birds, the Revised Project is not expected to have direct impacts on these biological resources.

Because glass is a part of the Revised Project's exterior and the Revised Project is located immediately adjacent to a substantially vegetated park larger than one acre (i.e., Lakeside Park), the Project Applicant would be required to implement **SCA BIO-1, Bird Collision Reduction Measures**. These measures would reduce the potential for bird-building collisions to the maximum extent feasible by submitting a Bird Collision Reduction Plan for City review and approval. The Plan would protect birds by requiring implementation of Best Management Practices to reduce bird strike collisions, such as using bird-friendly glazing, avoidance of bird-friendly attractants near glass, reduction of light pollution, and other appropriate measures. In addition, mandatory light pollution measures would be implemented as part of compliance with SCA BIO-1 and the Bird Collision Reduction Plan. Therefore, the Revised Project would not cause an adverse impact to birds from light or glare.

There are approximately 66 protected trees on the project site, with 59 located in the rooftop garden and 7 located at street-level. Some of the trees qualify as protected trees per the City of Oakland Protected Trees Ordinance. However, they are not connected to other nearby natural habitats, and therefore would not constitute a wildlife corridor. In order to accommodate construction of the Revised Project, approximately 20 protected trees could be removed, as needed. In addition, the Revised Project would install new street trees, as required, along all of the street frontages. **SCA BIO-2, Tree Removal During Bird Breeding Season**, would be required for the Revised Project which would ensure that any nesting birds in existing trees during the breeding season would be avoided and protected. Additionally, **SCA BIO-3, Tree Permit**, would ensure that the Project Applicant would obtain a tree permit and abide by the conditions of that permit per the City's Tree Protection Ordinance.

The Revised Project would also comply with SCAs relating to stormwater runoff from construction and operation including S**CA HYD-1, Erosion and Sedimentation Control Measures for Construction**; **SCA HYD-2, State Construction General Permit**; and **SCA HYD-3, NPDES C.3 Stormwater Requirements for Regulated Projects** (see Section 7.8, Hydrology and Water Quality below). Each of these measures contributes to protection and health of creeks and waterways downstream of the project site, including Lake Merritt.

7.3.2.2 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts related to biological resources with the implementation of applicable City of Oakland SCAs. As discussed in Section 7.3.2.1, the Revised Project would adhere to City of Oakland SCAs and therefore would have a less-than-significant impact with respect to biological resources, as identified in the 2011 EIR. Therefore, the Revised Project would not result in any new or more severe significant impacts related to biological resources than those identified in the 2011 EIR.

7.3.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, implementation of the Revised Project would not substantially increase the severity of significant impacts identified in the 2011 EIR, nor would it result in new significant impacts related to biological resources that were not identified in the 2011 EIR. Implementation of **SCA BIO-1**, **Bird Collision Reduction Measures**; **SCA BIO-2**, **Tree Removal During Bird Breeding Season**; **SCA BIO-3**, **Tree Permit**; **SCA HYD-1**, **Erosion and Sedimentation Control Measures for Construction**; **SCA HYD-2, State Construction General Permit**; and **SCA HYD-3, NPDES C.3 Stormwater Requirements for Regulated Projects** (see Attachment A) would be applicable to and would be implemented by the Revised Project, and would further ensure that impacts related to biological resources would be less than significant. No mitigation measures are required.

7.4 Cultural Resources

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Cause a substantial adverse change in the significance of an historical resource as defined in CEQA Guidelines Section 15064.5. Specifically, a substantial adverse change includes physical demolition, destruction, relocation, or alteration of the 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 Historic Places, Local Register, or historical resources survey form (DPR Form 523) with a rating of 1-5);	☒	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5;	☒	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or	☒	☐	☐
d. Disturb any human remains, including those interred outside of formal cemeteries.	☒	☐	☐

7.4.1 2011 EIR Findings

7.4.1.1 Historical Resources

The Kaiser Center complex has never been formally designated a City of Oakland Landmark and is not listed in the National Register of Historic Places (National Register). However, it is listed in the Oakland Cultural Heritage Survey (OCHS) with a status code of "A1+," which indicates that the property has an "A"-rating, defined as a property of "Highest Importance." According to the OCHS, the Kaiser Center complex, including the rooftop garden, appears to be eligible for listing in the National Register both individually and as a potential contributor to the Lake Merritt Historic District, an Area of Primary Importance (API) which includes Lake Merritt, Lakeside Park, and all the parcels immediately adjacent thereto. Further, the Historic Resource Evaluation (HRE), completed by Page & Turnbull, Inc. in 2009 to support the 2011 EIR, concluded that the Kaiser Center complex meets the criteria - including criteria for events, persons, and architecture - for listing in the California Register of Historical Resources (California Register). The HRE demonstrated that sufficient time has passed to understand the historical importance of the resource. Therefore, the 2011 EIR determined that, as an eligible resource for the National and California registers, the Kaiser Center complex is considered a historic resource under CEQA.

The 2011 EIR found that demolition of the 20th Street and Webster Street Mall buildings, both components of the qualified historic resource, would result in a significant impact even with implementation of **SCA CUL-4, Property Relocation Rather than Demolition** or project specific mitigation measures. Ultimately, with implementation of **Mitigation Measures CUL-1.1, Retain Existing Street Level Design and Character**, **and Prepare a Salvage Program**;[12] **CUL-1.2**, **HABS/HALS Level Recordation**; and **CUL-1.3**, **Financial Contributions to a historic resource related program such as the Façade Improvement Program or the Property Relocation Assistance Program** (see Attachment A) - each designed to help reduce impacts to historic architectural resources through new project design, a salvage program, qualified historic survey recordation, and financial contributions to historic resource-related programs - the 2011 EIR conservatively deemed the impact significant and unavoidable.

Further, the 2011 EIR identified a significant impact to the remaining components of the Kaiser Center complex. Specifically, by removing the mall buildings and altering the view corridor from the west on 21st Street to the rear of the existing office tower with the new proposed project towers, the 2011 Project would adversely affect the resource's "setting" and "feeling," which are two aspects of its historic integrity. Similarly, the 2011 EIR identified a significant impact to the resource's setting and rooftop garden design since new construction would adversely affect the character-defining features of the historic resource. Even with implementation of **Mitigation Measure CUL-2.1**, **Historically Sensitive Roof Garden Design**; **Mitigation Measure CUL-2.2**, **Historically Sensitive Tower Design**; and **Mitigation Measure CUL-2.3, Protection During Demolition and Construction** (see Attachment A), the 2011 EIR conservatively deemed the impact significant and unavoidable. This conclusion was based on a worst case scenario given the level of design detail available at the time. The 2011 Project constituted a Preliminary Development Plan application that did not include detailed architectural drawings for consideration. With implementation of these measures, the final approved design could be mitigated to a less-than-significant level.

The 2011 EIR analyzed potential impacts from new shading on the rooftop garden. Mitigation Measure CUL-2.1 would protect the integrity of the resource by requiring the rooftop garden design to include viable plant palette considering new shadows and the altered micro-climate. The 2011 EIR determined that this measure would reduce the potential impact to a less-than-significant level.

The 2011 EIR found the 2011 Project demolition and construction would not adversely affect the Lake Merritt Historic District's potential eligibility as an API or for the National Register. The proposed new towers would not directly front the lake, would be placed behind existing contributors to the district, would perpetuate the pattern of building heights stepping down toward the lake and, therefore, would not result in a significant visual impact to the district. Although the 2011 Project would demolish the mall buildings, which are considered potential contributors, the district would retain over two-thirds contributing properties and thus retain its integrity and its API and National Register status after removal of the mall buildings.

[12] According to the 2011 DEIR, the full title of Mitigation Measure CUL 1.1 is, "The Project applicant shall modify the design of the base of the new structures to retain the existing street level design and character, and shall prepare a salvage program."

7.4.1.2 Archaeological and Paleontological Resources

The 2011 EIR identified less-than-significant effects to archaeological and paleontological resources and human remains, specifically with the incorporation of City of Oakland SCAs. In the unlikely event that archaeological resources, paleontological resources, or human remains would be unearthed during construction, implementation of City of Oakland SCAs would reduce the 2011 Project's potential impact on these resources to a less than significant level.

7.4.2 Project Analysis

7.4.2.1 Historical Resources (Criterion 4a)

The Revised Project has the potential to impact the same area and the same historic resources—the Kaiser Center complex and the Lake Merritt Historic District—as the 2011 Project. The Revised Project would still develop a new office tower at the northwest corner of the property while new development of the southwest corner of the property would either be an office building or residential tower.

Demolition of the Kaiser Center Complex Mall Buildings

The Revised Project would demolish the two Kaiser Center mall buildings and SCA CUL-4, Property Relocation Rather than Demolition, along with Mitigation Measures CUL-1.1, CUL-1.2, and CUL-1.3, would apply. Note, Mitigation Measure CUL-1.1 requires retention of existing street level design and character and preparation of a salvage program. If this measure is not satisfied, the Project Applicant would be required to comply with Mitigation Measure CUL-1.3, Financial Contributions to a historic resource related program. In this case, to implement Mitigation Measure CUL-1.3, the Project Applicant would be required to contribute to the City's Façade Improvement Program in an amount determined based on the following:

- $10,000 for the first 25 feet of two facades of each building and $2,500 for each additional 10 linear feet of those two same facades beyond 25 feet
- 20 percent increase for each building designated as an Historic Resource under CEQA
- Double the amount for each building located within an API

For the purposes of this mitigation, the Webster Street Mall Building facades are 290 linear feet along Webster Street and 130 linear feet along 21st Street. The 20th Street Mall Building facades are 319.6 linear feet along 20th Street and 140 linear feet along Webster Street. The following calculations result in a total contribution of $563,760:

	Total
Webster Street Mall Building:	
Webster Street: $10,000 + $2,500*265/10	$76,250
21st Street: $10,000 + $2,500*105/10	$36,250
20th Street Mall Building:	
20th Street: $10,000 + $2,500*294.6/10	$83,650
Webster Street: $10,000 + $2,500*115/10	$38,750
Increase façade total of $234,900 by 20 percent	$281,880
Double $281,880	$563,760
Total	**$563,760**

The Revised Project demolition of the two Kaiser Center mall buildings is consistent with the 2011 Project and thus, consistent with the 2011 EIR, the impact is conservatively deemed significant and unavoidable with implementation of these measures.

New Construction Effects on the Remaining Portion of the Kaiser Center Complex

The Revised Project would retain the Kaiser Center Office Tower, the majority of the rooftop garden, and the parking garage, and construct two new buildings on the site of the existing mall buildings. As noted above, the Revised Project does not represent a change from the 2011 Project with respect to demolition of the mall buildings. The Revised Project, Master Plan II, would include two towers that are shorter than the towers proposed for the 2011 Project. Thus, height difference between the Revised Project towers and the Kaiser Center Office Tower would be reduced as would the impact. Building footprints also would shift from the 2011 Project design, leaving more space between the buildings at the southwest corner of the project site for both Master Plans. Nonetheless, Mitigation Measure CUL-2.2., Historically Sensitive Tower Design, would apply to the Revised Project.

The Revised Project would remove approximately 38,350 square feet of the existing rooftop garden, and replace approximately 17,800 square feet of the garden. Master Plan I would add approximately 25,770 square feet of new garden and Master Plan II would add approximately 32,364 square feet. Under either scenario, the Revised Project would result in a larger rooftop garden compared with the existing garden or 2011 Project. The new garden area would include a new grand landscape stair feature at the southwest corner of the site that would include stairs to Webster Street for additional public access. This was not included in the 2011 Project design.

The Project Applicant has engaged a landscape architect, PGAdesign, to begin implementation of Mitigation Measure CUL 2.1, Historically Sensitive Roof Garden Design, which would apply to the Revised Project. Thus far, PGAdesign has surveyed and researched the existing roof garden to understand the original plan and existing conditions, developed preliminary concepts for the maintenance of the existing conditions and development of the new portions, and presented this information to the Landmarks Preservation Advisory Board in June 2018. They have been developing a strategy for the preservation of the portions of the roof garden that will remain as well as sensitively designing the new components including design, circulation, seating, and plantings. Nonetheless, since these plans have not been finalized and the Revised Project constitutes a Preliminary Development Plan application, this impact is conservatively deemed significant and unavoidable.

The Revised Project would include demolition and construction activities similar to those of the 2011 Project and thus Mitigation Measure CUL-2.3, Protection During Demolition and Construction, would apply. This mitigation measure combines **SCA NOI-7, Vibration Impacts on Adjacent Historic Structures or Vibration-Sensitive Activities** (see Section 7.10, Noise) with Mitigation Measure CUL-1.2, HABS/HALS Level Recordation.

The Revised Project's impacts to the Kaiser Center complex would not be greater than those evaluated in the 2011 EIR for the 2011 Project. Therefore, the Revised Project would not result in impacts that would be more severe than those analyzed in the 2011 EIR.

Indirect Shadow Effects on the Rooftop Garden

The Revised Project would add new afternoon shadows on the rooftop garden. While the area of new shading is likely larger than the area of new shading from the 2011 Project, the Revised Project would result in a larger net increase of new, publicly accessible roof garden including new garden area in the southwest corner of the project site that would not be shaded during these afternoon hours. As with the 2011 Project, the Revised Project shadow effects would not substantially detract from the use or enjoyment of the garden such that the garden would no longer remain eligible as an historic resource. In addition, Mitigation Measure CUL 2.1, described above, requires the Project Applicant to ensure the viability of the plant palette under new shadows and altered micro-climate created by the proposed new towers. Therefore, consistent with the findings of the 2011 EIR, the Revised Project would not substantially detract from the use or enjoyment of the garden such that the garden would no longer remain eligible as an historic resource and the impact would be less than significant.

Eligibility of the Lake Merritt Historic District

As noted above, the 2011 EIR found that the 2011 Project would not adversely affect the Lake Merritt Historic District's potential eligibility as an API or for the National Register. The 2011 Project towers would retain the basic nature of the Laker Merritt Historic District in terms of use (a combination of residential, institutional, and commercial uses) and building height (predominantly high-rise on the northwest shore). The 2011 Project towers would not directly front the lake, would be placed behind existing contributors to the district, and would perpetuate the pattern of building heights stepping down toward the lake. Although the 2011 Project would demolish the mall buildings, which are considered potential contributors, the district would retain over two-thirds contributing properties and thus retain its integrity and its API. These aspects of the Revised Project would be consistent with the 2011 Project. The Revised Project would include two towers, not directly fronting the lake, and placed behind other existing historic buildings that are contributors to the district. The Revised Project also would perpetuate the pattern of building heights stepping down toward the lake. For these reasons, the Revised Project, consistent with the findings for the 2011 Project, would not adversely affect the integrity of the Lake Merritt Historic District and the impact would be less than significant.

7.4.2.2 Archaeological and Paleontological Resources and Human Remains (Criteria 4b through 4d)

The Project would involve excavation and grading activities on the project site; therefore, the Revised Project has the potential to impact unknown archeological resources, as well as potential unknown paleontological resources, or human remains. **SCA CUL-1**, **Archaeological and Paleontological Resources – Discovery During Construction**, is applicable to all construction projects including the Revised Project and would require all work within 50 feet of inadvertent discoveries of any subsurface archaeological materials to be halted and a qualified archaeologist or paleontologist hired to both assess the significance of the find, and deal with the find according to regulatory guidance. The 2011 EIR identified five recorded archaeological resources within the project vicinity. Therefore, implementation of **SCA CUL-2**, **Archaeologically Sensitive Areas – Pre-Construction Measures**, would be applicable to the Revised Project and would ensure that archaeological resources are recovered and that appropriate procedures are followed in the event of accidental discovery.

Additionally, **CUL-3**, **Human Remains – Discovery During Construction**, would ensure that the appropriate procedures for handling and identifying human remains are followed. Thus, the Revised Project would have a less than significant impact regarding archaeological resources, paleontological resources, and human remains with the implementation of applicable SCAs.

7.4.2.3 Consistency with the 2011 EIR

The 2011 EIR conservatively deemed historic architectural resource impacts significant and unavoidable with the implementation of mitigation measures. As described in Section 7.4.2.1, the Revised Project's impacts to the Kaiser Center complex would not be greater than those evaluated in the 2011 EIR for the 2011 Project. Therefore, the Revised Project would not result in impacts that would be more severe than those analyzed in the 2011 EIR.

The 2011 EIR also determined that impacts related to shadow impacts on the rooftop garden would be less than significant with implementation of Mitigation Measure CUL-2.1, and that adverse impacts to the eligibility of the Lake Merritt Historic District would be less than significant. As described in Section 7.4.2.1, the Revised Project would have less than significant impacts on these resources, similar to the 2011 EIR. Therefore, the Revised Project would not result in any new or more severe significant impacts related to shadow on the rooftop garden and the eligibility of the Lake Merritt Historic District than those identified in the 2011 EIR.

The 2011 EIR found that the 2011 Project would not result in significant impacts related to archaeological resources, paleontological resources, and human remains with the implementation of applicable City of Oakland SCAs. As discussed in Section 7.4.2.2, the Revised Project would adhere to City of Oakland SCAs and therefore would have a less-than-significant impact with respect to archaeological resources, paleontological resources, and human remains, as identified in the 2011 EIR. Therefore, the Revised Project would not result in any new or more severe significant impacts related to archaeological resources, paleontological resources, and human remains than those identified in the 2011 EIR.

7.4.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR considered throughout this analysis, the Revised Project would not result in any more severe significant impacts identified in the 2011 EIR, nor would it result in new significant impacts related to cultural resources that were not identified in the 2011 EIR. Implementation of **Mitigation Measures CUL-1.1**, **Retain Existing Street Level Design and Character**, **and Prepare a Salvage Program**; **CUL-1.2**, **HABS/HALS Level Recordation**; **CUL-1.3**, **Financial Contributions to a historic resource related program such as the Façade Improvement Program or the Property Relocation Assistance Program**; **CUL-2.1**, **Historically Sensitive Roof Garden Design**; **CUL-2.2, Historically Sensitive Tower Design;** and **CUL-2.3**, **Protection During Demolition and Construction;** as well as **SCA CUL-1**, **Archaeological and Paleontological Resources – Discovery During Construction; SCA CUL-2**, **Archaeologically Sensitive Areas – Pre-Construction Measures; SCA CUL-3, Human Remains – Discovery During Construction**; **SCA CUL-4, Property Relocation Rather than Demolition**; and **SCA NOI-7**, **Vibration Impacts on Adjacent Historic Structures or Vibration-Sensitive Activities**

(see Attachment A) would further ensure that potential impacts associated with cultural resources would be less than significant. No additional mitigation measures are required.

7.5 Geology, Soils, and Geohazards

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Expose people or structures to substantial risk of loss, injury, or death involving: • 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; • Strong seismic ground shaking; • Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse; or • Landslides;	☒	☐	☐
b. Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007, as it may be revised), creating substantial risks to life or property; result in substantial soil erosion or loss of topsoil, creating substantial risks to life, property, or creeks/waterways.	☒	☐	☐

7.5.1 2011 EIR Findings

The 2011 EIR identified that impacts to geology, soils, and geohazards would be less than significant, after identifying applicable City of Oakland SCAs. No mitigation measures were necessary. Compliance with site-specific geotechnical report recommendations, required as part of City of Oakland SCAs would reduce the potential for the 2011 Project to result in the exposure of people or structures to seismic hazards such as groundshaking or liquefaction, and geological hazards such as soil expansion and differential settlement. In addition, City of Oakland SCAs, including appropriate grading requirements, and compliance with the Uniform Building Code as locally amended would reduce the potential for cumulative geologic and seismic effects from the project site and surrounding area.

7.5.2 Project Analysis

7.5.2.1 Seismic Hazards, Expansive Soils, and Soil Erosion (Criteria 5a and 5b)

The Revised Project would develop an approximately 415-foot-tall office tower and one of two options for a second tower: a 413-foot-tall residential tower or a 240-foot-tall office tower. The Revised Project would include the demolition of the existing Webster Street Mall and 20th Street Mall buildings, and portions of the existing rooftop garden. Both scenarios would involve up to 39,000 cubic yards of excavation and fill export and import as well as demolition of approximately 280,000 square feet of structures. The Revised Project would be required to comply with **SCA GEO-1**, **Construction-Related Permits**, which ensures that the Revised Project would comply with all standards, requirements and conditions contained in construction-related codes, including but not

limited to the Oakland Building Code and the Oakland Grading Regulations, to ensure structural integrity and safe construction.

The project site is flat and not located in a landslide area. The project site is, however, located within a liquefaction hazard area, as mapped by the California Geological Survey (CGS).[13] Therefore, **SCA GEO-2**, **Seismic Hazard Zone (Landslide/Liquefaction)**, would be implemented, which would require the Project Applicant to implement the recommendations contained in an approved site-specific geotechnical report during project design and construction to reduce potential impacts related to liquefaction.

The Revised Project would include grading and excavation activities on approximately 2.2 acres of the project site after demolition of the existing Webster and 20th Street Mall buildings and thus would require a grading permit. Per **SCA HYD-1**, **Erosion and Sedimentation Control Plan for Construction**, the Project Applicant would be required to prepare and implement an Erosion and Sedimentation Control Plan. The Revised Project would also be required to implement a Stormwater Pollution Prevention Plan (SWPPP) per **SCA HYD-2**, **State Construction General Permit**, which would include erosion and sediment control Best Management Practices (BMPs).

The Revised Project would be required to comply with the California Building Code's current seismic standards, which require specific design parameters for construction in various seismic environments per SCA GEO-1 and SCA GEO-2, to ensure that development of the Revised Project would avoid and minimize potential geologic impacts through compliance specifically with local and state regulations governing design and construction practices. It is possible that unknown groundwater wells and abandoned structures (pits, mounts, septic tank vaults, sewer lines, etc.) could be present and disturbed during grading and construction activities, which would be appropriately addressed through implementation of these SCAs.

7.5.2.2 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts related to geology, soils, and geohazards with the implementation of applicable City of Oakland SCAs. As discussed in Section 7.5.2.1, the Revised Project would have less-than-significant impacts with regard to seismic hazards, expansive soils, and soil erosion with the implementation of current City of Oakland SCAs. The 2011 EIR also included a City of Oakland SCA under Chapter IV.E Geology, Soils, and Geohazards pertaining to vibration impacts on adjacent historic structures. This condition would still be applicable to the Revised Project (**SCA NOI-7**, **Vibration Impacts on Adjacent Historic Structures or Vibration-Sensitive Activities**), and is discussed under Sections 7.4, Cultural Resources, and 7.10, Noise, of this CEQA Checklist. Therefore, the Revised Project would not result in any new or more severe significant impacts related to geology, soils, and geohazards than those identified in the 2011 EIR.

[13] Association of Bay Area Governments, 2018. Resilience Open Data Portal, Liquefaction Study Zones. Available at: http://gis.abag.ca.gov/website/Hazards/?hlyr=cgsLiqZones. Accessed September 29, 2018.

7.5.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, the Revised Project would not result in any new or more significant impacts related to geology and soils than those identified in the 2011 EIR. Furthermore, implementation of **SCA GEO-1, Construction-Related Permit(s)**; **SCA GEO-2**, **Seismic Hazard Zone (Landslide/Liquefaction)**; **SCA HYD-1**, **Erosion and Sedimentation Control Plan for Construction; SCA HYD-2, State Construction General Permit**; and **SCA NOI-7**, **Vibration Impacts on Adjacent Historic Structures or Vibration-Sensitive Activities** (see Attachment A) would ensure that potential impacts associated with hazardous geologic and soils conditions would be less than significant. No mitigation measures are required.

7.6 Greenhouse Gas and Climate Change

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, specifically: • For a project involving a land use development, produce total emissions of more than 1,100 metric tons of CO_2e annually AND more than 4.64 metric tons of CO_2e per service population annually. The service population includes both the residents and the employees of the project. The 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 the project's emissions are below EITHER of these thresholds.	☒	☐	☐
b. Fundamentally conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing greenhouse gas emissions.	☒	☐	☐

7.6.1 2011 EIR Findings

The 2011 EIR included greenhouse gas (GHG) emissions and impacts analyses, and identified less-than-significant impacts with the implementation of Mitigation Measure AIR-3 requiring a Greenhouse Gas Reduction Plan (GHGRP). The 2011 EIR determined that development of the 2011 Project would generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment after occupation of the 20th Street Tower (Phase 1 or South Tower), but would be reduced to less-than-significant impacts with the implementation of mitigation measures, as well as with accommodation of the full service population upon full buildout. With the implementation of mitigation measures, the 2011 EIR determined that development of the 2011 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.

7.6.2 Project Analysis

Operational emission estimates prepared for this analysis reflect the operations associated with development under the simultaneous construction scenario, which would be completed and occupied the soonest. This represents the worst case scenario with the highest vehicle emission factors at occupancy.

7.6.2.1 Greenhouse Gas Emissions (Criterion 6a)

An analysis of the Revised Project using the 2017 BAAQMD CEQA Guidelines and Thresholds was conducted and found that the Revised Project would not result in a significant effect (cumulative) relating to GHG emissions, as shown below. Both BAAQMD and the California Air Pollution Control

Officers Association (CAPCOA) consider GHG impacts to be exclusively cumulative impacts, in that no single project could, by itself, result in a substantial change in climate. Therefore, the evaluation of GHG emissions impacts evaluates whether the Revised Project would make a considerable contribution to cumulative climate change effects.

Construction GHG Emissions

The total GHG emissions (construction and operation) for the Master Plan I and Master Plan II Scenarios are presented in Tables 7.6-2, and 7.6-3**,** respectively. These tables present GHG emissions from all sources associated with the scenarios and assess the impact relative to City thresholds. The CalEEMod model runs for both Project Scenarios (see Section 7.2, Air Quality, above) also calculated the GHG emissions that would be generated by construction activities associated with each scenario. Construction-related emissions would total approximately 1,524 metric tons of CO_2 equivalents (CO_2e) during the entirety of the construction period for both scenarios. These emissions are annualized over an assumed project life of 40 years and factored into the total GHG emissions calculation in Tables 7.6-2 and 7.6-3 below to determine significance. The impact would be less than significant as detailed below.

Operational GHG Emissions

Emissions from stationary sources permitted by the BAAQMD are assessed separately from other emissions as they are subject to a threshold of 10,000 metric tons per year of CO_2e. Based on applicant supplied data, it was assumed that both scenarios would include one 1,500 kilowatt and one 1,250 kilowatt backup diesel generators and the emissions associated with testing and maintenance of these generators is shown in **Table 7.6-1**. As shown, emissions from the backup diesel generators would be below this threshold and therefore less than significant.

TABLE 7.6-1
AVERAGE GREENHOUSE GAS EMISSIONS FROM THE BACKUP GENERATOR

Source	CO_2e[a] (metric tons per year)
Project Backup Generators	70.5
City of Oakland's Threshold	10,000
Exceeds Threshold?	No

NOTES:
[a] CO2e – Carbon dioxide equivalents

Both Project Scenarios would generate GHG emissions from many of the same sources as presented in air quality Tables 7.2-1 and 7.2-2 (see Section 7.2, Air Quality, above). Additionally, GHGs would be generated indirectly by increased electrical and water demand, and increased wastewater and solid waste generation. Though the project site is located within 0.5 miles of the Oakland 19th Street BART station, as it does not propose sufficient residential square footage as a percentage of overall development under either scenario, the Project would not qualify as a transit priority project under Section 21155 of the *California Public Resources Code.* GHG emissions from mobile sources have therefore been included in the emissions inventory. These emissions are presented in **Tables 7.6-2**, and **7.6-3** below to determine significance.

TABLE 7.6-2
PROJECT GHG EMISSIONS – MASTER PLAN I SCENARIO (METRIC TONS PER YEAR)[a]

Project Component	CO_2e
Project	
Area Source Emissions	<0.1
Energy Emissions	3,679.5
Mobile Emissions[b]	5,101.8
Solid Waste	631.5
Water and Wastewater	324.1
Annualized Construction Emissions (Over 40 Years)	70.0
Existing Emissions from Uses to be Removed	-1,428
Total Net Increase in GHG Emissions	8,379
City of Oakland Screening Threshold	1,100
Service Population (employees)	3,376
Total Emissions per Service Population	2.5
City Emissions per Service Population Threshold	4.6
Significant?	No

NOTES:
[a] Project operational emissions estimates were made using CalEEMod, version 2016.3.2.
[b] GHG emissions from mobile sources relied on inputs from the Transportation Analysis by Fehr & Peers.

TABLE 7.6-3
PROJECT GHG EMISSIONS – MASTER PLAN II SCENARIO (METRIC TONS PER YEAR)[a]

Project Component	CO_2e
Project	
Area Source Emissions	71.9
Energy Emissions	3,055.0
Mobile Emissions [b]	4,592.2
Solid Waste	548.9
Water and Wastewater	263.1
Annualized Construction Emissions (Over 40 Years)	66.5
Existing Emissions from Uses to be Removed	-1,428
Total Net Increase in GHG Emissions	7,170
City of Oakland Screening Threshold	1,100
Service Population (residents and employees)	3,388
Total Emissions per Service Population	2.1
City Emissions per Service Population Threshold	4.6
Significant?	No

NOTES:
[a] Project operational emissions estimates were made using CalEEMod, version 2016.3.2.
[b] GHG emissions from mobile sources relied on inputs from the Transportation Analysis by Fehr & Peers.

As shown in the tables, both Project Scenarios would exceed the operational threshold of 1,100 metric tons of CO_2e per year but would be well below the City's 4.6 metric tons of CO_2e per service population threshold. However, the Revised Project would be considered a "Very Large Project" based on it exceeding 250,000 square feet of commercial floor space under Master Plan I and encompassing more than 500 dwelling units of residential use under Master Plan II. Therefore, the City's current **SCA GHG-1**, **Greenhouse Gas Reduction Plan**, would apply to the Revised Project and both Project Scenarios would require a GHGRP. This SCA would replace Mitigation Measure AIR-3 from the 2011 EIR. The goal of the GHGRP would be to increase energy efficiency and reduce GHG emissions to below at least one of the BAAQMD's CEQA Thresholds of Significance (1,100 metric tons of CO_2e per year or 4.6 metric tons of CO_2e per year per service population). As the emissions per service population already are below the 4.6 metric tons of CO_2e per year per service population threshold, the GHGRP shall include, the basic requirements of, (a) a detailed GHG emissions inventory for the Revised Project under a "business-as-usual" scenario with no consideration of the Revised Project design features, or other energy efficiencies, (b) an "adjusted" baseline GHG emissions inventory for the Revised Project, taking into consideration energy efficiencies included as part of the Revised Project (including the City's SCAs, proposed mitigation measures, project design features, and other City requirements), (c) a comprehensive set of quantified additional GHG reduction measures available to further reduce GHG emissions beyond the adjusted GHG emissions, and (d) requirements for ongoing monitoring and reporting to demonstrate that the additional GHG reduction measures are being implemented.

7.6.2.2 Consistency with GHG Emissions Plans and Policies (Criterion 6b)

The Revised Project would comply with the Oakland Energy and Climate Action Plan, current City Sustainability Programs, and General Plan policies and regulations regarding GHG reductions and other local, regional and statewide plans, policies and regulations that are related to the reduction of GHG emissions and relevant to the Revised Project.

Specifically, the Revised Project would also be consistent with the State's Updated Climate Change Scoping Plan and the City of Oakland's Energy and Climate Action Plan, and will include a number of sustainability design features. The Revised Project would optimize the efficiency of its building envelope, and through the use of efficient lighting and HVAC systems it would reduce energy use. The Revised Project would meet the newly implemented Building Energy Efficiency Standards. Additionally, the Revised Project would be located in area with diverse land uses and in proximity to transit services, which would reduce the number of vehicle trips and the associated GHG emissions generated. Therefore, the Revised Project would be considered to be consistent with all applicable goals, policies and regulations adopted to reduce GHG emissions. This impact would be less than significant consistent with the findings of the 2011 EIR.

7.6.2.3 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would result in a significant impact related to emissions of GHGs after the first phase of construction but that these emissions would be reduced to less than significant through implementation of a GHGRP. As discussed in Section 7.6.2.1, the Revised Project would have less-than-significant impacts with respect to GHG emissions. Therefore, the

Revised Project would not result in any new or more severe significant impacts related to GHG emissions than those identified in the 2011 EIR.

The 2011 EIR found that the 2011 Project would result in a less than significant impact related to potential conflicts with applicable plans, policies or regulations adopted to reduce GHG emissions. As discussed in Section 7.6.2.2, the Revised Project would also have less-than-significant impacts with respect to potential conflicts with applicable plans, policies or regulations adopted to reduce GHG emissions. Therefore, the Revised Project would not result in any new or more severe significant impacts related to potential conflicts with applicable plans, policies or regulations adopted to reduce GHG emissions than those identified in the 2011 EIR.

7.6.3 Conclusion

Based on the analysis above, with the implementation of City SCAs, the Revised Project would not result in a significant impact regarding GHG emissions or compliance with applicable plans, policies, or regulations adopted for the purposes of reducing greenhouse gas emissions. Implementation of **SCA GHG-1**, **Greenhouse Gas Reduction Plan** would further reduce the Revised Project's less-than-significant impact. In addition, although not required to reach a less-than-significant impact, implementation of **SCA AES-3, Landscape Plan; SCA AIR-1**, **Dust Controls – Construction-Related**; **SCA AIR-2**, **Criteria Air Pollutant Controls – Construction Related**; **SCA AIR-3, Diesel Particulate Matter Controls-Construction Related**; **SCA TRA-2, Bicycle Parking**; **SCA TRA-4**, **Transportation and Parking Demand Management**; **SCA UTIL-1**, **Construction and Demolition Waste Reduction and Recycling**; and **SCA UTIL-4**, **Green Building Requirements** (see Attachment A) would further reduce GHG emissions. No mitigation measures are required.

7.7 Hazards and Hazardous Materials

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; 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; Create a significant hazard to the public through the storage or use of acutely hazardous materials near sensitive receptors; Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (i.e., the "Cortese List") and, as a result, would create a significant hazard to the public or the environment;	☒	☐	☐
b. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;	☒	☐	☐
c. Result in less than two emergency access routes for streets exceeding 600 feet in length unless otherwise determined to be acceptable by the Fire Chief, or his/her designee, in specific instances due to climatic, geographic, topographic, or other conditions; or Fundamentally impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	☒	☐	☐

7.7.1 2011 EIR Findings

With implementation of the City of Oakland's SCAs, the 2011 EIR identified less-than-significant impacts associated with hazards and hazardous materials including construction-related impacts involving the demolition of existing structures that contain hazardous building materials; the transportation, use, and storage of hazardous chemicals during construction activities and operation; and cumulative impacts.

7.7.2 Project Analysis

7.7.2.1 Exposure to Hazards, Hazardous Materials Use, Storage and Disposal (Criterion 7a)

Exposure to Hazards

Within the project vicinity, there are six listed leaking underground storage tank (LUST) Cleanup sites and one Cleanup Program site, of which none are active, or undergoing remediation.[14,15] One of the LUST Cleanup sites is located on the project site; however, the case was closed as of October 29, 1993[16].

A Phase I Environmental Site Assessment (ESA) was conducted for the project site in 2005 and included as a part of the 2011 EIR.[17] The following is a summary of the Phase I findings. The Project Site was developed in its current state by 1959. Prior to that, the site was occupied by the Holy Sacred Heart Convent. From 1958 to 1991 a gasoline filling station associated with tenant operations was located at the site in the underground parking garage. In 1991 a total of six underground storage tanks (USTs) were removed from the site. Four of the tanks were located in the driveway area of the parking garage which were used as part of the filling station. One UST was located at the northeastern portion of the garage and the other along the eastern portion. The tanks were removed along with surrounding impacted soils and the groundwater was monitored until 1993. As noted above, a closure letter from the Alameda County Health Care Services agency was issued in October 1993 indicating that no further action was warranted at the site and there was no threat to human health or the environment. No Phase II investigation was recommended.

Demolition of existing structures or portions thereof on the project site may expose construction workers, the public, or the environment to hazardous materials such as asbestos containing materials (ACM). The Phase I indicated that many ACM have been abated from the project site; however, ACM remain at the project site and are actively managed by an existing asbestos operation and maintenance program. **SCA AIR-6, Asbestos in Structures**, would ensure that the Revised Project would comply with all applicable laws and regulations regarding demolition and renovation of ACM.

The Revised Project would be required to implement **SCA HAZ-2**, **Hazardous Building Materials and Site Contamination**, which obligates the Project Applicant to submit the Phase I to the City for approval. Once approved, SCA HAZ-2 further requires the Project Applicant to submit to the City evidence of approval for any proposed remedial action and required clearances by the applicable local, state, or federal regulatory agency. As such, compliance with SCA HAZ-2 would

[14] State Water Resources Control Board (SWRCB), 2018a. GeoTracker database. Available at: geotracker.waterboards.ca.gov/. Accessed September 30, 2018.
[15] California Department of Toxic Substances Control (DTSC), 2018. Envirostor database. Available at: http://www.envirostor.dtsc.ca.gov/public/. Accessed September 30, 2018.
[16] SWRCB, 2018b. Kaiser Center (T0600100774). Available at: https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600100774. Accessed September 30, 2018.
[17] EMG, *Phase I Environmental Site Assessment of Kaiser Center, Oakland CA,* June 7, 2005.

ensure that the recommendations of the Phase I and requirements for remediation by the lead environmental regulatory agency are implemented.

Hazardous Materials

Revised Project elements (such as construction equipment fuel, chemicals that may be used for maintaining the linked pools in the roof garden, or general building storage) could involve the transportation, use, and storage of a limited amount of hazardous materials. The transportation, use, and storage of all hazardous materials involved with the Revised Project (construction and operation) would be required to follow the applicable laws and regulations adopted to safeguard workers and the general public. Further, the Project Applicant would be required to implement **SCA HAZ-1**, **Hazardous Material Related to Construction**, to ensure best management practices are followed during construction activities. Since development of the Revised Project would be subject to the SCAs pertaining to the handling of hazardous materials related to construction activities and the remedial actions required when site contamination is encountered, the potential impacts would be reduced to less-than-significant levels.

7.7.2.2 Hazardous Materials within a Quarter Mile of a School (Criterion 7b)

The project site is located approximately 0.20 miles southwest of Saint Paul's Episcopal School; however, the compliance with SCA HAZ-2 and existing local regulations requires hazardous material handlers within 1,000 feet of a school or other sensitive receptor to prepare a Hazardous Materials Assessment Report and implement recommendations for remedial action. With implementation of SCA HAZ-2, potential impacts would be reduced to less-than-significant levels.

7.7.2.3 Emergency Access Routes (Criteria 7c)

The Revised Project would not significantly interfere with emergency response plans or evacuation plans. The Revised Project would not result in permanent road closures, and therefore, would not physically interfere with emergency response or evacuation plans. Construction may result in temporary road closures, which could require traffic control plans to ensure at least two emergency access routes are available for streets exceeding 600 feet in length, per the City of Oakland's Ordinances and General Plan Policies; however, the Revised Project would not permanently change the surrounding streets or roadways. **SCA TRA-1**, **Construction Activity in the Public Right-of-Way**, would ensure that the Revised Project obtain an obstruction permit from the City prior to placing any temporary construction-related obstruction in the public right-of-way, including City streets and sidewalks.

7.7.2.4 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts related to hazards and hazardous materials with the implementation of applicable City of Oakland SCAs. As discussed in Sections 7.7.2.1 through 7.7.2.3, the Revised Project would adhere to City of Oakland SCAs and therefore would have a less-than-significant impact with respect to hazards and hazardous materials, as identified in the 2011 EIR. Therefore, the Revised Project would not result in any new or more severe significant impacts related to hazards and hazardous materials than those identified in the 2011 EIR.

7.7.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, the Revised Project would not result in any new or more severe significant impacts related to hazards and hazardous materials than those identified in the 2011 EIR. Implementation of **SCA HAZ-1**, **Hazards Materials Related to Construction**; **SCA HAZ-2, Hazardous Building Materials and Site Contamination; SCA AIR-6**, **Asbestos in Structures**; and **SCA TRA-1**, **Construction Activity in the Public Right-of-Way** (see Attachment A) would further ensure that potential impacts associated with hazardous conditions would be less than significant. No mitigation measures are required.

7.8 Hydrology and Water Quality

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Violate any water quality standards or waste discharge requirements; Result in substantial erosion or siltation on- or off-site that would affect the quality of receiving waters; Create or contribute substantial runoff which would be an additional source of polluted runoff; Otherwise substantially degrade water quality; Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect hydrologic resources.	☒	☐	☐
b. 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);	☒	☐	☐
c. Create or contribute substantial runoff which would exceed the capacity of existing or planned stormwater drainage systems; 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	☒	☐	☐
d. Result in substantial flooding on- or off-site; 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; Place within a 100-year flood hazard area structures which would impede or redirect flood flows; or Expose people or structures to a substantial risk of loss, injury, or death involving flooding.	☒	☐	☐

7.8.1 Previous CEQA Documents Findings

The 2011 EIR determined that with implementation of SCAs, impacts related to hydrology and water quality, groundwater, and flooding would be less than significant. No mitigation measures were warranted. Due to the implementation of the required plans and SCAs, the 2011 EIR found that the 2011 Project would have a less-than-significant impact to water quality and stormwater runoff during construction and operation. The 2011 EIR also found a less-than-significant impact to groundwater resources. The 2011 EIR concluded that the 2011 Project would not substantially alter

the existing drainage pattern on the project site or surrounding area and operational impacts on drainage patterns would be less than significant. The 2011 EIR found that the 2011 Project would not result in flooding due to its proximity to a 100-year flood hazard area, or expose people or structures to other substantial risk related to flooding, seiche, tsunami, or mudflow. The 2011 EIR determined that with implementation of SCAs, cumulative impacts related to hydrology and water quality would be less than significant.

7.8.2 Project Analysis

7.8.2.1 Water Quality, Stormwater, and Drainages and Drainage Patterns (Criteria 8a and 8c)

Lake Merritt is located adjacent to the project site. The Revised Project would include excavation and grading activities that could induce construction-related onsite soil erosion, and cause increased sediment in surface water runoff that could accumulate in downstream drainage facilities and interfere with flow and aggravate downstream flooding conditions that may exist and potentially increase sediment in Lake Merritt and ultimately the San Francisco Bay. Therefore, per **SCA HYD-1**, **Erosion and Sedimentation Control Plan for Construction**, the Project Applicant would be required to prepare and implement an Erosion and Sedimentation Control Plan. The Revised Project would also be required to implement a SWPPP per **SCA HYD-2**, **State Construction General Permit**, which would include erosion and sediment control Best Management Practices (BMPs).

Construction activities would include excavation work which could require dewatering (removal of groundwater by pumping) in order to lower groundwater levels and dry the project site for construction. If dewatering methods are used on the project site, groundwater would be pumped out of the excavation to the surface and discharged, usually to either a sanitary sewer or storm drain. Water extracted during dewatering could contain contaminants, either from existing sources or construction equipment, or could become sediment laden from construction activities. However, the requirements of the Construction General Permit issued by the State Water Resources Control Board (SWRCB) per SCA HYD-2, State Construction General Permit, would reduce potential impacts to a less-than-significant level. Therefore, construction activities associated with the Revised Project would have a less-than-significant impact on water quality during construction.

The project site is currently developed with structures, paved areas, and a rooftop garden. Construction activities on the project site would consist of demolition of the existing Webster Street Mall and 20th Street Mall buildings, demolition of portions of the rooftop garden, construction of Master Plan I or Master Plan II elements, landscaping, and finishing interiors. As with the 2011 Project, at buildout, the Revised Project would result in an approximately 5,283 square feet of additional building footprint (an approximate three percent increase). However, the building would be added on existing developed and impervious surfaces and the Revised Project would not result in a net increase in impervious surface. The Revised Project includes the addition of approximately 25,770 square feet of rooftop garden under Master Plan I, or the addition of approximately 32,364 square feet of rooftop garden under Master Plan II. This is considerably more than the 4,564 square feet of additional rooftop garden space proposed under the 2011 Project. This

additional rooftop garden square footage may provide additional low impact development (LID) drainage and thus improve drainage patterns relative to existing and 2011 Project conditions. Overall, the Revised Project would not result in an adverse change to existing drainage patterns, as the Revised Project would occur on a previously developed site and would not increase the amount of impervious surface on the project site.

The C.3 Provision of the National Pollutant Discharge Elimination System (NPDES) permit governs storm drain systems and regulates post-construction stormwater runoff. The Revised Project would be required to implement **SCA HYD-3**, **NPDES C.3 Stormwater Requirements for Regulated Projects**, for which a Post-Construction Stormwater Management Plan and maintenance agreement would be prepared for onsite stormwater treatment measures. The Revised Project would also be required to implement **SCA UTIL-6**, **Storm Drain System**, requiring stormwater control after construction and a reduction in peak stormwater runoff to less than pre-Project conditions. Therefore, the Revised Project would have a less-than-significant impact concerning water quality and stormwater runoff post-construction due to the implementation of the City of Oakland SCAs.

7.8.2.2 Use of Groundwater (Criterion 8b)

As described in the 2011 EIR, groundwater is generally located 3 to 18 feet below the ground surface in the vicinity of the project site, and there are no groundwater supply wells at the project site. The groundwater beneath the project site is generally not considered potable, is not utilized in the public drinking water supply or other municipal uses, and is not a source for agricultural uses. Construction activities would include excavation work at the project site which could require dewatering in order to lower groundwater levels and dry the project site for construction. However, dewatering would not deplete the groundwater supplies from the deeper recharge areas beneath the project vicinity. Therefore, the Revised Project would have a less-than-significant impact on groundwater resources.

7.8.2.3 Flooding and Substantial Risks from Flooding (Criteria 8d)

The Project site is not located in either a 100-year or 500-year flood boundary.[18] Therefore, the Revised Project would not place housing or other structures within a 100-year flood hazard area. In addition, the project site is not located near a levee or a dam. Flooding from tsunamis would affect low-lying areas along the Oakland Estuary and San Francisco Bay, but the island of Alameda would shelter inland areas such as the project site. Therefore, the Revised Project would not result in a significant impact with respect to flood-related risks.

7.8.2.4 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts related to hydrology and water quality with the implementation of applicable City of Oakland SCAs. As discussed in Sections 7.8.2.1 through 7.8.2.3, the Revised Project would adhere to City of Oakland SCAs and therefore would have a less-than-significant impact with respect to hydrology and water quality, as identified in the 2011 EIR. Therefore, the Revised Project would not result in any new

[18] Federal Emergency Management Agency (FEMA), 2009. Flood Insurance Rate Map, Alameda County (Unincorporated Areas), Panel 67 of 725, Map Number 06001C0067G. August 3, 2009.

or more severe significant impacts related to hydrology and water quality than those identified in the 2011 EIR.

7.8.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, implementation of the Revised Project would not would not result in any new or more severe significant impacts related to hydrology and water quality, groundwater, or flooding than those identified in the 2011 EIR. Implementation of **SCA HYD-1, Erosion and Sedimentation Control Plan for Construction; SCA HYD-2**, **State Construction General Permit; SCA HYD-3**, **NPDES C.3 Stormwater Requirements for Regulated Projects**; and **SCA UTIL-6**, **Storm Drain System**, (see Attachment A) would ensure that potential impacts to hydrology and water quality would be less than significant. No mitigation measures are required.

7.9 Land Use, Plans, and Policies

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Physically divide an established community;	☒	☐	☐
b. Result in a fundamental conflict between adjacent or nearby land uses; or	☒	☐	☐
c. 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 actually result in a physical change in the environment.	☒	☐	☐

7.9.1 2011 EIR Findings

The 2011 EIR found less-than-significant impacts related to land use, plans, and policies, and no mitigation measures were warranted. The 2011 EIR found that the 2011 Project would redevelop buildings at the Kaiser Center property on the northwest corner of Webster and 20th Streets in Downtown Oakland, but would not result in the physical division of an existing community. The 2011 EIR also concluded that the 2011 Project would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. The 2011 EIR found a less than significant impact with regard to a conflict between adjacent and nearby land uses, specifically with respect to any applicable habitat conservation plan or natural community conservation plan. The 2011 EIR determined that cumulative impacts related to land use, plans, and policies would be less than significant.

7.9.2 Project Analysis

7.9.2.1 Division of Existing Community, Conflict with Land Uses, or Land Use Plans (Criteria 9a through 9c)

The Project would redevelop buildings at the Webster and 20th Street sites. Therefore, the Revised Project would not physically divide an established community. The Revised Project also would not result in a fundamental conflict with adjacent land uses. The proposed office and retail uses, as well as the proposed residential uses under Master Plan II, would be consistent and compatible with nearby office, retail, institutional, recreational, and open space land uses.

The project site is within the Central Business District (CBD) land use designation identified in the Oakland General Plan and the Central Business District General Commercial Zone (CBD-C). The intent of the CBD-C zone is to create, maintain, and enhance areas of the CBD appropriate for a wide range of ground-floor retail, office, and other commercial activities. Upper-story spaces are intended to be available for a wide range of residential and office or other commercial activities.

Master Plan I office and retail land uses would be consistent with the CBD-C zone, constructing office and ground floor retail uses on both the 20th Street and Webster sites. Master Plan II office, multifamily residential, and retail land uses would also be consistent with the CBD-C zone, for which the upper stories of the 20th Street site would be utilized for residential uses with ground floor retail space. The project site is located in CBD Height Areas 6 and 7, which have no total maximum height limits. The maximum building base height is 85 feet and 120 feet for Height Areas 6 and 7, respectively. The Revised Project would develop an approximately 415-foot-tall office tower and two options for a second tower (a 413-foot-tall residential tower or a 240-foot-tall office building). The office tower on the Webster Street site would have a base height of approximately 40 feet and both options for the 20th Street site would have a base height of approximately 47 feet. Therefore, the Project would be consistent with these height designations. Therefore, consistent with the 2011 EIR, the Revised Project would have a less-than-significant impact regarding land use, plans, and policies.

7.9.2.2 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts related to land use, plans, and policies. As discussed in Section 7.9.2.1, the Revised Project would have a less-than-significant impact with respect to land use, plans, and policies, as identified in the 2011 EIR. Therefore, the Revised Project would not result in any new or more severe significant impacts related to land use, plans, and policies than those identified in the 2011 EIR.

7.9.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, the Revised Project would not result in any new or more severe significant impacts related to land use, plans, and policies than those identified in the 2011 EIR. The 2011 EIR did not identify any mitigation measures related to land use, and no City of Oakland SCAs directly addressing land use, plans, and policies apply to the Revised Project. No mitigation measures are required.

7.10 Noise

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. 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. During the hours of 7 p.m. to 7 a.m. on weekdays and 8 p.m. to 9 a.m. on weekends and federal holidays, noise levels received by any land use from construction or demolition shall not exceed the applicable nighttime operational noise level standard; Generate noise in violation of the City of Oakland nuisance standards (Oakland Municipal Code Section 8.18.020) regarding persistent construction-related noise;	☒	☐	☐
b. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise;	☒	☐	☐
c. 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 without the project (i.e., the cumulative condition including the project compared to the existing conditions) and a 3-dBA permanent increase is attributable to the project (i.e., the cumulative condition including the project compared to the cumulative baseline condition without the project);	☒	☐	☐
d. Expose persons to interior L_{dn} 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); 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 (see Figure 1); 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]); or	☒	☐	☐
e. 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).	☒	☐	☐

7.10.1 2011 EIR Findings

The 2011 EIR determined that with implementation of SCAs, construction-related and operational noise would be less than significant for the 2011 Project. Operational noise from heating, ventilating, and air conditioning mechanical equipment were found to be less than significant while roadside noise level increases attributable to the 2011 Project were also found to be less than significant. However, the 2011 EIR found that 2011 Project traffic, in combination with cumulative traffic, could substantially increase traffic noise levels in the 2011 Project area, which would result in a significant and unavoidable impact.

7.10.2 Project Analysis

The analysis of traffic-related noise impacts below applies a worst case scenario in that it examines the development scenario with the greatest vehicle trip generation (Master Plan I).

7.10.2.1 Construction and Operational Noise and Vibration, Exposure of Receptors to Noise (Criteria 10a, 10b, and 10e)

Construction Noise

Construction activities for the Revised Project would be expected to occur over approximately 30 months under a simultaneous tower construction scenario or over four and a half years under a sequential tower construction scenario. Construction would entail demolition of the existing Webster Street Mall and 20th Street Mall buildings, demolition of portions of the rooftop garden, construction of Master Plan I or Master Plan II elements, landscaping, and finishing interiors. Required implementation of applicable City of Oakland SCAs would minimize construction noise by limiting hours of construction activities, by requiring best available noise control technology and notification of any local residents of construction activities, and by tracking and responding to noise complaints. Specifically, project construction would comply with the following SCAs: **SCA NOI-1**, **Construction Days/Hours** limits construction hours mirroring Noise Ordinance requirements; **SCA NOI-2**, **Construction Noise** requires projects to implement construction noise reduction measures; **SCA NOI-3**, **Extreme Construction Noise** addresses extreme construction noise by requiring a Noise Management Plan and public notification of project construction activities; and **SCA NOI-4**, **Construction Noise Complaints** sets a protocol for receiving and addressing construction noise complaints from the public.[19] In addition, as construction would be adjacent to the rooftop garden which is a City of Oakland Designated Historic Resource, the Revised Project would implement **SCA NOI-7**, **Vibration Impacts on Adjacent Historic Structures or Vibration-Sensitive Activities**. With the implementation of these SCAs, construction noise impacts of the Revised Project would be less than significant, as identified for the 2011 EIR.

Operational Noise

Once operational, the Revised Project would include stationary sources such as heating, ventilating, and air conditioning (HVAC) mechanical equipment as well as emergency backup generators.

[19] Implementation of SCAs such as the Greenhouse Gas Reduction Plan, Construction Noise Management Plan, and Transportation Demand Management Plan; will be tied to the Final Development Plan submittals for the Revised Project.

Stationary equipment would be located on rooftops and operate within the restrictions of the City's Noise Ordinance. Chapter 17.120.050 of the City of Oakland Planning Code specifies the maximum sound level received at residential, public open spaces and commercial land uses. Development of the Revised Project would be required to comply with **SCA NOI-6, Operational Noise** which ensures compliance with operational noise limits in the City's Noise Ordinance. Therefore, the Revised Project would result in a less-than-significant impact with respect to noise from stationary sources on the project site.

7.10.2.3 Project and Cumulative Traffic Noise (Criterion 10c)

For operational noise impacts from project-related traffic increase, the analysis relies on vehicle trip generation prepared by Fehr & Peers, and existing (2007) and cumulative year 2030 traffic volumes in the 2011 EIR.

The 2011 EIR analyzed 16 roadway segments to assess potential roadway noise impacts. Many of these roadway segments do not have sensitive land uses along them and would not be affected by roadway noise increases. For the revised Project, nine roadway segments were analyzed, which are inclusive of those the 2011 EIR identified as having significant and unavoidable impacts.

Peak hour (evening) intersection turning data were analyzed to evaluate increases and resulting traffic-generated noise increases on roadway links most affected by project-related traffic. Noise levels at other times would be lower. The segments analyzed and the noise increases resulting from modeling are shown in **Table 7.10-1**, below. The increase in traffic noise from the Existing Plus Project scenario compared to the Existing scenario would increase peak hour noise levels by 1.3 dBA or less, well below the 5 dBA threshold at all studied roadway segments. Consequently, localized increases in noise would be a less than significant impact at the project level. Additionally, the increase in traffic noise from the Cumulative Plus Project scenario compared to the Existing scenario would increase peak hour noise levels by 3.5 dBA or less, below the 5 dBA threshold at all studied roadway segments.

The 2011 EIR determined that the segment of 21st Street west of Webster Street would experience a greater than 5 dBA increase in cumulative noise from traffic. Additionally, the 2011 EIR identified a significant and unavoidable cumulative impact on 21st Street west of Webster Street and east of Webster Street. However, reduced trip generation estimated for the Revised Project results in less than significant noise increases for all intersections at both the project level and the cumulative level.

7.10.2.4 Exposure to Project receptors (Criterion 10d)

Oakland's land use compatibility guidelines specify the community ambient noise level that would be considered "normally acceptable", "conditionally acceptable", "normally unacceptable" and "clearly unacceptable" for various uses. Based on Table IV.I-2 of the 2011 EIR, the project site would be located within the 65 to 70 dBA contour and the ambient noise level would therefore be considered "conditionally acceptable" for the office uses proposed by Master Plan I and "conditionally acceptable" for the residential uses proposed under Master Plan II. Therefore, **SCA NOI-5**, **Exposure to Community Noise** would be applicable to the Revised Project to ensure that adequate noise attenuation features are included in the building construction. With inclusion of SCA NOI-5, the noise exposure of proposed uses would be less than significant.

TABLE 7.10-1
PEAK-HOUR TRAFFIC NOISE LEVELS IN THE VICINITY OF THE PROJECT AREA

Roadway Segment	(A) Existing (2007)	(B) Existing Plus Project	(B-A) Difference between Existing Plus Project and Existing	(C) Cumulative No Project (2030)	(D) Cumulative Plus Project (2030)	(D-A) Difference between Cumulative Plus Project and Existing[d]	(D-C) Difference between Cumulative Plus Project and Cumulative No Project[e]
Grand Avenue between Broadway and Telegraph Avenue	65.2	65.4	0.2	66.5	66.6	1.4	0.1
20th Street between Franklin Street and Webster Street	61.4	62.0	0.6	63.4	63.9	2.5	0.5
20th Street between Webster Street and Harrison Street	62.5	63.1	0.6	64.5	64.9	2.4	0.4
21st between Webster Street and Harrison Street	59.3	60.2	0.9	61.3	61.9	2.6	0.6
21st between Franklin Street and Webster Street	59.2	60.5	1.3	61.2	62.1	1.8	0.9
Harrison Street between 19th Street and 20th Street	62.3	62.5	0.3	65.7	65.8	3.5	0.1
Harrison Street between Grand Avenue and 21st Street	67.1	67.5	0.3	68.2	68.5	1.4	0.3
Harrison Street between 27th Street and Grand Avenue	65.9	66.3	0.4	67.5	67.8	1.9	0.3
Harrison Street between Hamilton Place and 27th Street	66.3	66.4	0.1	67.4	67.4	1.1	0.0

NOTES :

[a] Considered significant if the incremental increase in noise from traffic is greater than the existing ambient (modeled) noise level by 5 dBA Leq, per City of Oakland, CEQA Thresholds/Criteria of Significance Guidelines. Violations are in **bolded** text.

[b] Road center to receptor distance is 15 meters (approximately 50 feet) for all roadway segments. Noise levels were determined using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model.

[c] The analysis considered the vehicle mix based on – cars 97 percent, medium trucks 2 percent, and heavy trucks 1 percent. Traffic speeds for all vehicle classes were set at 25 mph.

[d] Considered significant if the incremental increase in noise is greater than 5 dBA.

[e] Considered a cumulatively considerable contribution to a significant noise increase if the incremental increase in noise is greater than 3 dBA when the cumulative increase in the preceding column is greater than 5 dBA.

SOURCE: ESA, 2018

7.10.2.5 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts from construction noise and vibration or from operational noise. As discussed above, the Revised Project would also have less-than-significant impacts with respect to these same potential noise impacts.

The 2011 EIR found that 2011 Project traffic, in combination with cumulative traffic, could substantially increase traffic noise levels in the 2011 Project area, which would result in a significant and unavoidable impact. However, the above analysis indicates that under the Revised Project vehicle trip generation would be reduced to the extent that these cumulative roadside noise increase impacts would no longer be significant.

Potential noise impacts related to noise exposure of proposed uses was not examined in the 2011 EIR because no sensitive land uses were proposed at that time. As discussed above, while noise levels in the vicinity of the project site are considered "conditionally acceptable" for proposed residential and office land uses, SCA NOI-5 would be adequate to ensure that noise exposure impacts would be less than significant.

7.10.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, implementation of the Revised Project would not substantially increase the severity of impacts identified in the 2011 EIR, nor would it result in new significant impacts related to noise that were not identified in the 2011 EIR. Implementation of **SCA NOI-1**, **Construction Days/Hours**; **SCA NOI-2**, **Construction Noise**; **SCA NOI-3**, **Extreme Construction Noise**; **SCA NOI-4**, **Construction Noise Complaints**; **SCA NOI-5**, **Exposure to Community Noise**; **SCA NOI-6**, **Operational Noise; and SCA NOI-7**, **Vibration Impacts on Adjacent Historic Structures or Vibration-Sensitive Activities** (see Attachment A) would be applicable and would be implemented with the Revised Project, and would ensure that noise-related impacts associated with the Revised Project would be less than significant. No mitigation measures are required.

7.11 Population and Housing

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Induce substantial population growth in a manner not contemplated in the General Plan, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extensions of roads or other infrastructure), such that additional infrastructure is required but the impacts of such were not previously considered or analyzed;	☒	☐	☐
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element; or Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element.	☒	☐	☐

7.11.1 2011 EIR Findings

The 2011 EIR found less-than-significant impacts related to population and housing, as well as employment, and no mitigation measures were required. The 2011 EIR found that the 2011 Project would temporarily displace existing businesses and jobs, but not in substantial numbers necessitating construction of replacement facilities elsewhere, in excess of that anticipated in the City's General Plan. The employment opportunities created by 2011 Project would represent a major increase in employment at the project site. Additionally, the 2011 Project was found not to induce substantial population growth in a manner not anticipated by the General Plan, either directly by proposing new housing or businesses, or indirectly through infrastructure improvements. Redevelopment of the Kaiser Center has long been included in Oakland's future employment projections. Major new office expansion at the site has been planned for since the early 1980s.

7.11.2 Project Analysis

7.11.2.1 Population Growth and Displacement of Housing and People (Criteria 11a and 11b)

The Revised Project would include the demolition of approximately 117,000 square feet of existing office and retail space. This would temporarily displace existing businesses and jobs. It is estimated that 311 employees would temporarily be displaced.[20] However, the Revised Project involves the construction of 1,332,880 square feet of office space and 15,300 square feet of retail space under Master Plan I, and the construction of 865,540 square feet of office space, 18,850 square feet of retail space, and 580 residential units under Master Plan II. Master Plan I would result in approximately 3,332 office and 44 retail employees, for a total of 3,376 employees. Master Plan II would result in

[20] This analysis uses an employment factor of 1 employee per 400 square feet of office space and 1 employee per 350 square feet of retail space, as established in the 2011 EIR and consistent with the 2014 Lake Merritt Station Area Plan EIR.

approximately 2,164 office and 54 retail employees, for a total of 2,218 employees. Additionally, Master Plan II would result in approximately 1,170 residents.[21] The Revised Project would therefore represent a major increase in employment at the project site, and would not result in the permanent displacement of existing business and jobs from the project site that would necessitate construction of any new replacement facilities. No housing currently exists on the project site; therefore, no impacts to related to the displacement of housing would occur.

The addition of approximately 3,332 or 2,218 employees would contribute to employment growth expected in Oakland over the next 25 years, as the employment growth anticipated for the Revised Project would account for between approximately 5.1 and 3.4 percent of total employment growth projected for Oakland between 2015 and 2040. The 1,170 residents introduced by the Revised Project would represent approximately 0.9 percent of total population growth projected for Oakland between 2015 and 2040.[22] Therefore, the additional approximately 3,332 or 2,218 employees as well as the 1,170 residents would not result in substantial growth beyond what was projected in the General Plan.

The Revised Project would also comply with the requirements of the City of Oakland Jobs/Housing Impact Fee Ordinance (chapter 15.68 of the Oakland Municipal Code) by incorporating City of Oakland **SCA POP-1**, **Jobs/Housing Impact Fee** to address potential population and housing impacts. The Revised Project Master Plan II also would be required to implement **SCA POP-2**, **Affordable Housing Impact Fee** (chapter 15.72 of the Oakland Municipal Code). Therefore, the Revised Project's impact in relation to population and housing would be less than significant.

7.11.2.2 Consistency with the 2011 EIR

The 2011 EIR found that the amount of employment growth anticipated for the 2011 Project would account for about 4.8 percent of total employment growth projected for Oakland between 2005 and 2030. As discussed in Section 7.11.2.1 above, the Revised Project would account for between approximately 3.4 and 5.1 percent of total employment growth projected for Oakland between 2015 and 2040, and would not result in substantial business/employment growth. While the introduction of residents was not envisioned in the 2011 Project, as discussed in Section 7.11.2.1 above, the 1,170 residents resulting from Master Plan II would also not induce substantial population growth. Therefore, the Revised Project would not result in impacts that would be more severe than those analyzed in the 2011 EIR.

7.11.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, the Revised Project would not result in any new or more severe significant impacts related to population and housing than those identified in the 2011 EIR. Implementation of **SCA POP-1**, **Jobs/Housing Impact Fee** and **SCA POP-2**, **Affordable Housing Impact Fee** (see Attachment A) would ensure that potential impacts to population and housing would be less than significant. No mitigation measures are required.

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[21] Resident population was calculated using the residential density factor established in the Lake Merritt Station Area Plan EIR of 2.1 persons per household, and assumes a 4 percent vacancy rate.

[22] Association of Bay Area Governments (ABAG), 2013. *Bay Area Plan Projections 2013*. December 2013.

7.12 Public Services, Parks and Recreation Facilities

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: • Fire protection; • Police protection; • Schools; or • Other public facilities.	☒	☐	☐
b. Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or Include recreational facilities or require the construction or expansion of recreational facilities which might have a substantial adverse physical effect on the environment.	☒	☐	☐

7.12.1 2011 EIR Findings

The 2011 EIR found less-than-significant impacts related to public services and recreational facilities. The 2011 Project could result in an increase in calls for police protection services, but would not require new or physically altered police facilities in order to maintain acceptable performance objectives. The 2011 EIR also found that the increased population and density resulting from the 2011 Project would not involve or require new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection and emergency medical services and facilities. The 2011 EIR included SCAs to further reduce the need for emergency response and new staff to serve the project site, including **SCA PUB-2**, **Fire Safety Phasing Plan** (see Attachment A).

Even though the 2011 Project did not include new residential uses and would not directly generate new student enrollment, the 2011 EIR considered the potential for the project-related employment to result in new students for local schools. The 2011 EIR found the 2011 Project would not require new or physically altered school facilities to maintain acceptable performance objectives. The 2011 Project could increase the demand for parks, recreational facilities, and library facilities, but would not result in substantial physical deterioration of such facilities or require new or physically altered facilities in order to maintain acceptable performance objectives. Potential impacts to public services and recreation would be less than significant with implementation of SCAs, and no mitigation measures were warranted.

7.12.2 Project Analysis

7.12.2.1 Public Services and Parks and Recreation (Criteria 12a and 12b)

The Revised Project involves the redevelopment of 1,300,700 square feet of office space and 15,300 square feet of retail space under Master Plan I, and the construction of 865,540 square feet of office space, 18,850 square feet of retail space, and 580 residential units under Master Plan II. Employees, visitors, and potential residents to the project site would create demands on public services. However, the redevelopment activities would occur in an urban area already served by public services and recreation facilities, and recent CEQA analyses have consistently determined that the anticipated growth would not impose a burden on existing public services to create a significant impact. Compliance with standard City practices would further ensure the less-than-significant impact. These include City practices and requirements, such as the Oakland Fire Services' review of Revised Project plans, and Project Applicant's required contributions to school impact fees to offset any impacts to school facilities from the Revised Project.

The increased number of employees and visitors, and the introduction of residents under Master Plan II specifically, could result in the increased use of parks and recreational facilities near the project site. As described in Section 5.1.3, Surrounding Context, Snow Park is located southeast of the project site, across Harrison and 20th Streets, and is currently closed for improvements including building a new tot lot and children's play area, renovating the existing bathroom and putting green, and adding a pedestrian promenade plaza and pathway lighting. Directly east of the project site is the 3.4-acre Lake Merritt and surrounding Lakeside Park, an area providing open space and recreational facilities. Work is also currently being performed at the portion of Lake Merritt adjacent to the project site to expand the park and improve pedestrian and bicycle access around Lake Merritt.

In addition, the Revised Project includes the addition of approximately 25,770 square feet of rooftop garden under Master Plan I, and the addition of approximately 32,364 square feet of rooftop garden Master Plan II. Under Master Plan II, residents of the 20th Street Residential tower would also have access to a dedicated rooftop open space, separate from the rooftop garden. Since development of the Revised Project would occur in an urban area already served by recreation facilities that are currently undergoing improvements to enhance the recreational areas, and the Revised Project would provide additional private but publicly accessible rooftop garden, the potential increase in use of recreational facilities attributed to the Revised Project would not result in substantial physical deterioration of Snow Park, Lake Merritt, and Lakeside Park.

The Revised Project would comply with the requirements of the City of Oakland Capital Improvements Fee Ordinance (chapter 15.74 of the Oakland Municipal Code) by incorporating City of Oakland **SCA PUB-1**, **Capital Improvements Impact Fee** to address potential public services, and park and recreation facilities impacts. Since the Revised Project is located adjacent to Snow Park, Lake Merritt, and Lakeside Park, the Revised Project would also incorporate City of Oakland **SCA REC-1**, **Access to Parks and Open Space**, which would require the Project Applicant to submit a plan for City review and approval to enhance bicycle and pedestrian access from the project site to these areas. In addition, adherence to the General Plan's Open Space, Conservation and Recreation Element policies 3.1, 3.3, and 3.10 would reduce potential impacts to recreational

facilities. Any increases in need for police protection, fire protection, schools, or other public facilities would also be mitigated by adherence to General Plan Policies N.12.1, N.12.2, N.12.5, FI-1, and FI-2.

7.12.2.2 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts on the ability of service providers to provide adequate police services, fire protection and emergency medical services, public schools, and parks and recreation facilities to the 2011 Project area and vicinity. As discussed in Section 7.12.2.1, the Revised Project would have less-than-significant impacts with regard to public services and parks and recreation. Therefore, the Revised Project would not result in any new or more severe significant impacts related to public services and parks and recreation services than those identified in the 2011 EIR.

Under the City's revised SCAs, the provisions of 2011 EIR SCA PUB-1, Conformance with other Requirements, are provided in the City's General Administrative Conditions for which the Revised Project is required to comply. Additionally, 2011 EIR SCA PUB-2, Fire Safety Phasing Plan, would not apply to the Revised Project, as there is a fire hydrant located at the corner of 20th and Webster Streets less than 150 feet from the project site.

7.12.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, the Revised Project would not result in any new or more severe significant impacts related to public services and parks and recreation services than those identified in the 2011 EIR. Implementation of **SCA PUB-1, Capital Improvements Impact Fee**; and **SCA REC-1**, **Access to Parks and Open Space** (see Attachment A), would ensure that potential impacts to public services, parks and recreation would be less than significant. No mitigation measures are required.

7.13 Transportation and Circulation

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Conflict with a plan, ordinance, or policy addressing the safety or performance of the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths (except for automobile level of service or other measures of vehicle delay)	☒	☐	☐
b. Cause substantial additional vehicle miles traveled (VMT) per capita, per service population, or other appropriate efficiency measure	☒	☐	☐
c. Substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) or by adding new roadways to the network.	☒	☐	☐

7.13.1 2011 EIR Findings

The 2011 EIR included a comprehensive evaluation of the project impacts on transportation and circulation including traffic operations, traffic hazards and safety, emergency access, and consistency with adopted policies, plans, and programs regarding public transit, bicycle, and pedestrian facilities. The 2011 EIR traffic operations evaluated 51 intersections and 24 freeway and arterial segments within the vicinity of the 2011 Project site for potential impacts. The thresholds of significance for the traffic operations analysis in the 2011 EIR were based on vehicle level of service (LOS).

The 2011 EIR identified significant and unavoidable impacts regarding intersection and/or roadway segment operations. Various mitigation measures and City of Oakland SCAs were identified. The impacts and mitigation measures identified in the 2011 EIR under the different analysis scenarios are described below.

7.13.1.1 Existing Plus 2011 Project (Phase I and II)

Under Existing Plus 2011 Project (Phase I and II) conditions, the 2011 EIR identified significant impacts for the 2011 Project related to peak hour LOS at the six intersections and two roadway segments listed below.

- **Impact TRANS-1a**: Intersection 2 - Oakland Avenue/Perry Place/I-580 Eastbound Ramps
- **Impact TRANS-1b**: Intersection 3 - Harrison Street/27th Street/24th Street
- **Impact TRANS-1c**: Intersection 24 - Harrison Street/20th Street/Kaiser Center Access Road
- **Impact TRANS-1d**: Intersection 44 - Oak Street/5th Street/I-880 Southbound On-Ramp
- **Impact TRANS-1e**: Intersection 45 - Grand Avenue/El Embarcadero
- **Impact TRANS-1f**: Intersection 47 - Grand Avenue/MacArthur Boulevard (Eastbound)

- **Impact TRANS-2a**: Segment 9 – Eastbound Grand Avenue from Harrison Street to El Embarcadero
- **Impact TRANS-2b**: Segment 10 – Northbound Harrison Street/Oakland Avenue from 27th Street to I-580

The 2011 EIR includes the following mitigation measures under Existing Plus 2011 Project (Phase I and II) conditions:

- Mitigation Measures TRANS-1a through TRANS-1f, TRANS-2a, and TRANS-2b identified optimizing the traffic signal timings and coordinating the signal timing changes with adjacent intersections that are in the same signal coordination group.
- Mitigation Measure TRANS-1b identified prohibiting the westbound left turns from Bay Place at the Harrison Street/27th Street/24th Street intersection during the PM peak hour.
- Mitigation Measure TRANS-1c identified several modifications to lane configurations, crosswalks, and traffic signal timings at the Harrison Street/20th Street/Kaiser Center Access Road intersection.

Implementing the mitigation measures would reduce impacts TRANS-1c and TRANS-1e to less than significant; all other impacts were identified as significant and unavoidable under Existing Plus 2011 Project (Phase I and II) conditions.

7.13.1.2 Near-Term (2015) Plus 2011 Project (Phase I)

Under Near-Term (2015) Plus 2011 Project (Phase I) conditions, the 2011 EIR identified significant impacts for the 2011 Project related to peak hour LOS at the five intersections and one roadway segment listed below.

- **Impact TRANS-3a**: Intersection 2 - Oakland Avenue/Perry Place/I-580 Eastbound Ramps
- **Impact TRANS-3b**: Intersection 3 - Harrison Street/27th Street/24th Street
- **Impact TRANS-3c**: Intersection 12 - Harrison Street/Grand Avenue
- **Impact TRANS-3d**: Intersection 24 - Harrison Street/20th Street/Kaiser Center Access Road
- **Impact TRANS-3e**: Intersection 49 - Oakland Avenue/MacArthur Boulevard (Westbound)/Santa Clara Avenue/I-580 Westbound Off-Ramp
- **Impact TRANS-4a**: Segment 10 – Northbound Harrison Street/Oakland Avenue from 27th Street to I-580

The 2011 EIR includes the following mitigation measures under Near-Term (2015) Plus 2011 Project (Phase I):

- Mitigation Measures TRANS-3a through TRANS-3e and TRANS-4a identified optimizing the traffic signal timings and coordinating the signal timing changes with adjacent intersections that are in the same signal coordination group.
- Mitigation Measure TRANS-3b identified implementation of Mitigation Measure TRANS-1b.

- Mitigation Measure TRANS-3e identified re-striping and lane configuration changes at the Oakland Avenue/MacArthur Boulevard (Westbound)/Santa Clara Avenue/I-580 Westbound Off-Ramp intersection.

Implementing the above mitigation measures would reduce impacts TRANS-3d and TRANS-3e to less than significant; all other impacts were identified as significant and unavoidable under Near-Term (2015) Plus 2011 Project (Phase I) conditions.

7.13.1.3 Near-Term (2015) Plus 2011 Project (Phase I and II)

Under Near-Term (2015) Plus 2011 Project (Phase I and II) conditions, the 2011 EIR identified significant impacts for the 2011 Project related to peak hour LOS at the 10 intersections and two roadway segments listed below.

- **Impact TRANS-5a**: Intersection 2 - Oakland Avenue/Perry Place/I-580 Eastbound Ramps
- **Impact TRANS-5b**: Intersection 3 - Harrison Street/27th Street/24th Street
- **Impact TRANS-5c**: Intersection 5 – Telegraph Avenue/27th Street
- **Impact TRANS-5d**: Intersection 12 - Harrison Street/Grand Avenue
- **Impact TRANS-5e**: Intersection 24 - Harrison Street/20th Street/Kaiser Center Access Road
- **Impact TRANS-5f**: Intersection 44 - Oak Street/5th Street/I-880 Southbound On-Ramp
- **Impact TRANS-5g**: Intersection 45 - Grand Avenue/El Embarcadero
- **Impact TRANS-5h**: Intersection 47 - Grand Avenue/MacArthur Boulevard (Eastbound)
- **Impact TRANS-5i**: Intersection 48 - Lakeshore Avenue/MacArthur Boulevard (Eastbound)/I-580 Eastbound On-Ramp
- **Impact TRANS-5j**: Intersection 49 - Oakland Avenue/MacArthur Boulevard (Westbound)/Santa Clara Avenue/I-580 Westbound Off-Ramp
- **Impact TRANS-6a**: Segment 9 – Eastbound Grand Avenue from Harrison Street to El Embarcadero
- **Impact TRANS-6b**: Segment 10 – Northbound Harrison Street/Oakland Avenue from 27th Street to I-580

The 2011 EIR includes the following mitigation measures under Near-Term (2015) Plus 2011 Project (Phase I and II):

- Mitigation Measures TRANS-5a through TRANS-5j, TRANS-6a, and TRANS-6b identified optimizing the traffic signal timings and coordinating the signal timing changes with adjacent intersections that are in the same signal coordination group.
- Mitigation Measure TRANS-5b identified implementation of Mitigation Measure TRANS-1b.
- Mitigation Measure TRANS-5c identified re-designing the traffic signal plan at the Telegraph Avenue/27th Street intersection.
- Mitigation Measure TRANS-5j identified implementation of Mitigation Measure 3e.

Implementing the above mitigation measures would reduce impacts TRANS-5c, TRANS-5e, TRANS-5g, and TRANS-5j to less than significant; all other impacts were identified as significant and unavoidable under Near-Term (2015) Plus 2011 Project (Phase I and II) conditions.

7.13.1.4 Cumulative 2030 Plus 2011 Project (Phase I and II)

Under Cumulative 2030 Plus 2011 Project (Phase I and II) conditions, the 2011 EIR identified significant impacts for the 2011 Project related to peak hour LOS at the 12 intersections and three roadway segments listed below.

- **Impact TRANS-7a**: Intersection 2 - Oakland Avenue/Perry Place/I-580 Eastbound Ramps
- **Impact TRANS-7b**: Intersection 3 - Harrison Street/27th Street/24th Street
- **Impact TRANS-7c**: Intersection 5 – Telegraph Avenue/27th Street
- **Impact TRANS-7d**: Intersection 12 - Harrison Street/Grand Avenue
- **Impact TRANS-7e**: Intersection 13 - Harrison Street/21st Street
- **Impact TRANS-7f**: Intersection 24 - Harrison Street/20th Street/Kaiser Center Access Road
- **Impact TRANS-7g**: Intersection 44 - Oak Street/5th Street/I-880 Southbound On-Ramp
- **Impact TRANS-7h**: Intersection 45 - Grand Avenue/El Embarcadero
- **Impact TRANS-7i**: Intersection 47 - Grand Avenue/MacArthur Boulevard (Eastbound)
- **Impact TRANS-7j**: Intersection 48 - Lakeshore Avenue/MacArthur Boulevard (Eastbound)/I-580 Eastbound On-Ramp
- **Impact TRANS-7k**: Intersection 49 - Oakland Avenue/MacArthur Boulevard (Westbound)/ Santa Clara Avenue/I-580 Westbound Off-Ramp
- **Impact TRANS-7l**: Intersection 50 - Harrison Street/MacArthur Boulevard (Westbound)/Santa Clara Avenue
- **Impact TRANS-8a**: Segment 3 – I-880 from Oak Street to 5th Avenue
- **Impact TRANS-8b**: Segment 9 – Eastbound Grand Avenue from Harrison Street to El Embarcadero
- **Impact TRANS-8c**: Segment 10 – Northbound Harrison Street/Oakland Avenue from 27th Street to I-580

The 2011 EIR includes the following mitigation measures under Cumulative 2030 Plus 2011 Project (Phase I and II) conditions:

- Mitigation Measures TRANS-7a through TRANS-7l, TRANS-8b, and TRANS-8c identified optimizing the traffic signal timings and coordinating the signal timing changes with adjacent intersections that are in the same signal coordination group.
- Mitigation Measure TRANS-7b identified prohibiting westbound left turns from Bay Place at the Harrison Street/27th Street/24th Street intersection during the AM and PM peak hours.

- Mitigation Measure TRANS-7c identified implementation of Mitigation Measure TRANS-5c.
- Mitigation Measure TRANS-7d identified prohibiting southbound left-turns at the Harrison Street/Grand Avenue intersection during the AM and PM peak periods with the implementation of extinguishable message signs.
- Mitigation Measure TRANS-7e identified implementation of Mitigation Measure TRANS-1c.
- Mitigation Measure TRANS-7k identified implementation of Mitigation Measure TRANS-3e.

Implementing the above recommended mitigation measures would reduce impacts TRANS-7c, TRANS-7f, and TRANS-7k to less than significant; all other impacts were identified as significant and unavoidable under Cumulative 2030 Plus 2011 Project (Phase I and II) conditions.

7.13.1.5 Other Impacts and Mitigation Measures

The 2011 EIR also identified the following significant impacts and mitigation measures related to site access:

- **Impact TRANS-9** identified a potential conflict between loading dock operations and vehicular access to and from the Kaiser Center Garage with a potential safety hazard for pedestrians, bicyclists, and other drivers. Mitigation Measure TRANS-9 would prohibit delivery and service vehicles from accessing the loading docks during the AM and PM peak periods; the segment of the Kaiser Center Access Road between Harrison Street/ 20th Street and the parking garage driveway should be restricted to delivery and service vehicles only during weekday off-peak periods. Mitigation Measure TRANS-9 would also require the Project Applicant to prepare and implement after City approval a loading dock plan and operational analysis to minimize conflicts between vehicular, pedestrian, and bicycle access.
- **Impact TRANS-10** identified a potential conflict at the existing garage exit on 21st Street (just east of Kaiser Plaza) between exiting vehicles and pedestrians on the adjacent sidewalk. Mitigation Measure TRANS-10 requires the Project Applicant to redesign this driveway and/or the adjacent sidewalk to provide adequate sight distance between exiting vehicles and pedestrians on the adjacent sidewalk.

7.13.2 Project Analysis

Although the Project Applicant is considering multiple development alternatives, the evaluation summarized in this section considers a single "worst-case" scenario, which corresponds to the development scenario that would generate the highest daily and peak hour automobile trips. The "worst-case" scenario corresponds to the Revised Project Master Plan I and assumes the following development size:

- 1,333,000 square feet of office space[23]
- 15,300 square feet of retail space

[23] For the purposes of a conservative analysis, this CEQA Checklist assumes approximately 16,680 square feet of the Webster Street Building parking area would be occupied by approximately 8,340 square feet of office uses and approximately 47,680 square feet of the 20th Street Building parking area would be occupied by approximately 23,840 square feet of office uses for a total worst case scenario of approximately 1,333,000 square feet of office use.

This analysis concluded that the Revised Project would not exceed the City's applicable significance thresholds related to traffic, beyond the ones identified in the 2011 EIR.

7.13.2.1 Conflicts with Plans, Ordinances, or Policies Relating to Safety, or Performance of the Circulation System (Criterion a)

The Revised Project is consistent with applicable plans, ordinances, and policies, and would not cause a significant impact by conflicting with adopted plans, ordinances, or policies addressing the safety and performance of the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths (except for automobile level of service or other measures of vehicle delay).

The General Plan Land Use and Transportation Element (LUTE), as well as the City's Public Transit and Alternative Mode and Complete Streets policies, states a strong preference for encouraging the use of non-automobile transportation modes, such as transit, bicycling, and walking. The Revised Project would encourage the use of non-automobile transportation modes by providing employment and commercial uses with minimal parking in a dense, walkable urban environment that is well-served by local and regional transit.

The Revised Project is consistent with both the City's Pedestrian Master Plan and Bicycle Master Plan as it would not make major modifications to existing pedestrian or bicycle facilities in the surrounding areas and would not adversely affect installation of future facilities. Further, because the Revised Project would generate more than 50 peak hour trips, preparation and implementation of a transportation and parking demand management (TDM) Plan is required for the Revised Project, per City of Oakland's **SCA TRA-4**, **Transportation and Parking Demand Management**. A TDM Plan was developed for the 2011 Project, which will be updated to be consistent with the Revised Project after the preferred development scenario (Master Plan I or Master Plan II) is selected.

Overall, the Revised Project would not conflict with adopted plans, ordinances, or policies addressing the safety and performance of the circulation system. This is a less-than-significant impact; no mitigation measures are required.

Furthermore, the Revised Project would be consistent with the 2011 EIR, which evaluated the impacts of development at the project site. Consistency of the Revised Project with the 2011 EIR is discussed below.

7.13.2.2 Vehicle Miles travelled (VMT) Assessment (Criterion b)

On September 21, 2016, the City of Oakland's Planning Commission directed staff to update the City of Oakland's CEQA Thresholds of Significance Guidelines related to transportation impacts in order to implement the directive from Senate Bill 743 (Steinberg 2013) to modify local environmental review processes by removing automobile delay, as described solely by level of service (LOS) or similar measures of vehicular capacity or traffic congestion, as a significant impact on the environment pursuant to CEQA. The Planning Commission direction aligns with guidance from the Governor's Office of Planning and Research and the City's approach to transportation impact analysis, with adopted plans and polices related to transportation, which promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.

Consistent with the Planning Commission direction and the Senate Bill 743 requirements, the City of Oakland published the revised TIRG on April 14, 2017 to guide the evaluation of the transportation impacts associated with land use development projects.

Many factors affect travel behavior, including density of development, diversity of land uses, design of the transportation network, access to regional destinations, distance to high-quality transit, development scale, demographics, and transportation demand management. Typically, low-density development that is located at a great distance from other land uses, in areas with poor access to non-single occupancy vehicle travel modes generate more vehicle travel compared to development located in urban areas, where a higher density of development, a mix of land uses, and non-single occupancy vehicle travel options are available.

Given these travel behavior factors, most of Oakland has lower VMT per capita and VMT per worker ratios than the nine-county San Francisco Bay Area region. Further, within the City of Oakland, some neighborhoods may have lower VMT ratios than others.

VMT Estimate

Neighborhoods within Oakland are expressed geographically in transportation analysis zones, or TAZs, which are used in transportation planning models for transportation analysis and other planning purposes. The Metropolitan Transportation Commission (MTC) Travel Model includes 116 TAZs within Oakland that vary in size from a few city blocks in the downtown core, to multiple blocks in outer neighborhoods, to even larger geographic areas in lower-density neighborhoods.

The MTC Travel Model is a model that assigns all predicted trips within, across, or to/from the nine-county San Francisco Bay Area region onto the roadway network and the transit system by mode (single-driver and carpool vehicle, biking, walking, or transit) and transit carrier (bus, rail) for a particular scenario.

The travel behavior from MTC Travel Model is modeled based on the following inputs:

- Socioeconomic data developed by the Association of Bay Area Governments (ABAG)
- Population data created using the 2000 US Census and modified using the open source PopSyn software
- Zonal accessibility measurements for destinations of interest
- Travel characteristics and vehicle ownership rates derived from the 2000 Bay Area Travel Survey (BATS)
- Observed vehicle counts and transit boardings

The daily VMT output from the MTC Travel Model for residential and office uses comes from a tour-based analysis. The tour-based analysis examines the entire chain of trips over the course of a day, not just trips to and from the project site. In this way, all of the VMT for an individual resident or employee is included; not just trips into and out of the person's home or workplace. For example, a resident leaves her apartment in the morning, stops for coffee, and then goes to the office. In the afternoon she heads out to lunch, and then returns to the office, with a stop at the drycleaners on

the way. After work, she goes to the gym to work out, and then joins some friends at a restaurant for dinner before returning home. All the stops and trips within her day form her "tour." The tour-based approach would add up the total number of miles driven over the course of her tour and assign it as her daily VMT.

Based on the MTC Travel Model, the regional average daily VMT per capita is 15.0 under 2020 conditions and 13.8 under 2040 conditions, and the regional average daily VMT per worker is 21.8 under 2020 conditions and 20.3 under 2040 conditions.

Thresholds of Significance for VMT

According to the City of Oakland TIRG, the following are thresholds of significance related to substantial additional VMT:

- For residential projects, a project would cause substantial additional VMT if it exceeds existing regional household VMT per capita minus 15-percent.
- For office projects, a project would cause substantial additional VMT if it exceeds the existing regional VMT per worker minus 15-percent.
- For retail projects, a project would cause substantial additional VMT if it results in a net increase in total VMT.

Screening Criteria

VMT impacts would be less than significant for a project if any of the identified screening criteria outlined below are met:

1. Small Projects: The project generates fewer than 100 vehicle trips per day
2. Low-VMT Areas: The project meets map-based screening criteria by being located in an area that exhibits below threshold VMT, or 15-percent or more below the regional average
3. Near Transit Stations: The project is located in a Transit Priority Area or within a one-half mile of a Major Transit Corridor or Stop and satisfies the following:
    - Has a Floor Area Ratio (FAR) of more than 0.75,
    - includes less parking for use by residents, customers, or employees of the project than other typical nearby uses, or less than the minimum required by the City, or less than the minimum or maximum allowed without a conditional use permit,
    - and is consistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the MTC).

The Revised Project satisfies the Low-VMT Area (#2) and Near Transit Stations (#3) criteria as described below.

Criterion #1: Small Projects

The Revised Project would generate more than 100 vehicle trips per day and therefore does not meet criterion #1.

Criterion #2: Low-VMT Area

Table 7.13-1 shows the estimated 2020 and 2040 VMT per capita and VMT per worker for TAZ 971, the TAZ in which the Revised Project is located, as well as the applicable VMT thresholds of 15-percent below the regional average. As shown in Table 7.13-1, the 2020 and 2040 estimated average daily VMT per capita and VMT per worker in the Revised Project TAZ is less than the regional averages minus 15-percent.

TABLE 7.13-1
DAILY VEHICLE MILES TRAVELED SUMMARY

	Bay Area				TAZ 971	
	2020		2040			
Land Use	Regional Average	Regional Average minus 15%	Regional Average	Regional Average minus 15%	2020	2040
Residential (VMT per Capita)[a]	15.0	12.8	13.8	11.7	4.5	4.1
Office (VMT per Worker)[b]	21.8	18.5	20.3	17.3	12.7	12.0

NOTES:
[a] MTC Model results at analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerCapita and accessed in July 2018.
[b] MTC Model results at analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerWorker and accessed in July 2018.

SOURCE: Fehr & Peers, 2018.

According to the TIRG, retail spaces less than 80,000 square feet are considered local-serving and are not expected to contribute to an increase in VMT. Therefore, it is presumed that The Revised Project would include approximately 15,000 square feet of ground floor retail space, which is considered typical for mixed-use projects in downtown Oakland. Therefore, it is presumed that the Revised would not result in substantial additional VMT and Revised Project impacts with respect to VMT would be less than significant.

Criterion #3: Near Transit Stations

The Revised Project would be located about 0.3 miles from the 19th Street Oakland BART Station and about 0.5 miles from the 12th Street Oakland City Center BART Station. The Revised Project is also near bus stops with frequent bus service along Broadway (Routes 6 and 51A with 10-minute peak headways, the Free Broadway Shuttle with 11-minute peak headways, and Routes 18, 33, and 72 with 15-minute peak headways) and is within 0.2 miles of the Route 72R stop (12-minute peak headways) on Thomas L Berkeley Way. The Revised Project would satisfy Criterion #3 because it would meet the following three conditions for this criterion:

- The Revised Project would have a FAR greater than 19.0, which is greater than 0.75.
- The City of Oakland Planning Code (Section 17.116.060) has no minimum parking requirement and allows a maximum of 1.25 spaces per unit for multi-family residential developments in the CBD-C zone. For commercial uses in the CBD-C zone, the code (Section 17.116.080) has no minimum parking requirement and allows a maximum of one space per 300 square feet of ground floor space and one space per 500 square feet of above ground floor space. City Code allows a maximum of 2,717 off-street spaces for Master Plan I and 2,519 spaces for Master Plan II. Both Master Plans I and II propose up to 79 additional off-street parking spaces.

Therefore, the Revised Project would provide off-street parking that is less than the maximum allowed by City Code.

- The Revised Project is located within the Downtown & Jack London Square Priority Development Area (PDA) as defined by Plan Bay Area and is therefore consistent with the region's Sustainable Communities Strategy.

VMT Screening Conclusion

The Revised Project would satisfy the Low-VMT Area (#2) and the Near Transit Stations (#3) criteria and is therefore presumed to have a less–than-significant impact on VMT. Accordingly, the Revised Project would not result in new or more severe impacts than those identified in the 2011 EIR.

7.13.2.3 Induced Automobile Travel (Criterion c)

The Revised Project would not modify the roadway network capacity surrounding the project site. Therefore, it would not increase the physical roadway capacity and would not add new roadways to the network and would not induce additional automobile traffic. This is a less-than-significant impact; no mitigation measures are required.

7.13.2.4 Consistency with the 2011 EIR

The 2011 EIR evaluated the impacts of a project consisting of 1,320,000 square feet of office space and 46,000 square feet of commercial space on the transportation system primarily using LOS per the City of Oakland Significance Criteria at the time. As noted above, the City has since updated its Significance Criteria to a VMT analysis and has eliminated LOS or other congestion-based metrics. As a result, an updated LOS analysis is not required for CEQA purposes. Nonetheless, for informational purposes only, a comparison of the Revised Project's automobile trip generation to the 2011 Project is provided below. Moreover, because the Revised Project would not result in any significant impacts requiring mitigation, the mitigation measures identified in the 2011 EIR are no longer required. However, some of the 2011 EIR mitigations will be fulfilled through implementation of SCA TRA-5, and a list of those is provided below.

Trip Generation (for informational purposes only)

Trip generation is the process of estimating the number of vehicles that would likely access the Revised Project during a typical weekday. The trip generation estimates account for the removal of existing office and retail space that are currently leased and occupied but would be demolished as part of the Revised Project. Trip generation for the Revised Project is summarized in **Table 7.13-2**. Trip generation data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual* (10th Edition) was used as a starting point to estimate the vehicle trip generation.

ITE's *Trip Generation Manual* is primarily based on data collected at single-use mostly suburban sites where the automobile is often the only travel mode. However, the project site is in a dense mixed-use urban environment where many trips are walk, bike, or transit trips. Since the Revised Project is within 0.5 miles of the 19th Street BART station, this analysis reduces the ITE based trip generation by about 47 percent to account for non-automobile trips. This reduction is consistent with the City of

TABLE 7.13-2
REVISED PROJECT AUTOMOBILE TRIP GENERATION (MASTER PLAN I DEVELOPMENT SCENARIO)

Land Use	ITE Code	Size[a]	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				In	Out	Total	In	Out	Total
Tower 1									
Office[b]	710	866 KSF	8,610	722	118	840	142	743	885
Retail[c]	820	5.7 KSF	220	3	2	5	11	11	22
		Subtotal	8,830	725	120	845	153	754	907
		Non-Auto Reduction[d]	-4,140	-340	-56	-396	-72	-354	-425
		Pass-By Reduction[e]	-20	0	0	0	-2	-2	-4
		Adjusted Tower 1 Revised Project Trips	4,670	385	64	449	79	398	477
Tower 2									
Office[b]	710	467 KSF	4,730	401	65	466	79	414	493
Retail[c]	820	9.6 KSF	360	6	3	9	18	19	37
		Subtotal	5,090	407	68	475	97	433	530
		Non-Auto Reduction[d]	-2,390	-191	-32	-223	-45	-203	-249
		Pass-By Reduction[e]	-30	0	0	0	-3	-3	-7
		Adjusted Tower 2 Revised Project Trips	2,670	216	36	252	49	227	276
		Adjusted Total Revised Project Trips	7,340	601	100	701	128	625	753
Existing Conditions									
Office[b]	710	26 KSF	290	44	7	51	5	26	31
Co-Work Space[b]	710	43 KSF	470	58	9	67	8	44	52
Retail[c]	820	48 KSF	1,820	28	17	45	88	95	183
		Existing Conditions Sub Total	2,580	130	33	163	101	165	266
		Non-Auto Reduction[d]	-1,210	-61	-15	-76	-47	-77	-125
		Pass-By Reduction[e]	-160	0	0	0	-16	-17	-33
		Existing Condition Trips	*1,210*	*69*	*18*	*87*	*38*	*71*	*109*
		Net New Revised Project Vehicle Trips	**6,130**	**532**	**82**	**614**	**90**	**554**	**644**

NOTES:
[a] KSF = 1,000 square feet.
[b] ITE Trip Generation (10th Edition) land use category 710 (General Office Building in General Urban/Suburban Setting):
Daily: Ln(T) = 0.97Ln(X)+2.50
AM Peak Hour: T = 0.94(X)+26.49 (86% in, 14% out)
PM Peak Hour: Ln(T)=0.95Ln(X)+0.36 (16% in, 84% out)
[c] ITE Trip Generation (10th Edition) land use category 820 (Shopping Center in General Urban/Suburban Setting):
Daily: T = 37.75(X)
AM Peak Hour: T = 0.94(X) (62% in, 38% out)
PM Peak Hour: T = 3.81(X) (48% in, 52% out)
[d] Reduction of 46.9% assumed, based on City of Oakland Transportation Impact Review Guidelines using Census data for urban environments within 0.5 miles of a BART Station.
[e] Based on ITE Trip Generation Handbook (2nd Edition), the average PM peak hour pass-by rates for land use category 820 is 34%. A 17% daily pass-by rate is applied to retail uses. This reduction was applied to trips after the non-auto reduction.

SOURCE: Fehr & Peers, 2018.

Oakland's Transportation Impact Review Guidelines (TIRG) and is based on US Census commute data for Alameda County from the 2014 5-Year Estimates of the American Community Survey (ACS), which shows that the non-automobile mode share for areas less than 0.5 miles from a BART Station is about 47 percent.

In addition, pass-by adjustments were applied for the retail uses. Pass-by trips are trips attracted to the site from 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 trips to the roadway network. According to the ITE *Trip Generation Handbook* (2nd Edition), the average weekday PM peak hour pass-by reduction for retail uses is 34 percent (assuming ITE land use category 820). AM peak hour and daily pass-by reductions are not provided for ITE retail land use category 820. Since AM peak hour and daily pass-by rates are not available, for the purposes of a conservative analysis a pass-by reduction was not applied for the AM peak hour, and a 17 percent reduction (half of the PM peak hour pass-by reduction) was applied to the daily trips for retail uses. As summarized in **Table 7.13-2**, the net new automobile trip generation for the Revised Project is approximately 6,130 daily, 614 AM peak hour, and 644 PM peak hour automobile trips. As shown in **Table 7.13-3**, the Revised Project is expected to generate more daily, AM and PM peak hour trips than estimated in the 2011 EIR for Phase I. However, the Revised Project would generate fewer daily, AM and PM peak hour trips than estimated in the 2011 EIR for Phase I and II combined. Thus, the Revised Project would not result in additional impacts on traffic operations at locations analyzed in the 2011 EIR.

TABLE 7.13-2
KAISER CENTER EXPANSION PROJECT AUTOMOBILE TRIP GENERATION
2011 PROJECT AND REVISED PROJECT COMPARISON

Land Use	2011 EIR - Phase I Conditions[a]	2011 EIR - Phase I and II Conditions	2018 Revised Project (Master Plan I Scenario)
Office[b]	552 KSF	1,320 KSF	1,333 KSF
Retail[b]	27 KSF	46 KSF	15 KSF
Net New Daily Trips	3,479	7,966	6,130
Net New AM Peak Hour Trips	516	1,187	614
Net New PM Peak Hour Trips	487	1,144	644

NOTES:
[a] The 2011 EIR does not specify the size of the existing retail uses that would be replaced as part of the 2011 Project Phase I. For purposes of this analysis, it is assumed that the 2011 Project would replace 27 KSF of existing retail space with 27 KSF of new retail space.
[b] KSF = 1,000 square feet.

SOURCE: Fehr & Peers, 2018.

For purposes of providing a conservative trip generation analysis, it was assumed that 64,000 square feet of parking could be converted into an additional 32,000 square feet of office space for Master Plan 1, and that 16,000 square feet of parking could be converted into 8,000 square feet of office space for Master Plan 2 relative to the floor area totals shown on the Revised Project site plans dated May 25, 2018.

2011 EIR Mitigation Measures

As discussed above, the mitigation measures identified in the 2011 EIR to address LOS impacts no longer apply since the City's Significance Criteria no longer applies a LOS metric and no impacts result using the new VMT Significance Criteria.

However, several mitigation measures identified in the 2011 EIR have been included in the new **SCA TRA-5, Transportation Impact Fee**, which would ensure compliance with the requirements of the City of Oakland Transportation Impact Fee Ordinance (chapter 15.74 of the Oakland Municipal Code). The following mitigation measures identified in the 2011 EIR are included in the Citywide Transportation Impact Fee (TIF), which will be used to fund the implementation of these mitigation measures:

- Mitigation Measures TRANS-1a (project impact, Phase I and II), TRANS-3a (near-term impact, Phase I), TRANS-5a (near-term impact, Phase I and II), and TRANS-7a (cumulative impact, Phase I and II) apply to the Oakland Avenue /Perry Place/I-580 Eastbound Ramps intersection.
- Mitigation Measures TRANS-1b (project impact, Phase I and II), TRANS-3b (near-term impact, Phase I), TRANS-5b (near-term impact, Phase I and II), and TRANS-7b (cumulative impact, Phase I and II) apply to the Harrison Street/27th Street/24th Street intersection. These mitigation measures have been superseded by mitigation measures identified at this location in the Broadway/Valdez District Specific Plan EIR; the superseded improvements are included in the TIF Program.
- Mitigation Measures TRANS-2b (project impact, Phase I and II), TRANS-4a (near-term impact, Phase I), TRANS-6b (near-term impact, Phase I and II), and TRANS-8c (cumulative impact, Phase I and II) apply to the northbound Harrison Street/Oakland Avenue segment from 27th Street to I-580. These mitigation measures would optimize the traffic signal timings at the Oakland Avenue/Perry Place/I-580 Eastbound Ramps intersection (Mitigation Measure TRANS-1a) and the Harrison Street/ 27th Street/24th Street intersection (Mitigation Measure TRANS-1b), which are improvements included in the Citywide TIF Program.
- Mitigation Measures TRANS-3c (near-term impact, Phase I), TRANS-5d (near-term impact, Phase I and II), and TRANS-7d (cumulative impact, Phase I and II) apply to the Harrison Street/Grand Avenue intersection.
- Mitigation Measures TRANS-3e (near-term impact, Phase I), TRANS-5j (near-term impact, Phase I and II), and TRANS-7k (cumulative impact, Phase I and II) apply to the Oakland Avenue/MacArthur Boulevard (Westbound)/Santa Clara Avenue/I-580 Westbound Off-Ramp intersection.
- Mitigation Measures TRANS-5c (near-term impact, Phase I and II) and TRANS-7c (cumulative impact, Phase I and II) apply to the Telegraph Avenue/27th Street intersection.
- Mitigation Measures TRANS-5i (near-term impact, Phase I and II) and TRANS-7j (cumulative impact, Phase I and II) apply to the Lakeshore Avenue/MacArthur Boulevard (Eastbound)/I-580 Eastbound On-Ramp intersection.
- Mitigation Measure TRANS-7l (cumulative impact, Phase I and II) applies to the Harrison Street/MacArthur Boulevard (Westbound)/Santa Clara Avenue intersection.

The remaining mitigation measures identified in the 2011 EIR and not included in the Citywide TIF are listed below.

- Mitigation Measures TRANS-1c (project impact, Phase I and II), TRANS-3d (near-term impact, Phase I), TRANS-5e (near-term impact, Phase I and II), TRANS-7e (cumulative impact, Phase I and II), and TRANS-7f (cumulative impact, Phase I and II) apply to the Harrison Street/20th Street/Kaiser Center Access Road intersection. However, City of Oakland is currently implementing Measure DD improvements along the west side of Lake Merritt, including at this intersection. Furthermore, the upcoming 20th Streets Complete Streets project will also implement improvements to the 20th Street approach of the intersection. The current Measure DD and upcoming 20th Street improvements supersede the mitigation measure improvements identified in the 2011 EIR, therefore Mitigation Measures TRANS-1c, TRANS-3d, TRANS-5e, TRANS-7e, and TRANS-7f are no longer applicable to the Revised Project. Please refer to Appendix D for additional improvement recommendations at the Harrison Street/20th Street/Kaiser Center Access Road intersection.

- Mitigation Measures TRANS-1d (project impact, Phase I and II), TRANS-5f (near-term impact, Phase I and II), and TRANS-7g (cumulative impact, Phase I and II) apply to the Oak Street/5th Street/I-880 Southbound On-Ramp intersection. These mitigation measures would optimize the traffic signal timings at the intersection and coordinate the signal timing changes with adjacent intersections that are in the same signal coordination group. These improvements are not included in the Citywide TIF Program. This intersection is within Caltrans jurisdiction and was recently improved as part of the I-880 bridge widening project, which also widened the on-ramp, installed ramp metering controls, and optimized traffic signal timings at the intersection. These improvements supersede Mitigation Measures TRANS-1d, TRANS-5f, and TRANS-7g identified in the 2011 EIR.

- Mitigation Measures TRANS-1e (project impact, Phase I and II), TRANS-5g (near-term impact, Phase I and II), and TRANS-7h (cumulative impact, Phase I and II) apply to the Grand Avenue/El Embarcadero intersection. These mitigation measures would optimize the traffic signal timings at the intersection and coordinate the signal timing changes with adjacent intersections that are in the same signal coordination group. These improvements are not included in the Citywide TIF Program.

- Mitigation Measures TRANS-1f (project impact, Phase I and II), TRANS-5h (near-term impact, Phase I and II), and TRANS-7i (cumulative impact, Phase I and II) apply to the Grand Avenue/MacArthur Boulevard (Eastbound) intersection. These mitigation measures would optimize the traffic signal timings at the intersection and coordinate the signal timing changes with adjacent intersections that are in the same signal coordination group. These improvements are not included in the Citywide TIF Program.

- Mitigation Measures TRANS-2a (project impact, Phase I and II), TRANS-6a (near-term impact, Phase I and II), and TRANS-8b (cumulative impact, Phase I and II) apply to the eastbound Grand Avenue segment from Harrison Street to El Embarcadero. These mitigation measures would optimize the traffic signal timings at the intersections along Grand Avenue between Harrison Street and El Embarcadero and coordinate the signal timing changes with adjacent intersections that are in the same signal coordination group. These improvements are not included in the Citywide TIF Program. Pedestrian crossing and traffic signal optimization improvements were recently completed along Grand Avenue between Harrison Street and El Embarcadero. These recent improvements supersede Mitigation Measures TRANS-2a, TRANS-6a, and TRANS-8b identified in the 2011 EIR.

- Mitigation Measure TRANS-8a (cumulative impact, Phase I and II) applies to the I-880 segment from Oak Street to 5th Avenue. Mitigation Measure TRANS-8a determined that there are no feasible improvements to mitigate the 2011 Project's impact due to lack of available right-of-way. The same determination applies to the Revised Project.

- Mitigation Measure TRANS-9 applies to the loading dock operations proposed by the 2011 Project. This mitigation measure would prohibit delivery and service vehicles from accessing the loading docks during the AM and PM peak periods. In addition, the section of the Kaiser Center Access Road between Harrison Street/20th Street and the parking garage driveway should be restricted to delivery and service vehicles only during weekday off-peak periods. The Kaiser Center Access Road approach at the Harrison Street/20th Street intersection should be separated off by bollards or other removable barriers to prevent passenger vehicles from crossing the site during weekday off-peak periods. Site management staff should also be made available to direct loading maneuvers to improve the safety of pedestrians, bicyclists, and drivers during deliveries into and out of the loading berths. The Revised Project Master Plan I development scenario includes similar loading dock operations. The Kaiser Center Access Road loading berth is not proposed as part of Revised Project Master Plan II development scenario. Although Mitigation Measure TRANS-9 is not required for the Revised Project, the Revised Project applicant should continue to coordinate with City of Oakland staff to ensure that loading operations are adequate.
- Mitigation Measure TRANS-10 applies to the vehicular site access out of the existing garage exit on 21st Street (just east of Kaiser Plaza) which may be hazardous to pedestrians on the adjacent sidewalk. This mitigation measure would re-design the East Exist of the Kaiser Center Garage on 21st Street to allow for adequate sight distance between drivers and pedestrians. The Project Applicant shall also install audible and visible warning devices such as bells and lights to alert pedestrians, and a speed hump to force drivers exiting the garage to slow down and be more alert. Please refer to Appendix D for the recommended site access improvements at the 21st Street (just east of Kaiser Plaza) garage driveway.

As stated, Mitigation Measures TRANS-1d, TRANS-1e, TRANS-1f, TRANS-2a, TRANS-5f, TRANS-5g, TRANS-5h, TRANS-6a, TRANS-7g, TRANS-7h, TRANS-7i, TRANS-8b, TRANS-9, and TRANS-10 are no longer applicable as they are no longer required mitigations under CEQA. Nonetheless, recommendations to continue to coordinate with the City to implement the signal timing adjustments and improve site access that are included below.

Revised Project Recommended Improvement Measure TRANS-A: Revised Project applicant should coordinate with City of Oakland staff to implement improvements at the Harrison Street/20th Street/Kaiser Center Access Road intersection planned as part of the upcoming 20th Street Complete Streets project. The planned improvements include:

- Eliminating the channelized right-turn lane and re-aligning the Kaiser Center Access Road approach to allow left-turn access out from Kaiser Center Road
- Crosswalk enhancements with directional curb ramps
- Curb extensions at the southwest corner of the intersection
- Traffic signal equipment upgrades, including video detection, signal phasing, and timing optimization
- Leading pedestrian interval traffic signal phasing

The City of Oakland will implement the 20th Street Complete Streets project improvements within the public right-or-way; the Revised Project applicant should be responsible for implementing improvements proposed by the 20th Street Complete Streets project on the Kaiser Center property. The improvements include but are not limited to eliminating the

channelized right-turn lane along the Kaiser Center Access Road approach and widening the sidewalk at the northwest corner of the intersection (*see Recommendation 1 in Appendix D*).

Revised Project Recommended Improvement Measure TRANS-B: Revised Project applicant should coordinate with City of Oakland staff to ensure that the Revised Project provides adequate site access for passenger vehicles, delivery trucks, pedestrians, and bicyclist through implementation of previously identified Mitigation Measures TRANS-9 and TRANS-10 (*see Recommendation 2 in Appendix D*).

Revised Project Recommended Improvement Measure TRANS-C: Revised Project applicant should coordinate with City of Oakland staff to implement the traffic signal timing adjustments previously identified in Mitigation Measures TRANS-1e (Grand Avenue/El Embarcadero intersection) and TRANS-1f (Grand Avenue/MacArthur Boulevard Eastbound intersection) of the 2011 EIR.

7.13.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR, implementation of the Revised Project would not increase the severity of significant impacts identified in the 2011 EIR, nor would it result in new significant impacts related to transportation and circulation that were not identified in the 2011 EIR, as summarized below.

The Revised Project's potential impacts related to pedestrian, bicycle, transit, emergency access, and design and incompatible use considerations would be less than significant and thus consistent with that identified in the 2011 EIR. The Revised Project would not cause any significant impacts based on VMT, nor would it induce additional automobile travel. The Revised Project would not result in any other transportation related significant impacts.

Further, implementation of **SCA TRANS-1**, **Construction Activity in the Public Right-of-Way**; **SCA TRANS-2**, **Bicycle Parking**; **SCA TRANS-3**, **Transportation Improvements**; **SCA TRANS-4**, **Transportation and Parking Demand Management**; **SCA TRANS-5, Transportation Impact Fee**; and **SCA TRANS-6**, **Plug-In Electric Vehicle (PEV) Charging Infrastructure** would be applicable to the Revised Project and would ensure that transportation and circulation-related impacts associated with the Revised Project would be less than significant (see Attachment A). Overall, with implementation of applicable SCAs, the Revised Project would not result in new or more severe significant impacts related to transportation and circulation than those already analyzed and disclosed in the 2011 EIR.

While not required under the City's thresholds of significance, a trip generation analysis, a site plan review, and a collision analysis were provided for informational purposes. The analysis and recommendations that could improve multi-modal access, circulation, and safety are described in Appendix D.

7.14 Utilities and Service Systems

Would the project:	Equal or Less Severity of Impact Previously Identified in Previous EIR	Substantial Increase in Severity of Previously Identified Significant Impact in Previous EIR	New Significant Impact
a. Exceed wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board; Require or result in construction of new storm water drainage facilities or expansion of existing facilities, construction of which could cause significant environmental effects; 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;	☒	☐	☐
b. 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;	☒	☐	☐
c. 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; Violate applicable federal, state, and local statutes and regulations related to solid waste;	☒	☐	☐
d. Violate applicable federal, state and local statutes and regulations relating to energy standards; or 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.	☒	☐	☐

7.14.1 2011 EIR Findings

The 2011 EIR found less-than-significant impacts related to water, wastewater, or stormwater facilities, solid waste, and energy finding no mitigation measures were warranted with adherence to certain City of Oakland SCAs. The 2011 EIR determined that, with implementation of the applicable City of Oakland SCAs, the capacity of existing service systems would meet increased service demand of development analyzed for the 2011 Project; wastewater demand would not exceed wastewater treatment requirements or capacity; surface water runoff would not exceed the

capacity of the storm drain system; water demand would not exceed available water supplies; and solid waste generated would not exceed landfill capacity. Additionally, the 2011 EIR found less less-than-significant impacts related to energy, and no mitigation was required.

7.14.2 Project Analysis

7.14.2.1 Water, Wastewater, and Stormwater (Criteria 14a and 14b)

As discussed in Section 7.11 Population and Housing, above, given that the Revised Project represents only a marginal increase in population captured by the ABAG population projections, the Revised Project is not anticipated to exceed water supplies available to serve the Revised Project from existing entitlements and resources, and require or result in the expansion or construction of water facilities that would cause significant environmental effects.

The Revised Project may require specific on-site upgrades or extensions of utility infrastructure to serve the proposed new buildings. For example, upon coordination with utility providers such as East Bay Municipal Utility District, installation or upgrading of sanitary sewer lines, water supply pipelines, and/or water mains that currently serve the existing Webster and 20th Street Malls located on the project site may be warranted to serve the increased utility demands of the Revised Project.

Development of the Revised Project would increase sewer demand; however, implementation of **SCA UTIL-5**, **Sanitary Sewer System**, and **SCA UTIL-6**, **Storm Drain System**, requiring stormwater control after construction would address any potential impacts on stormwater treatment and sanitary sewer as a result of the Revised Project. Implementation of **SCA UTIL-2**, **Underground Utilities** would ensure that utility infrastructure is placed underground, improving service reliability, creating greater public safety, and enhancing aesthetics. In addition, **SCA HYD-1**, **Erosion and Sedimentation Control Plan for Construction**; **SCA HYD-2**, **State Construction General Permit**; and **SCA HYD-3**, **NPDES C.3 Stormwater Requirements for Regulated Projects**, would ensure that stormwater would be controlled during and after construction. The Revised Project would also require minimal amounts of water for landscaping in the new and replacement rooftop garden areas and would be required to implement **SCA UTIL-8**, **Water Efficient Landscape Ordinance**. **SCA UTIL-7**, **Recycled Water**, would ensure that recycled water is considered in the development of the Revised Project to satisfy the landscaping water demand. Therefore, the Revised Project would result in a less-than-significant impact on water and sewer services and, with the implementation of SCAs requiring stormwater control during and after construction, the impact on water and sewer services would remain less than significant.

7.14.2.2 Solid Waste Services (Criterion 14c)

The Project Applicant would be required to comply with the City's construction and demolition debris recycling ordinance (Municipal Code Chapter 15.34), which requires submittal of a plan to divert at least 50 percent of the construction waste generated by the Revised Project from landfill disposal. The Project Applicant would also be required to comply with the City of Oakland Recycling Space Allocation Ordinance (Planning Code Chapter 17.118) to ensure the provision of adequate, accessible, and convenient locations for the collection and storage of recyclable materials.

The Revised Project would also comply with City of Oakland SCAs pertaining to waste reduction and recycling. Specifically, implementation of **SCA UTIL-1**, **Construction and Demolition Waste Reduction and Recycling**, would ensure that solid waste during construction is minimized. Also, **SCA UTIL-3**, **Recycling Collection and Storage Space**, would ensure that operational solid waste is reduced. Thus, development of the Revised Project would not impede the ability of the City to meet the waste diversion requirements or cause the City to violate other applicable federal, state, and local statutes and regulations related to solid waste. Therefore, the impacts associated with solid waste services and/or landfill capacity as a result of the Revised Project would remain less than significant.

7.14.2.3 Energy (Criterion 14d)

The Revised Project would result in less-than-significant impacts related to energy standards and use, and would comply with the standards of the applicable Title 24 of the California Code of Regulations and the CALGreen, included in Title 24, Part 11. In addition, **SCA UTIL-4**, **Green Building Requirements**, pertaining to compliance with the green building ordinance, requires construction projects to incorporate energy-conserving design measures, which would ensure the Revised Project's impacts on energy would remain less than significant.

7.14.2.4 Consistency with the 2011 EIR

The 2011 EIR found that the 2011 Project would not result in significant impacts related to utilities and service systems with the implementation of applicable City of Oakland SCAs. As discussed in Sections 7.14.2.1 through 7.14.2.3, the Revised Project would adhere to City of Oakland SCAs and therefore would have a less-than-significant impact with respect to utilities and service systems, as identified in the 2011 EIR. Therefore, the Revised Project would not result in any new or more severe significant impacts related to utilities and service systems than those identified in the 2011 EIR.

7.14.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2011 EIR implementation of the Revised Project would not substantially increase the severity of significant impacts identified in the 2011 EIR, nor would it result in new significant impacts related to utilities and service systems that were not identified in the 2011 EIR. The 2011 EIR did not identify any mitigation measures related to utilities and service systems, and none would be required for the Revised Project. Implementation of **SCA UTIL-1, Construction and Demolition Waste Reduction and Recycling; SCA UTIL-2**, **Underground Utilities**; **SCA UTIL-3**, **Recycling Collection and Storage Space**; **SCA UTIL-4**, **Green Building Requirements**; **SCA UTIL-5**, **Sanitary Sewer System**; **SCA UTIL-6, Storm Drain System**; **SCA UTIL-7**, **Recycled Water**; **SCA UTIL-8**, **Water Efficient Landscape Ordinance**; **SCA HYD-1**, **Erosion and Sedimentation Control Plan for Construction**; **SCA HYD-2, State Construction General Permit**; and **SCA HYD-3**, **NPDES C.3 Stormwater Requirements for Regulated Projects** (see Attachment A), as well as compliance with Title 24 and CALGreen requirements, would ensure that impacts to sewer capacity, stormwater drainage facilities, solid waste services, and energy would be less than significant.

8. References

(All references cited below are available at the Oakland Bureau of Planning, Agency, 250 Frank Ogawa Plaza, Suite 3330, Oakland, California, unless specified otherwise.)

8.1 Kaiser Center Office Project EIR

City of Oakland, Draft EIR, August 2010.

City of Oakland, Final EIR, April 2011.

8.2 General Plan Land Use and Transportation Element

City of Oakland, 1998 LUTE Draft EIR, October 1997.

City of Oakland, 1998 LUTE Final EIR, February 1998.

City of Oakland, 2007. Land Use and Transportation Element of the Oakland General Plan, March 24, 1998, amended to June 21, 2007.

8.3 Plan Bay Area

Metropolitan Transportation Commission and Association of Bay Area Governments, 2017. Plan Bay Area 2040, Strategy for a Sustainable Region. Adopted July 11, 2017.

8.4 Oakland Planning Code

City of Oakland, 2017. City of Oakland Planning Code. CEDA: Planning and Zoning. http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak061640.pdf, accessed October 9, 2018.

9. Attachments

A. Standard Conditions of Approval and Mitigation Monitoring and Reporting Program
B. Criteria for Use of Addendum, Per CEQA Guidelines Sections 15162, 15164, and 15168

10. Appendices

A. Shadow Analysis and Graphics
B. Wind Assessment
C. Construction Health Risk Assessment
D. Non-CEQA Transportation Analysis/Transportation Tables

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ATTACHMENT A

Standard Conditions of Approval and Mitigation Monitoring and Reporting Program

This Standard Conditions of Approval (SCAs) and Mitigation Monitoring and Reporting Program (SCAMMRP) is based on the CEQA Checklist prepared for the Revised Kaiser Center Office Project (Revised Project).

This SCAMMRP is in compliance with Section 15097 of the CEQA Guidelines, which requires that the Lead Agency "adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects." The SCAMMRP lists mitigation measures recommended in the Kaiser Center Office Project EIR (2011 EIR) that apply to the Revised Project. The SCAMMRP also lists other SCAs that apply to the Revised Project, most of which were identified in the 2011 EIR and some of which have been subsequently updated or otherwise modified by the City. Specifically, on November 5, 2018, the City of Oakland released a revised set of all City of Oakland SCAs, which largely still include SCAs adopted by the City in 2008, along with supplemental, modified, and new SCAs. SCAs are measures that would minimize potential adverse effects that could result from implementation of the Revised Project, to ensure the conditions are implemented and monitored. The revised set of the City of Oakland SCAs includes new, modified, and reorganized SCAs; however, none of the revisions diminish or negate the ability of the SCAs considered "environmental protection measures" to minimize potential adverse environmental effects. As such, the SCAs identified in the SCAMMRP reflect the current SCAs only. Although the SCA numbers listed below may not correspond to the SCA numbers in the 2011 EIR, all of the environmental topics and potential effects addressed by the SCAs in the 2011 EIR are included in this SCAMMRP (as applicable to the Revised Project). This SCAMMRP also identifies the mitigation monitoring requirements for each mitigation measure and SCA.

To the extent that there is any inconsistency between any mitigation measures and/or SCAs, the more restrictive conditions shall govern; to the extent any mitigation measure and/or SCA identified in the CEQA Checklist were inadvertently omitted, they are automatically incorporated herein by reference.

- The first column of the SCAMMRP table identifies the mitigation measure or SCA applicable to that topic in the CEQA Checklist. While a mitigation measure or SCA can apply to more than one topic, it is listed in its entirety only under its primary topic (as indicated in the mitigation or SCA designator). The SCAs are numbered to specifically apply to the Revised

Project and this CEQA Checklist; however, the SCAs as presented in the City's *Standard Conditions of Approval and Uniformly Applied Development Standards* document[24] are included in parenthesis for cross-reference purposes.

- The second column identifies the monitoring schedule or timing applicable to the Revised Project.
- The third column names the party responsible for monitoring the required action for the Revised Project.

The Project Applicant is responsible for compliance with any recommendations identified in City-approved technical reports, all applicable mitigation measures adopted, and with all SCAs set forth herein at its sole cost and expense, unless otherwise expressly provided in a specific mitigation measure or condition of approval, and subject to the review and approval of the City of Oakland. Overall monitoring and compliance with the mitigation measures will be the responsibility of the Bureau or Planning, Zoning Inspections Division. Prior to the issuance of a demolition, grading, and/or construction permit, the Project Applicant shall pay the applicable mitigation and monitoring fee to the City in accordance with the City's Master Fee Schedule.

[24] Dated November 5, 2018, as amended.

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
General		
SCA GEN-1 (Standard Condition Approval 15) *Regulatory Permits and Authorizations from Other Agencies* Requirement: The project applicant shall obtain all necessary regulatory permits and authorizations from applicable resource/regulatory agencies including, but not limited to, the Regional Water Quality Control Board, Bay Area Air Quality Management District, Bay Conservation and Development Commission, California Department of Fish and Wildlife, U. S. Fish and Wildlife Service, and Army Corps of Engineers and shall comply with all requirements and conditions of the permits/authorizations. The project applicant shall submit evidence of the approved permits/authorizations to the City, along with evidence demonstrating compliance with any regulatory permit/authorization conditions of approval.	Prior to activity requiring permit/authorization from regulatory agency.	City of Oakland Bureau of Planning and applicable regulatory agency with jurisdiction
Aesthetics, Shadow, and Wind		
Mitigation Measure AES-1: At the time of submittal of the Final Development Plan, the Applicant shall develop and, at the time of construction pursuant to the Final Development Plan, the Applicant shall implement a wind reduction plan that reduces wind hazards at the street level and roof garden to the maximum feasible extent, subject to review and approval by the City. The wind reduction plan shall include the results of wind tunnel testing for hazardous wind speeds of the Project conducted on the Project consistent with the Final Development Plan. The wind reduction plan shall include, but not be limited to, structural and landscape design features that could be included in the tower design and/or installed on the roof garden that would either re-direct winds away from the roof garden or reduce wind speeds there. Examples of these measures include tree plantings, dense bamboo planting, arbors, canopies and lattice fencing. The Applicant shall develop the wind reduction plan in coordination with the required landscape plan for the roof garden and be submitted to the City's Landmarks Preservation Advisory Board (LPAB) for review and recommendation to the Planning Commission, consistent with Mitigation Measure CUL -2.1 Historically-Sensitive Roof Garden Design. The LPAB will make advisory recommendations to the Planning Commission for its approval as part of its approval of the Final Development Plan, and the Applicant shall implement the approved wind reduction plan. However, implementation of the measures cannot determine if these design features will be effective in reducing this impact to a less than significant impact until they are in place.	The Applicant shall submit the wind reduction plan at the time of submittal of the Final Development Plan and prior to the start of construction. The Applicant shall implement the wind reduction plan at the time of construction.	City Planning Staff, based on any LPAB recommendations to, and the City Planning Commission's approval of, the wind reduction plan as part of its approval of the Final Development Plan. City of Oakland Bureau of Planning and Bureau of Building
SCA AES-1 (Standard Condition of Approval 16) Trash and Blight Removal The project applicant and his/her successors shall maintain the property free of blight, as defined in chapter 8.24 of the Oakland Municipal Code. For nonresidential and multi-family residential projects, the project applicant shall install and maintain trash receptacles near public entryways as needed to provide sufficient capacity for building users.	Ongoing.	City of Oakland Bureau of Building
SCA AES-2 (Standard Condition of Approval 17) *Graffiti Control* a. During construction and operation of the project, the project applicant shall incorporate best management practices reasonably related to the control of graffiti and/or the mitigation of the impacts of graffiti. Such best management practices may include, without limitation: i. Installation and maintenance of landscaping to discourage defacement of and/or protect likely graffiti-attracting surfaces. ii. Installation and maintenance of lighting to protect likely graffiti-attracting surfaces. iii. Use of paint with anti-graffiti coating.	Ongoing.	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Aesthetics, Shadow, and Wind (cont.)		
iv. Incorporation of architectural or design elements or features to discourage graffiti defacement in accordance with the principles of Crime Prevention Through Environmental Design (CPTED). v. Other practices approved by the City to deter, protect, or reduce the potential for graffiti defacement. b. The project applicant shall remove graffiti by appropriate means within seventy-two (72) hours. Appropriate means include the following: i. Removal through scrubbing, washing, sanding, and/or scraping (or similar method) without damaging the surface and without discharging wash water or cleaning detergents into the City storm drain system. ii. Covering with new paint to match the color of the surrounding surface. iii. Replacing with new surfacing (with City permits if required).		
SCA AES-3 (Standard Condition of Approval 18) *Landscape Plan* ***a. Landscape Plan Required*** The project applicant shall submit a final Landscape Plan for City review and approval that is consistent with the approved Landscape Plan. The Landscape Plan shall be included with the set of drawings submitted for the construction-related permit and shall comply with the landscape requirements of chapter 17.124 of the Planning Code. Proposed plants shall be predominantly drought-tolerant. Specification of any street trees shall comply with the Master Street Tree List and Tree Planting Guidelines (which can be viewed at http://www2.oaklandnet.com/oakca1/groups/pwa/documents/report/oak042662.pdf and http://www2.oaklandnet.com/oakca1/groups/pwa/documents/form/oak025595.pdf, respectively), and with any applicable streetscape plan. ***b. Landscape Installation*** The project applicant shall implement the approved Landscape Plan unless a bond, cash deposit, letter of credit, or other equivalent instrument acceptable to the Director of City Planning, is provided. The financial instrument shall equal the greater of $2,500 or the estimated cost of implementing the Landscape Plan based on a licensed contractor's bid. ***c. Landscape Maintenance*** All required planting shall be permanently maintained in good growing condition and, whenever necessary, replaced with new plant materials to ensure continued compliance with applicable landscaping requirements. The property owner shall be responsible for maintaining planting in adjacent public rights-of-way. All required fences, walls, and irrigation systems shall be permanently maintained in good condition and, whenever necessary, repaired or replaced.	a. Prior to approval of construction-related permit. b. Prior to building permit final. c. Ongoing	a. City of Oakland Bureau of Planning b. City of Oakland Bureau of Building c. City of Oakland Bureau of Building
SCA AES-4 (Standard Condition of Approval 19): *Lighting* Proposed new exterior lighting fixtures shall be adequately shielded to a point below the light bulb and reflector to prevent unnecessary glare onto adjacent properties.	Prior to building permit final.	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Aesthetics, Shadow, and Wind (cont.)		
SCA AES-5 (Standard Condition of Approval 20) *Public Art for Private Development* Requirement: The project is subject to the City's Public Art Requirements for Private Development, adopted by Ordinance No. 13275 C.M.S. ("Ordinance"). The public art contribution requirements are equivalent to one-half percent (0.5%) for the "residential" building development costs, and one percent (1.0%) for the "non-residential" building development costs. The contribution requirement can be met through: 1) the installation of freely accessible art at the site; 2) the installation of freely accessible art within one-quarter mile of the site; or 3) satisfaction of alternative compliance methods described in the Ordinance, including, but not limited to, payment of an in-lieu fee contribution. The applicant shall provide proof of full payment of the in-lieu contribution and/or provide plans, for review and approval by the Planning Director, showing the installation or improvements required by the Ordinance prior to issuance of a building permit. Proof of installation of artwork, or other alternative requirement, is required prior to the City's issuance of a final certificate of occupancy for each phase of a project unless a separate, legal binding instrument is executed ensuring compliance within a timely manner subject to City approval.	Payment of in-lieu fees and/or plans showing fulfillment of public art requirement – Prior to Issuance of Building permit Installation of art/cultural space – Prior to Issuance of a Certificate of Occupancy.	City of Oakland Bureau of Planning and Bureau of Building
Also **SCA BIO-1, Bird Collision Reduction Measures.** See *Biological Resources*, below.		
Also **SCA REC-1, Access to Parks and Open Space**. See *Recreation*, below.		
Air Quality		
SCA AIR-1 (Standard Condition of Approval 21) ***Dust Controls*** **–** *Construction-Related* The Project applicant shall implement all of the following applicable dust control measures during construction of the Project: a. Water all exposed surfaces of active construction areas at least twice daily. 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 feasible. 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. Limit vehicle speeds on unpaved roads to 15 miles per hour. e. All demolition activities (if any) shall be suspended when average wind speeds exceed 20 mph. f. All trucks and equipment, including tires, shall be washed off prior to leaving the site. g. 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. h. Apply and maintain vegetative ground cover (e.g., hydroseed) or non-toxic soil stabilizers to disturbed areas of soil that will be inactive for more than one month. Enclose, cover, water twice daily, or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).	During construction.	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Air Quality (cont.)		
i. 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. j. When working at a site, install appropriate wind breaks (e.g., trees, fences) on the windward side(s) of the site, to minimize wind-blown dust. Windbreaks must have a maximum 50 percent air porosity. k. Post a publicly visible large on-site sign that includes the contact name and phone number for the project complaint manager responsible for responding to dust complaints and the telephone numbers of the City's Code Enforcement unit and the Bay Area Air Quality Management District. When contacted, the project complaint manager shall respond and take corrective action within 48 hours. **l.** 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.		
SCA AIR-2 (Standard Condition of Approval 22) *Criteria Air Pollutant Controls – Construction Related* Requirement: The project applicant shall implement all of the following applicable basic control measures for criteria air pollutants during construction of the project as applicable: a. Idling times on all diesel-fueled commercial vehicles over 10,000 lbs. shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two 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. b. Idling times on all diesel-fueled off-road vehicles over 25 horsepower shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes and fleet operators must develop a written policy as required by Title 23, Section 2449, of the California Code of Regulations ("California Air Resources Board Off-Road Diesel Regulations"). c. 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. Equipment check documentation should be kept at the construction site and be available for review by the City and the Bay Area Air Quality District as needed. d. Portable equipment shall be powered by grid electricity if available. If electricity is not available, propane or natural gas generators shall be used if feasible. Diesel engines shall only be used if grid electricity is not available and use propane or natural gas generators cannot meet the electrical demand. e. Low VOC (i.e., ROG) coatings shall be used that comply with BAAQMD Regulation 8, Rule 3: Architectural Coatings. f. All equipment to be used on the construction site and subject to the requirements of Title 13, Section 2449, of the California Code of Regulations ("California Air Resources Board Off-Road Diesel Regulations") and upon request by the City, the project applicant shall provide written documentation that fleet requirements have been met.	During construction.	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Air Quality (cont.)		
SCA AIR-3 (Standard Condition of Approval 23) *Diesel Particulate Matter Controls-Construction Related* ***a. Diesel Particulate Matter Reduction Measures*** Requirement: The project applicant shall implement appropriate measures during construction to reduce potential health risks to sensitive receptors due to exposure to diesel particulate matter (DPM) from construction emissions. The project applicant shall choose one of the following methods: i. The project applicant shall retain a qualified air quality consultant to prepare a Health Risk Assessment (HRA) in accordance with current guidance from the California Air Resources Board (CARB) and Office of Environmental Health and Hazard Assessment to determine the health risk to sensitive receptors exposed to DPM from project construction emissions. The HRA shall be submitted to the City (and the Air District if specifically requested) for review and approval. If the HRA concludes that the health risk is at or below acceptable levels, then DPM reduction measures are not required. If the HRA concludes that the health risk exceeds acceptable levels, DPM reduction measures shall be identified to reduce the health risk to acceptable levels as set forth under subsection b below. Identified DPM reduction measures shall be submitted to the City for review and approval prior to the issuance of building permits and the approved DPM reduction measures shall be implemented during construction. - or - ii. All off-road diesel equipment shall be equipped with the most effective Verified Diesel Emission Control Strategies (VDECS) available for the engine type (Tier 4 engines automatically meet this requirement) as certified by CARB. The equipment shall be properly maintained and tuned in accordance with manufacturer specifications. This shall be verified through an equipment inventory submittal and Certification Statement that the Contractor agrees to compliance and acknowledges that a significant violation of this requirement shall constitute a material breach of contract. ***b. Construction Emissions Minimization Plan (if required by a above)*** Requirement: The project applicant shall prepare a Construction Emissions Minimization Plan (Emissions Plan) for all identified DPM reduction measures (if any). The Emissions Plan shall be submitted to the City (and the Bay Area Air Quality District if specifically requested) for review and approval prior to the issuance of building permits. The Emissions Plan shall include the following: i. An equipment inventory summarizing the type of off-road equipment required for each phase of construction, including the equipment manufacturer, equipment identification number, engine model year, engine certification (tier rating), horsepower, and engine serial number. For all VDECS, the equipment inventory shall also include the technology type, serial number, make, model, manufacturer, CARB verification number level, and installation date. ii. A Certification Statement that the Contractor agrees to comply fully with the Emissions Plan and acknowledges that a significant violation of the Emissions Plan shall constitute a material breach of contract.	a. Prior to issuance of a construction related permit (i), during construction (ii). b. Prior to issuance of a construction related permit.	a. City of Oakland Bureau of Planning and Bureau of Building. b. City of Oakland Bureau of Planning and Bureau of Building.

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Air Quality (cont.)		
SCA AIR-4 (Standard Condition of Approval 24) *Exposure to Air Pollution (Toxic Air Contaminants)* ***a. Health Risk Reduction Measures*** Requirement: The project applicant shall incorporate appropriate measures into the project design in order to reduce the potential health risk due to exposure to toxic air contaminants. The project applicant shall choose one of the following methods: i. The project applicant shall retain a qualified air quality consultant to prepare a Health Risk Assessment (HRA) in accordance with California Air Resources Board (CARB) and Office of Environmental Health and Hazard Assessment requirements to determine the health risk of exposure of project residents/occupants/users to air pollutants. The HRA shall be submitted to the City for review and approval. If the HRA concludes that the health risk is at or below acceptable levels, then health risk reduction measures are not required. If the HRA concludes that the health risk exceeds acceptable levels, health risk reduction measures shall be identified to reduce the health risk to acceptable levels. Identified risk reduction measures shall be submitted to the City for review and approval and be included on the project drawings submitted for the construction-related permit or on other documentation submitted to the City. - or - ii. The project applicant shall incorporate the following health risk reduction measures into the project. These features shall be submitted to the City for review and approval and be included on the project drawings submitted for the construction-related permit or on other documentation submitted to the City: • Installation of air filtration to reduce cancer risks and Particulate Matter (PM) exposure for residents and other sensitive populations in the project that are in close proximity to sources of air pollution. Air filter devices shall be rated MERV-13 [insert MERV-16 for projects located in the West Oakland Specific Plan area] or higher. As part of implementing this measure, an ongoing maintenance plan for the building's HVAC air filtration system shall be required. • Where appropriate, install passive electrostatic filtering systems, especially those with low air velocities (i.e., 1 mph). • Phasing of residential developments when proposed within 500 feet of freeways such that homes nearest the freeway are built last, if feasible. • The project shall be designed to locate sensitive receptors as far away as feasible from the source(s) of air pollution. Operable windows, balconies, and building air intakes shall be located as far away from these sources as feasible. If near a distribution center, residents shall be located as far away as feasible from a loading dock or where trucks concentrate to deliver goods. • Sensitive receptors shall be located on the upper floors of buildings, if feasible. Planting trees and/or vegetation between sensitive receptors and pollution source, if feasible. Trees that are best suited to trapping PM shall be planted, including one or more of the following: Pine (*Pinus nigra* var. *maritima*), Cypress (*X Cupressocyparis leylandii*), Hybrid poplar (*Populus deltoids X trichocarpa*), and Redwood (*Sequoia sempervirens*). • Sensitive receptors shall be located as far away from truck activity areas, such as loading docks and delivery areas, as feasible.	a. Prior to issuance of a construction related permit. b. Ongoing.	a. City of Oakland Bureau of Planning and Bureau of Building b. City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Air Quality (cont.)		
• Existing and new diesel generators shall meet CARB's Tier 4 emission standards, if feasible. • Emissions from diesel trucks shall be reduced through implementing the following measures, if feasible: – Installing electrical hook-ups for diesel trucks at loading docks. – Requiring trucks to use Transportation Refrigeration Units (TRU) that meet Tier 4 emission standards. – Requiring truck-intensive projects to use advanced exhaust technology (e.g., hybrid) or alternative fuels. – Prohibiting trucks from idling for more than two minutes. – Establishing truck routes to avoid sensitive receptors in the project. A truck route program, along with truck calming, parking, and delivery restrictions, shall be implemented. ***b. Maintenance of Health Risk Reduction Measures*** Requirement: The project applicant shall maintain, repair, and/or replace installed health risk reduction measures, including but not limited to the HVAC system (if applicable), on an ongoing and as-needed basis. Prior to occupancy, the project applicant shall prepare and then distribute to the building manager/operator an operation and maintenance manual for the HVAC system and filter including the maintenance and replacement schedule for the filter.		
SCA AIR-5 (Standard Condition of Approval 25) *Stationary Sources of Air Pollution (Toxic Air Contaminants)* Requirement: The project applicant shall incorporate appropriate measures into the project design in order to reduce the potential health risk due to on-site stationary sources of toxic air contaminants. The project applicant shall choose one of the following methods: ***a.*** The project applicant shall retain a qualified air quality consultant to prepare a Health Risk Assessment (HRA) in accordance with California Air Resources Board (CARB) and Office of Environmental Health and Hazard Assessment requirements to determine the health risk associated with proposed stationary sources of pollution in the project. The HRA shall be submitted to the City for review and approval. If the HRA concludes that the health risk is at or below acceptable levels, then health risk reduction measures are not required. If the HRA concludes the health risk exceeds acceptable levels, health risk reduction measures shall be identified to reduce the health risk to acceptable levels. Identified risk reduction measures shall be submitted to the City for review and approval and be included on the project drawings submitted for the construction-related permit or on other documentation submitted to the City. - or - ***b.*** The project applicant shall incorporate the following health risk reduction measures into the project. These features shall be submitted to the City for review and approval and be included on the project drawings submitted for the construction-related permit or on other documentation submitted to the City: i. Installation of non-diesel fueled generators, if feasible, or; ii. Installation of diesel generators with an EPA-certified Tier 4 engine or engines that are retrofitted with a CARB Level 3 Verified Diesel Emissions Control Strategy, if feasible.	Prior to approval of construction-related permit.	City of Oakland Bureau of Planning and Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Air Quality (cont.)		
SCA AIR-6 (Standard Condition of Approval 27) *Asbestos in Structures* Requirement: The project applicant shall comply with all applicable laws and regulations regarding demolition and renovation of Asbestos Containing Materials (ACM), including but not limited to California Code of Regulations, Title 8; California Business and Professions Code, Division 3; California Health and Safety Code sections 25915-25919.7; and Bay Area Air Quality Management District, Regulation 11, Rule 2, as may be amended. Evidence of compliance shall be submitted to the City upon request.	Prior to approval of construction-related permit	Applicable regulatory agency with jurisdiction
Biological Resources		
SCA BIO-1 (Standard Condition of Approval 29): *Bird Collision Reduction Measures* The project applicant shall submit a Bird Collision Reduction Plan for City review and approval to reduce potential bird collisions to the maximum feasible extent. The Plan shall include all of the following mandatory measures, as well as applicable and specific project Best Management Practice (BMP) strategies to reduce bird strike impacts to the maximum feasible extent. The project applicant shall implement the approved Plan. Mandatory measures include all of the following: i. For large buildings subject to federal aviation safety regulations, install minimum intensity white strobe lighting with three second flash instead of solid red or rotating lights. ii. Minimize the number of and co-locate rooftop-antennas and other rooftop structures. iii. Monopole structures or antennas shall not include guy wires. iv. Avoid the use of mirrors in landscape design. v. Avoid placement of bird-friendly attractants (i.e., landscaped areas, vegetated roofs, water features) near glass unless shielded by architectural features taller than the attractant that incorporate bird friendly treatments no more than two inches horizontally, four inches vertically, or both (the "two-by-four" rule), as explained below. vi. Apply bird-friendly glazing treatments to no less than 90 percent of all windows and glass between the ground and 60 feet above ground or to the height of existing adjacent landscape or the height of the proposed landscape. Examples of bird-friendly glazing treatments include the following: • Use opaque glass in window panes instead of reflective glass. • Uniformly cover the interior or exterior of clear glass surface with patterns (e.g., dots, stripes, decals, images, abstract patterns). Patterns can be etched, fritted, or on films and shall have a density of no more than two inches horizontally, four inches vertically, or both (the "two-by-four" rule). • Install paned glass with fenestration patterns with vertical and horizontal mullions no more than two inches horizontally, four inches vertically, or both (the "two-by-four" rule). • Install external screens over non-reflective glass (as close to the glass as possible) for birds to perceive windows as solid objects. • Install UV-pattern reflective glass, laminated glass with a patterned UV-reflective coating, or UV-absorbing and UV-reflecting film on the glass since most birds can see ultraviolet light, which is invisible to humans. • Install decorative grilles, screens, netting, or louvers, with openings no more than two inches horizontally, four inches vertically, or both (the "two-by-four" rule).	Prior to approval of construction-related permit	City of Oakland Bureau of Planning and Planning and Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Biological Resources (cont.)		
• Install awnings, overhangs, sunshades, or light shelves directly adjacent to clear glass which is recessed on all sides. • Install opaque window film or window film with a pattern/design which also adheres to the "two-by-four" rule for coverage. vii. Reduce light pollution. Examples include the following: • Extinguish night-time architectural illumination treatments during bird migration season (February 15 to May 15 and August 15 to November 30). • Install time switch control devices or occupancy sensors on non-emergency interior lights that can be programmed to turn off during non-work hours and between 11:00 p.m. and sunrise. • Reduce perimeter lighting whenever possible. • Install full cut-off, shielded, or directional lighting to minimize light spillage, glare, or light trespass. • Do not use beams of lights during the spring (February 15 to May 15) or fall (August 15 to November 30) migration. viii. Develop and implement a building operation and management manual that promotes bird safety. Example measures in the manual include the following: • Donation of discovered dead bird specimens to an authorized bird conservation organization or museums (e.g., UC Berkeley Museum of Vertebrate Zoology) to aid in species identification and to benefit scientific study, as per all federal, state and local laws. • Distribution of educational materials on bird-safe practices for the building occupants. Contact Golden Gate Audubon Society or American Bird Conservancy for materials. • Asking employees to turn off task lighting at their work stations and draw office blinds, shades, curtains, or other window coverings at end of work day. • Install interior blinds, shades, or other window coverings in windows above the ground floor visible from the exterior as part of the construction contract, lease agreement, or CC&Rs. • Schedule nightly maintenance during the day or to conclude before 11 p.m., if possible.		
SCA BIO-2 (Standard Condition of Approval 30): *Tree Removal During Bird Breeding Season* To the extent feasible, removal of any tree and/or other vegetation suitable for nesting of birds shall not occur during the bird breeding season of February 1 to August 15 (or during December 15 to August 15 for trees located in or near marsh, wetland, or aquatic habitats). If tree removal must occur during the bird breeding season, all trees to be removed 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 the start of work and shall be submitted to the City for review and approval. If the survey indicates the potential presence 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 California Department of Fish and Wildlife, 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.	Prior to removal of trees.	City of Oakland Bureau of Planning and Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Biological Resources (cont.)		
SCA BIO-3 (Standard Condition of Approval 27): *Tree Permit* ***a. Tree Permit Required*** Pursuant to the City's Tree Protection Ordinance (OMC chapter 12.36), the project applicant shall obtain a tree permit and abide by the conditions of that permit. ***b. Tree Protection During Construction*** Requirement: 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: i. 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 project's consulting arborist. 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. ii. 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, filling, 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 project's consulting arborist 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. iii. 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 project's consulting arborist 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 project's consulting arborist. 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. iv. 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. v. 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 Department and the project's consulting arborist shall make a recommendation to the City Tree Reviewer as to whether the damaged tree can be preserved. 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. vi. 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.	a. Prior to approval of construction-related permit b. During construction.	a. City of Oakland Public Works Department, Tree Division, and Bureau of Building b. City of Oakland Public Works Department, Tree Division, and Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Biological Resources (cont.)		
c. Tree Replacement Plantings Requirement: Replacement plantings shall be required for tree removals for the purposes of erosion control, groundwater replenishment, visual screening, wildlife habitat, and preventing excessive loss of shade, in accordance with the following criteria: i. 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. ii. Replacement tree species shall consist of Sequoia sempervirens (Coast Redwood), Quercus agrifolia (Coast Live Oak), Arbutus menziesii (Madrone), Aesculus californica (California Buckeye), Umbellularia californica (California Bay Laurel), or other tree species acceptable to the Tree Division. iii. Replacement trees shall be at least 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. iv. Minimum planting areas must be available on site as follows: • For Sequoia sempervirens, three hundred fifteen (315) square feet per tree; • For other species listed, seven hundred (700) square feet per tree. v. In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee in accordance with the City's Master Fee Schedule may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians. vi. The project applicant shall install the plantings and maintain the plantings until established. The Tree Reviewer of the Tree Division of the Public Works Department may require a landscape plan showing the replacement plantings and the method of irrigation. Any replacement plantings which fail to become established within one year of planting shall be replanted at the project applicant's expense.		
Also **SCA HYD-1, Erosion and Sedimentation Control Plan for Construction**. See *Hydrology and Water Quality*, below.		
Also **SCA HYD-2, State Construction General Permit**. See *Hydrology and Water Quality*, below.		
Also **SCA HYD-3 NPDES C.3 Stormwater Requirements for Regulated Projects.** See *Hydrology and Water Quality*, below.		
Cultural Resources		
Mitigation Measure CUL-1.1: The project applicant shall modify the design of the base of new structures to ensure, to the extent feasible, a historically and architecturally appropriate street level design and character that shall be differentiated from the old mall buildings and shall meet the appropriate design findings under Policy 3.5 of the existing Historic Preservation Element of the City's General Plan, and shall prepare a salvage program.	Applicant shall prepare and submit the final as part of submittal of the Final Development Plan for recommendation of approval by Landmarks Preservation Advisory Board.	City of Oakland Bureau of Planning and Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Cultural Resources (cont.)		
Mitigation Measure CUL-1.2: HABS/HALS Level Recordation. The project applicant shall complete a recordation of the Kaiser Center which meets the requirements of the National Park Service's Historic American Buildings Survey (HABS) and the Historic American Landscape Survey (HALS).	Applicant shall prepare and submit the final as part of submittal of the Final Development Plan for recommendation of approval by Landmarks Preservation Advisory Board.	City of Oakland Bureau of Planning and Bureau of Building
Mitigation Measure CUL-1.3: Financial Contributions to a historic resource related program such as the Façade Improvement Program or the Property Relocation Assistance Program. If Mitigation Measure CUL-1.1 is not satisfied, the project applicant shall make a financial contribution to the City of Oakland, which can be used to fund other historic preservation projects at the project site or in the immediate vicinity.	Concurrent with approval of the Final Development Plan.	City of Oakland Bureau of Planning and Bureau of Building
Mitigation Measure CUL-2.1: Historically-Sensitive Roof Garden Design. The project applicant shall ensure that a qualified Historic Landscape Architect under the Historic Preservation Professional Qualifications Standards familiar with landscape history and historic resources designs a roof garden addition that is differentiated from the old and compatible with the historic design to protect the integrity of the historic roof garden.	Applicant shall prepare and submit the final Project design as part of submittal of the Final Development Plan for recommendation of approval by Landmarks Preservation Advisory Board.	City of Oakland Bureau of Planning and Bureau of Building
Mitigation Measure CUL-2.2: Historically Sensitive Tower Design. The Proposed Project shall be compatible with, yet clearly differentiated from, the existing Kaiser Center Office Tower.	Applicant shall prepare and submit the final Project design as part of submittal of the Final Development Plan for recommendation of approval by Landmarks Preservation Advisory Board.	City of Oakland Bureau of Planning and Bureau of Building
Mitigation Measure CUL-2.3: Protection During Demolition and Construction. The Project applicant shall prepare a historic resources protection plan which describes how the resource (both building and landscape) will be protected from vibration, equipment, storage of materials, and dust resulting from demolition and construction activities.	Applicant shall prepare and submit the final Project design as part of submittal of the Final Development Plan for recommendation of approval by Landmarks Preservation Advisory Board.	City of Oakland Bureau of Planning and Bureau of Building
SCA CUL-1 (Standard Condition of Approval 33): *Archaeological and Paleontological Resources – Discovery During Construction* Requirement: Pursuant to CEQA Guidelines section 15064.5(f), in the event that any historic or prehistoric subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and the Project applicant shall notify the City and consult with a qualified archaeologist or paleontologist, as applicable, to assess the significance of the find. In the case of discovery of paleontological resources, the assessment shall be done in accordance with the Society of	During construction.	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Cultural Resources (cont.)		
Vertebrate Paleontology standards. If any find is determined to be significant, appropriate avoidance measures recommended by the consultant and approved by the City must be followed unless avoidance is determined unnecessary or infeasible by the City. Feasibility of avoidance shall be determined with consideration 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, excavation) shall be instituted. Work may proceed on other parts of the project site while measures for the cultural resources are implemented. In the event of data recovery of archaeological resources, the Project applicant shall submit an Archaeological Research Design and Treatment Plan (ARDTP) prepared by a qualified archaeologist for review and approval by the City. 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 practicable. 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. The Project applicant shall implement the ARDTP at his/her expense. In the event of excavation of paleontological resources, the Project applicant shall submit an excavation plan prepared by a qualified paleontologist to the City for review and approval. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and/or a report prepared by a qualified paleontologist, as appropriate, according to current professional standards and at the expense of the Project applicant.		
SCA CUL-2 (Standard Condition of Approval 34): *Archaeologically Sensitive Areas – Pre-Construction Measures* Requirement: The project applicant shall implement either Provision A (Intensive Pre-Construction Study) or Provision B (Construction ALERT Sheet) concerning archaeological resources. ***Provision A: Intensive Pre-Construction Study.*** The Project applicant shall retain a qualified archaeologist to conduct a site-specific, intensive archaeological resources study for review and approval by the City 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. At a minimum, the study shall include: a. Subsurface presence/absence studies of the project site. Field studies may include, but are not limited to, auguring and other common methods used to identify the presence of archaeological resources. b. A report disseminating the results of this research. c. Recommendations for any additional measures that could be necessary to mitigate any adverse impacts to recorded and/or inadvertently discovered cultural resources. 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 and prepare an ALERT sheet pursuant to Provision B below that details what could potentially be found at the project site. Archaeological monitoring would include briefing construction personnel about the type of artifacts that may be	Prior to approval of construction-related permit; during construction.	City of Oakland Bureau of Planning and Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Cultural Resources (cont.)		
present (as referenced in the ALERT sheet, required per Provision B below) and the procedures to follow if any artifacts 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, and preparing a report to document negative findings after construction is completed if no archaeological resources are discovered during construction. ***Provision B: Construction ALERT Sheet.*** The Project applicant shall prepare a construction "ALERT" sheet developed by a qualified archaeologist for review and approval by the City prior to soil-disturbing activities occurring on the project site. The ALERT sheet shall contain, at a minimum, 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 utility firms involved in soil- disturbing activities within the project site. The ALERT sheet shall state, in addition to the basic archaeological resource protection measures contained in other standard conditions of approval, all work must stop and the City's Environmental Review Officer contacted in the event of discovery of the following cultural materials: 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. 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. The ALERT sheet shall also be posted in a visible location at the project site.		
SCA CUL-3 (Standard Condition of Approval SCA 35): *Human Remains – Discovery During Construction* Requirement: Pursuant to CEQA Guidelines section 15064.5(e)(1), in the event that human skeletal remains are uncovered at the project site during construction activities, all work shall immediately halt and the Project applicant shall notify the City and the Alameda County Coroner. If the County Coroner determines that an investigation of the cause of death is required or that the remains are Native American, all work shall cease within 50 feet of the remains until appropriate arrangements are made. In the event 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 California Health and Safety Code. 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 and at the expense of the Project applicant.	During construction.	City of Oakland Bureau of Building
Also SCA NOI-7, **Vibration Impacts on Adjacent Historic Structures or Vibration-Sensitive Activities.** See *Noise*, below.		
Geology, Soils, and Geohazards		
SCA GEO-1 (Standard Condition of Approval 37): *Construction-Related Permit(s)* Requirement: The Project applicant shall obtain all required construction-related permits/approvals from the City. The Project shall comply with all standards, requirements and conditions contained in construction-related codes, including but not limited to the Oakland Building Code and the Oakland Grading Regulations, to ensure structural integrity and safe construction.	Prior to approval of construction-related permit.	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Geology, Soils, and Geohazards (cont.)		
SCA GEO-2 (Standard Condition of Approval 40): *Seismic Hazards Zone (Landslide/Liquefaction)* Requirement: The Project applicant shall submit a site-specific geotechnical report, consistent with California Geological Survey Special Publication 117 (as amended), prepared by a registered geotechnical engineer for City review and approval containing at a minimum a description of the geological and geotechnical conditions at the site, an evaluation of site-specific seismic hazards based on geological and geotechnical conditions, and recommended measures to reduce potential impacts related to liquefaction and/or slope stability hazards. The Project applicant shall implement the recommendations contained in the approved report during Project design and construction.	Prior to approval of construction-related permit.	City of Oakland Bureau of Building
Also **SCA HYD-1, Erosion and Sedimentation Control Plan for Construction,** see *Hydrology and Water Quality*, below.		
Also **SCA HYD-2, State Construction General Permit,** see *Hydrology and Water Quality*, below.		
Greenhouse Gases and Climate Change		
SCA GHG-1 (Standard Condition of Approval 42): *Greenhouse Gas (GHG) Reduction Plan* ***a. Greenhouse Gas (GHG) Reduction Plan Required*** Requirement: The project applicant shall retain a qualified air quality consultant to develop a Greenhouse Gas (GHG) Reduction Plan for City review and approval and shall implement the approved GHG Reduction Plan. The goal of the GHG Reduction Plan shall be to increase energy efficiency and reduce GHG emissions to below at least one of the Bay Area Quality Management District's (BAAQMD's) CEQA Thresholds of Significance (1,100 metric tons of CO_2e per year or 4.6 metric tons of CO_2e per year per service population). The GHG Reduction Plan shall include, at a minimum, (a) a detailed GHG emissions inventory for the project under a "business-as-usual" scenario with no consideration of project design features, or other energy efficiencies, (b) an "adjusted" baseline GHG emissions inventory for the project, taking into consideration energy efficiencies included as part of the project (including the City's Standard Conditions of Approval, proposed mitigation measures, project design features, and other City requirements), and additional GHG reduction measures available to further reduce GHG emissions, and (c) requirements for ongoing monitoring and reporting to demonstrate that the additional GHG reduction measures are being implemented. If the project is to be constructed in phases, the GHG Reduction Plan shall provide GHG emission scenarios by phase. Potential GHG reduction measures to be considered include, but are not be limited to, measures recommended in BAAQMD's latest CEQA Air Quality Guidelines, the California Air Resources Board Scoping Plan (December 2008, as may be revised), the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010, as may be revised), the California Attorney General's website, and Reference Guides on Leadership in Energy and Environmental Design (LEED) published by the U.S. Green Building Council. The types of allowable GHG reduction measures include the following (listed in order of City preference): (1) physical design features; (2) operational features; and (3) the payment of fees to fund GHG-reducing programs (i.e., the purchase of "carbon credits") as explained below. The allowable locations of the GHG reduction measures include the following (listed in order of City preference): (1) the project site; (2) off-site within the City of Oakland; (3) off-site within the San Francisco Bay Area Air Basin; (4) off-site within the State of California; then (5) elsewhere in the United States.	a. Prior to approval of construction-related permit.	a. City of Oakland Bureau of Planning

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Greenhouse Gases and Climate Change (cont.)		
As with preferred locations for the implementation of all GHG reductions measures, the preference for carbon credit purchases include those that can be achieved as follows (listed in order of City preference): (1) within the City of Oakland; (2) within the San Francisco Bay Area Air Basin; (3) within the State of California; then (4) elsewhere in the United States. The cost of carbon credit purchases shall be based on current market value at the time purchased and shall be based on the project's operational emissions estimated in the GHG Reduction Plan or subsequent approved emissions inventory, which may result in emissions that are higher or lower than those estimated in the GHG Reduction Plan. For physical GHG reduction measures to be incorporated into the design of the project, the measures shall be included on the drawings submitted for construction-related permits.		
b. GHG Reduction Plan Implementation During Construction Requirement: The project applicant shall implement the GHG Reduction Plan during construction of the project. For physical GHG reduction measures to be incorporated into the design of the project, the measures shall be implemented during construction. For physical GHG reduction measures to be incorporated into off-site projects, the project applicant shall obtain all necessary permits/approvals and the measures shall be included on drawings and submitted to the City Planning Director or his/her designee for review and approval. These off-site improvements shall be installed prior to completion of the subject project (or prior to completion of the project phase for phased projects). For GHG reduction measures involving the purchase of carbon credits, evidence of the payment/purchase shall be submitted to the City for review and approval prior to completion of the project (or prior to completion of the project phase, for phased projects).	b. During construction.	b. City of Oakland Bureau of Planning and Bureau of Building
c. GHG Reduction Plan Implementation After Construction Requirement**:** The project applicant shall implement the GHG Reduction Plan after construction of the project (or at the completion of the project phase for phased projects). For operational GHG reduction measures to be incorporated into the project or off-site projects, the measures shall be implemented on an indefinite and ongoing basis. The project applicant shall satisfy the following requirements for ongoing monitoring and reporting to demonstrate that the additional GHG reduction measures are being implemented. The GHG Reduction Plan requires regular periodic evaluation over the life of the project (generally estimated to be at least 40 years) to determine how the Plan is achieving required GHG emissions reductions over time, as well as the efficacy of the specific additional GHG reduction measures identified in the Plan. **Annual Report.** Implementation of the GHG reduction measures and related requirements shall be ensured through compliance with Conditions of Approval adopted for the project. Generally, starting two years after the City issues the first Certificate of Occupancy for the project, the project applicant shall prepare each year of the useful life of the project an Annual GHG Emissions Reduction Report ("Annual Report"), for review and approval by the City Planning Director or his/her designee. The Annual Report shall be submitted to an independent reviewer of the City's choosing, to be paid for by the project applicant. The Annual Report shall summarize the project's implementation of GHG reduction measures over the preceding year, intended upcoming changes, compliance with the conditions of the Plan, and include a brief summary of the previous year's Annual Report results (starting the second year). The Annual Report shall include a comparison of annual project emissions to the baseline emissions reported in the GHG Plan. The GHG Reduction Plan shall be considered fully attained when project emissions are less than either applicable numeric BAAQMD CEQA Thresholds.	c. Ongoing.	c. City of Oakland Bureau of Planning

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Greenhouse Gases and Climate Change (cont.)		
Corrective Procedure. If the third Annual Report, or any report thereafter, indicates that, in spite of the implementation of the GHG Reduction Plan, the project is not achieving the GHG reduction goal, the project applicant shall prepare a report for City review and approval, which proposes additional or revised GHG measures to better achieve the GHG emissions reduction goals, including without limitation, a discussion on the feasibility and effectiveness of the menu of other additional measures ("Corrective GHG Action Plan"). The project applicant shall then implement the approved Corrective GHG Action Plan. If, one year after the Corrective GHG Action Plan is implemented, the required GHG emissions reduction target is still not being achieved, or if the project applicant fails to submit a report at the times described above, or if the reports do not meet City requirements outlined above, the City may, in addition to its other remedies, (a) assess the project applicant a financial penalty based upon actual percentage reduction in GHG emissions as compared to the percent reduction in GHG emissions established in the GHG Reduction Plan; or (b) refer the matter to the City Planning Commission for scheduling of a compliance hearing to determine whether the project's approvals should be revoked, altered or additional conditions of approval imposed. The penalty as described in (a) above shall be determined by the City Planning Director or his/her designee and be commensurate with the percentage GHG emissions reduction not achieved (compared to the applicable numeric significance thresholds) or required percentage reduction from the "adjusted" baseline. In determining whether a financial penalty or other remedy is appropriate, the City shall not impose a penalty if the project applicant has made a good faith effort to comply with the GHG Reduction Plan. The City would only have the ability to impose a monetary penalty after a reasonable cure period and in accordance with the enforcement process outlined in Planning Code Chapter 17.152. If a financial penalty is imposed, such penalty sums shall be used by the City solely toward the implementation of the GHG Reduction Plan. **Timeline Discretion and Summary.** The City shall have the discretion to reasonably modify the timing of reporting, with reasonable notice and opportunity to comment by the applicant, to coincide with other related monitoring and reporting required for the project.		
Also **SCA AES-3, Landscape Plan**. See *Aesthetics, Wind, and Shadow*, above.		
Also **SCA AIR-1, Dust Controls – Construction Related**. See *Air Quality,* above.		
Also **SCAs AIR-2, Criteria Air Pollutant Controls - Construction Related.** See *Air Quality*, above.		
Also **SCAs AIR-3, Diesel Particulate Matter Controls - Construction Related.** See *Air Quality*, above.		
Also SCA **TRA-2, Bicycle Parking**. See *Transportation and Circulation*, below.		
Also **SCA TRA-4, Transportation and Parking Demand Management.** See *Transportation and Circulation*, below.		
Also **SCA UTIL-1, Construction and Demolition Waste Reduction and Recycling**. See *Utilities and Service Systems*, below.		
Also **SCA UTIL-4, Green Building Requirements**. See *Utilities and Service Systems*, below.		

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Hazards and Hazardous Materials		
SCA HAZ-1 (Standard Condition of Approval 43): *Hazards Materials Related to Construction* Requirement: The Project applicant shall ensure that Best Management Practices (BMPs) are implemented by the contractor during construction to minimize potential negative effects on groundwater, soils, and human health. These shall include, at a minimum, the following: a. Follow manufacture's recommendations for 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. Implement lead-safe work practices and comply with all local, regional, state, and federal requirements concerning lead (for more information refer to the Alameda County Lead Poisoning Prevention Program); and 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 project 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 notifying the City and applicable 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.	During construction.	City of Oakland Bureau of Building
SCA HAZ-2 (Standard Condition of Approval 44): ***Hazardous Building Materials and Site Contamination*** ***a. Hazardous Building Materials and Site Contamination*** Requirement: The project applicant shall submit a comprehensive assessment report to the Bureau of Building, signed by a qualified environmental professional, documenting the presence or lack thereof of asbestos-containing materials (ACMs), lead-based paint, polychlorinated biphenyls (PCBs), and any other building materials or stored materials classified as hazardous materials by State or federal law. If lead-based paint, ACMs, PCBs, or any other building materials or stored materials classified as hazardous materials are present, the project applicant shall submit specifications prepared and signed by a qualified environmental professional, for the stabilization and/or removal of the identified hazardous materials in accordance with all applicable laws and regulations. The project applicant shall implement the approved recommendations and submit to the City evidence of approval for any proposed remedial action and required clearances by the applicable local, state, or federal regulatory agency. ***b. Environmental Site Assessment Required*** Requirement: The project applicant shall submit a Phase I Environmental Site Assessment report, and Phase II Environmental Site Assessment report if warranted by the Phase I report, for the project site for review and approval by the City. The report(s) shall be prepared by a qualified environmental assessment professional and include recommendations for remedial action, as appropriate, for hazardous materials. The project applicant shall implement the approved recommendations and submit to the City evidence of approval for any proposed remedial action and required clearances by the applicable local, state, or federal regulatory agency.	a. Prior to approval of demolition, grading, or building permits b. Prior to approval of construction-related permit c. Prior to approval of construction-related permit d. During Construction	a. City of Oakland Bureau of Building b. Applicable regulatory agency with jurisdiction c. City of Oakland Bureau of Building d. City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Hazards and Hazardous Materials (cont.)		
c. Health and Safety Plan Required Requirement: The Project applicant shall submit a Health and Safety Plan for the review and approval by the City in order to protect project construction workers from risks associated with hazardous materials. The Project applicant shall implement the approved Plan. ***d. Best Management Practices (BMPs) Required for Contaminated Sites*** Requirement: The Project applicant shall ensure that Best Management Practices (BMPs) are implemented by the contractor during construction to minimize potential soil and groundwater hazards. These shall include the following: **i.** Soil generated by construction activities shall be stockpiled on-site 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 requirements. **ii.** Groundwater pumped from the subsurface shall be contained on-site 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. Engineering controls shall be utilized, which include impermeable barriers to prohibit groundwater and vapor intrusion into the building.		
Also **SCA AIR-6, Asbestos in Structures**. See *Air Quality*, above.		
Also **SCA TRA-1, Construction Activity in the Public Right-of-Way**. See *Transportation and Traffic*, below.		
Hydrology and Water Quality		
SCA HYD-1 (Standard Condition of Approval 49): *Erosion and Sedimentation Control Plan for Construction* ***a. Erosion and Sedimentation Control Plan Required*** Requirement: The Project applicant shall submit an Erosion and Sedimentation Control Plan to the City for review and approval. 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 and/or construction 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 City. 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. Erosion and Sedimentation Control During Construction*** Requirement: The Project applicant shall implement the approved Erosion and Sedimentation Control Plan. No grading shall occur during the wet weather season (October 15 through April 15) unless specifically authorized in writing by the Bureau of Building.	a. Prior to approval of construction-related permit. b. During construction.	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Hydrology and Water Quality (cont.)		
SCA HYD-2 (Standard Condition of Approval 50): *State Construction General Permit* a. Requirement: The Project applicant shall comply with the requirements of the Construction General Permit issued by the State Water Resources Control Board (SWRCB). The project applicant shall submit a Notice of Intent (NOI), Stormwater Pollution Prevention Plan (SWPPP), and other required Permit Registration Documents to SWRCB. The Project applicant shall submit evidence of compliance with Permit requirements to the City.	Prior to approval of construction-related permit.	State Water Resources Control Board; evidence of compliance submitted to Bureau of Building
SCA HYD-3 (Standard Condition of Approval 54): *NPDES C.3 Stormwater Requirements for Regulated Projects* ***a. Post-Construction Stormwater Management Plan Required*** Requirement: The Project applicant shall comply with the requirements of Provision C.3 of the Municipal Regional Stormwater Permit issued under the National Pollutant Discharge Elimination System (NPDES). The project applicant shall submit a Post-Construction Stormwater Management Plan to the City for review and approval with the project drawings submitted for site improvements, and shall implement the approved Plan during construction. The Post-Construction Stormwater Management Plan shall include and identify the following: i. Location and size of new and replaced impervious surface; ii. Directional surface flow of stormwater runoff; iii. Location of proposed on-site storm drain lines; iv. Site design measures to reduce the amount of impervious surface area; v. Source control measures to limit stormwater pollution; vi. Stormwater treatment measures to remove pollutants from stormwater runoff, including the method used to hydraulically size the treatment measures; and vii. Hydromodification management measures, if required by Provision C.3, so that post-Project stormwater runoff flow and duration match pre-Project runoff. ***b. Maintenance Agreement Required*** Requirement: The project applicant shall enter into a maintenance agreement with the City, based on the Standard City of Oakland Stormwater Treatment Measures Maintenance Agreement, in accordance with Provision C.3, which provides, in part, for the following: i. The Project 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 ii. 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 maintenance agreement shall be recorded at the County Recorder's Office at the applicant's expense.	a. Prior to approval of construction-related permit. b. Prior to building permit final.	a. City of Oakland Bureau of Building b. City of Oakland Bureau of Building
Also **SCA UTIL-6, Storm Drain System**. See *Utilities and Service Systems*, below.		

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Noise		
SCA NOI-1 (Standard Condition of Approval 62) *Construction Days/Hours* Requirement: The project applicant shall comply with the following restrictions concerning construction days and hours: a. Construction activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, except that pier drilling 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. b. Construction activities are limited to between 9:00 a.m. and 5:00 p.m. on Saturday. In residential zones and within 300 feet of a residential zone, construction activities are allowed from 9:00 a.m. to 5:00 p.m. only within the interior of the building with the doors and windows closed. No pier drilling or other extreme noise generating activities greater than 90 dBA are allowed on Saturday. c. No construction is allowed on Sunday or federal holidays. 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. Any construction activity proposed outside of the above days and hours for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case-by-case basis by the City, with criteria including the urgency/emergency nature of the work, the proximity of residential or other sensitive uses, and a consideration of nearby residents'/occupants' preferences. The project applicant shall notify property owners and occupants located within 300 feet at least 14 calendar days prior to construction activity proposed outside of the above days/hours. When submitting a request to the City to allow construction activity outside of the above days/hours, the project applicant shall submit information concerning the type and duration of proposed construction activity and the draft public notice for City review and approval prior to distribution of the public notice.	During construction.	City of Oakland Bureau of Building
SCA NOI-2: (Standard Condition of Approval 63) *Construction Noise* Requirement: The project applicant shall implement noise reduction measures to reduce noise impacts due to construction. Noise reduction measures include, but are not limited to, the following**:** 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. Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered 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, if such jackets are commercially available, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures. c. Applicant shall use temporary power poles instead of generators where feasible. d. Stationary noise sources shall be located as far from adjacent properties as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City to provide equivalent noise reduction. e. The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.	During construction.	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Noise (cont.)		
SCA NOI-3 (Standard Condition of Approval 64) *Extreme Construction Noise* ***a. Construction Noise Management Plan Required*** Requirement: Prior to any extreme noise generating construction activities (e.g., pier drilling, pile driving and other activities generating greater than 90dBA), the project applicant shall submit a Construction Noise Management Plan prepared by a qualified acoustical consultant for City review and approval that contains a set of site-specific noise attenuation measures to further reduce construction impacts associated with extreme noise generating activities. The project applicant shall implement the approved Plan during construction. Potential attenuation measures include, but are not limited to, the following: i. Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings; ii. 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; iii. Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site; iv. 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 implement such measure if such measures are feasible and would noticeably reduce noise impacts**;** and v. Monitor the effectiveness of noise attenuation measures by taking noise measurements. ***b. Public Notification Required*** Requirement: The project applicant shall notify property owners and occupants located within 300 feet of the construction activities at least 14 calendar days prior to commencing extreme noise generating activities. Prior to providing the notice, the project applicant shall submit to the City for review and approval the proposed type and duration of extreme noise generating activities and the proposed public notice. The public notice shall provide the estimated start and end dates of the extreme noise generating activities and describe noise attenuation measures to be implemented.	a. Prior to approval of construction-related permit. b. During construction.	City of Oakland Bureau of Building
SCA NOI-4 (Standard Condition of Approval 66) *Construction Noise Complaints* Requirement: The project applicant shall submit to the City for review and approval a set of procedures for responding to and tracking complaints received pertaining to construction noise, and shall implement the procedures during construction. At a minimum, the procedures shall include**:** a. Designation of an on-site construction complaint and enforcement manager for the project; b. A large on-site sign near the public right-of-way containing permitted construction days/hours, complaint procedures, and phone numbers for the project complaint manager and City Code Enforcement unit; c. Protocols for receiving, responding to, and tracking received complaints; and d. Maintenance of a complaint log that records received complaints and how complaints were addressed, which shall be submitted to the City for review upon the City's request.	Prior to approval of construction-related permit.	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Noise (cont.)		
SCA NOI-5 (Standard Condition of Approval 67) *Exposure to Community Noise* Requirement: The project applicant shall submit a Noise Reduction Plan prepared by a qualified acoustical engineer for City review and approval that contains noise reduction measures (e.g., sound-rated window, wall, and door assemblies) to achieve an acceptable interior noise level in accordance with the land use compatibility guidelines of the Noise Element of the Oakland General Plan. The applicant shall implement the approved Plan during construction. To the maximum extent practicable, interior noise levels shall not exceed the following: a. 45 dBA: Residential activities, civic activities, hotels b. 50 dBA: Administrative offices; group assembly activities c. 55 dBA: Commercial activities d. 65 dBA: Industrial activities	Prior to approval of construction-related permit.	City of Oakland Bureau of Planning and Bureau of Building
SCA NOI-6 (Standard Condition of Approval 68) *Operational Noise* Requirement: Noise levels from the project site after completion of the project (i.e., during project operation) shall comply with the performance standards of chapter 17.120 of the Oakland Planning Code and chapter 8.18 of the Oakland Municipal Code. If noise levels exceed these standards, the activity causing the noise shall be abated until appropriate noise reduction measures have been installed and compliance verified by the City.	Ongoing.	City of Oakland Bureau of Building
SCA NOI-7 (Standard Condition of Approval 70) *Vibration Impacts on Adjacent Historic Structures or Vibration-Sensitive Activities* Requirement: The project applicant shall submit a Vibration Analysis prepared by an acoustical and/or structural engineer or other appropriate qualified professional for City review and approval that establishes pre-construction baseline conditions and threshold levels of vibration that could damage the structure and/or substantially interfere with activities located at the project site. The Vibration Analysis shall identify design means and methods of construction that shall be utilized in order to not exceed the thresholds. The applicant shall implement the recommendations during construction.	Prior to construction.	City of Oakland Bureau of Building
Population and Housing		
SCA POP-1 (Standard Condition of Approval 71) *Jobs/Housing Impact Fee* Requirement: The Project applicant shall submit payment to the City in accordance with the requirements of the City of Oakland Jobs/Housing Impact Fee Program (chapter 15.68 of the Oakland Municipal Code).	Prior to construction.	City of Oakland Bureau of Building
SCA POP-2 (Standard Condition of Approval 72) *Affordable Housing Impact Fee* Requirement: The project applicant shall comply with the requirements of the City of Oakland Affordable Housing Impact Fee Ordinance (chapter 15.72 of the Oakland Municipal Code).	Prior to issuance of building permit; subsequent milestones pursuant to ordinance.	City of Oakland Bureau of Building
Public Services, Parks and Recreation Facilities		
SCA PUB-1 (Standard Condition of Approval 74) *Capital Improvements Impact Fee* Requirement: The project applicant shall comply with the requirements of the City of Oakland Capital Improvements Fee Ordinance (chapter 15.74 of the Oakland Municipal Code).	Prior to issuance of building permit	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Public Services, Parks and Recreation Facilities (cont.)		
SCA REC-1 (Standard Condition of Approval 75) *Access to Parks and Open Space* Requirement: The project applicant shall submit a plan for City review and approval to enhance bicycle and pedestrian access from the project site and adjacent areas to Lake Merritt, Lakeside Park, and Snow Park. Examples of enhancements may include, but are not limited to, new or improved bikeways, bike parking, traffic control devices, sidewalks, pathways, bulb-outs, and signage. The project sponsor shall install the approved enhancements during construction and prior to completion of the project.	Prior to approval of construction-related permit	City of Oakland Bureau of Planning and City of Oakland Department of Transportation
Transportation and Circulation		
SCA TRA-1 (Standard Condition of Approval 76) *Construction Activity in the Public Right-of-Way* ***a. Obstruction Permit Required*** Requirement: The project applicant shall obtain an obstruction permit from the City prior to placing any temporary construction-related obstruction in the public right-of-way, including City streets, sidewalks, bicycle facilities, and bus stops. ***b. Traffic Control Plan Required*** Requirement: In the event of obstructions to vehicle or bicycle travel lanes, bus stops, or sidewalks, the project applicant shall submit a Traffic Control Plan to the City for review and approval prior to obtaining an obstruction permit. The project applicant shall submit evidence of City approval of the Traffic Control Plan with the application for an obstruction permit. The Traffic Control Plan shall contain a set of comprehensive traffic control measures for auto, transit, bicycle, and pedestrian accommodations (or Detours, if accommodations are not feasible), including detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes. The Traffic Control Plan shall be in conformance with the City's Supplemental Design Guidance for Accommodating Pedestrians, Bicyclists, and Bus Facilities in Construction Zones. The project applicant shall implement the approved Plan during construction. ***c. Repair of City Streets*** Requirement: The project applicant shall repair any damage to the public right-of way, including streets and sidewalks caused by project construction at his/her 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 approval of the final inspection of the construction-related permit. All damage that is a threat to public health or safety shall be repaired immediately.	a. Prior to approval of construction-related permit. b. Prior to approval of construction-related permit. c. Prior to building permit final.	City of Oakland Department of Transportation
SCA TRA-2 (Standard Condition of Approval 77) *Bicycle Parking* Requirement: The project applicant shall comply with the City of Oakland Bicycle Parking Requirements (chapter 17.118 of the Oakland Planning Code). The project drawings submitted for construction-related permits shall demonstrate compliance with the requirements.	Prior to approval of construction-related permit.	City of Oakland Bureau of Planning and Bureau of Building
SCA TRA-3 (Standard Condition of Approval 78): *Transportation Improvements.* The project applicant shall implement the recommended on- and off-site transportation-related improvements contained within the Transportation Impact Review for the project (e.g., signal timing adjustments, restriping, signalization, traffic control devices, roadway reconfigurations, transportation demand management measures, and transit, pedestrian, and bicyclist amenities). The project applicant is responsible for funding and installing the improvements, and shall obtain all necessary permits and approvals from the City and/or other applicable regulatory agencies such as, but not limited to, Caltrans (for improvements related to Caltrans	Prior to building permit final or as otherwise specified	City of Oakland Bureau of Building and City of Oakland Department of Transportation

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Transportation and Circulation (cont.)		
facilities) and the California Public Utilities Commission (for improvements related to railroad crossings), prior to installing the improvements. To implement this measure for intersection modifications, the project applicant shall submit Plans, Specifications, and Estimates (PS&E) to the City for review and approval. All elements shall be designed to applicable City standards in effect at the time of construction and all new or upgraded signals shall include these enhancements as required by the City. 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: a. 2070L Type Controller with cabinet accessory b. GPS communication (clock) c. Accessible pedestrian crosswalks according to Federal and State Access Board guidelines with signals (audible and tactile) d. Countdown pedestrian head module switch out e. City Standard ADA wheelchair ramps f. Video detection on existing (or new, if required) g. Mast arm poles, full activation (where applicable) h. Polara Push buttons (full activation) i. Bicycle detection (full activation) j. Pull boxes k. Signal interconnect and communication with trenching (where applicable), or through existing conduit (where applicable), 600 feet maximum l. Conduit replacement contingency m. Fiber switch n. PTZ camera (where applicable) o. Transit Signal Priority (TSP) equipment consistent with other signals along corridor p. Signal timing plans for the signals in the coordination group q. Bi-directional curb ramps (where feasible, and if project is on a street corner) r. Upgrade ramps on receiving curb (where feasible, and if project is on a street corner)		
SCA TRA-4 (Standard Condition of Approval 79) *Transportation and Parking Demand Management* ***a. Transportation and Parking Demand Management (TDM) Plan Required*** Requirement: The project applicant shall submit a Transportation and Parking Demand Management (TDM) Plan for review and approval by the City. i. The goals of the TDM Plan shall be the following:	a. Prior to approval of planning application.	a. City of Oakland Bureau of Planning

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Transportation and Circulation (cont.)		

- Reduce vehicle traffic and parking demand generated by the project to the maximum extent practicable.
- Achieve the following project vehicle trip reductions (VTR):
  - Projects generating 50-99 net new a.m. or p.m. peak hour vehicle trips: 10 percent VTR
  - Projects generating 100 or more net new a.m. or p.m. peak hour vehicle trips: 20 percent VTR
- Increase pedestrian, bicycle, transit, and carpool/vanpool modes of travel. All four modes of travel shall be considered, as appropriate.
- Enhance the City's transportation system, consistent with City policies and programs.

ii. The TDM Plan should include the following:

- Baseline existing conditions of parking and curbside regulations within the surrounding neighborhood that could affect the effectiveness of TDM strategies, including inventory of parking spaces and occupancy if applicable.
- Proposed TDM strategies to achieve VTR goals (see below).

iii. For employers with 100 or more employees at the subject site, the TDM Plan shall also comply with the requirements of Oakland Municipal Code Chapter 10.68 Employer-Based Trip Reduction Program.

iv. The following TDM strategies **must** be incorporated into a TDM Plan based on a project location or other characteristics. When required, these mandatory strategies should be identified as a credit toward a project's VTR.

Improvement	Required by code or when…
Bus boarding bulbs or islands	• A bus boarding bulb or island does not already exist and a bus stop is located along the project frontage; and/or • A bus stop along the project frontage serves a route with 15 minutes or better peak hour service and has a shared bus-bike lane curb
Bus shelter	• A stop with no shelter is located within the project frontage, or • The project is located within 0.10 miles of a flag stop with 25 or more boardings per day
Concrete bus pad	• A bus stop is located along the project frontage and a concrete bus pad does not already exist
Curb extensions or bulb-outs	• Identified as an improvement within site analysis
Implementation of a corridor-level bikeway improvement	• A buffered Class II or Class IV bikeway facility is in a local or county adopted plan within 0.10 miles of the project location; and • The project would generate 500 or more daily bicycle trips

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Transportation and Circulation (cont.)		

Improvement	Required by code or when…
Implementation of a corridor-level transit capital improvement	• A high-quality transit facility is in a local or county adopted plan within 0.25 miles of the project location; and • The project would generate 400 or more peak period transit trips
Installation of amenities such as lighting; pedestrian-oriented green infrastructure, trees, or other greening landscape; and trash receptacles per the Pedestrian Master Plan and any applicable streetscape plan.	• Always required
In-street bicycle corral	• A project includes more than 10,000 square feet of ground floor retail, is located along a Tier 1 bikeway, and on-street vehicle parking is provided along the project frontages.
Intersection improvements[25]	• Identified as an improvement within site analysis
New sidewalk, curb ramps, curb and gutter meeting current City and ADA standards	• Always required
No monthly permits and establish minimum price floor for public parking[26]	• If proposed parking ratio exceeds 1:1000 sf. (commercial)
Parking garage is designed with retrofit capability	• Optional if proposed parking ratio exceeds 1:1.25 (residential) or 1:1000 sf. (commercial)
Parking space reserved for car share	• If a project is providing parking and a project is located within downtown. One car share space reserved for buildings between 50 – 200 units, then one car share space per 200 units.
Paving, lane striping or restriping (vehicle and bicycle), and signs to midpoint of street section	• Typically required
Pedestrian crossing improvements	• Identified as an improvement within site analysis
Pedestrian-supportive signal changes[27]	• Identified as an improvement within operations analysis
Real-time transit information system	• A project frontage block includes a bus stop or BART station and is along a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better

[25] Including but not limited to visibility improvements, shortening corner radii, pedestrian safety islands, accounting for pedestrian desire lines.
[26] May also provide a cash incentive or transit pass alternative to a free parking space in commercial properties.
[27] Including but not limited to reducing signal cycle lengths to less than 90 seconds to avoid pedestrian crossings against the signal, providing a leading pedestrian interval, provide a "scramble" signal phase where appropriate.

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Transportation and Circulation (cont.)		

Improvement	Required by code or when…
Relocating bus stops to far side	• A project is located within 0.10 mile of any active bus stop that is currently near-side
Signal upgrades[28]	• Project size exceeds 100 residential units, 80,000 sf. of retail, or 100,000 sf. of commercial; and • Project frontage abuts an intersection with signal infrastructure older than 15 years
Transit queue jumps	• Identified as a needed improvement within operations analysis of a project with frontage along a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better
Trenching and placement of conduit for providing traffic signal interconnect	• Project size exceeds 100 units, 80,000 sf. of retail, or 100,000 sf. of commercial; and • Project frontage block is identified for signal interconnect improvements as part of a planned ITS improvement; and • A major transit improvement is identified within operations analysis requiring traffic signal interconnect
Unbundled parking	• If proposed parking ratio exceeds 1:1.25 (residential)

v. Other TDM strategies to consider include, but are not limited to, the following:

- 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 the Bicycle Parking Ordinance (chapter 17.117 of the Oakland Planning Code), and shower and locker facilities in commercial developments that exceed the requirement.
- Construction of and/or access to bikeways per the Bicycle Master Plan; construction of priority bikeways, on-site signage and bike lane striping.
- Installation of safety elements per the Pedestrian Master Plan (such as crosswalk striping, curb ramps, count down signals, bulb outs, etc.) to encourage convenient and safe crossing at arterials, in addition to safety elements required to address safety impacts of the project.
- Installation of amenities such as lighting, street trees, and trash receptacles per the Pedestrian Master Plan, the Master Street Tree List, Tree Planting Guidelines (which can be viewed at http://www2.oaklandnet.com/oakca1/groups/pwa/documents/report/oak042662.pdf and http://www2.oaklandnet.com/oakca1/groups/pwa/documents/form/oak025595.pdf, respectively), and any applicable streetscape plan.

[28] Including typical traffic lights, pedestrian signals, bike actuated signals, transit-only signals

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Transportation and Circulation (cont.)		
• Construction and development of transit stops/shelters, pedestrian access, way finding signage, and lighting around transit stops per transit agency plans or negotiated improvements. • 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). • Provision of a transit subsidy to employees or residents, determined by the project applicant and subject to review by the City, if employees or residents use transit or commute by other alternative modes. • Provision of an ongoing contribution to transit service to the area between the project and nearest mass transit station prioritized as follows: 1) Contribution to AC Transit bus service; 2) Contribution to an existing area shuttle service; and 3) Establishment of new shuttle service. The amount of contribution (for any of the above scenarios) would be based upon the cost of establishing new shuttle service (Scenario 3). Guaranteed ride home program for employees, either through 511.org or through separate program. • Pre-tax commuter benefits (commuter checks) for employees. • 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. • On-site carpooling and/or vanpool program that includes preferential (discounted or free) parking for carpools and vanpools. • Distribution of information concerning alternative transportation options. • 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. • Parking management strategies including attendant/valet parking and shared parking spaces. • Requiring tenants to provide opportunities and the ability to work off-site. • 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 (e.g., working four, ten-hour days; allowing employees to work from home two days per week). • 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 TDM Plan shall indicate the estimated VTR for each strategy, based on published research or guidelines where feasible. For TDM Plans containing ongoing operational VTR strategies, the Plan shall include an ongoing monitoring and enforcement program to ensure the Plan is implemented on an ongoing basis during project operation. If an annual compliance report is required, as explained below, the TDM Plan shall also specify the topics to be addressed in the annual report.		

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Transportation and Circulation (cont.)		
b. TDM Implementation – Physical Improvements Requirement: For VTR strategies involving physical improvements, the project applicant shall obtain the necessary permits/approvals from the City and install the improvements prior to the completion of the project.	b. Prior to building permit final	b. City of Oakland Bureau of Building
c. TDM Implementation – Operational Strategies Requirement: For projects that generate 100 or more net new a.m. or p.m. peak hour vehicle trips and contain ongoing operational VTR strategies, the project applicant shall submit an annual compliance report for the first five years following completion of the project (or completion of each phase for phased projects) for review and approval by the City. The annual report shall document the status and effectiveness of the TDM program, including the actual VTR achieved by the project during operation. If deemed necessary, the City may elect to have a peer review consultant, paid for by the project applicant, review the annual report. If timely reports are not submitted and/or the annual reports indicate that the project applicant has failed to implement the TDM Plan, the project will be considered in violation of the Conditions of Approval and the City may initiate enforcement action as provided for in these Conditions of Approval. The project shall not be considered in violation of this Condition if the TDM Plan is implemented but the VTR goal is not achieved.	c. Ongoing.	c. City of Oakland Department of Transportation
SCA TRA-5 (Standard Condition of Approval 80) *Transportation Impact Fee* Requirement: The project applicant shall comply with the requirements of the City of Oakland Transportation Impact Fee Ordinance (chapter 15.74 of the Oakland Municipal Code).	Prior to issuance of building permit.	City of Oakland Bureau of Building
SCA TRA-6 (Standard Condition of Approval 83) *Plug-In Electric Vehicle (PEV) Charging Infrastructure* ***a. PEV-Ready Parking Spaces*** Requirement: The applicant shall submit, for review and approval of the Building Official and the Zoning Manager, plans that show the location of parking spaces equipped with full electrical circuits designated for future PEV charging (i.e. "PEV-Ready) per the requirements of Chapter 15.04 of the Oakland Municipal Code. Building electrical plans shall indicate sufficient electrical capacity to supply the required PEV-Ready parking spaces. ***b. PEV-Capable Parking Spaces*** Requirement: The applicant shall submit, for review and approval of the Building Official, plans that show the location of inaccessible conduit to supply PEV-capable parking spaces per the requirements of Chapter 15.04 of the Oakland Municipal Code. Building electrical plans shall indicate sufficient electrical capacity to supply the required PEV-capable parking spaces. ***c. ADA-Accessible Spaces*** Requirement: The applicant shall submit, for review and approval of the Building Official, plans that show the location of future accessible EV parking spaces as required under Title 24 Chapter 11B Table 11B-228.3.2.1, and specify plans to construct all future accessible EV parking spaces with appropriate grade, vertical clearance, and accessible path of travel to allow installation of accessible EV charging station(s).	Prior to Issuance of Building Permit	City of Oakland Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Utilities and Service Systems		
SCA UTIL-1 (Standard Condition of Approval 84) *Construction and Demolition Waste Reduction and Recycling* Requirement: The Project applicant shall comply with the City of Oakland Construction and Demolition Waste Reduction and Recycling Ordinance (chapter 15.34 of the Oakland Municipal Code) by submitting a Construction and Demolition Waste Reduction and Recycling Plan (WRRP) for City review and approval, and shall implement the approved WRRP. Projects subject to these requirements include all new construction, renovations/alterations/modifications with construction values of $50,000 or more (except R-3 type construction), and all demolition (including soft demolition) except demolition of type R-3 construction. The WRRP must specify the methods by which the Project will divert construction and demolition debris waste from landfill disposal in accordance with current City requirements. The WRRP may be submitted electronically at www.greenhalosystems.com or manually at the City's Green Building Resource Center. Current standards, FAQs, and forms are available on the City's website and in the Green Building Resource Center.	Prior to approval of construction-related permit	City of Oakland Public Works Department, Environmental Services Division
SCA UTIL-2 (Standard Condition of Approval 85) *Underground Utilities* Requirement: The Project applicant shall place underground all new utilities serving the Project and under the control of the Project applicant and the City, including all new gas, electric, cable, and telephone facilities, fire alarm conduits, street light wiring, and other wiring, conduits, and similar facilities. The new facilities shall be placed underground along the Project's street frontage and from the Project structures to the point of service. Utilities under the control of other agencies, such as PG&E, shall be placed underground if feasible. All utilities shall be installed in accordance with standard specifications of the serving utilities.	During construction.	City of Oakland Bureau of Building
SCA UTIL-3 (Standard Condition of Approval 86) *Recycling Collection and Storage Space* Requirement: The Project applicant shall comply with the City of Oakland Recycling Space Allocation Ordinance (chapter 17.118 of the Oakland Planning Code). The Project drawings submitted for construction-related permits shall contain recycling collection and storage areas in compliance with the Ordinance. For residential projects, at least two cubic feet of storage and collection space per residential unit is required, with a minimum of ten cubic feet. For nonresidential projects, at least two cubic feet of storage and collection space per 1,000 square feet of building floor area is required, with a minimum of ten cubic feet.	Prior to approval of construction-related permit.	City of Oakland Bureau of Planning and Bureau of Building
SCA UTIL-4 (Standard Condition of Approval 87) *Green Building Requirements* ***a. Compliance with Green Building Requirements During Plan-Check*** Requirement: The Project applicant shall comply with the requirements of the California Green Building Standards (CALGreen) mandatory measures and the applicable requirements of the City of Oakland Green Building Ordinance (chapter 18.02 of the Oakland Municipal Code). i. The following information shall be submitted to the City for review and approval with the application for a building permit: • Documentation showing compliance with Title 24 of the current version of the California Building Energy Efficiency Standards. • Completed copy of the final green building checklist approved during the review of the Planning and Zoning permit. • Copy of the Unreasonable Hardship Exemption, if granted, during the review of the Planning and Zoning permit. • Permit plans that show, in general notes, detailed design drawings, and specifications as necessary, compliance with the items listed in subsection (ii) below.	a. Prior to approval of construction-related permit. b. During construction. c. Prior to Final Approval.	a. City of Oakland Bureau of Building b. City of Oakland Bureau of Building c. City of Oakland Bureau of Planning and Bureau of Building

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Utilities and Service Systems (cont.)		
• Copy of the signed statement by the Green Building Certifier approved during the review of the Planning and Zoning permit that the project complied with the requirements of the Green Building Ordinance. • Signed statement by the Green Building Certifier that the project still complies with the requirements of the Green Building Ordinance, unless an Unreasonable Hardship Exemption was granted during the review of the Planning and Zoning permit. • Other documentation as deemed necessary by the City to demonstrate compliance with the Green Building Ordinance. ii. The set of plans in subsection (i) shall demonstrate compliance with the following: • CALGreen mandatory measures. • Compliance with the appropriate and applicable checklist approved during the Planning entitlement process. • All green building points identified on the checklist approved during review of the Planning and Zoning permit, unless a Request for Revision Plan-check application is submitted and approved by the Bureau of Planning that shows the previously approved points that will be eliminated or substituted. • The required green building point minimums in the appropriate credit categories. ***b. Compliance with Green Building Requirements During Construction*** Requirement: The Project applicant shall comply with the applicable requirements of CALGreen and the Oakland Green Building Ordinance during construction of the Project. The following information shall be submitted to the City for review and approval: i. Completed copies of the green building checklists approved during the review of the Planning and Zoning permit and during the review of the building permit. ii. Signed statement(s) by the Green Building Certifier during all relevant phases of construction that the project complies with the requirements of the Green Building Ordinance. iii. Other documentation as deemed necessary by the City to demonstrate compliance with the Green Building Ordinance. ***c. Compliance with Green Building Requirements After Construction*** Requirement: Prior to the finalizing the Building Permit, the Green Building Certifier shall submit the appropriate documentation to City staff and attain the minimum required point level.		
SCA UTIL-5 (Standard Condition of Approval 89) *Sanitary Sewer System* Requirement: The Project applicant shall prepare and submit a Sanitary Sewer Impact Analysis to the City for review and approval in accordance with the City of Oakland Sanitary Sewer Design Guidelines. The Impact Analysis shall include an estimate of pre-Project and post-Project wastewater flow from the Project site. In the event that the Impact Analysis indicates that the net increase in Project wastewater flow exceeds City-projected increases in wastewater flow in the sanitary sewer system, the Project applicant shall pay the Sanitary Sewer Impact Fee in accordance with the City's Master Fee Schedule for funding improvements to the sanitary sewer system.	Prior to approval of construction-related permit.	City of Oakland Public Works Department, Department of Engineering and Construction

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	**Responsibility**
Utilities and Service Systems (cont.)		
SCA UTIL-6 (Standard Condition of Approval 90) *Storm Drain System* Requirement: The Project storm drainage system shall be designed in accordance with the City of Oakland's Storm Drainage Design Guidelines. To the maximum extent practicable, peak stormwater runoff from the project site shall be reduced by at least 25 percent compared to the pre-Project condition.	Prior to approval of construction-related permit.	City of Oakland Bureau of Building
SCA UTIL-7 (Standard Condition of Approval 91) *Recycled Water* Requirement: Pursuant to section 16.08.030 of the Oakland Municipal Code, the Project applicant shall provide for the use of recycled water in the Project for landscape irrigation purposes unless the City determines that there is a higher and better use for the recycled water, the use of recycled water is not economically justified for the Project, or the use of recycled water is not financially or technically feasible for the Project. The Project applicant shall contact the New Business Office of the East Bay Municipal Utility District (EBMUD) for a recycled water feasibility assessment by the Office of Water Recycling. If recycled water is to be provided in the Project, the Project drawings submitted for construction-related permits shall include the proposed recycled water system and the Project applicant shall install the recycled water system during construction.	Prior to approval of construction-related permit.	City of Oakland Bureau of Planning and Bureau of Building
Utilities and Service Systems (cont.)		
SCA UTIL-8 (Standard Condition of Approval 92) *Water Efficient Landscape Ordinance (WELO)* Requirement: The project applicant shall comply with California's Water Efficient Landscape Ordinance (WELO) in order to reduce landscape water usage. For any landscape project with an aggregate (total noncontiguous) landscape area equal to 2,500 sq. ft. or less. The project applicant may implement either the Prescriptive Measures or the Performance Measures, of, and in accordance with the California's Model Water Efficient Landscape Ordinance. For any landscape project with an aggregate (total noncontiguous) landscape area over 2,500 sq. ft., the project applicant shall implement the Performance Measures in accordance with the WELO. *Prescriptive Measures:* Prior to construction, the project applicant shall submit documentation showing compliance with Appendix D of California's Model Water Efficient Landscape Ordinance (see website below starting on page 23): http://www.water.ca.gov/wateruseefficiency/landscapeordinance/docs/Title%2023%20extract%20-%20Official%20CCR%20pages.pdf *Performance Measures*: Prior to construction, the project applicant shall prepare and submit a Landscape Documentation Package for review and approval, which includes the following: a. Project Information: i. Date, ii. Applicant and property owner name, iii. Project address, iv. Total landscape area, v. Project type (new, rehabilitated, cemetery, or home owner installed), vi. Water supply type and water purveyor, vii. Checklist of documents in the package, and vii. Applicant signature and date with the statement: "I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package."	Prior to approval of construction-related permit.	City of Oakland Bureau of Planning

Standard Conditions of Approval/Mitigation Measures	Mitigation Implementation/ Monitoring	
	Schedule	Responsibility
Utilities and Service Systems (cont.)		
b. Water Efficient Landscape Worksheet i. Hydrozone Information Table ii. Water Budget Calculations with Maximum Applied Water Allowance (MAWA) and Estimated Total Water Use c. Soil Management Report d. Landscape Design Plan e. Irrigation Design Plan, and f. Grading Plan g. Upon installation of the landscaping and irrigation systems, the Project applicant shall submit a Certificate of Completion and landscape and irrigation maintenance schedule for review and approval by the City. The Certificate of Compliance shall also be submitted to the local water purveyor and property owner or his or her designee. h. For the specific requirements within the Water Efficient Landscape Worksheet, Soil Management Report, Landscape Design Plan, Irrigation Design Plan and Grading Plan, see the link below. Effective May 1, 2018 Page 77 http://www.water.ca.gov/wateruseefficiency/landscapeordinance/docs/Title%2023%20extract%20-%20Official%20CCR%20pages.pdf		
Also **SCA HYD-1, Erosion and Sedimentation Control Plan for Construction**. See *Hydrology and Water Quality*, above.		
Also **SCA HYD-2, State Construction General Permit**. See *Hydrology and Water Quality*, above.		
Also **SCA HYD-3 NPDES C.3 Stormwater Requirements for Regulated Projects.** See *Hydrology and Water Quality*, above.		

ATTACHMENT B

Criteria for Use of Addendum per CEQA Guidelines Section 15164

Section 15164(a) of the California Environmental Quality Act (CEQA) Guidelines states that "a lead agency or responsible agency shall prepare an addendum to a previously certified EIR [Environmental Impact Report] if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred." Section 15164(e) states that "a brief explanation of the decision not to prepare a subsequent EIR pursuant to Section 15162 should be included in an addendum to an EIR."

As discussed in detail in Section 6 of this document, the analysis in the 2011 EIR is considered for this assessment under Sections 15162 and 15164.

Project Modifications

The 2011 EIR evaluated the potential significant environmental impacts that could result from redevelopment of approximately 2.2 acres at the westernmost portion of the 7.2-acre project site. The 2011 Project would demolish approximately 280,002 square feet of office and commercial/retail uses and construct approximately 1.47 million square feet of office and commercial/retail uses in two new high-rise towers. The 2011 Project would demolish the existing 20th Street Mall and Webster Street Mall buildings, along with a portion of the roof garden, which would be replaced. The first tower to be constructed would be 34 stories in height and replace the existing 20th Street Mall. The second tower to be constructed would be 42 stories in height and replace the Webster Street Mall. Both towers would be primarily for office use and would also include street level retail spaces.

The Revised Project would include an approximately 415-foot-tall office tower (approximately 160 feet shorter than the approved office tower) on Webster Street with approximately 865,540 square feet of office use. Two options are under consideration for the 20th Street site: an approximately 240-foot-tall office tower with 467,340 square feet of office use (Master Plan I) or a 413-foot-tall residential tower with approximately 512,800 square feet of residential use (580 units) (Master Plan II). As with the 2011 Project, the Revised Project would include the demolition of the existing Webster Street Mall and 20th Street Mall buildings, and portions of the existing rooftop garden. The Revised Project would entail minor revisions to the 2011 Project analyzed by the 2011 EIR, providing the basis for use of an Addendum.

Conditions for Addendum

As demonstrated in the CEQA Checklist, none of the following conditions for preparation of a subsequent EIR per Section 15162(a) apply to the Revised Project:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:

   (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

   (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

   (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Project Consistency with Section 15162 of the CEQA Guidelines

Since certification of the 2011 EIR, no changes have occurred in the circumstances under which the Revised Project would be implemented that would change the severity of the Revised Project's physical impacts, as explained in the CEQA Checklist in Section 7 of this document. No new information has emerged that would substantially change the analyses or conclusions set forth in the 2011 EIR.

Furthermore, as demonstrated in the CEQA Checklist, the Revised Project would not result in any new significant environmental impacts, result in any substantial increases in the significance of previously identified effects, or necessitate implementation of additional or considerably different mitigation measures than those identified in the 2011 EIR, nor render any mitigation measures or alternatives found not to be feasible, feasible. The effects of the Revised Project would be substantially the same as, or less than, those reported in the 2011 EIR.

The analysis presented in this CEQA Checklist, combined with the prior 2011 EIR analysis, demonstrates that the Revised Project would not result in significant impacts that were not previously identified in the 2011 EIR. The Revised Project would not result in a substantial increase in the significance of impacts, nor would the Revised Project contribute considerably to cumulative effects that were not already accounted for in the certified 2011 EIR. Overall, the Revised Project's impacts are similar to those identified and discussed in the 2011 EIR, as described in the CEQA Checklist, and the findings reached in the 2011 EIR are applicable.

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APPENDIX A

Shadow Analysis and Graphics

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PREVISION DESIGN

DRAFT CEQA SHADOW SECTION: Kaiser Center, Oakland

March 8, 2019

Shade and Shadow

Based on City of Oakland significance threshold criteria, potential adverse effects pertaining to shadow from new buildings within the downtown area of Oakland were considered as described below. Under City of Oakland thresholds of significance, a project would have a significant shadow impact if it would:

A. introduce landscape that would now or in the future cast substantial shadows on existing solar collectors;

B. cast shadow that substantially impairs the function of a building using passive solar heat collection, solar collectors for hot water heating, or photovoltaic solar collectors[1];

C. cast shadow that substantially impairs the beneficial use of any public or quasi-public park, lawn, garden, or open space; or

D. cast shadow on an historic resource[2] 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 designation as an historic resource.

Two separate masterplan schemes are reviewed in this section: Master Plan 1 (two office buildings), and Master Plan 2 (one office building and one residential tower). To accompany the written analysis, graphics depicting the new net shadow effects at 9:00 a.m., 12:00 p.m., and 3:00 p.m. for the summer solstice (June 21st), spring/fall equinoxes (March 20th and September 22nd), and winter solstice (December 21st) have been prepared for Master Plan 1 (Exhibits MP1.1-A1 to MP1.3-A3), and Master Plan 2 (Exhibits MP2.1-A1 to MP2.3-A3). Graphics showing the same dates and times have also been prepared additionally showing the extents of net new shading that would be generated by future planned projects[3], the "cumulative condition". Cumulative condition graphics for Master Plan 1 are shown by Exhibits MP1.1-B1 to MP1.3-B3, and for Masterplan 2 by Exhibits MP2.1-B1 to MP2.3-B3.

Project Shading Effects:

The shadow analysis demonstrates that between the hours of 9am and 3pm, the Master Plan 1 would cast net new shadow throughout the year westward towards the intersection of Telegraph Avenue and 21st Street (Reference MP1.2-A1), northwest across 23rd Street between Telegraph and Northgate Avenues

[1] Solar collector locations determined by review of high-resolution Google Earth aerial photography, dated 10/7/2017.
[2] Local historic resources per city of Oakland Designated Landmarks webpage (http://www2.oaklandnet.com/government/o/PBN/OurServices/Historic/DOWD009012), and the Oakland Planning and Zoning Map, (http://oakgis.maps.arcgis.com/apps/webappviewer/index.html?id=3676148ea4924fc7b75e7350903c7224).
[3] Cumulative condition projects based on Oakland Planning's Major Project's List, dated July 2017 (http://www2.oaklandnet.com/oakca1/groups/ceda/documents/agenda/oak065129.pdf).

(Reference MP1.3-A1), northward across Grand Avenue just short of 23rd Street (Reference MP1.3-A2), and northeast close to the intersection of Harrison and 24st Streets (Reference MP1.3-A3).

Master Plan 2 would result in a similar reach of shadow to the west, northwest, and north, however the residential tower would cast shadows further to the eastward across Harrison Street (Reference MP2.3-A3).

The proposed buildings of Master Plan Schemes 1 and 2 would each generate net new shadow that would at various times affect solar collectors, historic resources, or public parks in the vicinity. Neither scheme would introduce landscape that would cast shadows on existing solar collectors. The features and sites that are affected by net new shadow between the hours of 9am and 3pm are detailed below. The difference in shading effects, if any, between Masterplan Schemes 1 and 2 are identified in the discussion.

Public Parks or Open Spaces affected by net new shadow from the proposed project:

Adams Park (#3)

Times of year new shading would occur:	Master Plan 1: No net new shadow at Adams Park. Master Plan 2: Mid-November though late January.
Range of times affected throughout the year:	Master Plan 1: N/A Master Plan 2: Between approximately 2:50pm and 3pm
Shading Effects during Summer Period[4]:	Master Plan 1: No net new shadow. Master Plan 2: No net new shadow.
Shading Effects during Fall & Spring Periods[5]:	Master Plan 1: No net new shadow. Master Plan 2: No net new shadow.
Shading Effects during Winter Period:	Master Plan 1: No net new shadow. Master Plan 2: Between one-third and one-half of the park area would be cast in shadow for a short time before 3pm. In mid-November and later January, the southeast corner of the park would be affected, whereas closer to the winter solstice (December 21) the northwest corner would instead be affected.

[4] The path of the sun, and therefore the pattern of shadow it casts, is roughly mirrored between the summer and winter solstices as it is between the winter and summer solstices. As such, for the purposes of capturing this symmetrical pattern, the "Summer Period" is defined by this analysis as the 3-month period with the summer solstice falling as a *midpoint* (rather than as the starting point), which would be from May 6th to Aug 6th. Following this methodology, the "Fall Period" would be therefore defined as between August 7 and November 4th, the "Winter Period" would fall between November 5th and February 5th, and the "Spring Period" would occur between February 6th and May 5th.

[5] As the path of the sun is mirrored about the solstices, patterns of shading over the Fall and Spring periods are also mirror images of each other.

Adams Park (#3)

Shading Significance:	Master Plan 1: N/A Master Plan 2: The project's net new shadow would be present over approximately one and a half months near the winter solstice, affecting the park for only a very short duration in the late afternoon. The park features affected include grassy areas, trees, a paved pedestrian walkway and exposed portions of Glen Echo Creek, however the short duration of such coverage would not substantially impair the beneficial use of park, and as such would not be considered a significant impact.

Franklin Plaza (#2)

Times of year new shading would occur:	Master Plan 1: Early November through early February. Master Plan 2: Same as Master Plan 1
Range of times affected throughout the year:	Master Plan 1: Between approximately 10:30am and 11:00am Master Plan 2: Same as Master Plan 1
Shading Effects during Summer Period:	Master Plan 1: No net new shadow. Master Plan 2: No net new shadow.
Shading Effects during Fall & Spring Periods:	Master Plan 1: No net new shadow. Master Plan 2: No net new shadow.
Shading Effects during Winter Period:	Master Plan 1: Approximately one quarter of the plaza along the western side adjacent Broadway would receive shadow for approximately 15-20 minutes. The shadow would arrive around 10:30am in November and January/February and gradually arrive later (closer to 10:45) near the winter solstice. Master Plan 2: Same as Master Plan 1
Shading Significance:	Master Plan 1: The project's net new shadow would be present for a short duration in the late morning throughout the winter period. The area cast in shadow would include a portion of a raised planter and concrete pedestrian paths. The short duration of such coverage would not substantially impair the beneficial use of park, and as such would not be considered a significant impact. Master Plan 2: Same as Master Plan 1

No other known public open spaces in the vicinity would be affected by net new shadow from either of the two proposed master plans.

Sites affected by net new shadow from the proposed project on solar collectors:

420 West Grand Avenue Rooftop Solar Panels (#3)

Times of year new shading would occur:	Master Plan 1: Late November through mid-January Master Plan 2: Same as Master Plan 1
Range of times affected throughout the year:	Master Plan 1: Between approximately 9:30am and 10:15am Master Plan 2: Same as Master Plan 1
Shading Effects during Summer Period:	Master Plan 1: No net new shadow. Master Plan 2: Same as Master Plan 1
Shading Effects during Fall & Spring Periods:	Master Plan 1: No net new shadow. Master Plan 2: Same as Master Plan 1
Shading Effects during Winter Period:	Master Plan 1: Starting around 9:30 am, new shadows would be cast on the southern portion of the rooftop and move from west to east until the shadows move off the rooftop by around 10:15am. Peak coverage would occur around 10am, when approximately one third of the rooftop panels would be cast in new project shadow. Master Plan 2: Same as Master Plan 1
Shading Significance:	Master Plan 1: The project's net new shadow would affect existing solar panels for a short daily duration for about one and a half months a year at times when solar panel efficiency would already be lower than at other times of year due to the low angle of the sun. The presence of new shading would not substantially impair the functioning of the building and, therefore, the Project shading would not be considered a significant impact. Master Plan 2: Same as Master Plan 1

No other known solar collectors in the vicinity would be affected by net new shadow from either of the two proposed master plans.

Historic resources affected by net new shadow from the proposed project:

2101 Telegraph (#3/YMCA)

Times of year new shading would occur:	Master Plan 1: In October and from mid-February through early March. Master Plan 2: Same as Master Plan 1
Range of times affected throughout the year:	Master Plan 1: Between 9:00am through approximately 9:10am Master Plan 2: Same as Master Plan 1
Shading Effects during Summer Period:	Master Plan 1: No net new shadow Master Plan 2: No net new shadow.
Shading Effects during Fall & Spring Periods:	Master Plan 1: Early morning shadows would be cast on the eastern-facing street façade of the building at 9am, and would move off the building completely no later than 9:10am Master Plan 2: Same as Master Plan 1
Shading Effects during Winter Period:	Master Plan 1: No net new shadow Master Plan 2: No net new shadow.
Shading Significance:	Master Plan 1: The presence of new shadow would not materially alter the physical characteristics of the resource that convey its historical significance, and therefore would not be considered a significant impact. Master Plan 2: Same as Master Plan 1

523 22nd Street (#4/Residential Building)

Times of year new shading would occur:	Master Plan 1: Mid-October though early November and from mid-February through early March. Master Plan 2: Same as Master Plan 1
Range of times affected throughout the year:	Master Plan 1: Between 9am and approximately 9:15am Master Plan 2: Same as Master Plan 1
Shading Effects during Summer Period:	Master Plan 1: No net new shadow. Master Plan 2: No net new shadow.
Shading Effects during Fall & Spring Periods:	Master Plan 1: Early morning shadows would be cast on the rooftop and eastern-facing building elevation at 9am, and would move off the building completely no later than 9:15am Master Plan 2: Same as Master Plan 1
Shading Effects during Winter Period:	Master Plan 1: No net new shadow. Master Plan 2: No net new shadow.

523 22nd Street (#4/Residential Building)

Shading Significance:	Master Plan 1: The presence of new shadow would not materially alter the physical characteristics of the resource that convey its historical significance, and therefore would not be considered a significant impact. Master Plan 2: Same as Master Plan 1

2025 Broadway (#6/Paramount Theatre)

Times of year new shading would occur:	Master Plan 1: From early August through mid-October and late February through early May Master Plan 2: From early August through early November and mid-February through early May
Range of times affected throughout the year:	Master Plan 1: Between 9:00am and approximately 9:40am Master Plan 2: Same as Master Plan 1
Shading Effects during Summer Period:	Master Plan 1: In late May and early August, a small amount of new shadow would be cast over a portion of the eastern-facing street façade (including the theatre marquee) but would move off the building no later than 9:15am. Master Plan 2: Same as Master Plan 1
Shading Effects during Fall & Spring Periods:	Master Plan 1: New shadow would occur in early to mid-fall as well as in mid to late spring. In early mornings, shadow would be cast on the rooftop of the theater as well as the eastern-facing street façade and theatre marquee. Shadow would move off the building to the northeast no later than 9:40am. Master Plan 2: Substantially similar to Master Plan 1
Shading Effects during Winter Period:	Master Plan 1: No net new shadow. Master Plan 2: No net new shadow.
Shading Significance:	Master Plan 1: The presence of new shadow would not materially alter the physical characteristics of the resource that convey its historical significance, and therefore would not be considered a significant impact. Master Plan 2: Same as Master Plan 1

2333 Harrison Street (#8/ Seventh Church of Christ Scientist)

Times of year new shading would occur:	Master Plan 1: From approximately mid-November through late January Master Plan 2: Same as Master Plan 1

2333 Harrison Street (#8/ Seventh Church of Christ Scientist)

Range of times affected throughout the year:	Master Plan 1: Between approximately 2:45pm through 3:00pm Master Plan 2: Same as Master Plan 1
Shading Effects during Summer Period:	Master Plan 1: No net new shadow Master Plan 2: No net new shadow
Shading Effects during Fall & Spring Periods:	Master Plan 1: No net new shadow Master Plan 2: No net new shadow
Shading Effects during Winter Period:	Master Plan 1: The western quarter of the roof would receive up to 15 minutes of net new shadow in the late afternoon. Master Plan 2: Same as Master Plan 1
Shading Significance:	Master Plan 1: The presence of new shadow would not materially alter the physical characteristics of the resource that convey its historical significance, and therefore would not be considered a significant impact. Master Plan 2: Same as Master Plan 1

No other historic resources in the vicinity would be affected by net new shadow from either of the two proposed master plans.

While access to light is not typically an important characteristic of most historic buildings, it may be of historic places of worship where the light, specifically the light through stained glass windows, contributes to its architectural historical significance.

The shadows cast by the Project would be cast for a short period of the day, on limited portions of four historic buildings. Light is not an important historical characteristic for the YMCA, the residential building at 523 22nd Street, or the Paramount Theater and the presence of new shadow would not materially alter the physical characteristics that convey historical significance for any of the three historic resources.

New shading on the Seventh Church of Christ Scientist was analyzed in the Broadway Valdez District Specific Plan EIR (BVDSP EIR) in 2014. Based on observations, this church contains a relatively small amount of clear glass doors and windows within an entry vestibule along its eastern façade, rather than large areas of stained glass windows on any one facade. As such, access to light is not an important characteristic nor a characteristic which conveys the historical significance of this building, in particular. Consistent with the findings in the BVDSP EIR, new Project shadow the glass doors and windows would not materially impair the resource's historic significance and new shading would not adversely affect the building's historic status. Overall, new project shadow would not result in a significant impact with respect to any of the four historic resources.

Project + Cumulative Shading Effects:

The cumulative condition analysis assesses the potential shadow impacts that would be caused by either of the proposed master plans in combination with other proposed projects in the vicinity that have the potential to cast shadow on sites affected by project shading. The following proposed projects were modeled and added to the analysis to identify possible shadow interaction between these projects and the sites affected by the Kaiser Center project:

1. 2100 Telegraph Avenue
2. 2015 Telegraph Avenue
3. 2225 Telegraph Avenue (Moxy Hotel)
4. 2016 Telegraph Avenue
5. 2100 Telegraph Avenue (max envelope)
6. 2201 Valley Street
7. 2250 Telegraph Avenue
8. 459 23rd Street
9. 456-466 23rd Street
10. 1900 Broadway
11. 2044 Franklin Street
12. 2270 Broadway
13. 2305 Webster Street
14. 2 Kaiser Place
15. 2302 Valdez Street
16. 24th & Harrison

Below is a brief synopsis of whether shading from these cumulative projects (if constructed) would affect the same receptor sites discussed in this section.

Adams Park (#3): No cumulative shadow impacts.

Franklin Plaza (#2): Shadow from the proposed project at 2044 Franklin Street would completely overlap shadows cast by both master plan schemes on Franklin Park. The 2100 Telegraph would also contribute new shadow to Franklin Plaza, however that shadow would be non-overlapping as it occurs at times unaffected by either master plan scheme.

420 West Grand Avenue Rooftop Solar Panels (#3): No shadow from cumulative projects would directly overlap/interact with shadows cast on 420 West Grand by either of the master plan schemes, however new non-overlapping shadow would be cast at other times by planned projects at 2100 Telegraph Avenue, 2201 Valley Street, 2270 Broadway and 2305 Webster Street. Considering the project shadow would fall for a short duration for about one and a half months a year at times when solar panel efficiency would already be lower than at other times of year due to the low angle of the sun, and the presence of new shading would not substantially impair the functioning of the building the project would not result in a considerable contribution to any cumulative impact.

2101 Telegraph(#3/YMCA): Shadow from 2100 Telegraph Avenue would partially overlap/interact with shadows cast by either of the master plan schemes. At other times, 2101 Telegraph would also receive

non-overlapping new shadow from 2015 Telegraph Avenue, 2016 Telegraph Avenue and 2044 Franklin Street.

523 22nd Street (#4/residential building): Shadow cast by 2100 Telegraph Avenue would completely overlap with all shadows cast by either of the master plan schemes.

2025 Broadway (#6/Paramount Theatre): Shadow from 2044 Franklin Street would partially overlap/interact with shadows cast by either of the master plan schemes. At other times, 2025 Broadway would also receive non-overlapping new shadow from 2100 Telegraph Avenue, 2015 Telegraph Avenue and 2016 Telegraph Avenue.

2333 Harrison Street (#8/ Seventh Church of Christ Scientist): None of the cumulative development in the project vicinity would cast new shadow on the Seventh Church of Christ Scientist.

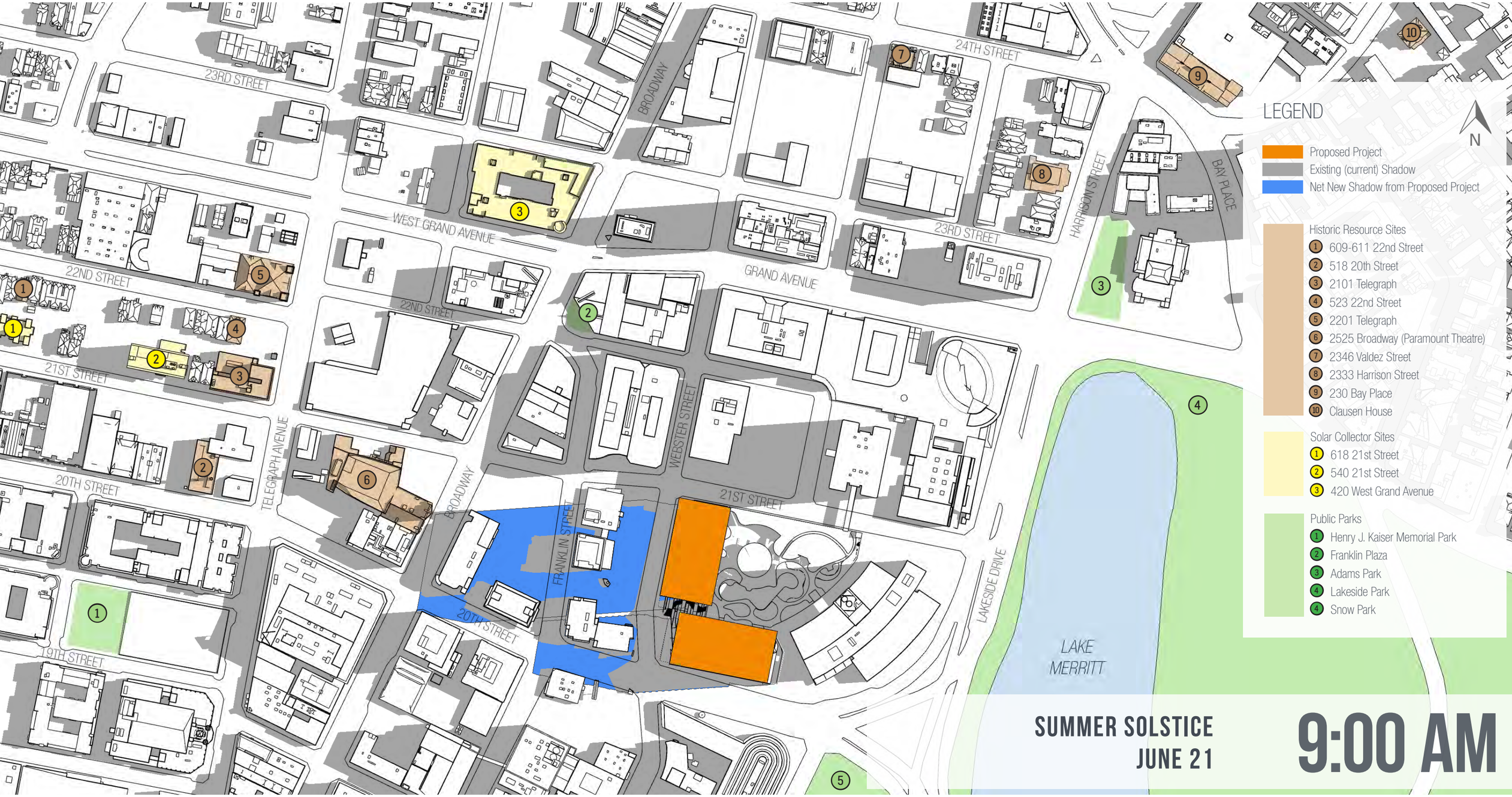
Conclusion:
Overall, based on the factors discussed in this section, net new shadow cast by the either of the proposed Kaiser Center master plan schemes would not result in a significant impact.

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Shading diagrams on the Summer Solstice

MP1.1-A1



SUMMER SOLSTICE
JUNE 21

9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Cumulative shading diagrams on the Summer Solstice

MP1.1-B1



Historic Resource Sites

1. 609-611 22nd Street
2. 518 20th Street
3. 2101 Telegraph
4. 523 22nd Street
5. 2201 Telegraph
6. 2525 Broadway (Paramount Theatre)
7. 2346 Valdez Street
8. 2333 Harrison Street
9. 230 Bay Place

Solar Collector Sites

1. 618 21st Street
2. 540 21st Street
3. 420 West Grand Avenue

Public Parks

1. Henry J. Kaiser Memorial Park
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12. 2270 Broadway
13. 2305 Webster
14. 2 Kaiser Place
15. 2302 Valdez Street
16. 24th & Harrison

N

SUMMER SOLSTICE
JUNE 21

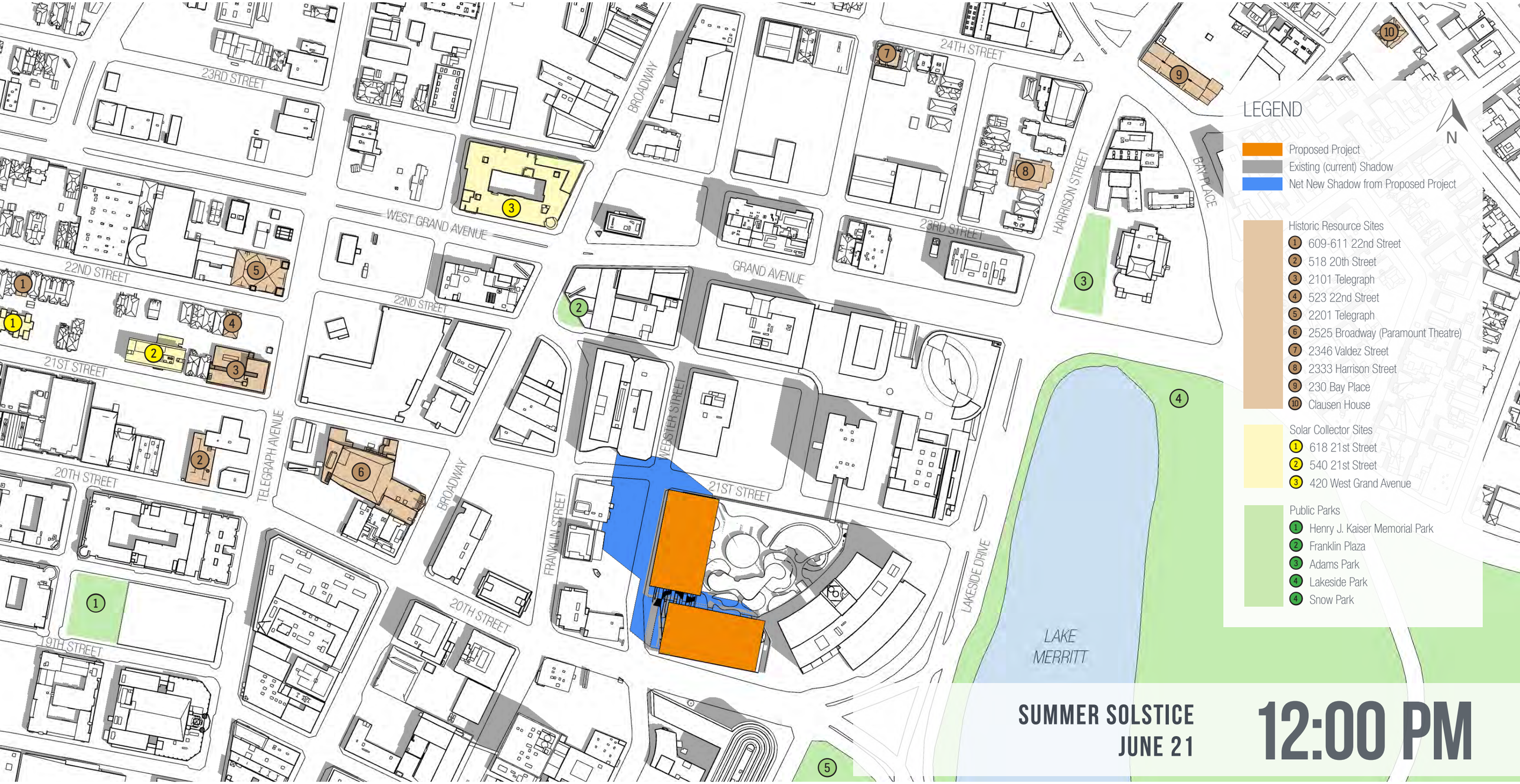
9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Shading diagrams on the Summer Solstice

MP1.1-A2



SUMMER SOLSTICE
JUNE 21

12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Cumulative shading diagrams on the Summer Solstice

MP1.1-B2



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SUMMER SOLSTICE
JUNE 21

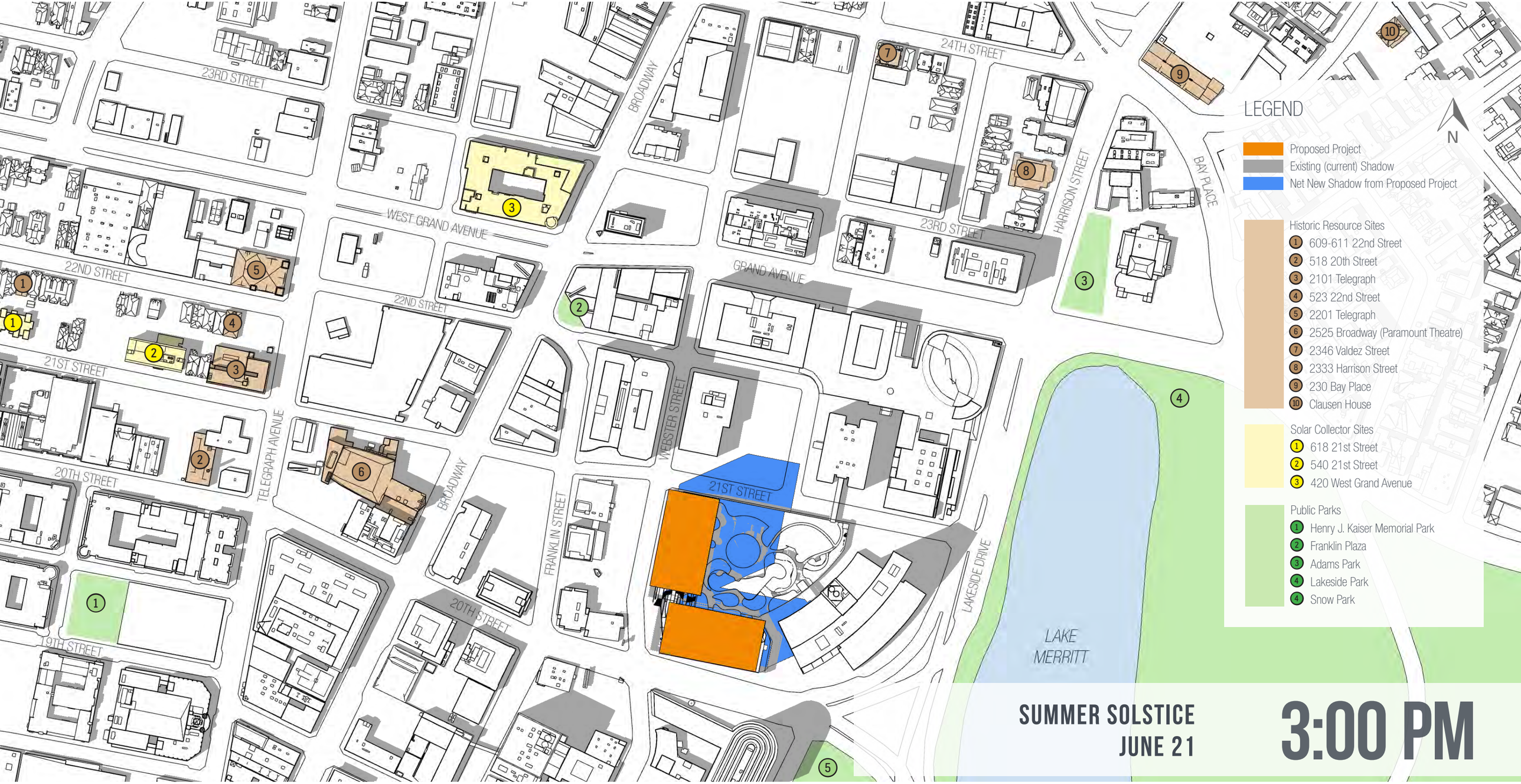
12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Shading diagrams on the Summer Solstice

MP1.1-A3



SUMMER SOLSTICE
JUNE 21

3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Cumulative shading diagrams on the Summer Solstice

MP1.1-B3



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LEGEND
- Proposed Project
- Existing (current) Shadows
- Net New Shadow from Proposed Project
- New Shading from Cumulative Projects

N

SUMMER SOLSTICE
JUNE 21

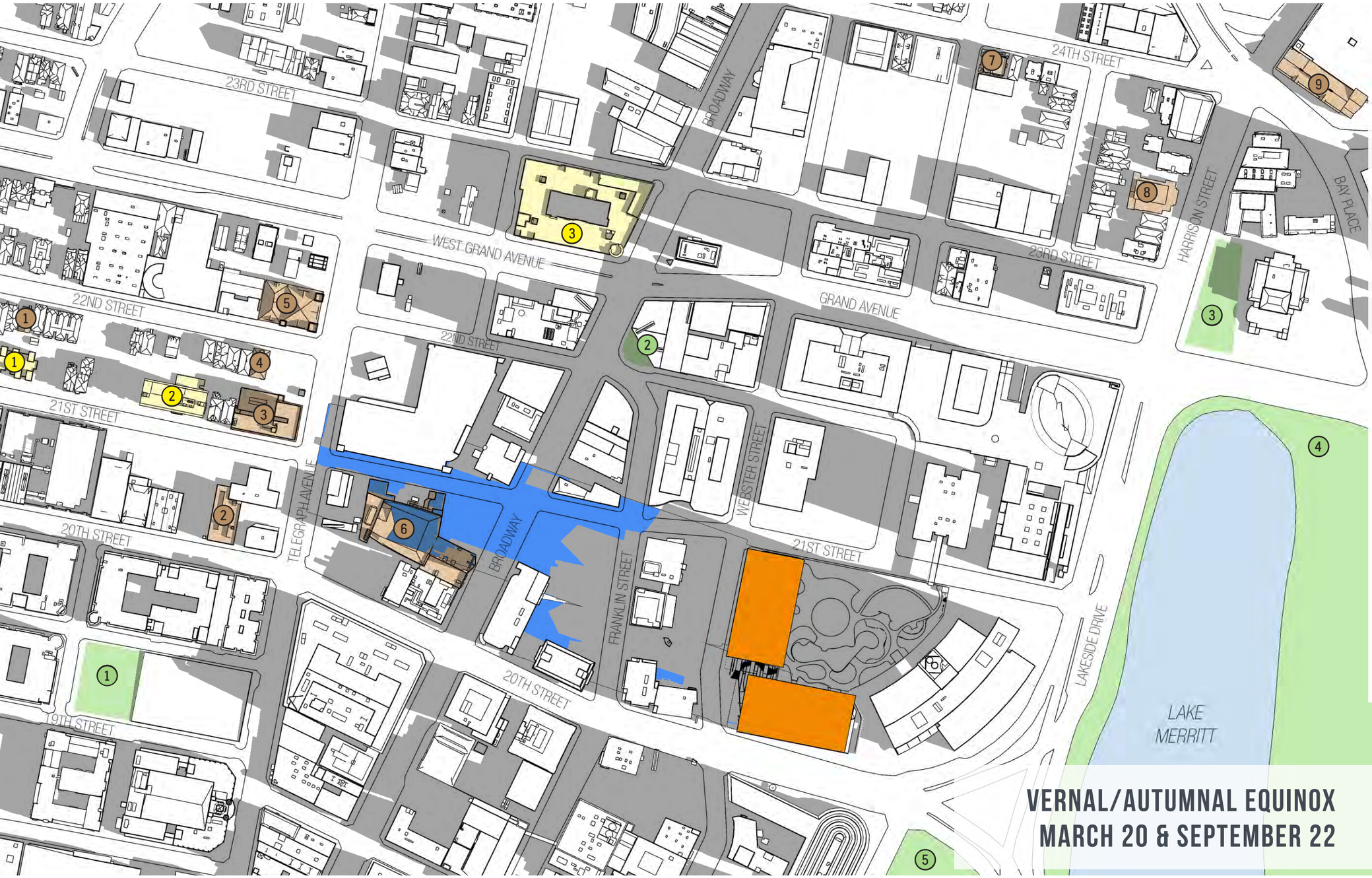
3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Shading diagrams on the Vernal/Autumnal Equinoxes

MP1.2-A1



LEGEND

N

Proposed Project

Existing (current) Shadow

Net New Shadow from Proposed Project

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VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

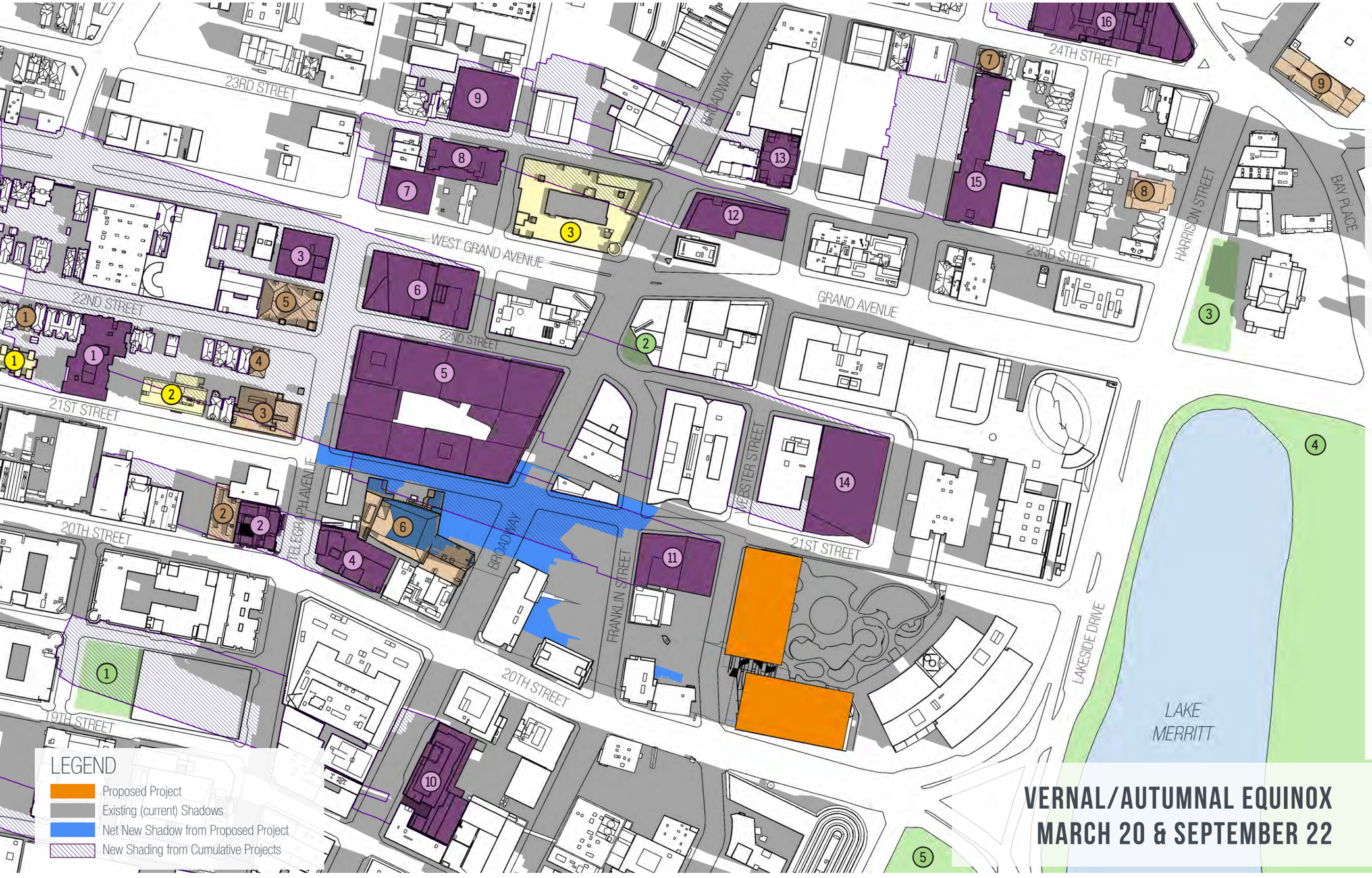
9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Cumulative shading diagrams on the Vernal/Autumnal Equinoxes

MP1.2-B1



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- New Shading from Cumulative Projects

VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

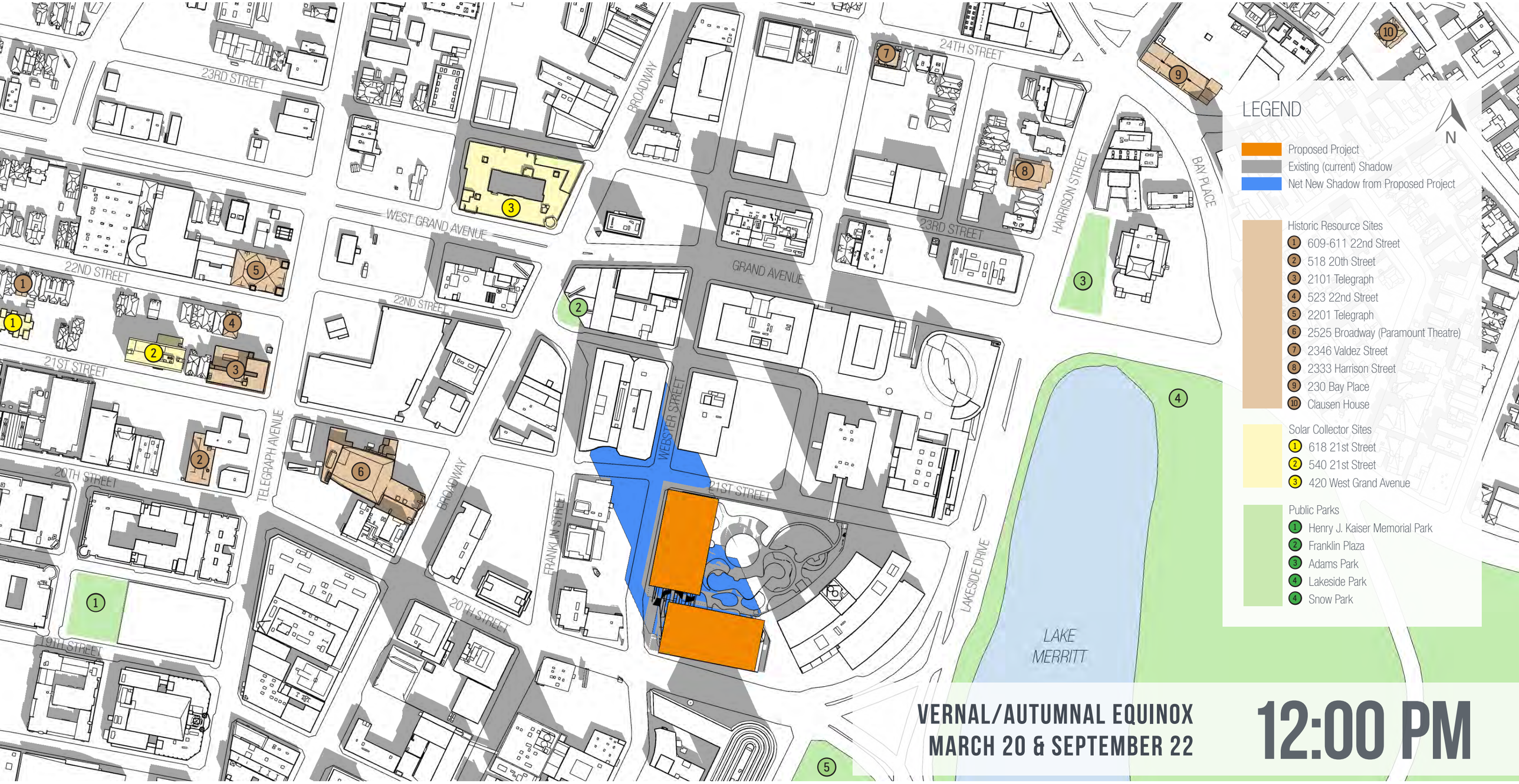
9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Shading diagrams on the Vernal/Autumnal Equinoxes

MP1.2-A2



VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

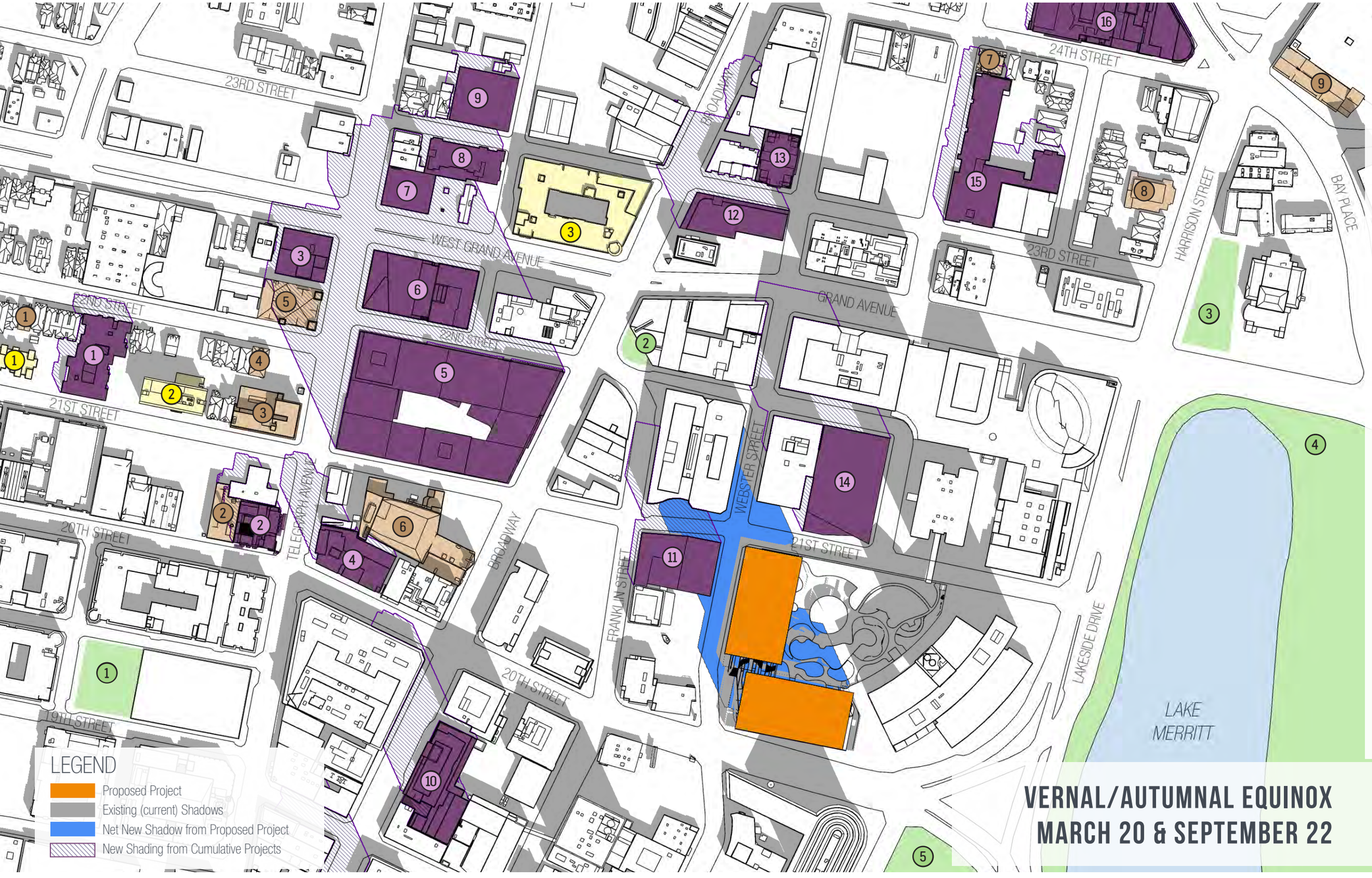
12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Cumulative shading diagrams on the Vernal/Autumnal Equinoxes

MP1.2-B2



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VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

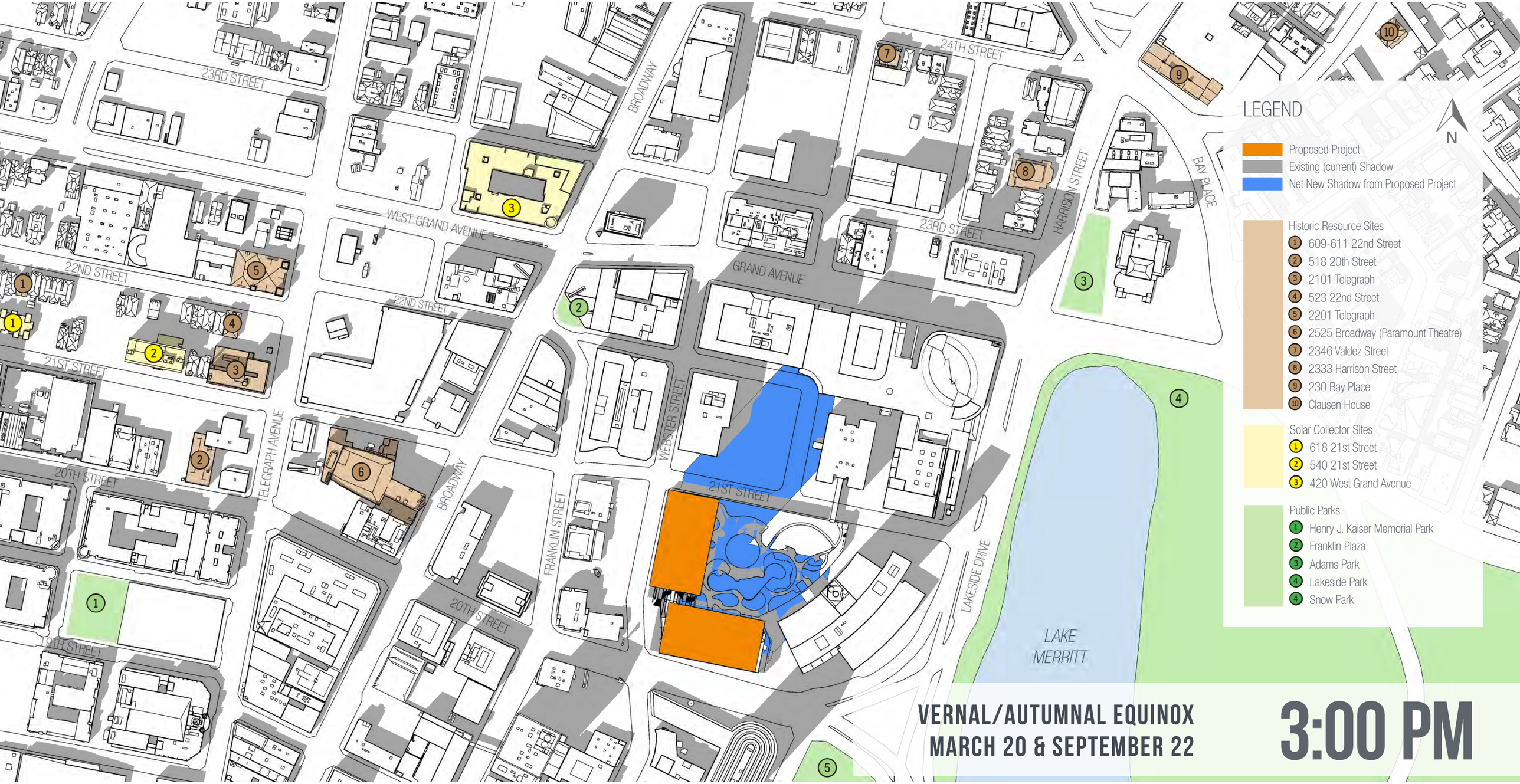
12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Shading diagrams on the Vernal/Autumnal Equinoxes

MP1.2-A3



VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

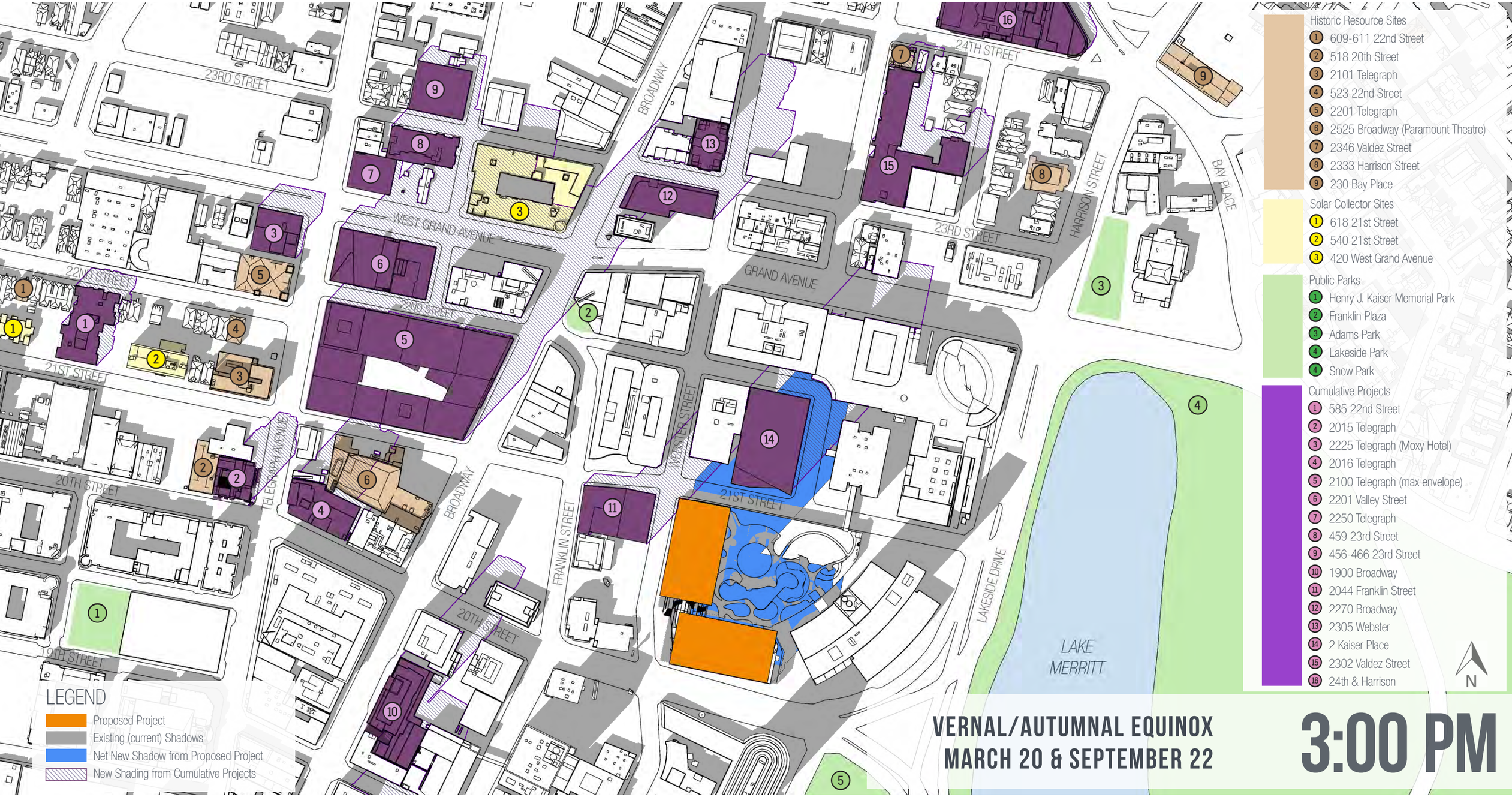
3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Cumulative shading diagrams on the Vernal/Autumnal Equinoxes

MP1.2-B3



VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

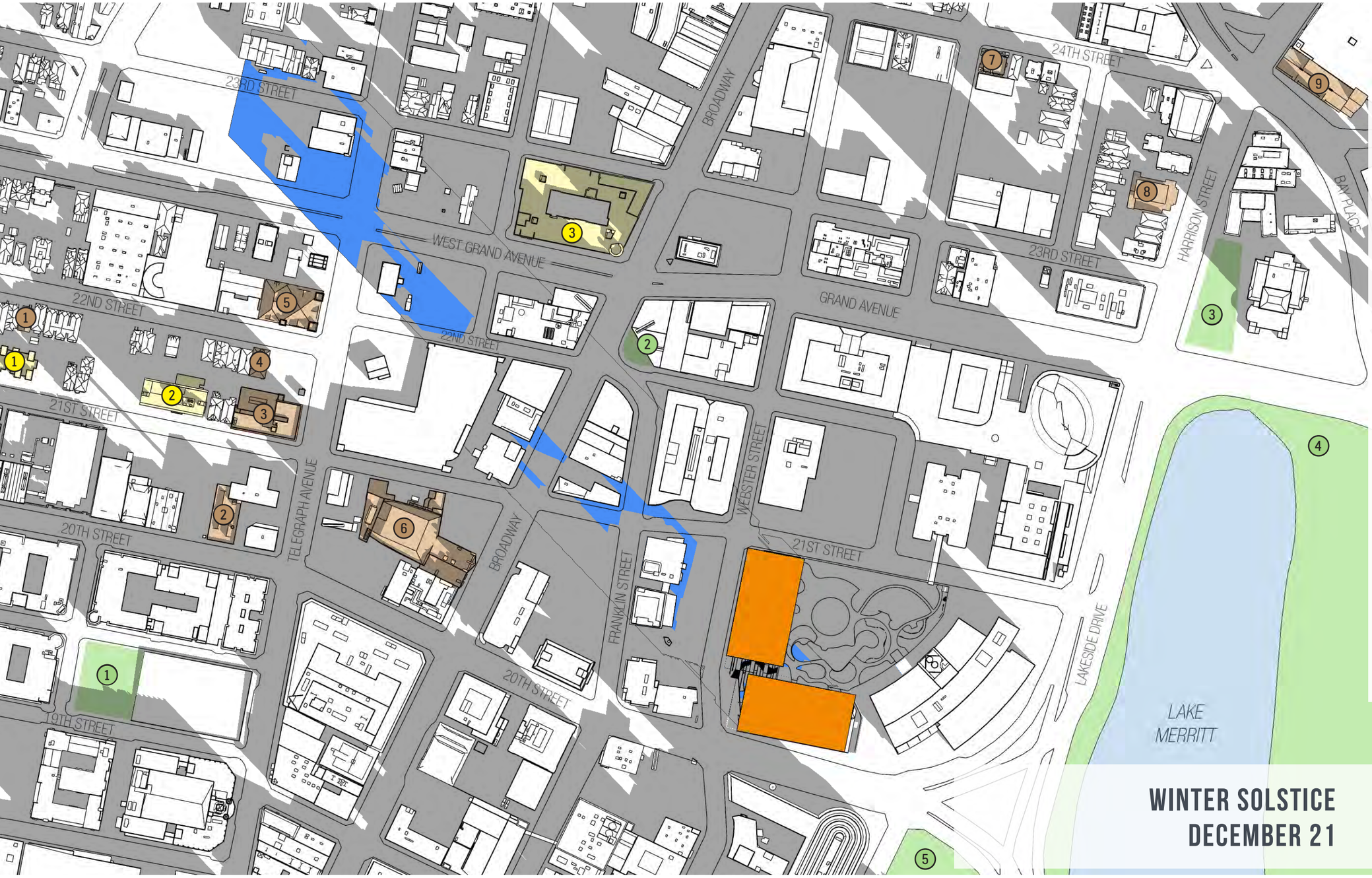
3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Shading diagrams on the Winter Solstice

MP1.3-A1



LEGEND

N

- Proposed Project
- Existing (current) Shadow
- Net New Shadow from Proposed Project

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WINTER SOLSTICE
DECEMBER 21

9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Cumulative shading diagrams on the Winter Solstice

MP1.3-B1



WINTER SOLSTICE
DECEMBER 21

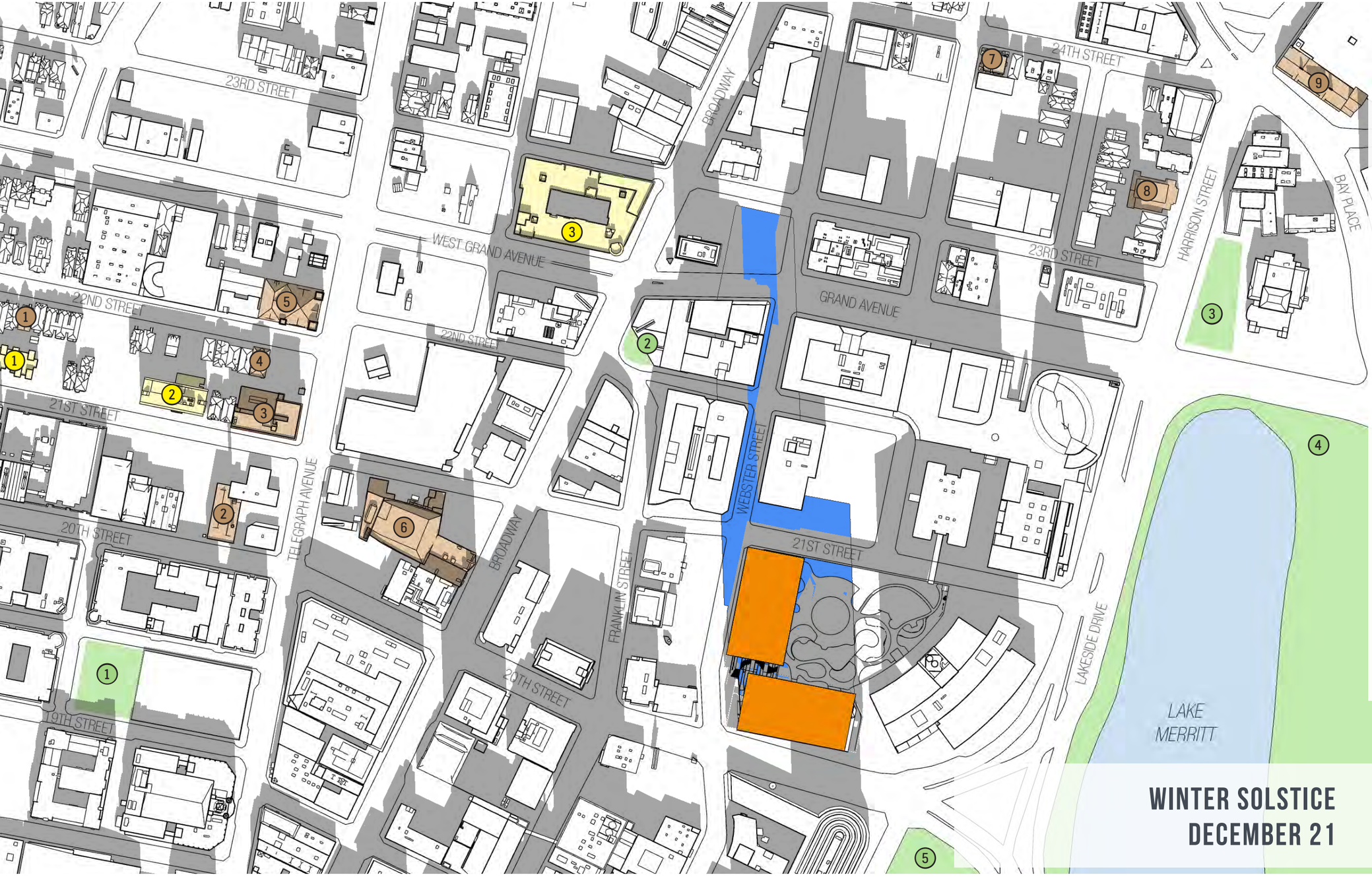
9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Shading diagrams on the Winter Solstice

MP1.3-A2



LEGEND

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Proposed Project

Existing (current) Shadow

Net New Shadow from Proposed Project

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WINTER SOLSTICE DECEMBER 21

12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Cumulative shading diagrams on the Winter Solstice

MP1.3-B2



WINTER SOLSTICE
DECEMBER 21

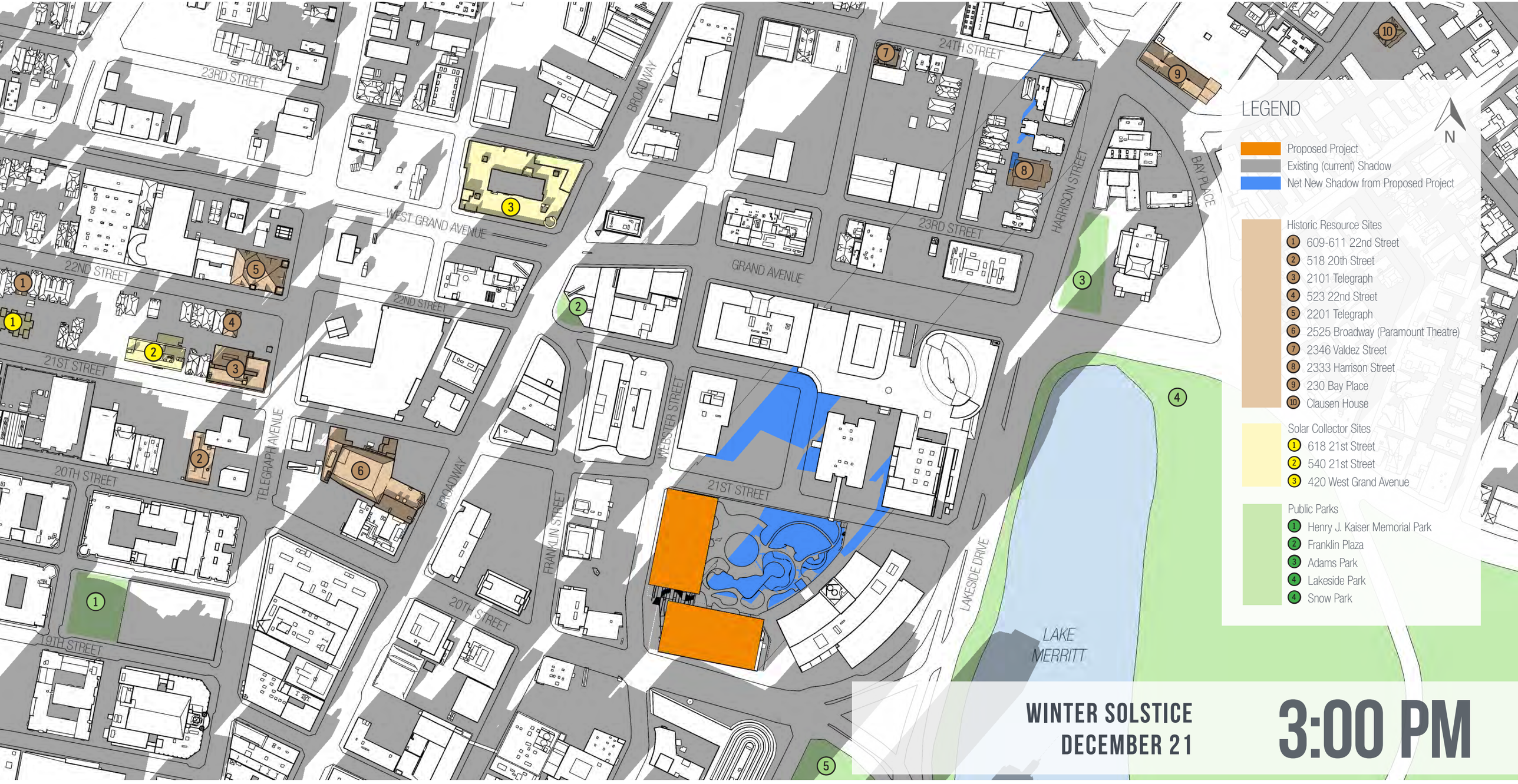
12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Shading diagrams on the Winter Solstice

MP1.3-A3



WINTER SOLSTICE
DECEMBER 21

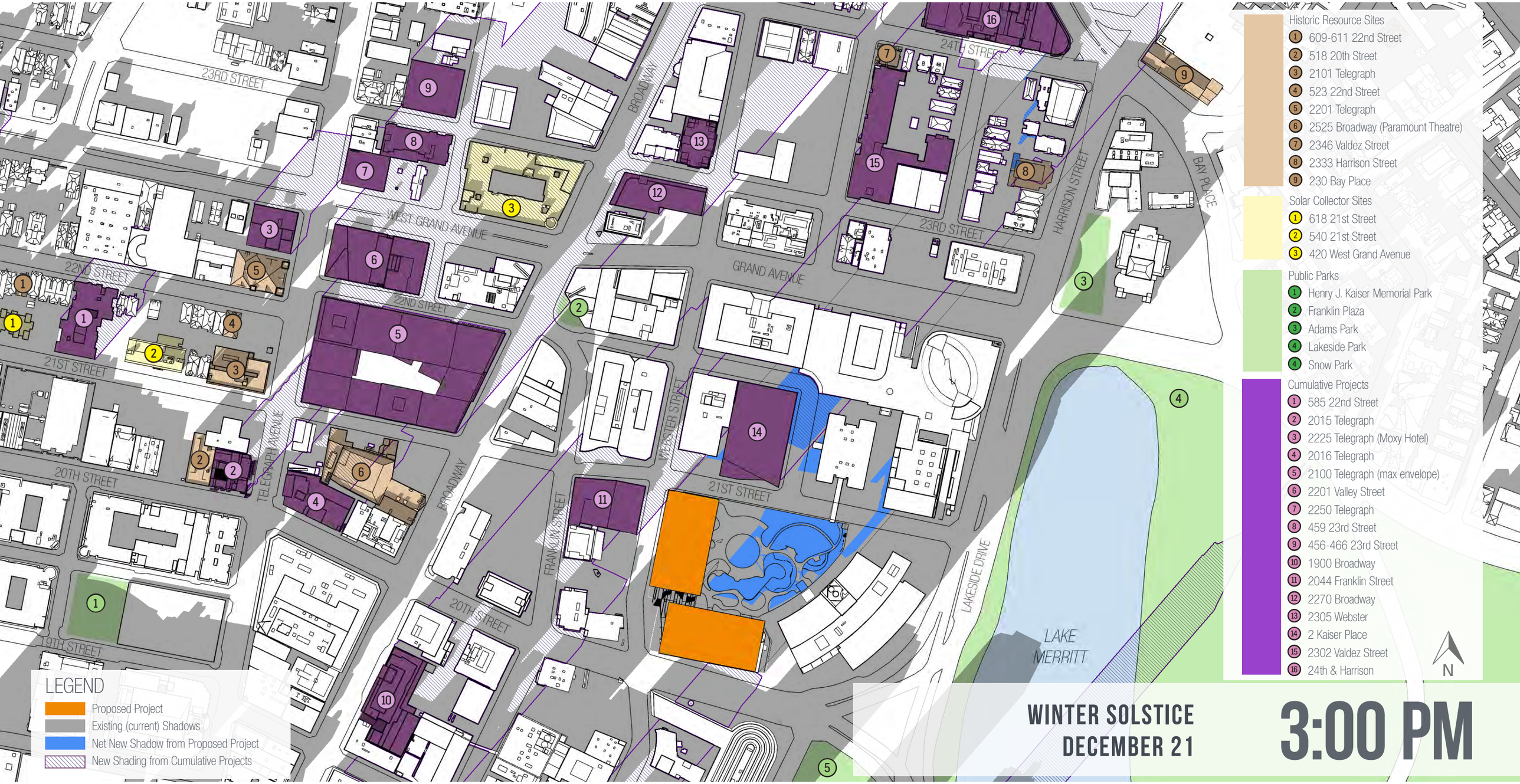
3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 1

Cumulative shading diagrams on the Winter Solstice

MP1.3-B3



WINTER SOLSTICE
DECEMBER 21

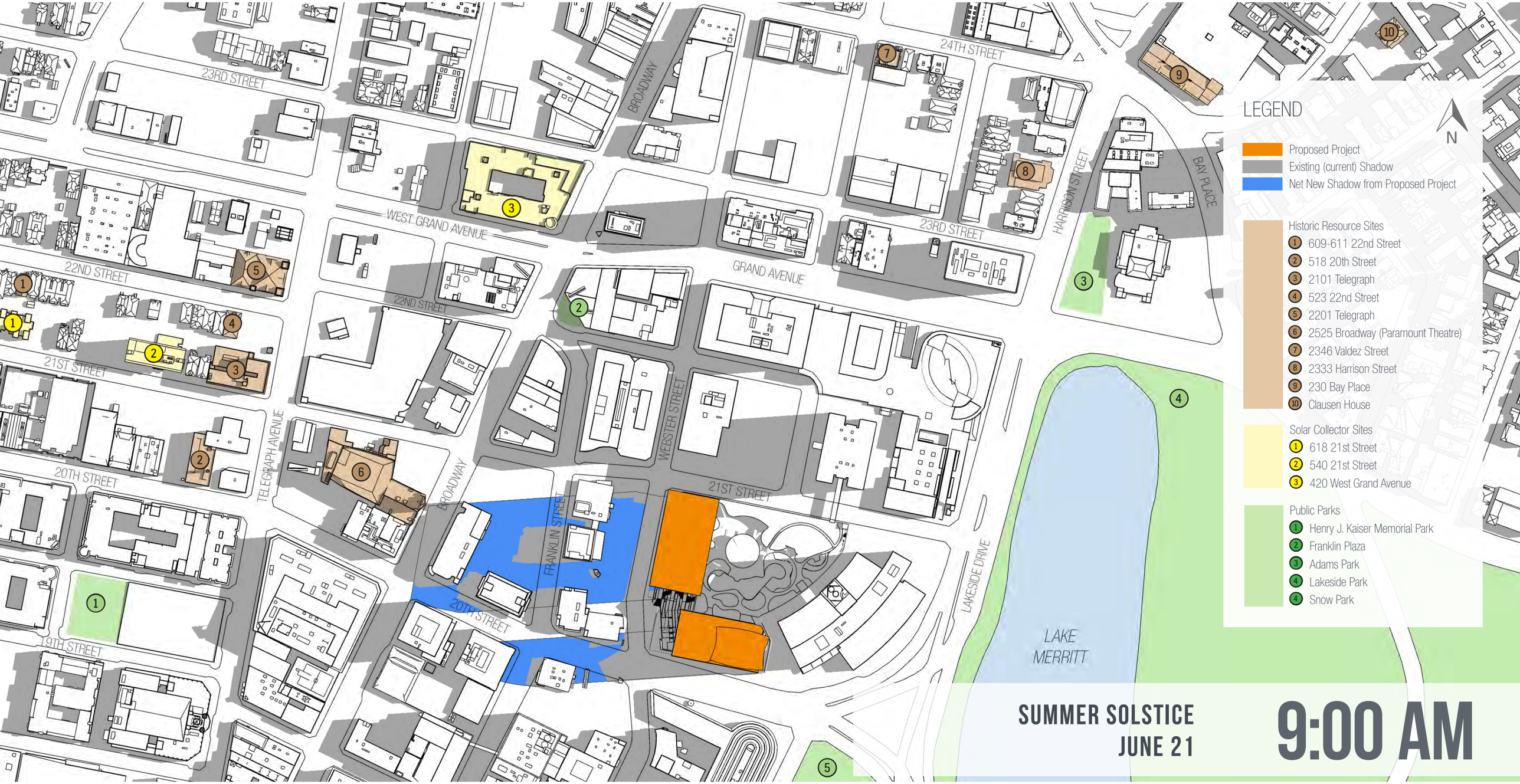
3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Shading diagrams on the Summer Solstice

MP2.1-A1



SUMMER SOLSTICE
JUNE 21

9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Cumulative shading diagrams on the Summer Solstice

MP2.1-B1



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SUMMER SOLSTICE
JUNE 21

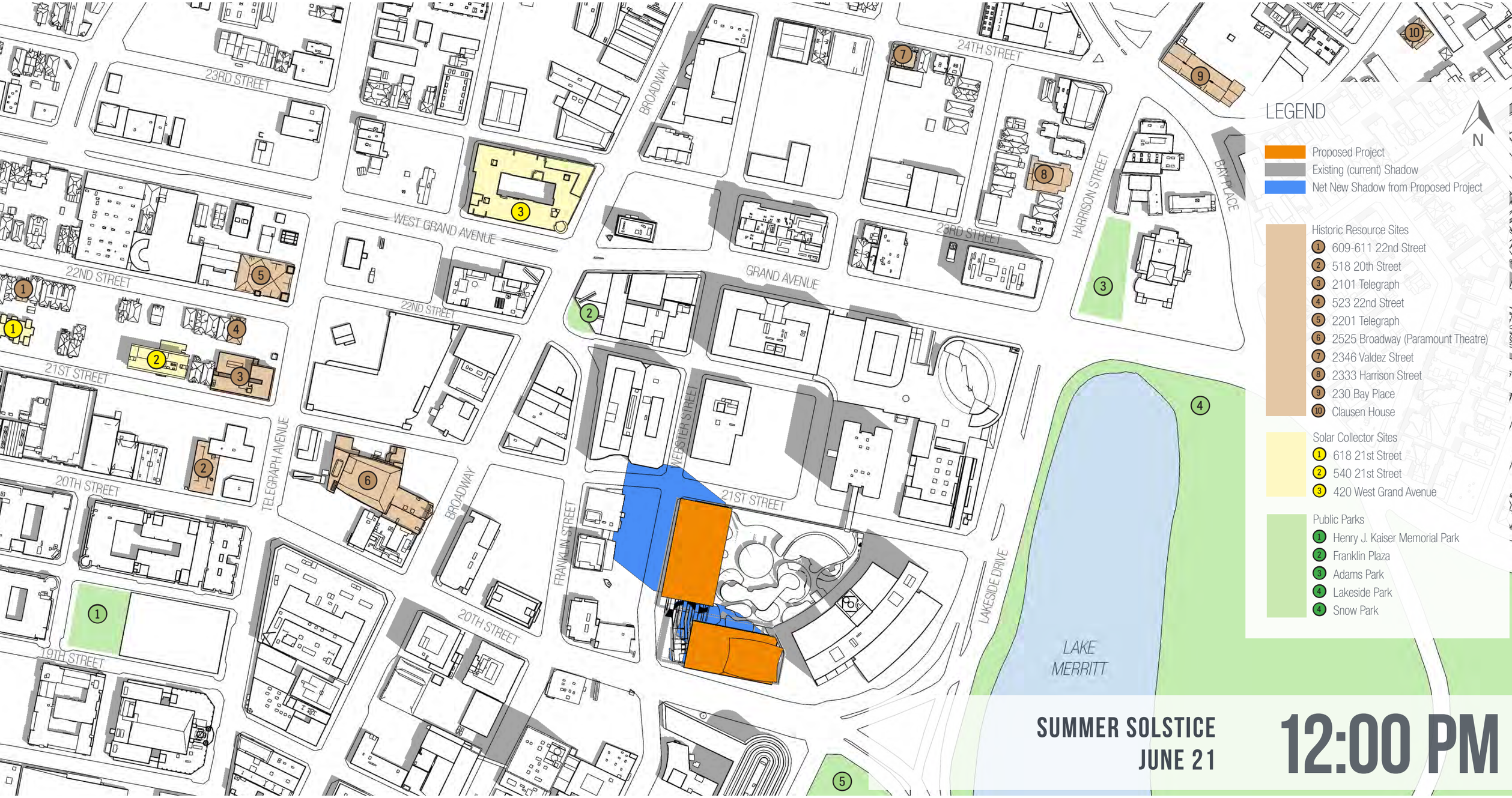
9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Shading diagrams on the Summer Solstice

MP2.1-A2



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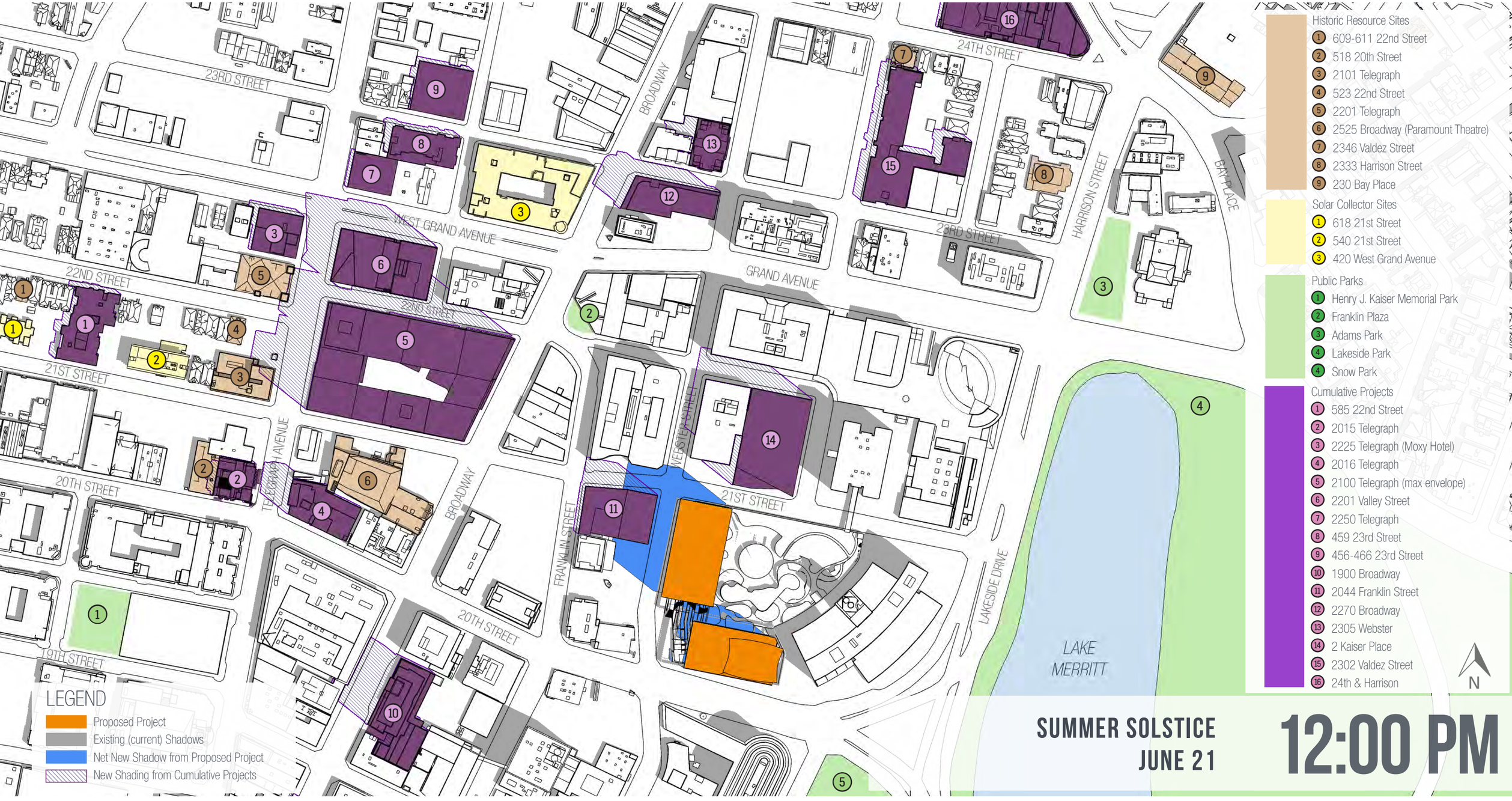

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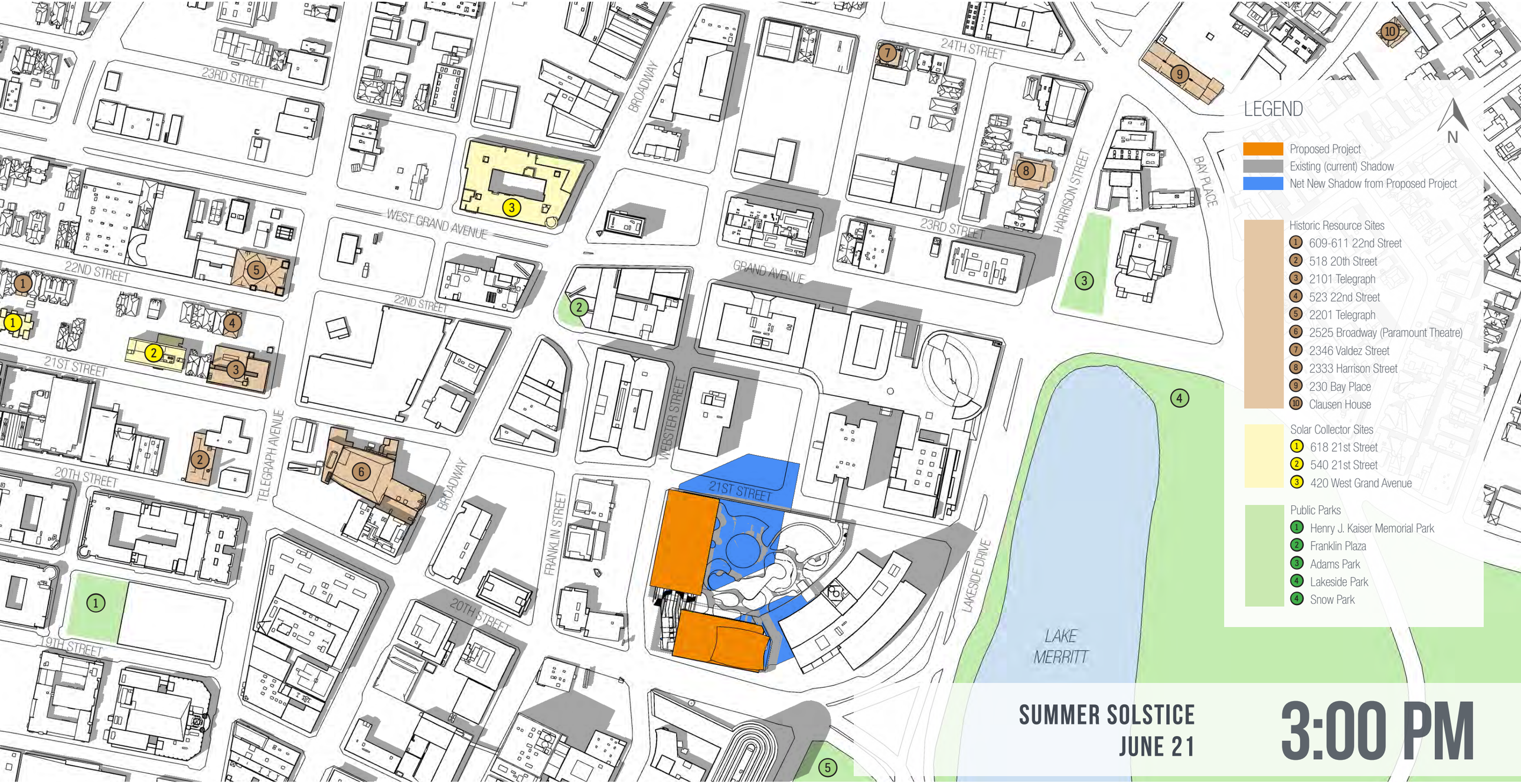

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SUMMER SOLSTICE
JUNE 21

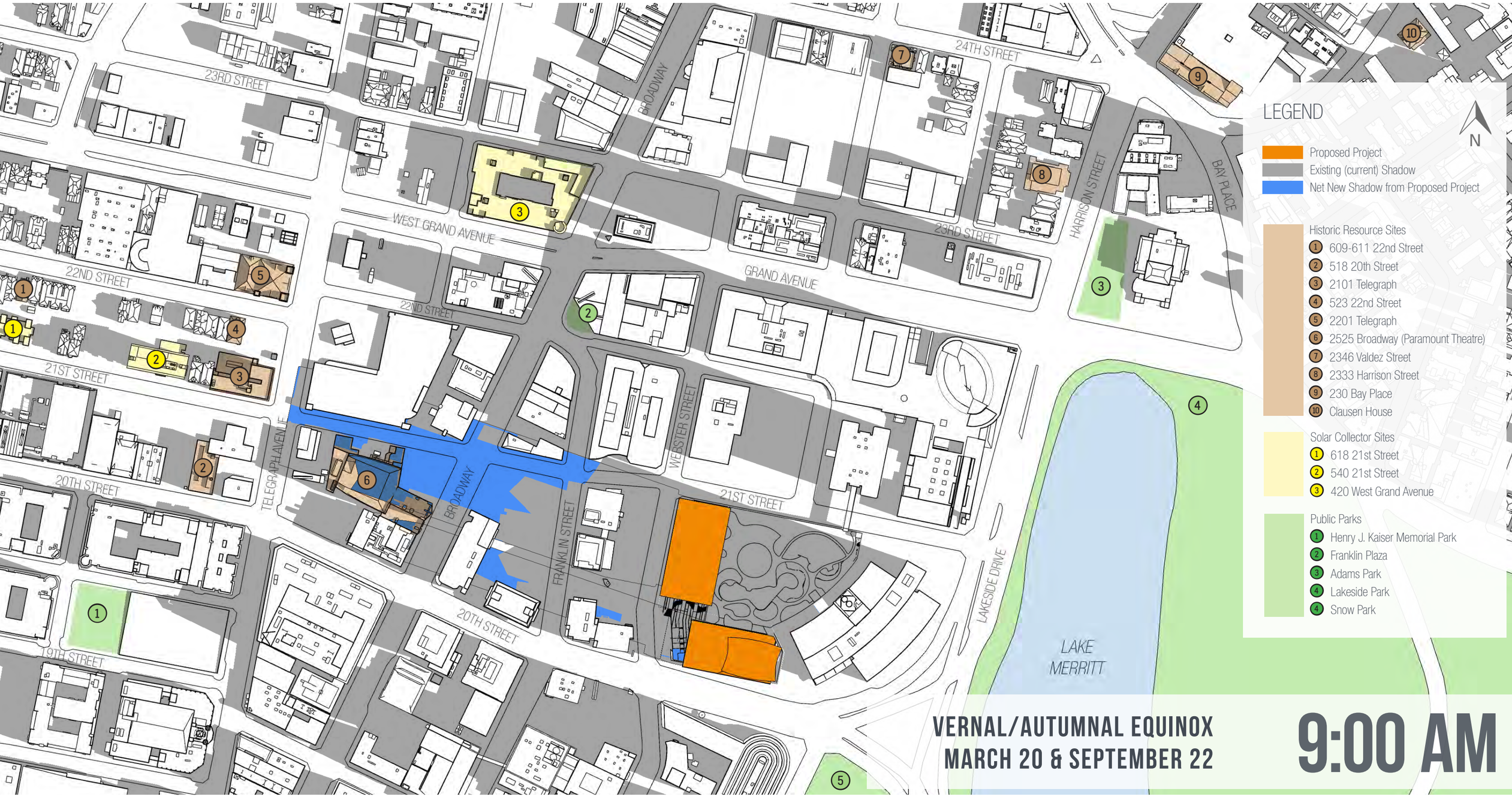
3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Shading diagrams on the Vernal/Autumnal Equinoxes

MP2.2-A1



VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

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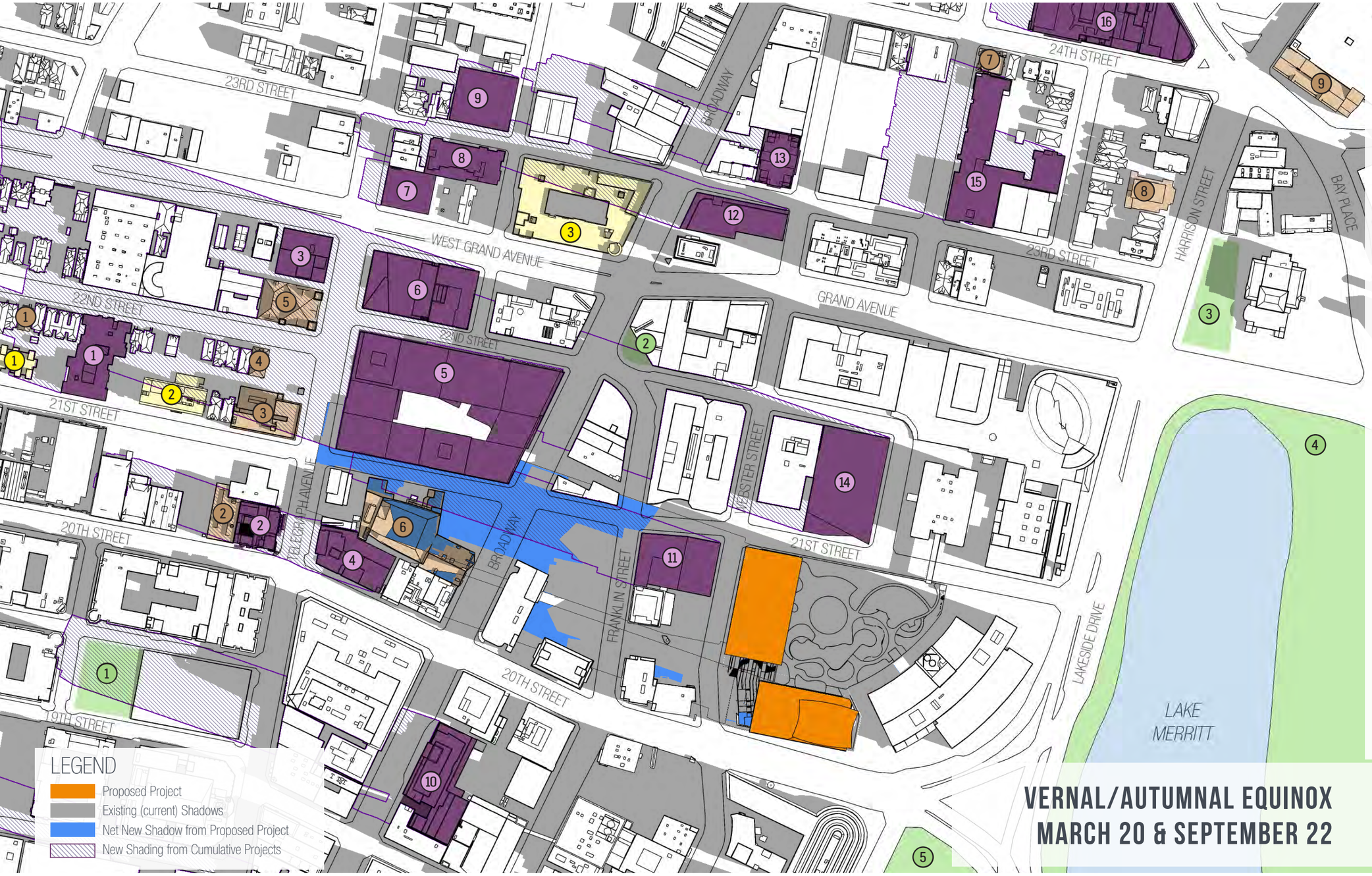
MP2.2-B1



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VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

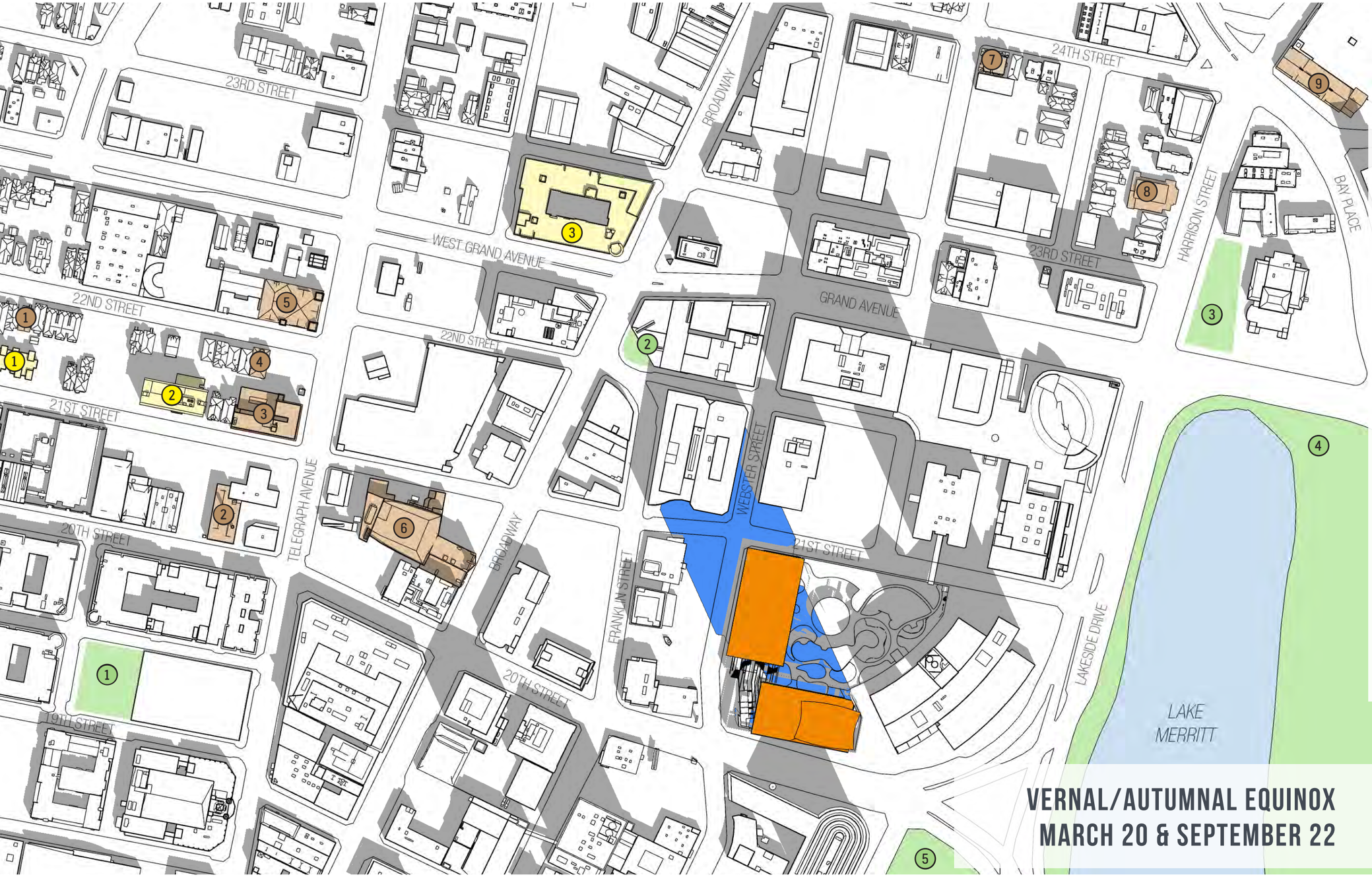
9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Shading diagrams on the Vernal/Autumnal Equinoxes

MP2.2-A2



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VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

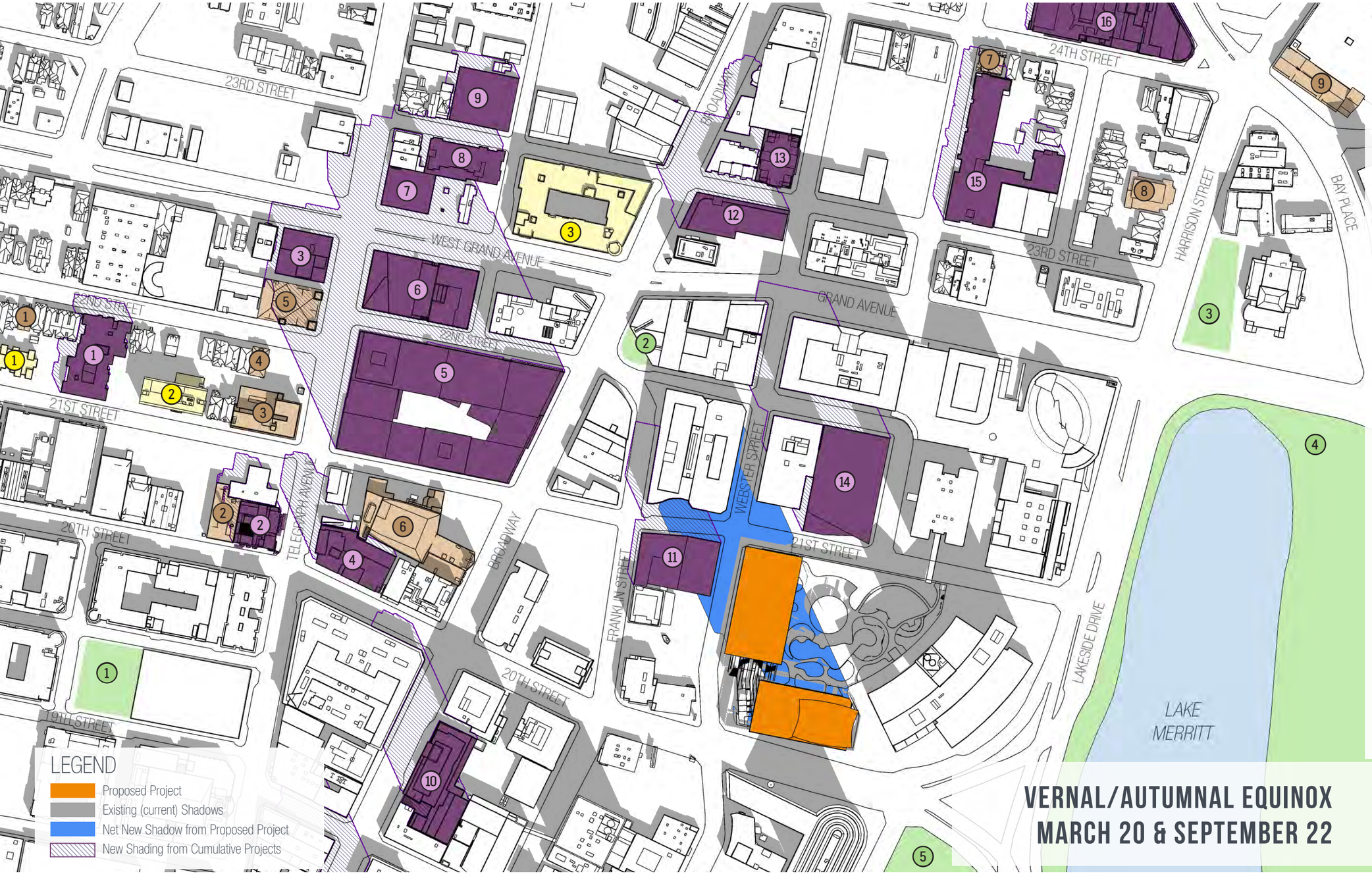
12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Cumulative shading diagrams on the Vernal/Autumnal Equinoxes

MP2.2-B2



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7. 2250 Telegraph
8. 459 23rd Street
9. 456-466 23rd Street
10. 1900 Broadway
11. 2044 Franklin Street
12. 2270 Broadway
13. 2305 Webster
14. 2 Kaiser Place
15. 2302 Valdez Street
16. 24th & Harrison

N

VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

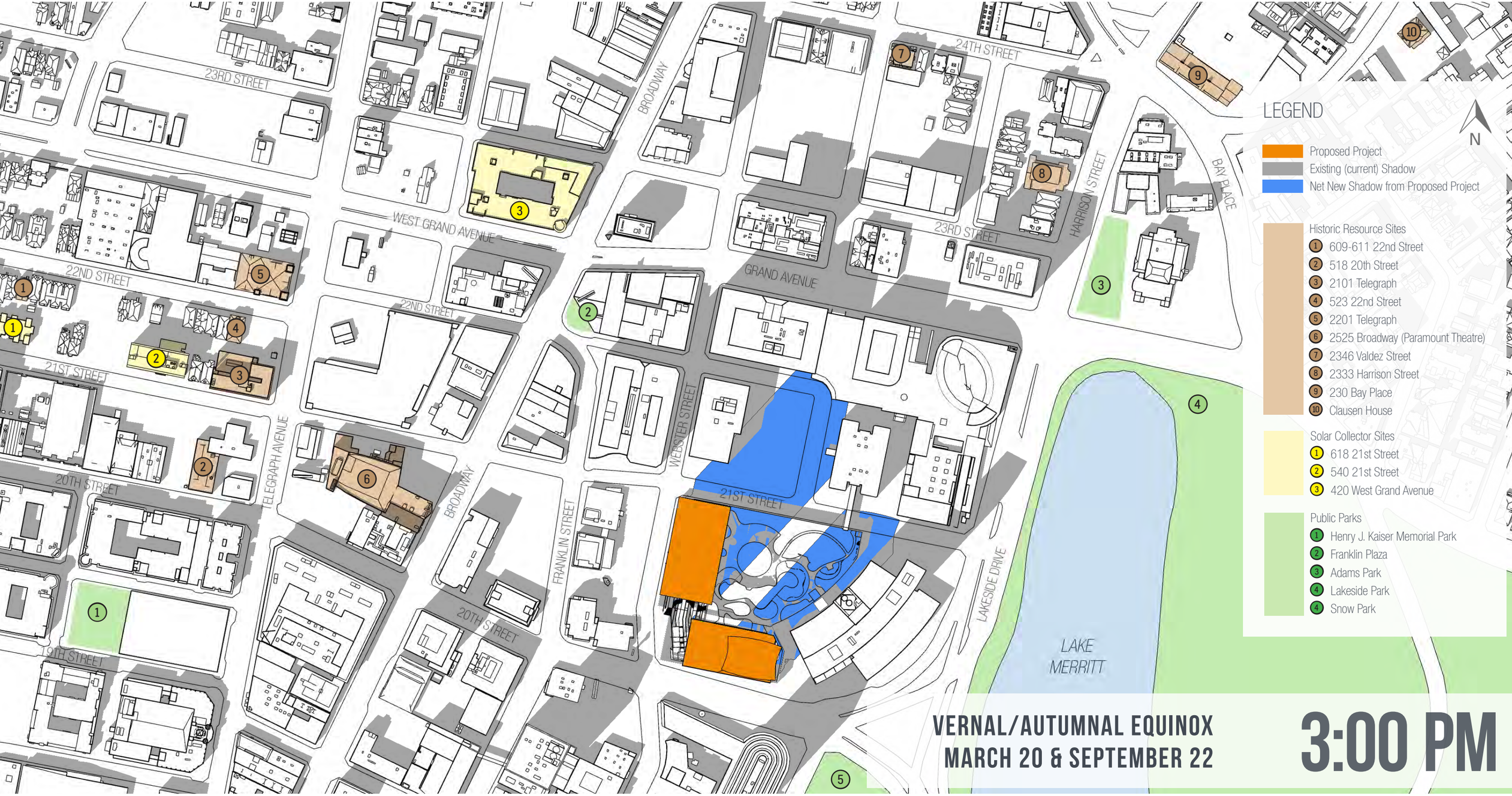
12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Shading diagrams on the Vernal/Autumnal Equinoxes

MP2.2-A3



VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

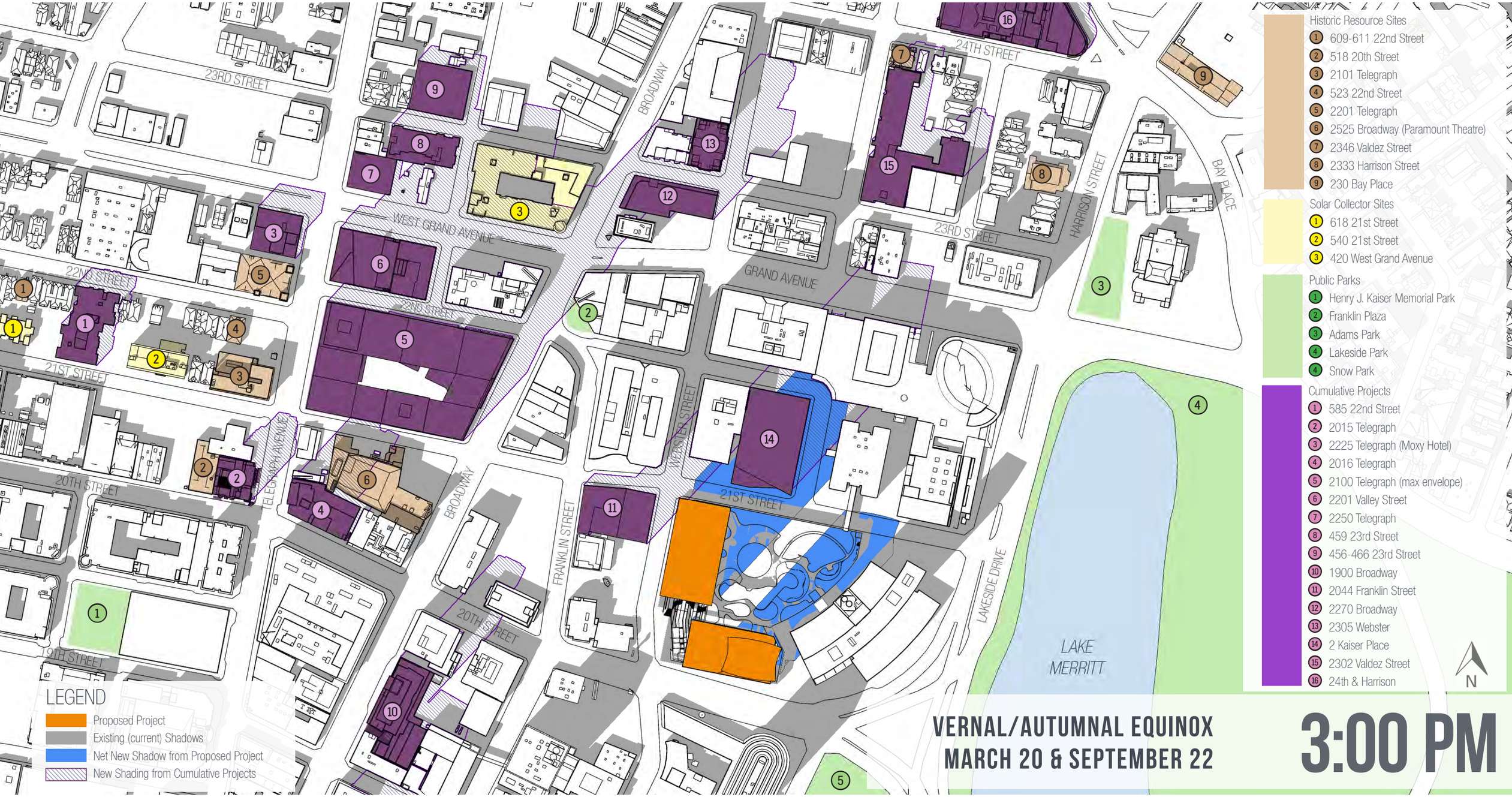
3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Cumulative shading diagrams on the Vernal/Autumnal Equinoxes

MP2.2-B3



Historic Resource Sites

1. 609-611 22nd Street
2. 518 20th Street
3. 2101 Telegraph
4. 523 22nd Street
5. 2201 Telegraph
6. 2525 Broadway (Paramount Theatre)
7. 2346 Valdez Street
8. 2333 Harrison Street
9. 230 Bay Place

Solar Collector Sites

1. 618 21st Street
2. 540 21st Street
3. 420 West Grand Avenue

Public Parks

1. Henry J. Kaiser Memorial Park
2. Franklin Plaza
3. Adams Park
4. Lakeside Park
4. Snow Park

Cumulative Projects

1. 585 22nd Street
2. 2015 Telegraph
3. 2225 Telegraph (Moxy Hotel)
4. 2016 Telegraph
5. 2100 Telegraph (max envelope)
6. 2201 Valley Street
7. 2250 Telegraph
8. 459 23rd Street
9. 456-466 23rd Street
10. 1900 Broadway
11. 2044 Franklin Street
12. 2270 Broadway
13. 2305 Webster
14. 2 Kaiser Place
15. 2302 Valdez Street
16. 24th & Harrison

N

VERNAL/AUTUMNAL EQUINOX
MARCH 20 & SEPTEMBER 22

3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Shading diagrams on the Winter Solstice

MP2.3-A1



LEGEND

N

- Proposed Project
- Existing (current) Shadow
- Net New Shadow from Proposed Project

Historic Resource Sites

1. 609-611 22nd Street
2. 518 20th Street
3. 2101 Telegraph
4. 523 22nd Street
5. 2201 Telegraph
6. 2525 Broadway (Paramount Theatre)
7. 2346 Valdez Street
8. 2333 Harrison Street
9. 230 Bay Place
10. Clausen House

Solar Collector Sites

1. 618 21st Street
2. 540 21st Street
3. 420 West Grand Avenue

Public Parks

1. Henry J. Kaiser Memorial Park
2. Franklin Plaza
3. Adams Park
4. Lakeside Park
4. Snow Park

WINTER SOLSTICE
DECEMBER 21

9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Cumulative shading diagrams on the Winter Solstice

MP2.3-B1



LEGEND

- Proposed Project
- Existing (current) Shadows
- Net New Shadow from Proposed Project
- New Shading from Cumulative Projects

Historic Resource Sites

1. 609-611 22nd Street
2. 518 20th Street
3. 2101 Telegraph
4. 523 22nd Street
5. 2201 Telegraph
6. 2525 Broadway (Paramount Theatre)
7. 2346 Valdez Street
8. 2333 Harrison Street
9. 230 Bay Place

Solar Collector Sites

1. 618 21st Street
2. 540 21st Street
3. 420 West Grand Avenue

Public Parks

1. Henry J. Kaiser Memorial Park
2. Franklin Plaza
3. Adams Park
4. Lakeside Park
4. Snow Park

Cumulative Projects

1. 585 22nd Street
2. 2015 Telegraph
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4. 2016 Telegraph
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10. 1900 Broadway
11. 2044 Franklin Street
12. 2270 Broadway
13. 2305 Webster
14. 2 Kaiser Place
15. 2302 Valdez Street
16. 24th & Harrison

N

WINTER SOLSTICE
DECEMBER 21

9:00 AM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Shading diagrams on the Winter Solstice

MP2.3-A2



LEGEND

N

- Proposed Project
- Existing (current) Shadow
- Net New Shadow from Proposed Project

Historic Resource Sites

1. 609-611 22nd Street
2. 518 20th Street
3. 2101 Telegraph
4. 523 22nd Street
5. 2201 Telegraph
6. 2525 Broadway (Paramount Theatre)
7. 2346 Valdez Street
8. 2333 Harrison Street
9. 230 Bay Place
10. Clausen House

Solar Collector Sites

1. 618 21st Street
2. 540 21st Street
3. 420 West Grand Avenue

Public Parks

1. Henry J. Kaiser Memorial Park
2. Franklin Plaza
3. Adams Park
4. Lakeside Park
4. Snow Park

WINTER SOLSTICE
DECEMBER 21

12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Cumulative shading diagrams on the Winter Solstice

MP2.3-B2



WINTER SOLSTICE
DECEMBER 21

12:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Shading diagrams on the Winter Solstice

MP2.3-A3



WINTER SOLSTICE
DECEMBER 21

3:00 PM

PREVISION DESIGN

KAISER CENTER: MASTER PLAN 2

Cumulative shading diagrams on the Winter Solstice

MP2.3-B3



Historic Resource Sites
1. 609-611 22nd Street
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5. 2201 Telegraph
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7. 2346 Valdez Street
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9. 230 Bay Place

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2. 540 21st Street
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4. Lakeside Park
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9. 456-466 23rd Street
10. 1900 Broadway
11. 2044 Franklin Street
12. 2270 Broadway
13. 2305 Webster
14. 2 Kaiser Place
15. 2302 Valdez Street
16. 24th & Harrison

N

LEGEND
- Proposed Project
- Existing (current) Shadows
- Net New Shadow from Proposed Project
- New Shading from Cumulative Projects

WINTER SOLSTICE
DECEMBER 21

3:00 PM

APPENDIX B
Wind Assessment

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REPORT

KAISER CENTER OFFICE

OAKLAND, CA

PEDESTRIAN WIND STUDY

RWDI #1801312

February 15, 2019

SUBMITTED TO

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EXECUTIVE SUMMARY

The following document provides the preliminary results for the Pedestrian Wind Study conducted for the proposed Kaiser Center Office located in Oakland, California. The City of Oakland Planning Code Requirement, which deals with both pedestrian comfort and hazard as they relate to wind force, are described to assist with the assessment of the results presented.

The predicted wind comfort and hazard conditions pertaining to the eleven configurations presented are graphically depicted on a site plan in **Figures 1a through 2k**. These conditions and the associated wind speeds are presented in **Tables 1 and 2** at the end of this report and can be summarized as follows:

Table 1.1 – Summary of Results – Public Spaces

Configuration	WIND COMFORT				WIND HAZARD			
	Average (mph)	Average (%)	Speed Change (mph)	Total	Average (mph)	Total Hours	Hours Change	Total
A - Existing	13	19	-	18/25	31	10	-	6/25
B - Existing + Webster Street Office Tower	13	20	0	17/25	31	7	-3	5/25
C - Existing + 20th Street Office Tower	13	20	0	20/25	31	4	-6	2/25
D - Existing + 20th Street Residential Tower	14	21	1	21/25	32	13	3	7/25
E - Existing + Webster Street Office Tower & 20th Street Office Tower	13	21	0	18/25	32	14	4	6/25
F - Existing + Webster Street Office Tower & 20th Street Residential Tower	14	21	1	18/25	33	15	5	9/25
G - Cumulative + Webster Street Office Tower	11	13	-2	11/25	30	3	-7	2/25
H - Cumulative + 20th Street Office Tower	12	14	-1	13/25	30	2	-8	1/25
I - Cumulative + 20th Street Residential Tower	12	15	-1	15/25	30	2	-8	1/25
J - Cumulative + Webster Street Office Tower & 20th Street Office Tower	11	13	-2	10/25	30	4	-6	2/25
K - Cumulative + Webster Street Office Tower and 20th Street Residential Tower	12	15	-1	12/25	30	4	-6	2/25
Notes: *1) Wind Comfort = Wind speeds exceeding 11 mph for 10% of the time*								
2) Wind Hazard = Wind speeds exceeding 36 mph for 1hour/year								

Table 2.1 – Summary of Results – Above Grade

Configuration	WIND COMFORT				WIND HAZARD			
	Average (mph)	Average (%)	Speed Change (mph)	Total	Average (mph)	Total Hours	Hours Change	Total
A - Existing	7	4	-	0/3	19	0	-	0/3
B - Existing + Webster Street Office Tower	14	25	7	3/3	34	0	0	0/3
C - Existing + 20th Street Office Tower	10	9	3	1/3	25	0	0	0/3
D - Existing + 20th Street Residential Tower	11	15	4	2/3	28	0	0	0/3
E - Existing + Webster Street Office Tower & 20th Street Office Tower	12	19	5	2/3	30	0	0	0/3
F - Existing + Webster Street Office Tower & 20th Street Residential Tower	17	33	10	3/3	36	4	4	2/3
G - Cumulative + Webster Street Office Tower	11	11	4	1/3	30	0	0	0/3
H - Cumulative + 20th Street Office Tower	10	11	3	1/3	28	0	0	0/3
I - Cumulative + 20th Street Residential Tower	12	19	5	2/3	30	0	0	0/3
J - Cumulative + Webster Street Office Tower & 20th Street Office Tower	10	8	3	1/3	26	0	0	0/3
K - Cumulative + Webster Street Office Tower and 20th Street Residential Tower	13	21	6	2/3	30	0	0	0/3
Notes: *1) Wind Comfort = Wind speeds exceeding 11 mph for 10% of the time*								
2) Wind Hazard = Wind speeds exceeding 36 mph for 1hour/year								

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Figure 1f: Pedestrian wind comfort conditions – Existing + Webster Street Office Tower & 20th Street Residential Tower – Annual
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Figure 1i: Pedestrian wind comfort conditions – Cumulative + 20th Street Residential Tower – Annual
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Figure 2c: Pedestrian wind hazard conditions – Existing + 20th Street Office Tower – Annual
Figure 2d: Pedestrian wind hazard conditions – Existing + 20th Street Residential Tower – Annual
Figure 2e: Pedestrian wind hazard conditions – Existing + Webster Street Office Tower & 20th Street Office Tower – Annual
Figure 2f: Pedestrian wind hazard conditions – Existing + Webster Street Office Tower & 20th Street Residential Tower – Annual
Figure 2g: Pedestrian wind hazard conditions – Cumulative + Webster Street Office Tower – Annual
Figure 2h: Pedestrian wind hazard conditions – Cumulative + 20th Street Office Tower – Annual
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Table 1: Pedestrian wind comfort and hazard conditions – Public Spaces
Table 2: Pedestrian wind comfort and hazard conditions – Above Grade

LIST OF APPENDICES

Appendix A: Drawings List for Model Construction

1 INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by ESA to consult on the pedestrian wind conditions for the proposed Kaiser Centre Office in Oakland, CA. The purpose of the study was to assess the wind environment around the development in terms of pedestrian wind comfort and hazard relative to wind metrics specified in the City of Oakland Significant Wind Impact Criterion. This objective was achieved through wind tunnel testing of a 1:300 scale model of the proposed development for the following 11 configurations:

A – Existing:	all existing buildings on-site and surroundings;
B – Existing + Webster Street Office Tower:	proposed Webster Street Office Tower with existing surrounds;
C – Existing + 20th Street Office Tower:	proposed 20th Street Office Tower with existing surrounds;
D – Existing + 20th Street Residential Tower:	proposed 20th Street Residential Tower with existing surrounds;
E – Existing + Webster Street Office Tower & 20th Street Office Tower:	proposed Webster Street Office Tower & 20th Street Office Tower with existing surrounds;
F – Existing + Webster Street Office Tower & 20th Street Residential Tower:	proposed Webster Street Office Tower & 20th Street Residential Tower with existing surrounds;
G – Cumulative + Webster Street Office Tower:	proposed Webster Street Office Tower with cumulative surrounds;
H – Cumulative + 20th Street Office Tower:	proposed 20th Street Office Tower with cumulative surrounds;
I – Cumulative + 20th Street Residential Tower:	proposed 20th Street Residential Tower with cumulative surrounds;
J – Cumulative + Webster Street Office Tower & 20th Street Office Tower:	proposed Webster Street Office Tower & 20th Street Office Tower with cumulative surrounds;
K – Cumulative + Webster Street Office Tower & 20th Street Residential Tower:	proposed Webster Street Office Tower & 20th Street Residential Tower with cumulative surrounds;

The photographs in Images 1a through 1k show the test model in one of RWDI's boundary-layer wind tunnels. There are three different towers proposed for the development, Webster Street Office Tower (22 Storeys), and 2 options for 20th Street: a 29-storey Office Tower and a 35-storey Office and Residential Tower, referred to going forward as a "Residential Tower". The test models were constructed using the design information and drawings listed in Appendix A. Existing street trees for the surrounding areas were included, as well as the proposed landscape plan at the above grade areas (Appendix A). This report summarizes the methodology of wind tunnel studies for pedestrian wind conditions, describes the wind comfort and wind hazard criteria associated with wind force, as used in the current study, and presents the local wind conditions and their effects on pedestrians.

The placement of wind measurement locations was based on our experience and understanding of the pedestrian usage for this site, and reviewed by ESA along with the list of cumulative buildings.



Image 1a: Wind Tunnel Study Model – Existing



Image 1b: Wind Tunnel Study Model – Existing Plus Webster Street Office Tower



Image 1c: Wind Tunnel Study Model – Existing Plus 20th Street Office Tower



Image 1d: Wind Tunnel Study Model – Existing Plus 20th Street Residential Tower



Image 1e: Wind Tunnel Study Model – Existing Plus Webster Street Office Tower and 20th Street Office Tower



Image 1f: Wind Tunnel Study Model – Existing Plus Webster Street Office Tower and 20th Street Residential Tower



Image 1g: Wind Tunnel Study Model – Cumulative Plus Webster Street Office Tower



Image 1h: Wind Tunnel Study Model – Cumulative Plus 20th Street Office Tower



Image 1i: Wind Tunnel Study Model –Cumulative Plus 20th Street Residential Tower

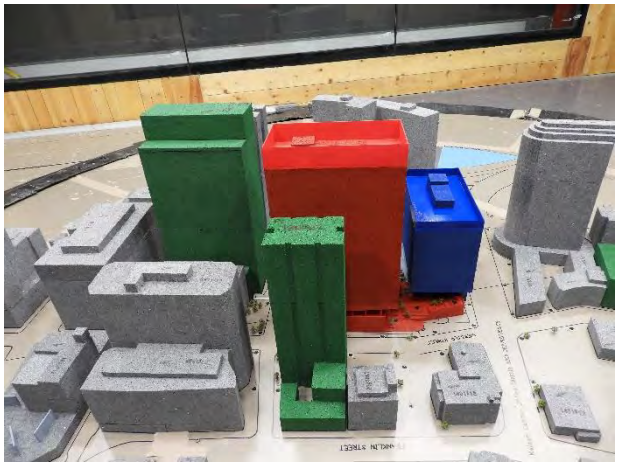



Image 1j: Wind Tunnel Study Model – Cumulative Plus Webster Street Office Tower and 20th Street Office Tower




Image 1k: Wind Tunnel Study Model – Cumulative Plus Webster Street Office Tower and 20th Street Residential Tower

2 METHODOLOGY

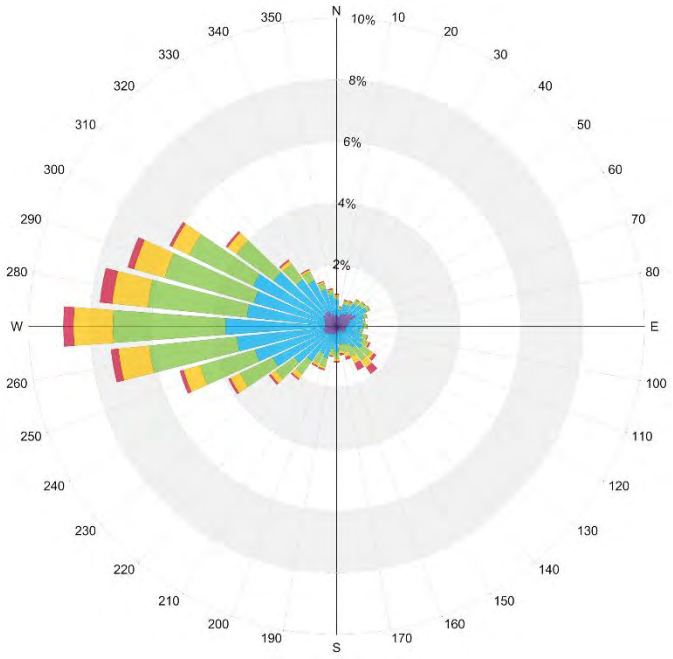
2.1 Wind Tunnel Testing

As shown in Images 1a through 1k, the wind tunnel model included the project site and all relevant surrounding buildings and topography within a 1200 ft radius of the study site. The mean speed profile and turbulence of the natural wind approaching the modelled area were simulated in RWDI's boundary-layer wind tunnel. The model was instrumented with 28 wind speed sensors to measure mean and gust wind speeds at a full-scale height of approximately 5 feet. These measurements were recorded for 36 equally incremented wind directions.

2.2 Local Climate

Wind statistics recorded at the Metropolitan Oakland International Airport between 1987 and 2017 were analyzed for annual wind conditions. Image 2 graphically depicts the directional distributions of annual wind frequencies and speeds. Winds are frequent from the west-southwest through northwest directions throughout the year, as indicated by the wind rose. Strong winds of a mean speed greater than 20 mph measured at the airport (at an anemometer height of 33 feet) occur 2.8% of the time annually.

Wind statistics from the Metropolitan Oakland International Airport were combined with the wind tunnel data to predict the frequency of occurrence of full-scale wind speeds. The full-scale wind predictions were then compared with the City of Oakland Significant Wind Impact Criterion.



Annual Winds

Wind Speed (mph)	Probability (%)
Calm	11.6
1-5	13.5
6-10	36.9
11-15	26.4
16-20	8.7
>20	2.8

Image 2: Directional distribution of winds approaching Metropolitan Oakland International Airport from 1987 to 2017

2.3 Planning Code Requirements

A wind analysis only needs to be done if the height of the project is 100 feet or greater (measured to the roof) and one of the following conditions exists: (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. As the proposed project (around 460 feet tall) exceeds 100 feet in height and is located in Downtown, it is subject to the thresholds of significance.

For the purposes of this study, the City of Oakland considers a significant wind impact to occur if a project were to "Create winds exceeding 36 mph for more than one hour during daylight hours during the year". The Planning Code defines these wind speeds in terms of equivalent wind speeds, and average wind speed (mean velocity), adjusted to include the level of gustiness and turbulence. Equivalent wind speeds were calculated per the specifications in the City of Oakland Significant Wind Impact Criterion, whereby the mean hourly wind speed is increased when the turbulence intensity is greater than 15% according to the following formula:

$$\boldsymbol{EWS = V_m \times (2 \times TI + 0.7)}$$

where $\boldsymbol{EWS}$ = equivalent wind speed
$\boldsymbol{V_m}$ = mean pedestrian-level wind speed
$\boldsymbol{TI}$ = turbulence intensity

2.4 Pedestrian Comfort

Although not applicable towards the Significant Wind Impacts Criterion defined by the City of Oakland, wind comfort speeds have been calculated for informational purposes. The comfort criterion states that wind speeds do not exceed 11 mph for more than 10% of the time during the year, when calculated for daylight hours, in substantial pedestrian use areas. A lower wind speed threshold of 7 mph may be considered for public seating areas where calmer wind conditions are ideal.

2.5 Cumulative Buildings

Future buildings which have been approved and/or pending, were included in the cumulative configurations. These sites are shown in Image 3 and listed in the table below the image.



CUMULATIVE	
1. 2270 Broadway	5. 2204 Franklin
2. 2100 Telegraph	6. 1900 Broadway
3. 2 Kaiser Plaza	7. 1940 Webster Street
4. 2016 Telegraph	8. 301 19th Street

Image 3: Wind Tunnel Image and List of Cumulative Buildings

3 TEST RESULTS

This section presents the results of the wind tunnel measurements analyzed in terms of equivalent wind speeds as defined by the equation in Section 2.3. The text in the report simply refers to the data as wind speeds.

Table 1, located in the tables section of this report, presents the wind comfort and hazard results for the eleven configurations tested for the Public Areas only. Table 2 presents the wind comfort and hazard results for the eleven configurations tested for Above Grade locations. For each measurement point, the measured 10% exceeded (90th percentile) wind speed and the percentage of time that the wind speed exceeds 11 mph for all areas are shown in the left column and the wind speed exceeded for more than 1 hour of the year and number of hours the 36mph threshold is exceeded is shown in the left column. A letter "e" in the last column of each configuration indicates a wind comfort or hazard exceedance.

3.1 Wind Comfort Conditions

Although the analysis of wind comfort conditions is not required by California Environmental Quality Act (CEQA), this section describes the wind comfort conditions on and around the project site and can be used as a reference for further understanding of the wind conditions.

For the Existing Configuration (Configuration A), there are 27 total test locations, 25 in the Public Spaces and 2 Above Grade (Locations 26 and 28). 18 locations exceed the 11mph threshold analyzed for comfort, all within the Public Spaces. These results can be found in Figure 1a and Tables 1 and 2.

With the addition of any of the study buildings, in any arrangement (Configurations B through F), there are 25 test locations in the Public Spaces and 3 test locations Above Grade (1 additional location above grade from the existing configuration, Location 27) and the 11mph threshold is exceeded at 17, 20, 21, 18 and 18 locations for Configurations B though F in the Public Spaces respectively and 3, 1, 2, 2 and 3 Above Grade. This is an increase when compared to the Existing Configuration (Tables 1 and 2, and Figures 1b through 1f).

With the addition of the cumulative buildings (Configurations G through K) of the 25 Public Space test locations, the 11mph threshold is exceeded at 11, 13, 15, 10 and 12 locations for Configurations G though K in the Public Spaces respectively and 1, 1, 2, 1 and 2 Above Grade. This is an improvement from the Existing and Project Configurations (Tables 1 and 2, and Figures 1g through 1k).

3.2 Wind Hazard Conditions

As described in section 2.3 of this report, any location that exceeds 36 mph for more than one hour during daylight hours during the year is reported as a location exceeding the hazard criterion.

For the public areas in the Existing Configuration (Configuration A), there are 27 total test locations, 25 in the Public Spaces and 2 Above Grade (Locations 26 and 28). 6 locations exceed the hazard criterion, all within the Public Spaces. These results can be found in Figure 2a and Tables 1 and 2.

With the addition of any of the study buildings, in any arrangement (Configurations B through F) there are 25 test locations in the Public Spaces and 3 test locations Above Grade (1 additional location above grade from the existing configuration, Location 27) and the hazard criterion is exceeded at 5, 2, 7, 6 and 9 locations for Configurations B through F respectively in the Public Spaces (Table 1 and Figures 2b through 2f). This shows similar results to those found in the Existing Configuration for Configurations B, D and E. Configuration C shows a large improvement from the Existing Configuration and Configuration F has a number more locations exceeding the hazard criterion. Configuration F is also the only configuration that has exceedances Above Grade with 2 of the 3 test locations exceeding the hazard criterion (Table 2 and Figure 2f).

With the addition of the cumulative buildings (Configurations G through K) of the 25 Public Space test locations, the hazard criterion is exceeded at 2, 1, 1, 2 and 2 locations for Configurations G through K respectively. The hazard criterion is not exceeded at any of the Above Grade test locations for any of these configurations. This shows an improvement in conditions from the Existing and Project Configurations (Tables 1and 2, and Figures 2g through 2k).

4 APPLICABILITY OF RESULTS

The wind conditions presented in this report pertain to the proposed Kaiser Centre development as detailed in the architectural design drawings listed in Appendix A. Should there be any design changes that deviate from this list of drawings, the wind condition predictions presented may change. It is the responsibility of the project team to contact RWDI in this case.

5 REFERENCES

1. ASCE Task Committee on Outdoor Human Comfort (2004). *Outdoor Human Comfort and Its Assessment*, 68 pages, American Society of Civil Engineers, Reston, Virginia, USA.
2. Williams, C.J., Hunter, M.A. and Waechter, W.F. (1990). "Criteria for Assessing the Pedestrian Wind Environment," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.36, pp.811-815.
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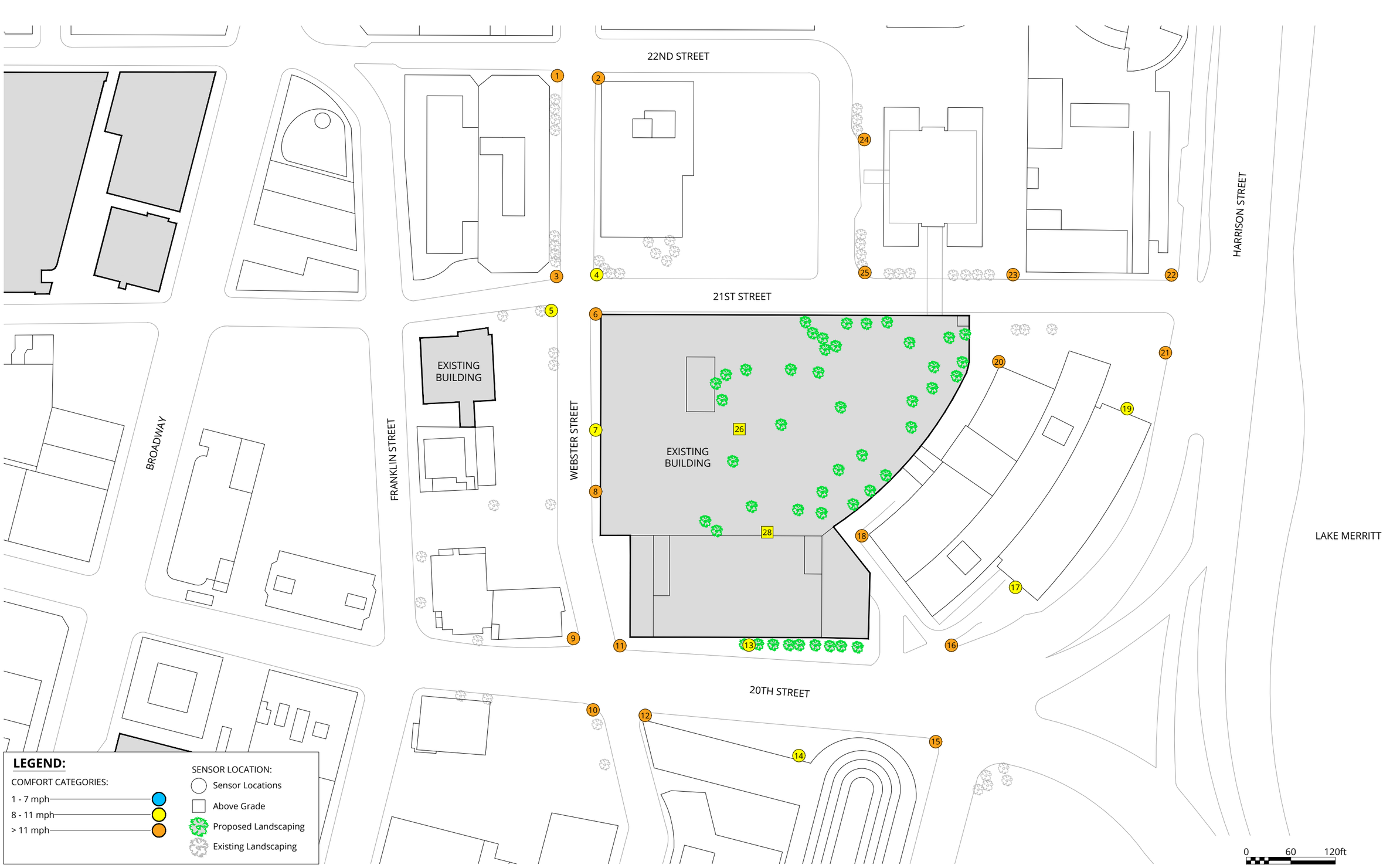
7. Lawson, T.V. (1973). "Wind Environment of Buildings: A Logical Approach to the Establishment of Criteria", *Report No. TVL 7321*, Department of Aeronautic Engineering, University of Bristol, Bristol, England.
8. Durgin, F. H. (1997). "Pedestrian Level Wind Criteria Using the Equivalent average", *Journal of Wind Engineering and Industrial Aerodynamics*, Vol. 66, pp. 215-226.

FIGURES



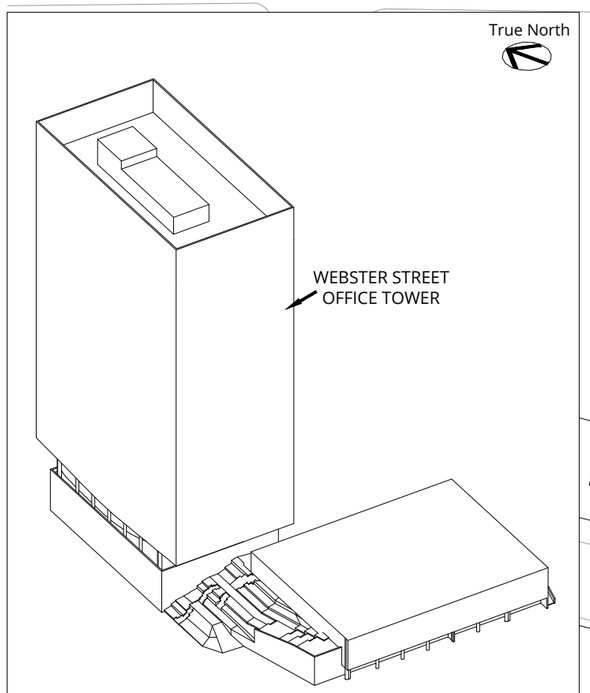
Pedestrian Wind Comfort Conditions
Existing
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1a
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

COMFORT CATEGORIES:
- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:
- Sensor Locations
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET
21ST STREET
20TH STREET
HARRISON STREET
LAKE MERRITT
FRANKLIN STREET
WEBSTER STREET
EXISTING BUILDING
T1 - WEBSTER OFFICE TOWER

0 60 120ft

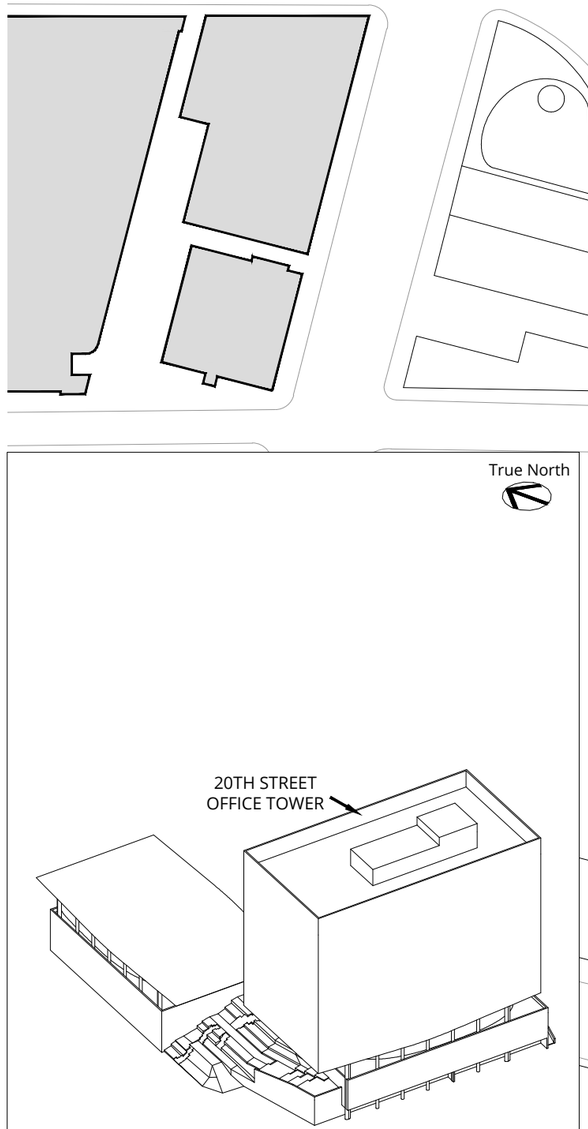
Pedestrian Wind Comfort Conditions
Existing + Project - Webster Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1b
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

COMFORT CATEGORIES:
- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:
- Sensor Locations
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET
21ST STREET
20TH STREET
WEBSTER STREET
FRANKLIN STREET
HARRISON STREET
LAKE MERRITT
EXISTING BUILDING
T2 - 20TH STREET OFFICE TOWER

0 60 120ft

Pedestrian Wind Comfort Conditions

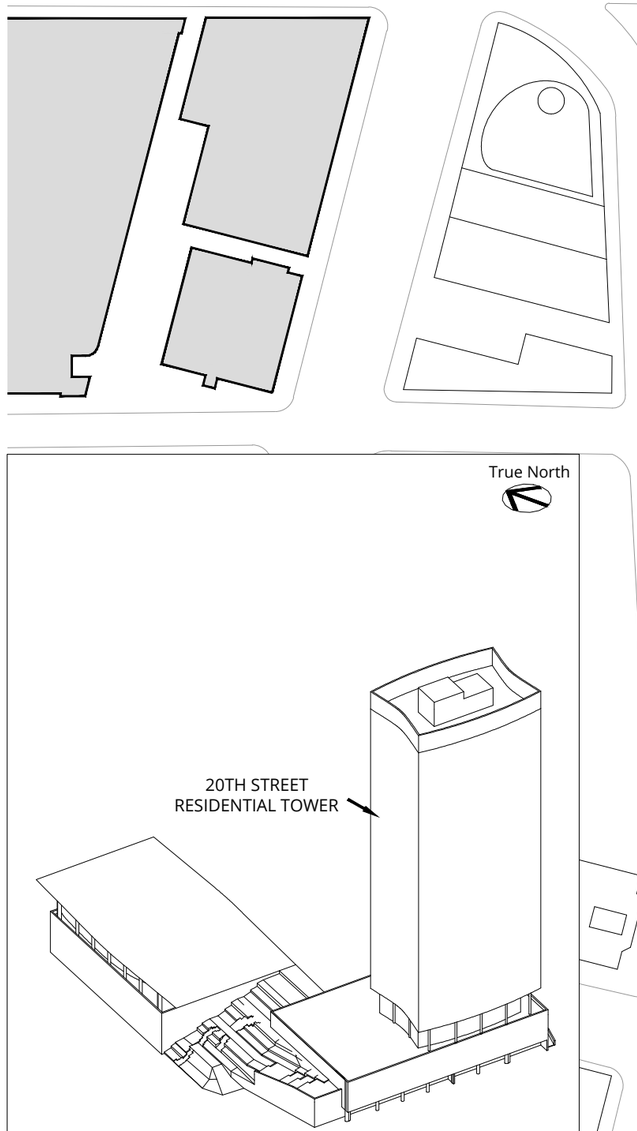
Existing + Project - 20th Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1c
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

COMFORT CATEGORIES:
- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:
- Sensor Locations
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET
21ST STREET
20TH STREET
FRANKLIN STREET
WEBSTER STREET
HARRISON STREET
LAKE MERRITT
T2 - 20TH STREET RESIDENTIAL TOWER

0 60 120ft

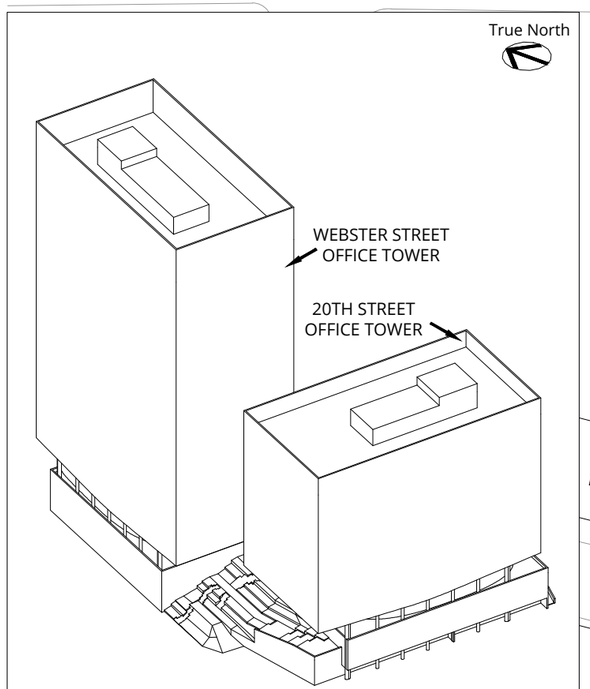
Pedestrian Wind Comfort Conditions
Existing + Project - 20th Street Residential Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1d
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

COMFORT CATEGORIES:
- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:
- Sensor Locations
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET
21ST STREET
20TH STREET
FRANKLIN STREET
WEBSTER STREET
HARRISON STREET
LAKE MERRITT
EXISTING BUILDING
T1 - WEBSTER OFFICE TOWER
T2 - 20TH STREET OFFICE TOWER

0 60 120ft

Pedestrian Wind Comfort Conditions

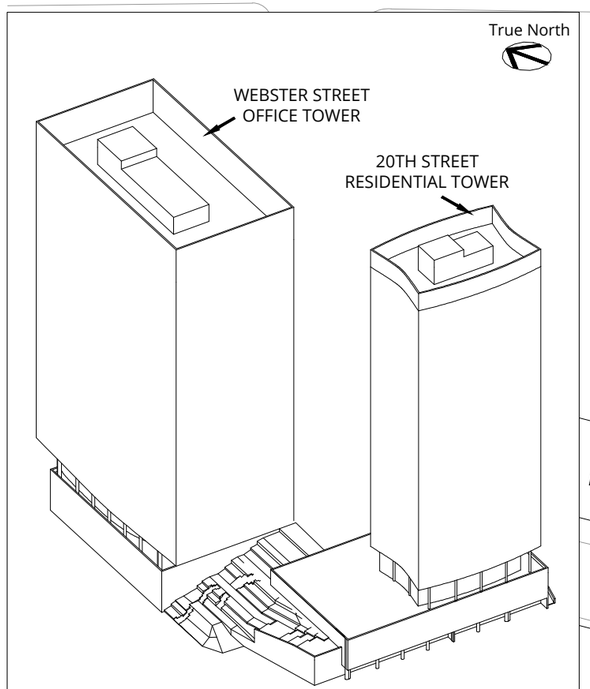
Existing + Project - Webster Street Office Tower & 20th Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1e
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

COMFORT CATEGORIES:
- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:
- Sensor Locations
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET
21ST STREET
20TH STREET
FRANKLIN STREET
WEBSTER STREET
HARRISON STREET
LAKE MERRITT
EXISTING BUILDING
T1 - WEBSTER OFFICE TOWER
T2 - 20TH STREET RESIDENTIAL TOWER

0 60 120ft

Pedestrian Wind Comfort Conditions

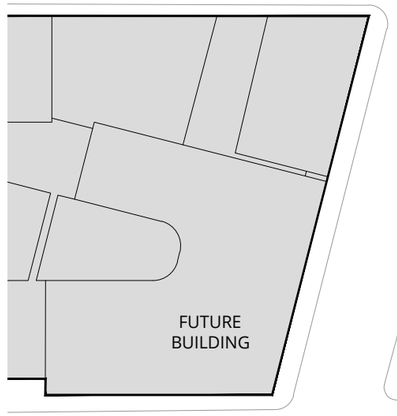
Existing + Project - Webster Street Office Tower & 20th Street Residential Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1f
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

COMFORT CATEGORIES:
- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:
- Sensor Locations
- Above Grade
- Proposed Landscaping
- Existing Landscaping

True North

22ND STREET

21ST STREET

20TH STREET

WEBSTER STREET

FRANKLIN STREET

HARRISON STREET

LAKE MERRITT

FUTURE BUILDING

FUTURE BUILDING

FUTURE BUILDING

T1 - WEBSTER OFFICE TOWER

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

0 60 120ft

Pedestrian Wind Comfort Conditions

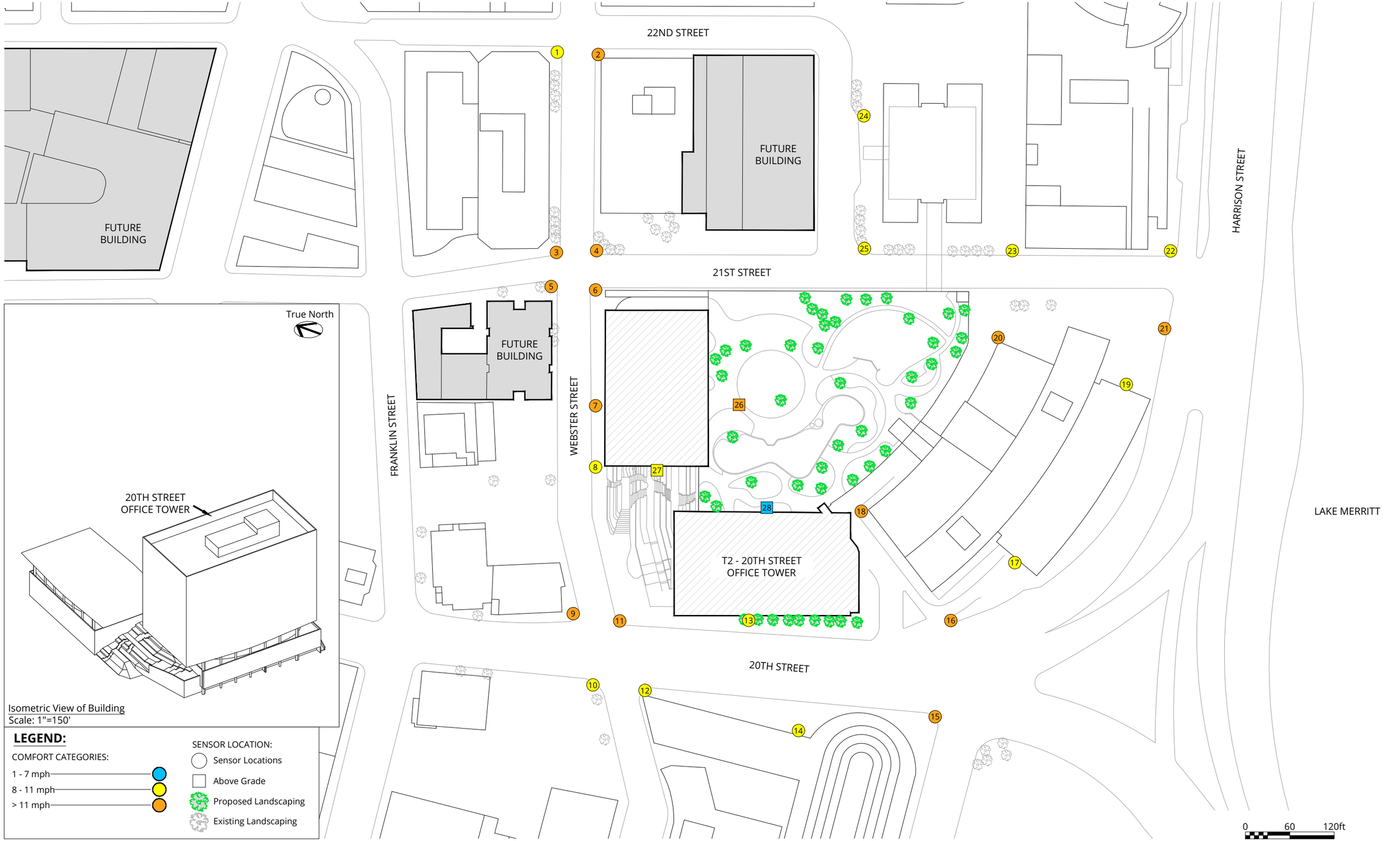
Project + Cumulative - Webster Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1g
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



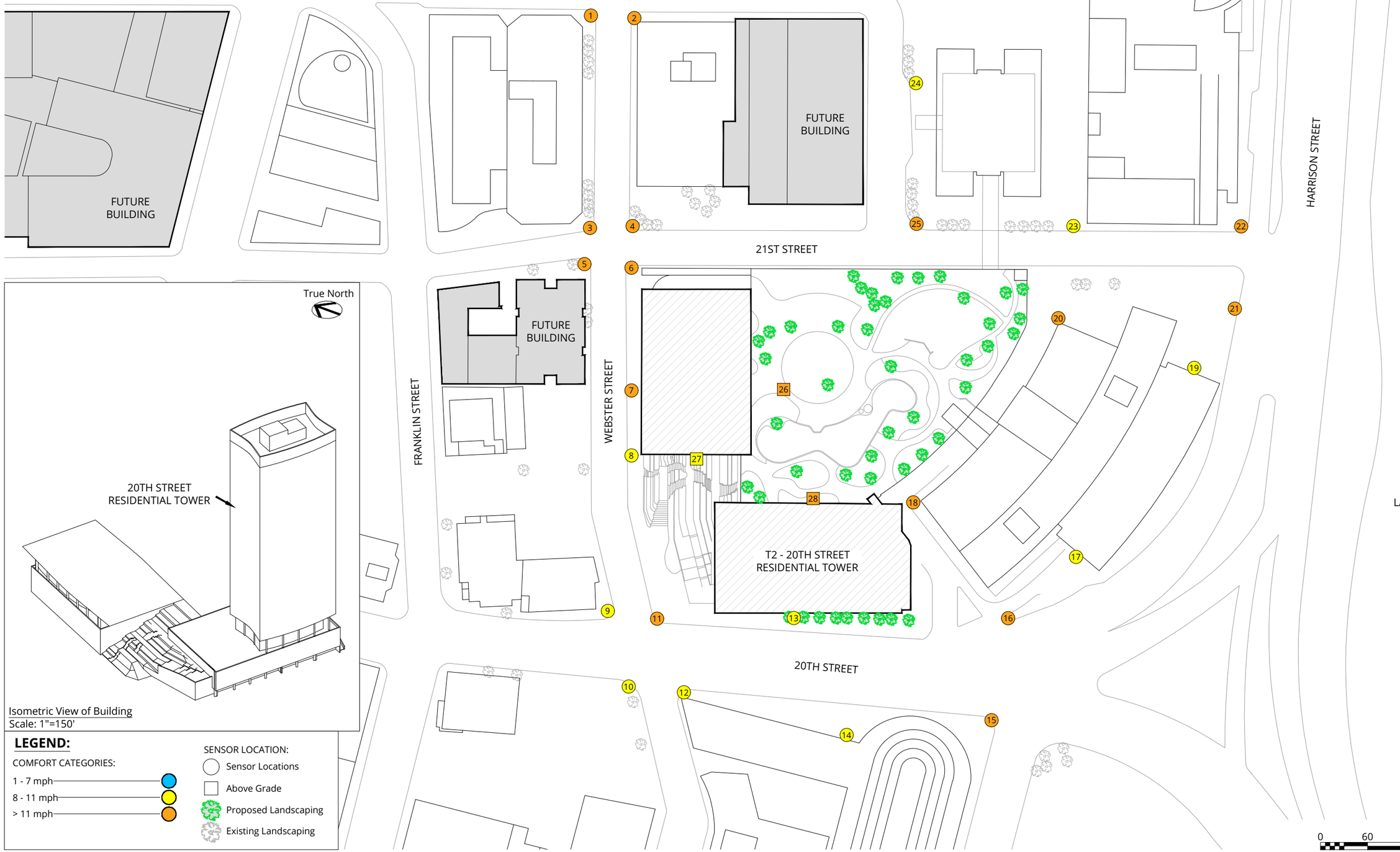
Pedestrian Wind Comfort Conditions
Project + Cumulative - 20th Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1h
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

COMFORT CATEGORIES:
- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:
- Sensor Locations
- Above Grade
- Proposed Landscaping
- Existing Landscaping

0 60 120ft

Pedestrian Wind Comfort Conditions

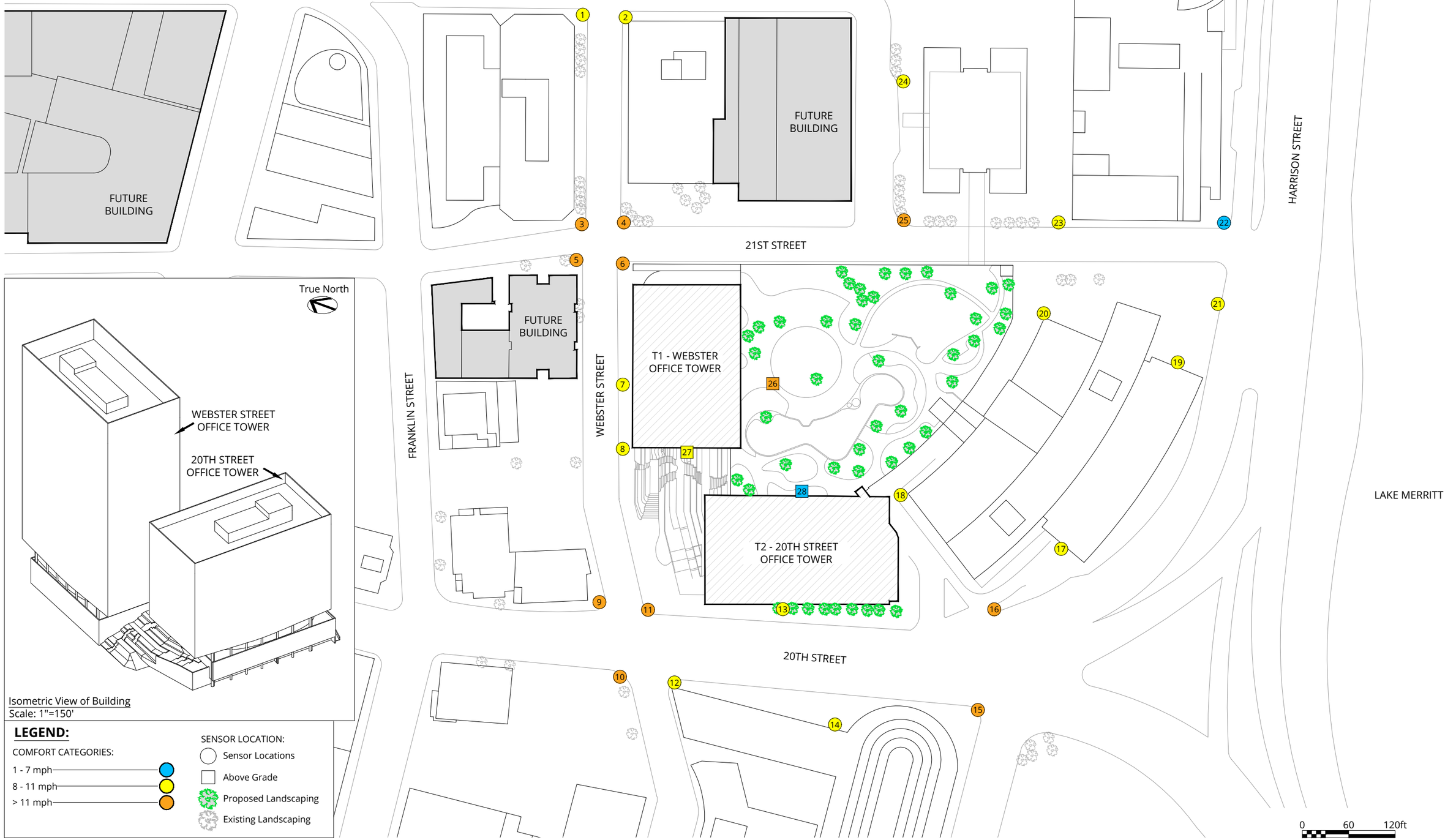
Project + Cumulative - 20th Street Residential Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1i
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

COMFORT CATEGORIES:
- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:
- Sensor Locations
- Above Grade
- Proposed Landscaping
- Existing Landscaping

Pedestrian Wind Comfort Conditions

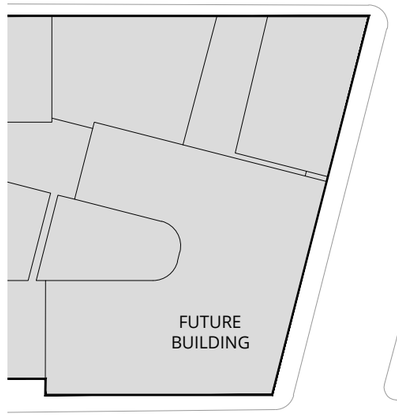
Project + Cumulative - Webster Street Office Tower & 20th Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1j
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

COMFORT CATEGORIES:
- 1 - 7 mph
- 8 - 11 mph
- > 11 mph

SENSOR LOCATION:
- Sensor Locations
- Above Grade
- Proposed Landscaping
- Existing Landscaping

Pedestrian Wind Comfort Conditions
Project + Cumulative - Webster Street Office Tower & 20th Street Residential Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 1k
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



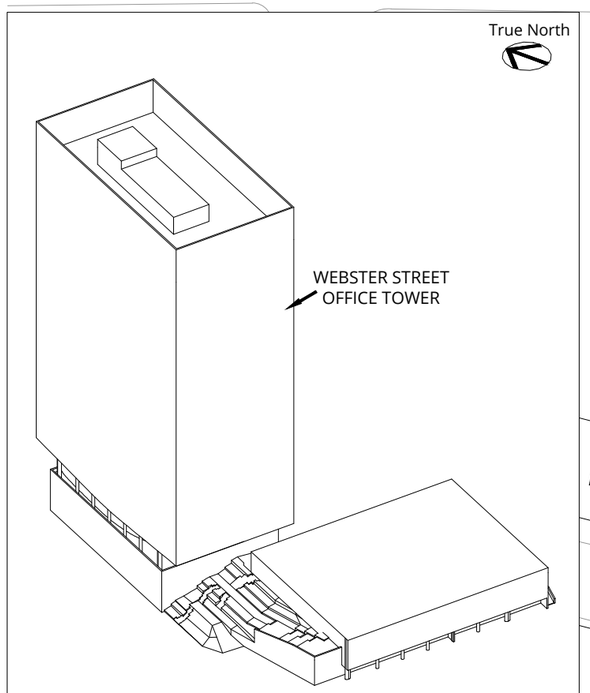
Pedestrian Wind Hazard Conditions
Existing
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2a
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET

21ST STREET

20TH STREET

WEBSTER STREET

FRANKLIN STREET

HARRISON STREET

LAKE MERRITT

EXISTING BUILDING

T1 - WEBSTER OFFICE TOWER

0 60 120ft

Pedestrian Wind Hazard Conditions
Existing + Project - Webster Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2b	
Approx. Scale: 1"=120'		
Date Revised: Feb. 15, 2019		

22ND STREET

21ST STREET

20TH STREET

HARRISON STREET

FRANKLIN STREET

WEBSTER STREET

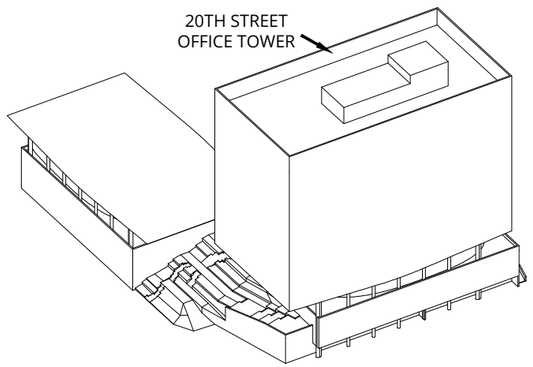
LAKE MERRITT

EXISTING BUILDING

T2 - 20TH STREET OFFICE TOWER

True North

20TH STREET OFFICE TOWER



Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

0 60 120ft

Pedestrian Wind Hazard Conditions

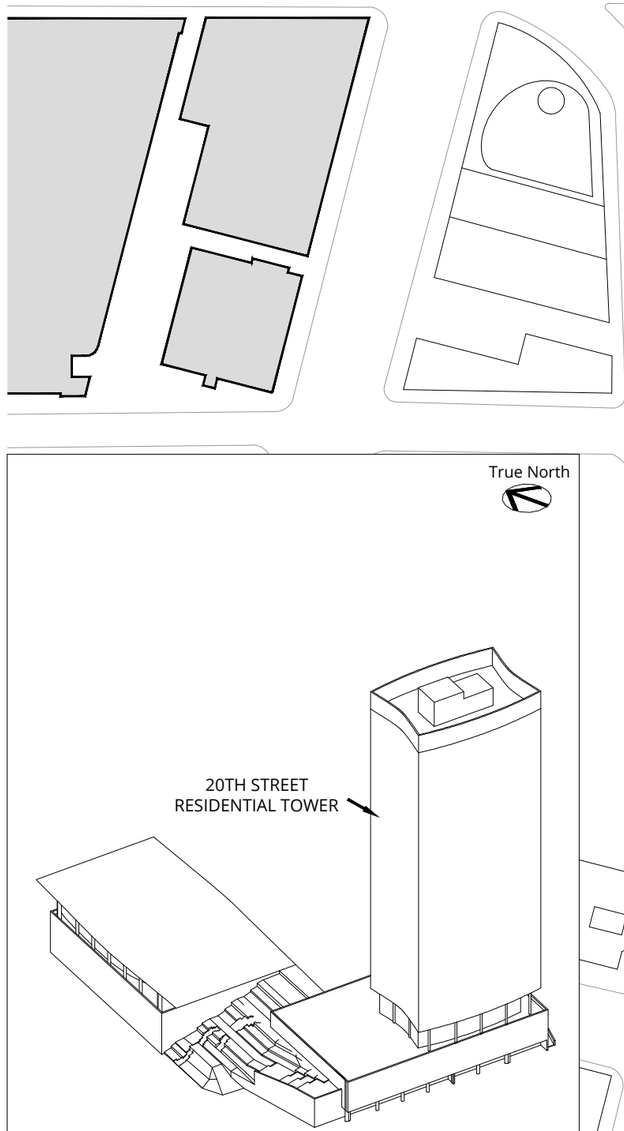
Existing + Project - 20th Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2c
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET

21ST STREET

20TH STREET

FRANKLIN STREET

WEBSTER STREET

HARRISON STREET

LAKE MERRITT

T2 - 20TH STREET RESIDENTIAL TOWER

0 60 120ft

Pedestrian Wind Hazard Conditions
Existing + Project - 20th Street Residential Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2d
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019

22ND STREET

21ST STREET

20TH STREET

HARRISON STREET

WEBSTER STREET

FRANKLIN STREET

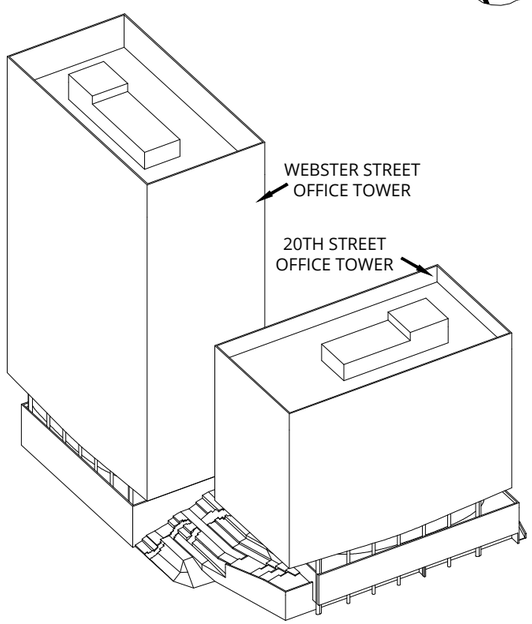
LAKE MERRITT

EXISTING BUILDING

T1 - WEBSTER OFFICE TOWER

T2 - 20TH STREET OFFICE TOWER

True North



Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

0 60 120ft

Pedestrian Wind Hazard Conditions

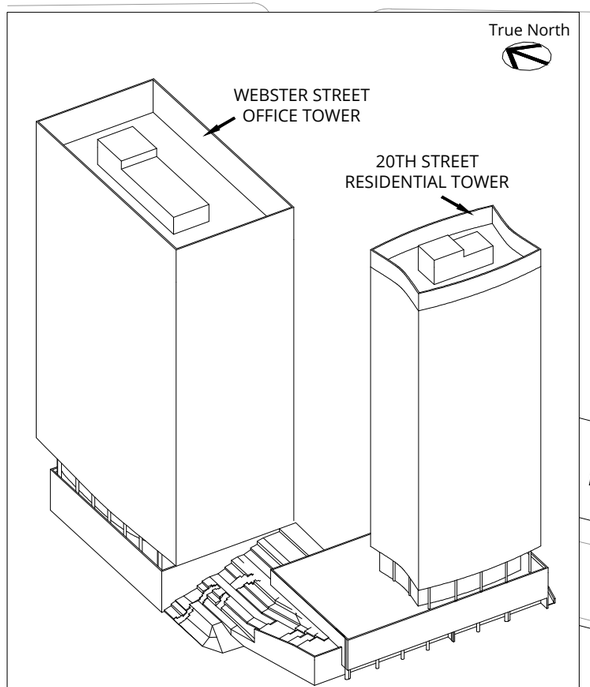
Existing + Project - Webster Street Office Tower & 20th Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

Project #1801312

True North

Drawn by: DBB	Figure: 2e
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET

21ST STREET

20TH STREET

FRANKLIN STREET

WEBSTER STREET

HARRISON STREET

LAKE MERRITT

EXISTING BUILDING

T1 - WEBSTER OFFICE TOWER

T2 - 20TH STREET RESIDENTIAL TOWER

0 60 120ft

Pedestrian Wind Hazard Conditions

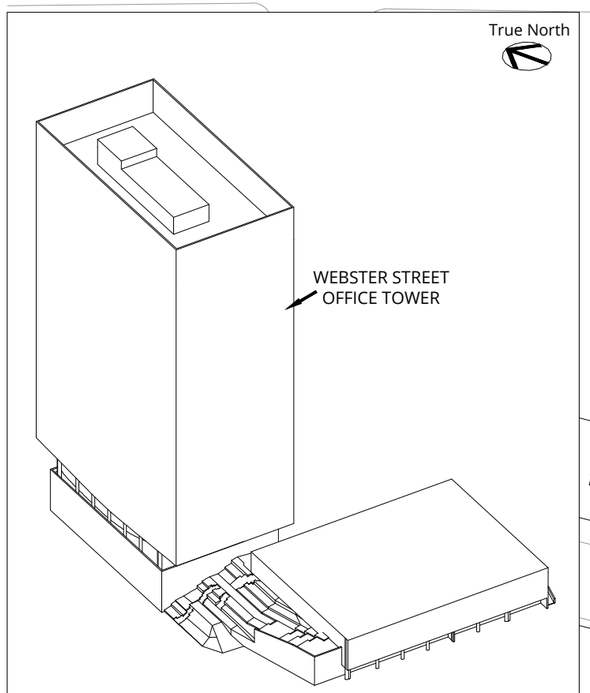
Existing + Project - Webster Street Office Tower & 20th Street Residential Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2f
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET

21ST STREET

20TH STREET

WEBSTER STREET

FRANKLIN STREET

HARRISON STREET

LAKE MERRITT

FUTURE BUILDING

FUTURE BUILDING

FUTURE BUILDING

T1 - WEBSTER OFFICE TOWER

0 60 120ft

Pedestrian Wind Hazard Conditions

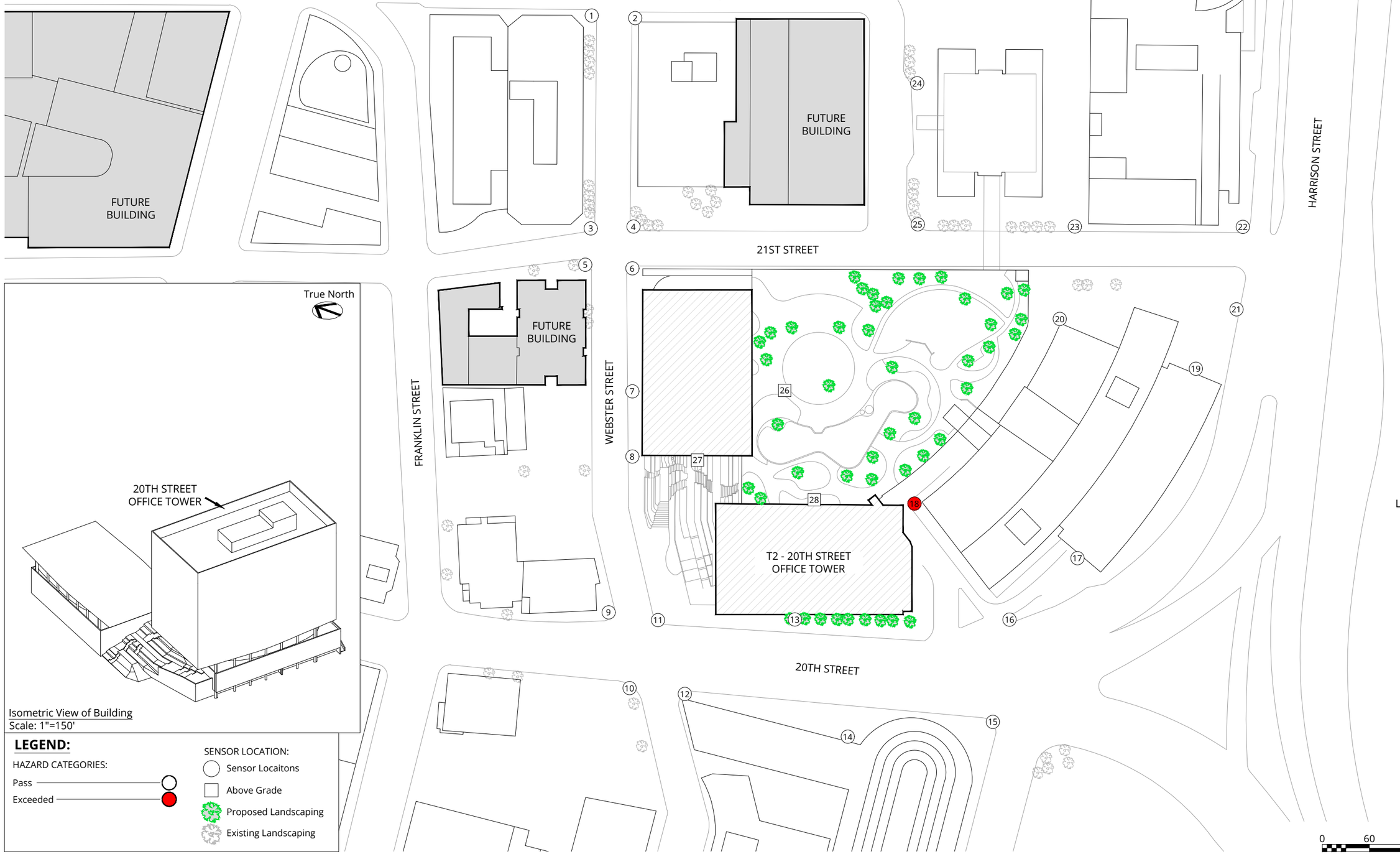
Project + Cumulative - Webster Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2g
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



True North

20TH STREET OFFICE TOWER

Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

0 60 120ft

Pedestrian Wind Hazard Conditions

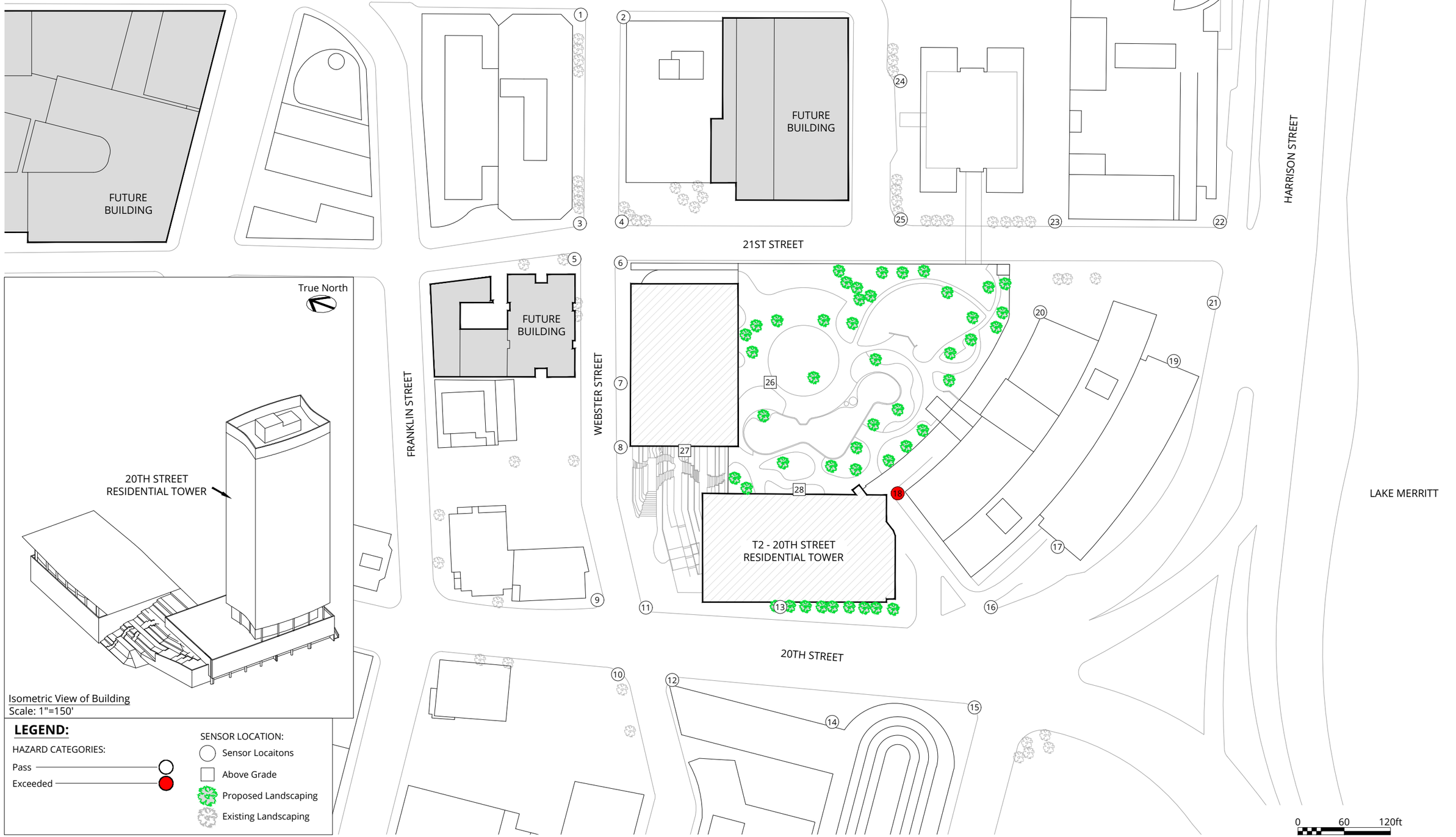
Project + Cumulative - 20th Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2h
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

Pedestrian Wind Hazard Conditions

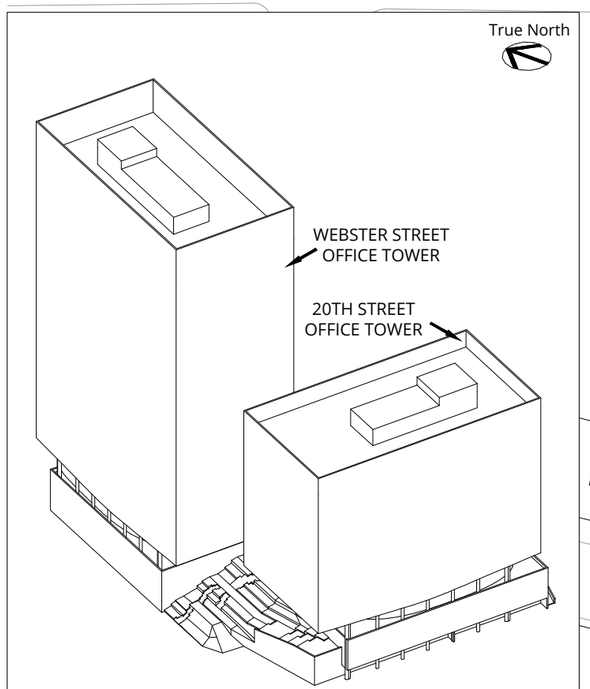
Project + Cumulative - 20th Street Residential Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2i
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET
21ST STREET
20TH STREET
FRANKLIN STREET
WEBSTER STREET
HARRISON STREET
LAKE MERRITT

FUTURE BUILDING
FUTURE BUILDING
FUTURE BUILDING
T1 - WEBSTER OFFICE TOWER
T2 - 20TH STREET OFFICE TOWER

0 60 120ft

Pedestrian Wind Hazard Conditions

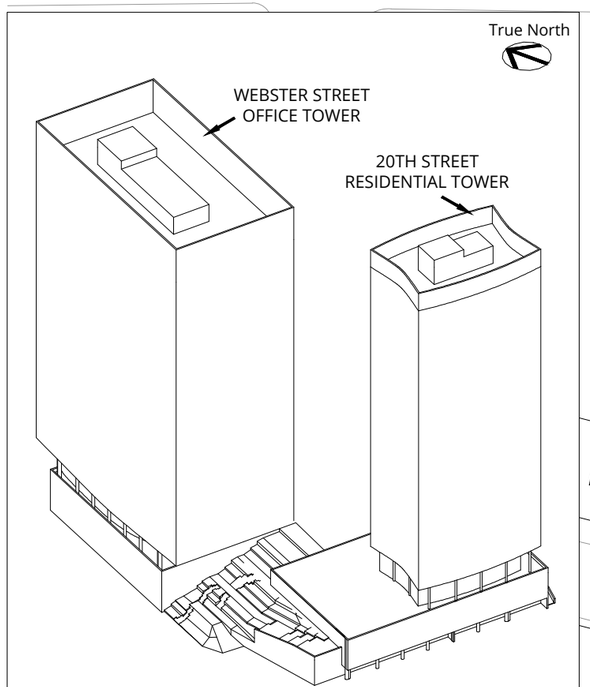
Project + Cumulative - Webster Street Office Tower & 20th Street Office Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2j
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019



Isometric View of Building
Scale: 1"=150'

LEGEND:

HAZARD CATEGORIES:
- Pass
- Exceeded

SENSOR LOCATION:
- Sensor Locaitons
- Above Grade
- Proposed Landscaping
- Existing Landscaping

22ND STREET
21ST STREET
20TH STREET
FRANKLIN STREET
WEBSTER STREET
HARRISON STREET
LAKE MERRITT
FUTURE BUILDING
FUTURE BUILDING
T1 - WEBSTER OFFICE TOWER
T2 - 20TH STREET RESIDENTIAL TOWER

0 60 120ft

Pedestrian Wind Hazard Conditions

Project + Cumulative - Webster Street Office Tower & 20th Street Residential Tower
Annual

Kaiser Center Office - Oakland, CA

True North

Project #1801312

Drawn by: DBB	Figure: 2k
Approx. Scale:	1"=120'
Date Revised:	Feb. 15, 2019

TABLES

Table 1: Pedestrian Wind Comfort and Hazard Conditions - Public Spaces

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
1	A	15	25	-	e	32	0	-	
	B	12	13	-3	e	26	0	0	
	C	15	26	0	e	32	0	0	
	D	15	27	0	e	33	0	0	
	E	13	18	-2	e	28	0	0	
	F	13	18	-2	e	28	0	0	
	G	10	6	-5		28	0	0	
	H	11	10	-4		28	0	0	
	I	12	12	-3	e	29	0	0	
	J	10	6	-5		27	0	0	
	K	11	10	-4		28	0	0	
2	A	13	20	-	e	28	0	-	
	B	13	17	0	e	28	0	0	
	C	13	20	0	e	29	0	0	
	D	13	20	0	e	28	0	0	
	E	14	21	1	e	30	0	0	
	F	14	21	1	e	30	0	0	
	G	10	7	-3		24	0	0	
	H	12	14	-1	e	28	0	0	
	I	14	18	1	e	30	0	0	
	J	11	10	-2		24	0	0	
	K	11	10	-2		25	0	0	
3	A	13	21	-	e	30	0	-	
	B	15	31	2	e	31	0	0	
	C	13	22	0	e	28	0	0	
	D	13	23	0	e	29	0	0	
	E	16	32	3	e	33	0	0	
	F	16	34	3	e	33	0	0	
	G	15	28	2	e	31	0	0	
	H	13	22	0	e	28	0	0	
	I	14	22	1	e	29	0	0	
	J	15	29	2	e	31	0	0	
	K	15	29	2	e	32	0	0	
4	A	11	10	-		22	0	-	
	B	17	39	6	e	37	1	1	e
	C	11	10	0		28	0	0	
	D	12	14	1	e	29	0	0	
	E	17	40	6	e	38	2	2	e
	F	17	40	6	e	38	2	2	e
	G	14	27	3	e	39	2	2	e
	H	12	15	1	e	33	0	0	
	I	13	17	2	e	33	0	0	
	J	14	25	3	e	38	2	2	e

Table 1: Pedestrian Wind Comfort and Hazard Conditions - Public Spaces

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
	K	15	28	4	e	39	3	3	e
5	A	11	10	-		28	0	-	
	B	18	41	7	e	38	2	2	e
	C	12	13	1	e	28	0	0	
	D	13	18	2	e	29	0	0	
	E	18	41	7	e	39	2	2	e
	F	18	43	7	e	39	2	2	e
	G	12	17	1	e	29	0	0	
	H	13	18	2	e	27	0	0	
	I	13	20	2	e	27	0	0	
	J	12	15	1	e	28	0	0	
	K	13	19	2	e	29	0	0	
6	A	14	23	-	e	29	0	-	
	B	18	43	4	e	38	2	2	e
	C	15	27	1	e	32	0	0	
	D	16	29	2	e	34	0	0	
	E	19	44	5	e	39	3	3	e
	F	19	44	5	e	39	3	3	e
	G	15	33	1	e	32	0	0	
	H	12	17	-2	e	30	0	0	
	I	13	21	-1	e	31	0	0	
	J	15	32	1	e	32	0	0	
	K	16	33	2	e	33	0	0	
7	A	11	10	-		24	0	-	
	B	8	3	-3		27	0	0	
	C	12	13	1	e	25	0	0	
	D	13	17	2	e	26	0	0	
	E	8	2	-3		26	0	0	
	F	9	3	-2		27	0	0	
	G	12	12	1	e	27	0	0	
	H	14	22	3	e	31	0	0	
	I	15	23	4	e	34	0	0	
	J	11	10	0		26	0	0	
	K	12	13	1	e	28	0	0	
8	A	13	18	-	e	28	0	-	
	B	16	32	3	e	35	0	0	
	C	13	21	0	e	31	0	0	
	D	15	28	2	e	36	1	1	e
	E	15	27	2	e	34	0	0	
	F	17	34	4	e	37	2	2	e
	G	14	22	1	e	34	0	0	

Table 1: Pedestrian Wind Comfort and Hazard Conditions - Public Spaces

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
	H	11	10	-2		25	0	0	
	I	10	7	-3		28	0	0	
	J	11	10	-2		27	0	0	
	K	14	22	1	e	33	0	0	
9	A	12	12	-	e	27	0	-	
	B	10	7	-2		25	0	0	
	C	12	15	0	e	29	0	0	
	D	11	10	-1		26	0	0	
	E	14	26	2	e	30	0	0	
	F	11	10	-1		25	0	0	
	G	10	7	-2		25	0	0	
	H	12	16	0	e	28	0	0	
	I	11	10	-1		28	0	0	
	J	12	17	0	e	26	0	0	
	K	11	10	-1		26	0	0	
10	A	13	17	-	e	30	0	-	
	B	12	14	-1	e	30	0	0	
	C	13	17	0	e	29	0	0	
	D	12	13	-1	e	29	0	0	
	E	13	19	0	e	29	0	0	
	F	11	10	-2		30	0	0	
	G	10	6	-3		29	0	0	
	H	11	10	-2		27	0	0	
	I	10	7	-3		28	0	0	
	J	12	15	-1	e	27	0	0	
	K	11	10	-2		29	0	0	
11	A	12	12	-	e	34	0	-	
	B	17	35	5	e	36	1	1	e
	C	14	23	2	e	34	0	0	
	D	12	14	0	e	33	0	0	
	E	17	38	5	e	35	0	0	
	F	17	38	5	e	36	1	1	e
	G	13	18	1	e	33	0	0	
	H	14	20	2	e	32	0	0	
	I	12	12	0	e	32	0	0	
	J	14	27	2	e	32	0	0	
	K	13	21	1	e	32	0	0	
12	A	12	15	-	e	31	0	-	
	B	12	15	0	e	33	0	0	
	C	12	14	0	e	30	0	0	
	D	12	13	0	e	31	0	0	

Table 1: Pedestrian Wind Comfort and Hazard Conditions - Public Spaces

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
	E	11	10	-1		31	0	0	
	F	11	10	-1		32	0	0	
	G	10	5	-2		32	0	0	
	H	10	6	-2		30	0	0	
	I	9	5	-3		30	0	0	
	J	10	7	-2		30	0	0	
	K	9	6	-3		31	0	0	
13	A	10	7	-		32	0	-	
	B	8	2	-2		21	0	0	
	C	10	7	0		23	0	0	
	D	10	5	0		23	0	0	
	E	12	13	2	e	26	0	0	
	F	12	12	2	e	25	0	0	
	G	6	1	-4		20	0	0	
	H	9	4	-1		23	0	0	
	I	9	4	-1		23	0	0	
	J	10	7	0		23	0	0	
	K	9	5	-1		25	0	0	
14	A	9	4	-		28	0	-	
	B	11	10	2		28	0	0	
	C	10	6	1		26	0	0	
	D	10	6	1		28	0	0	
	E	11	10	2		28	0	0	
	F	11	10	2		28	0	0	
	G	10	6	1		28	0	0	
	H	10	7	1		26	0	0	
	I	10	7	1		29	0	0	
	J	11	10	2		26	0	0	
	K	10	8	1		28	0	0	
15	A	16	37	-	e	37	1	-	e
	B	16	35	0	e	35	0	-1	
	C	16	37	0	e	35	0	-1	
	D	17	39	1	e	38	2	1	e
	E	18	43	2	e	39	3	2	e
	F	18	41	2	e	38	2	1	e
	G	14	25	-2	e	29	0	-1	
	H	15	30	-1	e	31	0	-1	
	I	16	34	0	e	32	0	-1	
	J	15	32	-1	e	32	0	-1	
	K	16	34	0	e	32	0	-1	
16	A	17	40	-	e	36	1	-	e

Table 1: Pedestrian Wind Comfort and Hazard Conditions - Public Spaces

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
	B	16	35	-1	e	34	0	-1	
	C	16	35	-1	e	35	0	-1	
	D	17	40	0	e	37	1	0	e
	E	13	17	-4	e	33	0	-1	
	F	17	38	0	e	36	1	0	e
	G	14	25	-3	e	32	0	-1	
	H	13	19	-4	e	33	0	-1	
	I	14	25	-3	e	34	0	-1	
	J	12	16	-5	e	32	0	-1	
	K	15	31	-2	e	33	0	-1	
17	A	9	6	-		25	0	-	
	B	10	8	1		24	0	0	
	C	9	5	0		26	0	0	
	D	9	6	0		25	0	0	
	E	9	4	0		27	0	0	
	F	11	10	2		25	0	0	
	G	9	4	0		22	0	0	
	H	9	4	0		25	0	0	
	I	9	5	0		24	0	0	
	J	8	4	-1		26	0	0	
	K	9	4	0		23	0	0	
18	A	16	31	-	e	39	3	-	e
	B	14	23	-2	e	37	1	-2	e
	C	18	40	2	e	40	3	0	e
	D	18	40	2	e	39	3	0	e
	E	13	17	-3	e	39	3	0	e
	F	12	15	-4	e	37	1	-2	e
	G	11	10	-5		36	1	-2	e
	H	14	25	-2	e	38	2	-1	e
	I	14	24	-2	e	37	2	-1	e
	J	11	10	-5		38	2	-1	e
	K	12	14	-4	e	36	1	-2	e
19	A	11	10	-		34	0	-	
	B	9	6	-2		34	0	0	
	C	11	10	0		33	0	0	
	D	12	15	1	e	34	0	0	
	E	9	6	-2		34	0	0	
	F	9	6	-2		34	0	0	
	G	9	5	-2		33	0	0	
	H	9	6	-2		33	0	0	
	I	9	6	-2		33	0	0	
	J	8	5	-3		33	0	0	

Table 1: Pedestrian Wind Comfort and Hazard Conditions - Public Spaces

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
	K	9	6	-2		34	0	0	
20	A	15	30	-	e	36	1	-	e
	B	13	17	-2	e	33	0	-1	
	C	14	26	-1	e	33	0	-1	
	D	15	27	0	e	36	1	0	e
	E	12	12	-3	e	32	0	-1	
	F	13	17	-2	e	33	0	-1	
	G	10	7	-5		33	0	-1	
	H	13	17	-2	e	33	0	-1	
	I	13	17	-2	e	31	0	-1	
	J	8	3	-7		31	0	-1	
	K	10	7	-5		29	0	-1	
21	A	19	40	-	e	39	3	-	e
	B	12	15	-7	e	32	0	-3	
	C	18	37	-1	e	37	1	-2	e
	D	19	41	0	e	40	4	1	e
	E	12	12	-7	e	33	0	-3	
	F	13	15	-6	e	34	0	-3	
	G	10	6	-9		31	0	-3	
	H	13	19	-6	e	31	0	-3	
	I	14	23	-5	e	31	0	-3	
	J	8	4	-11		31	0	-3	
	K	10	7	-9		31	0	-3	
22	A	15	30	-	e	33	0	-	
	B	11	10	-4		29	0	0	
	C	14	25	-1	e	31	0	0	
	D	16	32	1	e	33	0	0	
	E	11	10	-4		30	0	0	
	F	12	13	-3	e	29	0	0	
	G	9	5	-6		29	0	0	
	H	11	10	-4		29	0	0	
	I	13	17	-2	e	29	0	0	
	J	7	4	-8		29	0	0	
	K	9	4	-6		29	0	0	
23	A	14	23	-	e	31	0	-	
	B	14	23	0	e	29	0	0	
	C	12	14	-2	e	29	0	0	
	D	14	21	0	e	32	0	0	
	E	12	13	-2	e	28	0	0	
	F	12	12	-2	e	31	0	0	
	G	12	14	-2	e	28	0	0	

Table 1: Pedestrian Wind Comfort and Hazard Conditions - Public Spaces

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
	H	11	10	-3		29	0	0	
	I	11	10	-3		30	0	0	
	J	9	4	-5		28	0	0	
	K	9	4	-5		29	0	0	
24	A	12	16	-	e	36	1	-	e
	B	11	10	-1		35	0	-1	
	C	13	17	1	e	35	0	-1	
	D	13	21	1	e	37	1	0	e
	E	11	10	-1		36	1	0	e
	F	12	13	0	e	36	1	0	e
	G	10	9	-2		34	0	-1	
	H	11	10	-1		35	0	-1	
	I	11	10	-1		35	0	-1	
	J	11	10	-1		33	0	-1	
	K	12	13	0	e	34	0	-1	
25	A	12	13	-	e	29	0	-	
	B	15	27	3	e	32	0	0	
	C	12	13	0	e	28	0	0	
	D	12	14	0	e	30	0	0	
	E	15	29	3	e	33	0	0	
	F	15	28	3	e	34	0	0	
	G	13	20	1	e	32	0	0	
	H	11	10	-1		28	0	0	
	I	12	13	0	e	32	0	0	
	J	13	20	1	e	30	0	0	
	K	13	21	1	e	29	0	0	

SUMMARY	Configurations	WIND COMFORT				WIND HAZARD			
		Average (mph)	Average (%)	Speed Change (mph)	Total	Average (mph)	Total Hours	Hours Change	Total
	A	**13 mph**	**19%**	**-**	**18 / 25**	**31 mph**	**10 Hrs**	**-**	**6 / 25**
	B	**13 mph**	**20%**	**0**	**17 / 25**	**31 mph**	**7 Hrs**	**-3**	**5 / 25**
	C	**13 mph**	**20%**	**0**	**20 / 25**	**31 mph**	**4 Hrs**	**-6**	**2 / 25**
	D	**14 mph**	**21%**	**1**	**21 / 25**	**32 mph**	**13 Hrs**	**3**	**7 / 25**
	E	**13 mph**	**21%**	**0**	**18 / 25**	**32 mph**	**14 Hrs**	**4**	**6 / 25**
	F	**14 mph**	**21%**	**1**	**18 / 25**	**33 mph**	**15 Hrs**	**5**	**9 / 25**
	G	**11 mph**	**13%**	**-2**	**11 / 25**	**30 mph**	**3 Hrs**	**-7**	**2 / 25**
	H	**12 mph**	**14%**	**-1**	**13 / 25**	**30 mph**	**2 Hrs**	**-8**	**1 / 25**
	I	**12 mph**	**15%**	**-1**	**15 / 25**	**30 mph**	**2 Hrs**	**-8**	**1 / 25**

Table 1: Pedestrian Wind Comfort and Hazard Conditions - Public Spaces

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
	J	11 mph	13%	-2	10 / 25	30 mph	4 Hrs	-6	2 / 25
	K	12 mph	15%	-1	12 / 25	30 mph	4 Hrs	-6	2 / 25

Notes:

1) Wind Comfort = Wind speeds exceeding 11 mph for ≥ 10% of the time

2) Wind Hazard = Wind speeds exceeding 36 mph for ≥ 1 hour/year

Table 2: Pedestrian Wind Comfort and Hazard Conditions - Above Grade

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
26	A	11	10	-		27	0	-	
	B	13	19	2	e	35	0	0	
	C	13	19	2	e	26	0	0	
	D	13	17	2	e	29	0	0	
	E	14	28	3	e	31	0	0	
	F	14	24	3	e	33	0	0	
	G	11	10	0		35	0	0	
	H	14	25	3	e	31	0	0	
	I	15	27	4	e	32	0	0	
	J	12	15	1	e	32	0	0	
	K	13	18	2	e	31	0	0	
27	A	3	0	-		6	0	-	
	B	16	32	13	e	35	0	0	
	C	10	5	7		25	0	0	
	D	7	2	4		24	0	0	
	E	15	25	12	e	32	0	0	
	F	17	32	14	e	37	2	2	e
	G	12	13	9	e	25	0	0	
	H	10	5	7		26	0	0	
	I	8	3	5		27	0	0	
	J	10	7	7		22	0	0	
	K	11	10	8		25	0	0	
28	A	8	3	-		24	0	-	
	B	14	24	6	e	33	0	0	
	C	8	2	0		24	0	0	
	D	14	27	6	e	31	0	0	
	E	8	3	0		28	0	0	
	F	19	42	11	e	38	2	2	e
	G	11	10	3		30	0	0	
	H	7	2	-1		26	0	0	
	I	14	26	6	e	32	0	0	
	J	7	2	-1		25	0	0	
	K	16	35	8	e	35	0	0	

MARY	Configurations	WIND COMFORT				WIND HAZARD			
		Average (mph)	Average (%)	Speed Change (mph)	Total	Average (mph)	Total Hours	Hours Change	Total
	A	**7 mph**	**4%**	**-**	**0 / 3**	**19 mph**	**0 Hrs**	**-**	**0 / 3**
	B	**14 mph**	**25%**	**7**	**3 / 3**	**34 mph**	**0 Hrs**	**0**	**0 / 3**
	C	**10 mph**	**9%**	**3**	**1 / 3**	**25 mph**	**0 Hrs**	**0**	**0 / 3**
	D	**11 mph**	**15%**	**4**	**2 / 3**	**28 mph**	**0 Hrs**	**0**	**0 / 3**

Table 2: Pedestrian Wind Comfort and Hazard Conditions - Above Grade

Location	Configuration	WIND COMFORT				WIND HAZARD			
		Wind Speed Exceeded (mph)	% of Time Exceeding	Speed Change (mph)	Exceeds	Wind Speed Exceeded (mph)	Hours per Year Exceeding	Hours Change	Exceeds
SUMM	E	12 mph	19%	5	2 / 3	30 mph	0 Hrs	0	0 / 3
	F	17 mph	33%	10	3 / 3	36 mph	4 Hrs	4	2 / 3
	G	11 mph	11%	4	1 / 3	30 mph	0 Hrs	0	0 / 3
	H	10 mph	11%	3	1 / 3	28 mph	0 Hrs	0	0 / 3
	I	12 mph	19%	5	2 / 3	30 mph	0 Hrs	0	0 / 3
	J	10 mph	8%	3	1 / 3	26 mph	0 Hrs	0	0 / 3
	K	13 mph	21%	6	2 / 3	30 mph	0 Hrs	0	0 / 3

Notes:

1) Wind Comfort = Wind speeds exceeding 11 mph for ≥ 10% of the time

2) Wind Hazard = Wind speeds exceeding 36 mph for ≥ 1 hour/year

APPENDIX A

Drawing List for Model Construction

The drawings and information listed below were received from ESA and were used to construct the scale model of the proposed Kaiser Centre. Should there be any design changes that deviate from this list of drawings, the results may change. If changes in the design are made, it is recommended that RWDI be contacted and requested to review their potential effects on wind conditions.

File Name	File Type	Date Received (mm/dd/yyyy)
20180705_MasterPlan-I-140'Wide	Rhino	12/07/2018
20180705_MasterPlan-II-140'Wide	Rhino	12/07/2018
2018-07-09 Site Plan Massing Update	pdf	11/07/2018
Copy of Major Projects List 2018. Spring. 05 01 18. MAR2MR. STAFF USE ON...	pdf	19/06/2018

APPENDIX C

Construction Health Risk Assessment

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APPENDIX C
Construction Health Risk Assessment

The Health Risk Assessment (HRA) presented below includes a detailed assessment of the health risks associated with diesel particulate matter (DPM) from construction activities related to the Revised Kaiser Center Project. This HRA has been prepared in compliance with SCA AIR-3(a)(i) [City of Oakland SCA 23a(i)] which applies to construction activities associated with all projects that involve greater than 50,000 square feet of non-residential floor area or 100 residential dwelling units, such as the Revised Project. This SCA requires that project applicants implement appropriate measures during construction to reduce potential health risks to sensitive receptors due to exposure to DPM from construction emissions by either:

i. Preparing and submitting an HRA in accordance with current guidance from the California Air Resources Board (CARB) and Office of Environmental Health and Hazard Assessment (OEHHA) to determine the health risk to sensitive receptors exposed to DPM from project construction emissions. If the HRA concludes that the health risk exceeds acceptable levels, a Construction Emissions Minimization Plan shall be prepared that includes DPM reduction measures identified to reduce the health risk to acceptable levels.

   OR

ii. Using all off-road diesel construction equipment equipped with the most effective Verified Diesel Emission Control Strategies (VDECS) available for the engine type (such as Tier 4 engines) as certified by CARB.

The HRA consists of three principal components:

1. Estimation of TAC emissions from project construction,
2. Estimation of TAC concentrations at existing sensitive receptors from the project's construction emissions using refined air dispersion modeling, and
3. Estimation of health risks from construction using the modeled concentrations at receptors and exposure parameters and comparison to significance thresholds developed by the Bay Area Air Quality Management District (BAAQMD) and adopted by the City of Oakland.

The HRA was conducted in accordance with technical guidelines developed by federal, state, and regional agencies, including U.S. Environmental Protection Agency (USEPA), CARB, OEHHA *Air*

Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments[1] and the BAAQMD *Air Toxics New Source Review (NSR) Program Health Risk Assessment Guidelines*.[2]

1. Estimation of TAC Emissions from Project Construction

The primary TAC of concern emitted during project construction is DPM, a primary component of diesel exhaust from construction equipment and heavy duty trucks transporting materials to and from the project site. In August 1998, the CARB identified DPM as a TAC. DPM is a complex mixture of numerous individual gaseous and particulate compounds emitted from diesel-fueled combustion engines and contains at least 40 different TACs. DPM is formed primarily through the incomplete combustion of diesel fuel. DPM is removed from the atmosphere through physical processes including atmospheric fall-out and washout by rain. Humans can be exposed to airborne DPM by deposition on water, soil, and vegetation; although the main pathway of exposure is inhalation. Studies indicate that DPM poses the greatest health risk among airborne TACs.

For purposes of this assessment, consistent with OEHHA guidelines, exhaust emissions of PM_{10} are represented as DPM. Exhaust PM_{10} emissions from project construction were derived from CalEEMod (Version 2016.3.2). As detailed under the Project Description, the Project considers two options: Master Plan I and Master Plan II. Both options propose to build and office tower at Webster Street. However, while Master Plan I proposes an office tower at the 20th Street Mall site, Master Plan II would include a residential tower instead. The two towers under both master plan options could either be built simultaneously or sequentially. Separate emissions estimates were prepared for four development scenarios representing worst case scenarios and listed below:

- Simultaneous construction of both office towers under Master Plan I
- Sequential construction with the 20th Street office tower followed by the Webster Street office tower under Master Plan I
- Simultaneous construction of office and residential towers under Master Plan II
- Sequential construction with the 20th Street residential tower followed by the Webster Street office tower under Master Plan II

The following assumptions were used in the estimation of emissions using CalEEMod:

- Construction was assumed to begin in January 2020 and last for a period of approximately 30 months for the simultaneous construction scenarios and 60 months for the sequential construction scenarios;
- The duration of the various construction phases for all four construction scenarios (e.g., demolition, grading, building construction, etc.) were provided by the Project Applicant (shown in **Tables C-1 and C-2**);

1 Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, February 2015, http://oehha.ca.gov/air/hot_spots/hotspots2015.html

2 BAAQMD, *BAAQMD Air Toxics New Source Review (NSR) Program Health Risk Assessment Guidelines*, January 2016.

- The number and types of construction equipment used for each phase, their size and activity level as well as the number of construction related worker, vendor and hauling trips during each phase for each of the four construction scenarios were also provided by the Project Applicant;

- Demolition of 280,000 square feet of existing structures; and

- Off-haul of a total 33,000 cubic yards and infill of 6,000 cubic yards of material during the grading and site preparation phases under the Master Plan I construction scenarios. Off-haul of a total 37,000 cubic yards and infill of 6,000 cubic yards of material during the grading and site preparation phases under the Master Plan II construction scenarios.

TABLE C-1
PROJECT CONSTRUCTION SCHEDULE – MASTER PLAN I [a]

Construction Phase	Duration	Number of Workdays [b]
Simultaneous construction of both office towers		
Demolition	1/1/2020 – 4/1/2020	66
Site Preparation	4/2/2020 – 6/2/2020	44
Grading	6/3/2020 – 8/3/2020	44
Building Construction	8/4/2020 – 2/4/2022	394
Paving	4/4/2022 – 6/4/2022	45
Architectural Coating	10/4/2021 – 6/4/2022	175
Total number of workdays over the construction duration		768
Total number of workdays accounting for overlapping construction		633
Sequential construction with 20th Street office tower followed by Webster Street tower		
20th Street Office Tower		
Demolition	1/1/2020 – 3/1/2020	43
Site Preparation	3/2/2020 – 5/2/2020	45
Grading	5/3/2020 – 7/3/2020	45
Building Construction	7/4/2020 – 8/4/2021	283
Paving	11/4/2021 – 12/4/2021	22
Architectural Coating	6/142021 – 12/4/2021	131
Total number of workdays over the construction duration		569
Total number of workdays accounting for overlapping construction		504
Webster Street Office Tower		
Demolition	12/4/2021 – 3/4/2022	65
Site Preparation	3/5/2022 – 5/5/2022	44
Grading	5/6/2022 – 7/6/2022	44
Building Construction	7/7/2022 – 1/7/2024	392
Paving	3/7/2024 – 5/7/2024	44
Architectural Coating	9/7/2023 – 5/7/2024	174
Total number of workdays over the construction duration		763
Total number of workdays accounting for overlapping construction		632

a Provided by Project Applicant.
b Number of workdays are calculated assuming Monday – Friday construction. No construction on weekends is assumed.

TABLE C-2
PROJECT CONSTRUCTION SCHEDULE – MASTER PLAN II [a]

Construction Phase	Duration	Number of Workdays [b]
Simultaneous construction of residential and office towers		
Demolition	1/1/2020 – 3/1/2020	43
Site Preparation	3/1/2020 – 5/1/2020	45
Grading	5/1/2020 – 7/1/2020	44
Building Construction	7/1/2020 – 3/1/2022	435
Paving	5/1/2022 – 7/1/2022	45
Architectural Coating	11/1/2021 – 7/1/2022	175
Total number of workdays over the construction duration		787
Total number of workdays accounting for overlapping construction		655
Sequential construction with residential tower followed by office tower		
20th Street Residential Tower		
Demolition	1/1/2020 – 3/1/2020	43
Site Preparation	3/1/2020 – 5/1/2020	45
Grading	5/1/2020 – 7/1/2020	44
Building Construction	7/1/2020 – 3/1/2022	435
Paving	5/1/2022 – 7/1/2022	45
Architectural Coating	11/1/2021 – 7/1/2022	175
Total number of workdays over the construction duration		787
Total number of workdays accounting for overlapping construction		655
Webster Street Office Tower		
Demolition	7/1/2022 – 10/1/2022	66
Site Preparation	10/2/2022 – 12/2/2022	45
Grading	12/3/2022 – 2/3/2023	45
Building Construction	2/4/2023 – 8/4/2024	390
Paving	8/4/2024 – 10/4/2024	45
Architectural Coating	4/4/2024 – 12/4/2024	175
Total number of workdays over the construction duration		766
Total number of workdays accounting for overlapping construction		635

a Provided by Project Applicant.
b Number of workdays are calculated assuming Monday – Friday construction. No construction on weekends is assumed.

Total exhaust PM_{10} emissions from construction activities associated with the four scenarios as estimated using CalEEMod are presented in **Table C-3**. Emission rates are also presented assuming 8 hours of construction, Monday through Friday. As required by the BAAQMD Guidelines, fugitive emissions are not included in this assessment and are addressed separately through dust control measures implemented as part of SCA AIR-1.

TABLE C-3
TOTAL PM_{10} EXHAUST EMISSIONS AND EMISSION RATES FOR PROJECT CONSTRUCTION SCENARIOS

Source	Unmitigated Scenario
Master Plan I – Simultaneous Construction of both office towers	
Total DPM (as PM_{10} Exhaust) (tons)	0.4
Number of construction workdays	633
Emission Rate (grams/second) [a]	0.0198
Master Plan I – Sequential Construction of both office towers	
Total DPM (as PM_{10} Exhaust) (tons)	0.41
Number of construction workdays	1136
Emission Rate (grams/second) [a]	0.0112
Master Plan II – Simultaneous Construction of residential and office towers	
Total DPM (as PM_{10} Exhaust) (tons)	0.38
Number of construction workdays	655
Emission Rate (grams/second) [a]	0.0181
Master Plan II – Sequential Construction with residential tower followed by office tower	
Total DPM (as PM_{10} Exhaust) (tons)	0.48
Number of construction workdays	1290
Emission Rate (grams/second) [a]	0.0118

a Emission rate calculated assuming 8 hours of construction per day, Monday to Friday.

2. Estimation of Ambient Concentrations at Existing Sensitive Receptors

Dispersion is the process by which atmospheric pollutants disseminate due to wind and vertical stability. The results of a dispersion analysis are used to assess pollutant concentrations at or near an emission source. The results of such an analysis allow predicted concentrations of pollutants to be compared directly to air quality standards and other criteria such as health risks based on modeled concentrations.

An air dispersion model is a mathematical formulation that is used to estimate the air quality concentrations at specific locations (receptors) surrounding a source of emissions given the rate of emissions, topography and prevailing meteorological conditions. The air dispersion model used in this assessment was the United States Environmental Protection Agency (EPA) AERMOD air dispersion model that is approved by the BAAQMD for air pollutant dispersion assessments. Specifically, the AERMOD model was used to estimate concentrations of DPM emissions at sensitive receptor locations using the project's emission rate shown in **Table C-3.**

Based on the estimated emission rates presented in Table C-3 for the four development scenarios, the following two worst case scenarios were modeled to estimate DPM concentrations in the project vicinity. Concentrations associated with the other development scenarios would be lower.

1. Master Plan I simultaneous construction scenario had the highest emission rate of the four scenarios. Concentrations at existing offsite receptors located around the Project site were modeled for this scenario.

2. Master Plan II sequential construction scenario has the longest construction duration. Therefore, offsite concentrations were also modeled for this scenario which assumes construction of the 20th Street residential tower followed by the Webster Street office tower.

   Under this scenario, DPM concentration at proposed receptors of the 20th Street residential tower from emissions generated by construction activities at the Webster Street office tower was also modeled assuming that the residential tower would be occupied prior to start of construction of the office tower.

The emission rates for these scenarios was further refined to include exhaust PM_{10} emissions only from on-site construction equipment and off-site vendor and hauling trips during the different phases. Both on-site emissions from construction and off-site emissions from heavy duty trucks were modeled together as an area source extending over the entire project site. Only 10 percent of off-site emissions were considered in the modeling effort as contributing to concentrations in the project vicinity. A release height of 5 meters above ground was used to account for the top of the equipment exhaust stack where the emissions are released to the atmosphere and the increase in the height of the emissions due to its heated exhaust. A variable emissions rate was used to represent project construction activity that is expected to take place only on weekdays for 8 hours per day between 8 a.m. and 4 p.m. Meteorological data from the Metropolitan Oakland International Airport was used to represent wind conditions at the project site.

The area immediately surrounding the project site contains primarily office, retail, institutional, recreational, and open space land uses with few residential or other sensitive uses. Open space areas and the Children's Fairyland are located to the east and downwind of the project site. The nearest residential uses are located approximately 850 feet to the northwest and southwest of the site at 438 West Grand Avenue and 1768 Broadway, respectively.

The results of the dispersion modeling are shown in **Table C-4** below.

TABLE C-4
MODELED MAXIMUM ANNUAL CONCENTRATIONS FOR WORST CASE SCENARIOS

Construction Scenario	Maximum Exposed Receptor	Maximum Annual Concentration ($\mu g/m^3$)
Master Plan I Simultaneous Construction Scenario	Offsite – 438 W Grand Ave	0.005
Master Plan II Sequential Construction Scenario	Offsite – 438 W Grand Ave	0.003
Master Plan II – construction of Webster Street office tower	Onsite – 20th Street Residential Tower	0.057

The results of the modeling effort show that maximum offsite annual concentrations from unmitigated emissions from both Master Plan I simultaneous construction scenario and Master Plan II Sequential construction scenario would be the residential receptors 438 West Grand Avenue northwest of the project site. This would be considered the Maximum Exposed Individual Receptor

(MEIR). Onsite receptors at the 20th Street residential tower would experience the maximum concentration from construction activities associated with the office tower.

3. Assessment of Health Risks from Project Construction to Existing Receptors

Assessment of health risks from project construction was conducted following methodologies and exposure parameters recommended in OEHHA's Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.[3] OEHHA's 2015 revisions to its Guidance Manual are primarily designed to ensure that the greater sensitivity of children to cancer and other health risks is reflected in HRAs. For example, OEHHA now recommends that risks be analyzed separately for multiple age groups, focusing especially on young children and teenagers, rather than the past practice of analyzing risks to the general population, without distinction by age. OEHHA also now recommends that statistical "age sensitivity factors" be incorporated into a HRA, and that children's relatively high breathing rates be accounted for. On the other hand, the Guidance Manual revisions also include some changes that would reduce calculated health risks. For example, under the former guidance, OEHHA recommended that residential cancer risks be assessed by assuming 70 years of exposure at a residential receptor; under the revised Guidance Manual, this assumption is lessened to 30 years. This is based on studies showing that 30 years is a reasonable estimate of the 90th to 95th percentile of residency duration in the population.

For short term projects such as construction activities, OEHHA recommends using the actual project duration. To ensure that short-term projects do not result in unanticipated estimated higher cancer impacts due to short duration high-exposure rates, the BAAQMD recommends that the cancer risk be evaluated assuming that the average daily dose for short-term exposure lasts a minimum of three years for projects lasting three years or less. Therefore, for the assessment of risks to offsite receptors from simultaneous construction of the office towers under Master Plan I and for the analysis of risks to occupants of the Revised Project's residential tower from activities associated with the construction of the office tower under the Master Plan II sequential construction scenario, short-term exposure is assumed to be 3 years. However, for the assessment of health risks to offsite receptors from the sequential construction of both the residential and office towers under Master Plan II, the actual construction duration of 5 years is used as the exposure duration according to the information provided by the Project Applicant.

Based on OEHHA recommendations, the cancer risk to residential receptors assumes that exposure occurs 24 hours per day for 350 days per year while accounting for a percentage of time at home. OEHHA evaluated information from activity pattern databases to estimate the fraction of time at home (FAH) during the day. This information was used to adjust exposure duration and cancer risk based on the assumption that a person is not present at home continuously for 24 hours and therefore exposure to emissions is not occurring when a person is away from their home.

[3] Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, February 2015, http://oehha.ca.gov/air/hot_spots/hotspots2015.html

TABLE C-5
EXPOSURE PARAMETERS USED

Receptor Age	Exposure Duration (ED) [a] (years)	Age Sensitivity Factors (ASF)	Fraction of time at Home (TAH) (%)	Daily Breathing Rate (DBR) [b] (L/kg-day)
Residential Receptor - Infant				
3rd trimester	0.25	10	0.85	361
0 – 2 years	2	10	0.85	1090
2 – 9 years	1	3	0.72	631
Residential Receptor - Child				
2 – 9 years	3	3	0.72	631
Residential Receptor - Adult				
>16 years	3	1	0.73	261
School Receptor - Child				
2 – 9 years	3	3	0.72	631
School Receptor - Adult				
>16 years	3	1	0.73	261

NOTES

a Per BAAQMD guidance, a minimum 3-year exposure duration is assumed to estimate risks from project construction. Exposure duration was increased to the actual duration of 5 years for only the Master Plan II sequential construction scenario.

b BAAQMD Air Toxics New Source Review Program HRA Guidelines recommend using the 95th percentile rate for age groups less than 2 years old and the 80th percentile rate for age groups that are greater than or equal to 2 years old.

Cancer risk at the MEIR was estimated using the OEHHA recommended method shown in the following equations and the cancer risk exposure parameters shown in **Table C-5**. Estimates were made using the mandatory minimum pathways, which for DPM is only through inhalation.

$$Risk_{inh\text{-}res} = DOSE_{air} \times CPF \times ASF \times ED/AT \times FAH$$

$Risk_{inh\text{-}res}$ = Residential inhalation cancer risk

$DOSE_{air}$ = Daily Inhalation Dose

CPF = Cancer Potency Factor for DPM = 1.1

ASF = Age Sensitivity Factors

ED = Exposure Duration in each age group (years)

AT = Averaging Time over lifetime cancer risk (years) = 70 years

FAH = Fraction of Time at Home (%)

$$DOSE_{air} = C_{air} \times DBR \times A \times EF \times 10^{-6}$$

C_{air} = Concentration of TAC in air ($\mu g/m^3$)

DBR = Daily Breathing Rate

A = Inhalation Absorption factor = 1.0 for DPM

EF = Exposure Frequency = 350/365 = 0.96

Chronic (long-term) adverse health impacts unrelated to cancer are measured against a hazard index (HI), which is defined as the ratio of the predicted incremental DPM exposure concentration from the proposed project to a reference exposure level (REL) that could cause adverse health effects. The RELs are published by OEHHA based on epidemiological research. The chronic reference exposure level for DPM was established by the California OEHHA as 5 μg/m^3. [4]

Estimated health risks and maximum $PM_{2.5}$ concentrations to receptors of different age groups at the MEIR are shown in **Table C-6** below and compared to the BAAQMD project-level thresholds that have been adopted by the City of Oakland.

TABLE C-6
MAXIMUM HEALTH RISKS FROM PROJECT CONSTRUCTION – UNMITIGATED EMISSIONS

Health Risk at MEIR	Maximum Cancer Risk (in a million)	Chronic Risk (Hazard Index)	Maximum $PM_{2.5}$ concentration
Master Plan I – Simultaneous Construction Scenario – Unmitigated Emissions			
Residential Receptor - Infant	1.5	0.001	0.005
Residential Receptor - Child	<0.1	0.001	0.005
Residential Receptor - Adult	<0.1	0.001	0.005
Project-level Threshold	10	1.0	0.3
Significant?	**No**	**No**	**No**
Master Plan II – Sequential Construction Scenario – Unmitigated Emissions			
Residential Receptor - Infant	1	0.0006	0.0027
Residential Receptor - Child	<0.1	0.0006	0.0027
Residential Receptor - Adult	<0.1	0.0006	0.0027
Project-level Threshold	10	1.0	0.3
Significant?	**No**	**No**	**No**
Master Plan II – Construction of Office Tower only – Unmitigated Emissions			
Residential Receptor - Infant	**17.8**	0.0114	0.055
Residential Receptor - Child	3.5	0.0114	0.055
Residential Receptor - Adult	0.5	0.0114	0.055
Project-level Threshold	10	1.0	0.3
Significant?	**Yes**	**No**	**No**
Master Plan II – Construction of Office Tower only – Tier 4 Construction Equipment			
Residential Receptor - Infant	17.2	0.001	0.004
Residential Receptor - Child	0.2	0.001	0.004
Residential Receptor - Adult	<0.1	0.001	0.004
Project-level Threshold	10	1.0	0.3
Significant?	**No**	**No**	**No**

[4] California Office of Environmental Health Hazards Assessment - Acute, 8-hour, and Chronic Reference Exposure Levels, June 2014, http://www.oehha.ca.gov/air/allrels.html

Summary

As shown in the table, health risks (cancer and chronic) to off-site receptors of all age groups and $PM_{2.5}$ concentrations resulting from project construction would be less than the applicable significance thresholds for both Master Plan I simultaneous construction and Master Plan II sequential construction scenarios. With lower emission rate, health risks from the sequential construction of Master Plan I and simultaneous construction of Master Plan II would also be less than significant. However, under Master Plan II, if the project were constructed sequentially with the residential tower constructed and occupied prior to start of construction of the office tower, cancer risk to the receptors of the residential tower from exposure to construction activities of the office tower would be significant for the infant age group. As shown in Table C-6, this impact would be reduced to a less than significant level by using all Tier 4 equipment for the office tower construction consistent with SCA AIR-3(a)(ii). Alternately, constructing the office tower first in the sequential scenario would avoid this impact. Therefore, with the implementation of SCAs, the TAC impact of project construction on existing receptors would be less than significant for all construction scenarios.

Kaiser Center - Existing Uses

San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	69.00	1000sqft	2.20	69,000.00	0
Regional Shopping Center	48.00	1000sqft	0.00	48,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Kaiser Center - Existing Uses - San Francisco Bay Area Air Basin, Annual

Project Characteristics - Based on PG&E's GHG emission factor for 2016
https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

Land Use - Existing Land uses at the Project site

Construction Phase -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT -

Demolition -

Grading - Data from applicant

Architectural Coating - Correctting default values per Appendix D

Vehicle Trips - Adjusted based on project traffic data
Passby trips for retail uses already accounted for in trip rate

Woodstoves -

Energy Use - Using historical data for energy use

Water And Wastewater - 100% aerobic digestion assumed

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	250.00	150.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblLandUse	LotAcreage	1.58	2.20
tblLandUse	LotAcreage	1.10	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	ST_TR	2.46	1.31
tblVehicleTrips	ST_TR	49.97	19.63
tblVehicleTrips	SU_TR	1.05	0.56
tblVehicleTrips	SU_TR	25.24	9.92
tblVehicleTrips	WD_TR	11.03	5.87
tblVehicleTrips	WD_TR	42.70	16.77
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

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					
2017	0.1020	0.8396	0.5373	9.4000e-004	0.0307	0.0482	0.0789	0.0127	0.0456	0.0583	0.0000	83.4561	83.4561	0.0174	0.0000	83.8914
2018	0.9115	2.2431	1.6948	3.1900e-003	0.0394	0.1233	0.1628	0.0108	0.1181	0.1288	0.0000	277.4842	277.4842	0.0482	0.0000	278.6879
Maximum	**0.9115**	**2.2431**	**1.6948**	**3.1900e-003**	**0.0394**	**0.1233**	**0.1628**	**0.0127**	**0.1181**	**0.1288**	**0.0000**	**277.4842**	**277.4842**	**0.0482**	**0.0000**	**278.6879**

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					
2017	0.1020	0.8396	0.5373	9.4000e-004	0.0307	0.0482	0.0789	0.0127	0.0456	0.0583	0.0000	83.4560	83.4560	0.0174	0.0000	83.8913
2018	0.9115	2.2431	1.6948	3.1900e-003	0.0394	0.1233	0.1628	0.0108	0.1181	0.1288	0.0000	277.4840	277.4840	0.0482	0.0000	278.6877
Maximum	**0.9115**	**2.2431**	**1.6948**	**3.1900e-003**	**0.0394**	**0.1233**	**0.1628**	**0.0127**	**0.1181**	**0.1288**	**0.0000**	**277.4840**	**277.4840**	**0.0482**	**0.0000**	**278.6877**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-3-2017	1-2-2018	0.9660	0.9660
2	1-3-2018	4-2-2018	0.8536	0.8536
3	4-3-2018	7-2-2018	0.8607	0.8607
4	7-3-2018	9-30-2018	0.8676	0.8676
		Highest	0.9660	0.9660

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	0.5926	1.0000e-005	1.0900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0900e-003	2.0900e-003	1.0000e-005	0.0000	2.2300e-003
Energy	0.0102	0.0925	0.0777	5.5000e-004		7.0300e-003	7.0300e-003		7.0300e-003	7.0300e-003	0.0000	312.3257	312.3257	0.0228	6.1700e-003	314.7332
Mobile	0.3718	1.6698	4.1102	0.0112	0.8693	0.0153	0.8846	0.2334	0.0144	0.2479	0.0000	1,028.3892	1,028.3892	0.0457	0.0000	1,029.5306
Waste						0.0000	0.0000		0.0000	0.0000	23.2567	0.0000	23.2567	1.3744	0.0000	57.6174
Water						0.0000	0.0000		0.0000	0.0000	5.5968	15.9403	21.5371	0.0208	0.0125	25.7820
Total	**0.9746**	**1.7622**	**4.1889**	**0.0118**	**0.8693**	**0.0223**	**0.8916**	**0.2334**	**0.0215**	**0.2549**	**28.8535**	**1,356.6573**	**1,385.5108**	**1.4638**	**0.0187**	**1,427.6654**

2.2 Overall Operational

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	0.5926	1.0000e-005	1.0900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0900e-003	2.0900e-003	1.0000e-005	0.0000	2.2300e-003
Energy	0.0102	0.0925	0.0777	5.5000e-004		7.0300e-003	7.0300e-003		7.0300e-003	7.0300e-003	0.0000	312.3257	312.3257	0.0228	6.1700e-003	314.7332
Mobile	0.3718	1.6698	4.1102	0.0112	0.8693	0.0153	0.8846	0.2334	0.0144	0.2479	0.0000	1,028.3892	1,028.3892	0.0457	0.0000	1,029.5306
Waste						0.0000	0.0000		0.0000	0.0000	23.2567	0.0000	23.2567	1.3744	0.0000	57.6174
Water						0.0000	0.0000		0.0000	0.0000	5.5968	15.9403	21.5371	0.0208	0.0125	25.7820
Total	**0.9746**	**1.7622**	**4.1889**	**0.0118**	**0.8693**	**0.0223**	**0.8916**	**0.2334**	**0.0215**	**0.2549**	**28.8535**	**1,356.6573**	**1,385.5108**	**1.4638**	**0.0187**	**1,427.6654**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**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

Construction Phase

Kaiser Center - Existing Uses - San Francisco Bay Area Air Basin, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/3/2017	10/30/2017	5	20	
2	Site Preparation	Site Preparation	10/31/2017	11/2/2017	5	3	
3	Grading	Grading	11/3/2017	11/10/2017	5	6	
4	Building Construction	Building Construction	11/11/2017	9/14/2018	5	220	
5	Paving	Paving	9/15/2018	9/28/2018	5	10	
6	Architectural Coating	Architectural Coating	9/29/2018	10/12/2018	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 175,500; Non-Residential Outdoor: 58,500; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Kaiser Center - Existing Uses - San Francisco Bay Area Air Basin, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	37.00	19.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2017

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0276	0.2676	0.1556	2.4000e-004		0.0165	0.0165		0.0154	0.0154	0.0000	21.9668	21.9668	5.5600e-003	0.0000	22.1057
Total	**0.0276**	**0.2676**	**0.1556**	**2.4000e-004**	**0.0000**	**0.0165**	**0.0165**	**0.0000**	**0.0154**	**0.0154**	**0.0000**	**21.9668**	**21.9668**	**5.5600e-003**	**0.0000**	**22.1057**

3.2 Demolition - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.6000e-004	4.5900e-003	1.0000e-005	1.0300e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.9855	0.9855	3.0000e-005	0.0000	0.9863
Total	**5.9000e-004**	**4.6000e-004**	**4.5900e-003**	**1.0000e-005**	**1.0300e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9855**	**0.9855**	**3.0000e-005**	**0.0000**	**0.9863**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0276	0.2676	0.1556	2.4000e-004		0.0165	0.0165		0.0154	0.0154	0.0000	21.9668	21.9668	5.5600e-003	0.0000	22.1057
Total	**0.0276**	**0.2676**	**0.1556**	**2.4000e-004**	**0.0000**	**0.0165**	**0.0165**	**0.0000**	**0.0154**	**0.0154**	**0.0000**	**21.9668**	**21.9668**	**5.5600e-003**	**0.0000**	**22.1057**

3.2 Demolition - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.6000e-004	4.5900e-003	1.0000e-005	1.0300e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.9855	0.9855	3.0000e-005	0.0000	0.9863
Total	**5.9000e-004**	**4.6000e-004**	**4.5900e-003**	**1.0000e-005**	**1.0300e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9855**	**0.9855**	**3.0000e-005**	**0.0000**	**0.9863**

3.3 Site Preparation - 2017

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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2000e-003	0.0401	0.0216	4.0000e-005		1.6600e-003	1.6600e-003		1.5300e-003	1.5300e-003	0.0000	3.4134	3.4134	1.0500e-003	0.0000	3.4395
Total	**3.2000e-003**	**0.0401**	**0.0216**	**4.0000e-005**	**2.3900e-003**	**1.6600e-003**	**4.0500e-003**	**2.6000e-004**	**1.5300e-003**	**1.7900e-003**	**0.0000**	**3.4134**	**3.4134**	**1.0500e-003**	**0.0000**	**3.4395**

3.3 Site Preparation - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	4.2000e-004	0.0000	9.0000e-005	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0910	0.0910	0.0000	0.0000	0.0910
Total	**5.0000e-005**	**4.0000e-005**	**4.2000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0910**	**0.0910**	**0.0000**	**0.0000**	**0.0910**

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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2000e-003	0.0401	0.0216	4.0000e-005		1.6600e-003	1.6600e-003		1.5300e-003	1.5300e-003	0.0000	3.4134	3.4134	1.0500e-003	0.0000	3.4395
Total	**3.2000e-003**	**0.0401**	**0.0216**	**4.0000e-005**	**2.3900e-003**	**1.6600e-003**	**4.0500e-003**	**2.6000e-004**	**1.5300e-003**	**1.7900e-003**	**0.0000**	**3.4134**	**3.4134**	**1.0500e-003**	**0.0000**	**3.4395**

3.3 Site Preparation - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	4.2000e-004	0.0000	9.0000e-005	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0910	0.0910	0.0000	0.0000	0.0910
Total	**5.0000e-005**	**4.0000e-005**	**4.2000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0910**	**0.0910**	**0.0000**	**0.0000**	**0.0910**

3.4 Grading - 2017

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					0.0197	0.0000	0.0197	0.0101	0.0000	0.0101	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9600e-003	0.0785	0.0323	6.0000e-005		3.9000e-003	3.9000e-003		3.5800e-003	3.5800e-003	0.0000	5.7484	5.7484	1.7600e-003	0.0000	5.7925
Total	**6.9600e-003**	**0.0785**	**0.0323**	**6.0000e-005**	**0.0197**	**3.9000e-003**	**0.0236**	**0.0101**	**3.5800e-003**	**0.0137**	**0.0000**	**5.7484**	**5.7484**	**1.7600e-003**	**0.0000**	**5.7925**

3.4 Grading - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.1000e-004	1.0600e-003	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.2274	0.2274	1.0000e-005	0.0000	0.2276
Total	**1.4000e-004**	**1.1000e-004**	**1.0600e-003**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2274**	**0.2274**	**1.0000e-005**	**0.0000**	**0.2276**

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					0.0197	0.0000	0.0197	0.0101	0.0000	0.0101	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9600e-003	0.0785	0.0323	6.0000e-005		3.9000e-003	3.9000e-003		3.5800e-003	3.5800e-003	0.0000	5.7484	5.7484	1.7600e-003	0.0000	5.7924
Total	**6.9600e-003**	**0.0785**	**0.0323**	**6.0000e-005**	**0.0197**	**3.9000e-003**	**0.0236**	**0.0101**	**3.5800e-003**	**0.0137**	**0.0000**	**5.7484**	**5.7484**	**1.7600e-003**	**0.0000**	**5.7924**

3.4 Grading - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.1000e-004	1.0600e-003	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.2274	0.2274	1.0000e-005	0.0000	0.2276
Total	**1.4000e-004**	**1.1000e-004**	**1.0600e-003**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2274**	**0.2274**	**1.0000e-005**	**0.0000**	**0.2276**

3.5 Building Construction - 2017

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	0.0585	0.4030	0.2854	4.4000e-004		0.0257	0.0257		0.0246	0.0246	0.0000	37.2702	37.2702	8.3000e-003	0.0000	37.4777
Total	**0.0585**	**0.4030**	**0.2854**	**4.4000e-004**		**0.0257**	**0.0257**		**0.0246**	**0.0246**	**0.0000**	**37.2702**	**37.2702**	**8.3000e-003**	**0.0000**	**37.4777**

3.5 Building Construction - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0100e-003	0.0475	0.0133	9.0000e-005	2.1800e-003	4.3000e-004	2.6100e-003	6.3000e-004	4.1000e-004	1.0400e-003	0.0000	8.8451	8.8451	5.4000e-004	0.0000	8.8586
Worker	2.9300e-003	2.2900e-003	0.0229	5.0000e-005	5.1200e-003	4.0000e-005	5.1500e-003	1.3600e-003	3.0000e-005	1.4000e-003	0.0000	4.9084	4.9084	1.6000e-004	0.0000	4.9124
Total	**4.9400e-003**	**0.0498**	**0.0362**	**1.4000e-004**	**7.3000e-003**	**4.7000e-004**	**7.7600e-003**	**1.9900e-003**	**4.4000e-004**	**2.4400e-003**	**0.0000**	**13.7535**	**13.7535**	**7.0000e-004**	**0.0000**	**13.7710**

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	0.0585	0.4030	0.2854	4.4000e-004		0.0257	0.0257		0.0246	0.0246	0.0000	37.2702	37.2702	8.3000e-003	0.0000	37.4777
Total	**0.0585**	**0.4030**	**0.2854**	**4.4000e-004**		**0.0257**	**0.0257**		**0.0246**	**0.0246**	**0.0000**	**37.2702**	**37.2702**	**8.3000e-003**	**0.0000**	**37.4777**

3.5 Building Construction - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0100e-003	0.0475	0.0133	9.0000e-005	2.1800e-003	4.3000e-004	2.6100e-003	6.3000e-004	4.1000e-004	1.0400e-003	0.0000	8.8451	8.8451	5.4000e-004	0.0000	8.8586
Worker	2.9300e-003	2.2900e-003	0.0229	5.0000e-005	5.1200e-003	4.0000e-005	5.1500e-003	1.3600e-003	3.0000e-005	1.4000e-003	0.0000	4.9084	4.9084	1.6000e-004	0.0000	4.9124
Total	**4.9400e-003**	**0.0498**	**0.0362**	**1.4000e-004**	**7.3000e-003**	**4.7000e-004**	**7.7600e-003**	**1.9900e-003**	**4.4000e-004**	**2.4400e-003**	**0.0000**	**13.7535**	**13.7535**	**7.0000e-004**	**0.0000**	**13.7710**

3.5 Building Construction - 2018

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	0.2694	1.9155	1.4539	2.3100e-003		0.1163	0.1163		0.1115	0.1115	0.0000	195.5022	195.5022	0.0421	0.0000	196.5551
Total	**0.2694**	**1.9155**	**1.4539**	**2.3100e-003**		**0.1163**	**0.1163**		**0.1115**	**0.1115**	**0.0000**	**195.5022**	**195.5022**	**0.0421**	**0.0000**	**196.5551**

3.5 Building Construction - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.2400e-003	0.2355	0.0625	4.9000e-004	0.0115	1.8100e-003	0.0133	3.3300e-003	1.7300e-003	5.0600e-003	0.0000	46.6273	46.6273	2.6900e-003	0.0000	46.6945
Worker	0.0138	0.0105	0.1057	2.8000e-004	0.0270	1.9000e-004	0.0272	7.1900e-003	1.7000e-004	7.3700e-003	0.0000	25.2197	25.2197	7.4000e-004	0.0000	25.2383
Total	**0.0230**	**0.2460**	**0.1683**	**7.7000e-004**	**0.0386**	**2.0000e-003**	**0.0406**	**0.0105**	**1.9000e-003**	**0.0124**	**0.0000**	**71.8470**	**71.8470**	**3.4300e-003**	**0.0000**	**71.9327**

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	0.2694	1.9155	1.4539	2.3100e-003		0.1163	0.1163		0.1115	0.1115	0.0000	195.5020	195.5020	0.0421	0.0000	196.5549
Total	**0.2694**	**1.9155**	**1.4539**	**2.3100e-003**		**0.1163**	**0.1163**		**0.1115**	**0.1115**	**0.0000**	**195.5020**	**195.5020**	**0.0421**	**0.0000**	**196.5549**

3.5 Building Construction - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.2400e-003	0.2355	0.0625	4.9000e-004	0.0115	1.8100e-003	0.0133	3.3300e-003	1.7300e-003	5.0600e-003	0.0000	46.6273	46.6273	2.6900e-003	0.0000	46.6945
Worker	0.0138	0.0105	0.1057	2.8000e-004	0.0270	1.9000e-004	0.0272	7.1900e-003	1.7000e-004	7.3700e-003	0.0000	25.2197	25.2197	7.4000e-004	0.0000	25.2383
Total	**0.0230**	**0.2460**	**0.1683**	**7.7000e-004**	**0.0386**	**2.0000e-003**	**0.0406**	**0.0105**	**1.9000e-003**	**0.0124**	**0.0000**	**71.8470**	**71.8470**	**3.4300e-003**	**0.0000**	**71.9327**

3.6 Paving - 2018

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	7.0200e-003	0.0713	0.0599	9.0000e-005		4.2500e-003	4.2500e-003		3.9200e-003	3.9200e-003	0.0000	8.0478	8.0478	2.4600e-003	0.0000	8.1093
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.0200e-003**	**0.0713**	**0.0599**	**9.0000e-005**		**4.2500e-003**	**4.2500e-003**		**3.9200e-003**	**3.9200e-003**	**0.0000**	**8.0478**	**8.0478**	**2.4600e-003**	**0.0000**	**8.1093**

3.6 Paving - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	2.3000e-004	2.3200e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5527	0.5527	2.0000e-005	0.0000	0.5531
Total	**3.0000e-004**	**2.3000e-004**	**2.3200e-003**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5527**	**0.5527**	**2.0000e-005**	**0.0000**	**0.5531**

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	7.0200e-003	0.0713	0.0599	9.0000e-005		4.2500e-003	4.2500e-003		3.9200e-003	3.9200e-003	0.0000	8.0478	8.0478	2.4600e-003	0.0000	8.1093
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.0200e-003**	**0.0713**	**0.0599**	**9.0000e-005**		**4.2500e-003**	**4.2500e-003**		**3.9200e-003**	**3.9200e-003**	**0.0000**	**8.0478**	**8.0478**	**2.4600e-003**	**0.0000**	**8.1093**

3.6 Paving - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	2.3000e-004	2.3200e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5527	0.5527	2.0000e-005	0.0000	0.5531
Total	**3.0000e-004**	**2.3000e-004**	**2.3200e-003**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5527**	**0.5527**	**2.0000e-005**	**0.0000**	**0.5531**

3.7 Architectural Coating - 2018

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	0.6101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4900e-003	0.0100	9.2700e-003	1.0000e-005		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	1.2766	1.2766	1.2000e-004	0.0000	1.2797
Total	**0.6116**	**0.0100**	**9.2700e-003**	**1.0000e-005**		**7.5000e-004**	**7.5000e-004**		**7.5000e-004**	**7.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.2000e-004**	**0.0000**	**1.2797**

3.7 Architectural Coating - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.1000e-004	1.0800e-003	0.0000	2.8000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	0.2579	0.2579	1.0000e-005	0.0000	0.2581
Total	**1.4000e-004**	**1.1000e-004**	**1.0800e-003**	**0.0000**	**2.8000e-004**	**0.0000**	**2.8000e-004**	**7.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2579**	**0.2579**	**1.0000e-005**	**0.0000**	**0.2581**

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	0.6101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4900e-003	0.0100	9.2700e-003	1.0000e-005		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	1.2766	1.2766	1.2000e-004	0.0000	1.2797
Total	**0.6116**	**0.0100**	**9.2700e-003**	**1.0000e-005**		**7.5000e-004**	**7.5000e-004**		**7.5000e-004**	**7.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.2000e-004**	**0.0000**	**1.2797**

3.7 Architectural Coating - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.1000e-004	1.0800e-003	0.0000	2.8000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	0.2579	0.2579	1.0000e-005	0.0000	0.2581
Total	**1.4000e-004**	**1.1000e-004**	**1.0800e-003**	**0.0000**	**2.8000e-004**	**0.0000**	**2.8000e-004**	**7.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2579**	**0.2579**	**1.0000e-005**	**0.0000**	**0.2581**

4.0 Operational Detail - Mobile

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	0.3718	1.6698	4.1102	0.0112	0.8693	0.0153	0.8846	0.2334	0.0144	0.2479	0.0000	1,028.3892	1,028.3892	0.0457	0.0000	1,029.5306
Unmitigated	0.3718	1.6698	4.1102	0.0112	0.8693	0.0153	0.8846	0.2334	0.0144	0.2479	0.0000	1,028.3892	1,028.3892	0.0457	0.0000	1,029.5306

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	405.03	90.39	38.64	735,423	735,423
Regional Shopping Center	804.96	942.24	476.16	1,598,708	1,598,708
Total	1,209.99	1,032.63	514.80	2,334,130	2,334,130

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.567674	0.042970	0.194260	0.117237	0.019396	0.005375	0.016640	0.023570	0.002459	0.002683	0.006005	0.000868	0.000864
Regional Shopping Center	0.567674	0.042970	0.194260	0.117237	0.019396	0.005375	0.016640	0.023570	0.002459	0.002683	0.006005	0.000868	0.000864

5.0 Energy Detail

Historical Energy Use: Y

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						0.0000	0.0000		0.0000	0.0000	0.0000	211.6842	211.6842	0.0209	4.3200e-003	213.4936
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	211.6842	211.6842	0.0209	4.3200e-003	213.4936
NaturalGas Mitigated	0.0102	0.0925	0.0777	5.5000e-004		7.0300e-003	7.0300e-003		7.0300e-003	7.0300e-003	0.0000	100.6415	100.6415	1.9300e-003	1.8500e-003	101.2395
NaturalGas Unmitigated	0.0102	0.0925	0.0777	5.5000e-004		7.0300e-003	7.0300e-003		7.0300e-003	7.0300e-003	0.0000	100.6415	100.6415	1.9300e-003	1.8500e-003	101.2395

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/yr	tons/yr										MT/yr					
General Office Building	1.62771e+006	8.7800e-003	0.0798	0.0670	4.8000e-004		6.0600e-003	6.0600e-003		6.0600e-003	6.0600e-003	0.0000	86.8608	86.8608	1.6600e-003	1.5900e-003	87.3770
Regional Shopping Center	258240	1.3900e-003	0.0127	0.0106	8.0000e-005		9.6000e-004	9.6000e-004		9.6000e-004	9.6000e-004	0.0000	13.7807	13.7807	2.6000e-004	2.5000e-004	13.8626
Total		**0.0102**	**0.0925**	**0.0777**	**5.6000e-004**		**7.0200e-003**	**7.0200e-003**		**7.0200e-003**	**7.0200e-003**	**0.0000**	**100.6415**	**100.6415**	**1.9200e-003**	**1.8400e-003**	**101.2395**

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/yr	tons/yr										MT/yr					
General Office Building	1.62771e+006	8.7800e-003	0.0798	0.0670	4.8000e-004		6.0600e-003	6.0600e-003		6.0600e-003	6.0600e-003	0.0000	86.8608	86.8608	1.6600e-003	1.5900e-003	87.3770
Regional Shopping Center	258240	1.3900e-003	0.0127	0.0106	8.0000e-005		9.6000e-004	9.6000e-004		9.6000e-004	9.6000e-004	0.0000	13.7807	13.7807	2.6000e-004	2.5000e-004	13.8626
Total		**0.0102**	**0.0925**	**0.0777**	**5.6000e-004**		**7.0200e-003**	**7.0200e-003**		**7.0200e-003**	**7.0200e-003**	**0.0000**	**100.6415**	**100.6415**	**1.9200e-003**	**1.8400e-003**	**101.2395**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	1.00464e+006	133.9749	0.0132	2.7300e-003	135.1201
Regional Shopping Center	582720	77.7093	7.6700e-003	1.5900e-003	78.3735
Total		**211.6842**	**0.0209**	**4.3200e-003**	**213.4936**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	1.00464e+006	133.9749	0.0132	2.7300e-003	135.1201
Regional Shopping Center	582720	77.7093	7.6700e-003	1.5900e-003	78.3735
Total		**211.6842**	**0.0209**	**4.3200e-003**	**213.4936**

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	0.5926	1.0000e-005	1.0900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0900e-003	2.0900e-003	1.0000e-005	0.0000	2.2300e-003
Unmitigated	0.5926	1.0000e-005	1.0900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0900e-003	2.0900e-003	1.0000e-005	0.0000	2.2300e-003

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	0.1356					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0900e-003	2.0900e-003	1.0000e-005	0.0000	2.2300e-003
Total	**0.5926**	**1.0000e-005**	**1.0900e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0900e-003**	**2.0900e-003**	**1.0000e-005**	**0.0000**	**2.2300e-003**

6.2 Area by SubCategory

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	0.1356					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0900e-003	2.0900e-003	1.0000e-005	0.0000	2.2300e-003
Total	**0.5926**	**1.0000e-005**	**1.0900e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0900e-003**	**2.0900e-003**	**1.0000e-005**	**0.0000**	**2.2300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	21.5371	0.0208	0.0125	25.7820
Unmitigated	21.5371	0.0208	0.0125	25.7820

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	12.2636 / 7.51642	16.6965	0.0162	9.6900e-003	19.9873
Regional Shopping Center	3.55548 / 2.17917	4.8407	4.6800e-003	2.8100e-003	5.7947
Total		**21.5371**	**0.0208**	**0.0125**	**25.7820**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	12.2636 / 7.51642	16.6965	0.0162	9.6900e-003	19.9873
Regional Shopping Center	3.55548 / 2.17917	4.8407	4.6800e-003	2.8100e-003	5.7947
Total		**21.5371**	**0.0208**	**0.0125**	**25.7820**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	23.2567	1.3744	0.0000	57.6174
Unmitigated	23.2567	1.3744	0.0000	57.6174

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	64.17	13.0259	0.7698	0.0000	32.2712
Regional Shopping Center	50.4	10.2307	0.6046	0.0000	25.3462
Total		**23.2567**	**1.3744**	**0.0000**	**57.6174**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	64.17	13.0259	0.7698	0.0000	32.2712
Regional Shopping Center	50.4	10.2307	0.6046	0.0000	25.3462
Total		**23.2567**	**1.3744**	**0.0000**	**57.6174**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Kaiser Center - Master Plan 1 - Simultaneous Construction

San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	865.54	1000sqft	2.20	865,540.00	0
General Office Building	467.34	1000sqft	0.00	467,340.00	0
Enclosed Parking with Elevator	30.68	1000sqft	0.00	30,680.00	0
Enclosed Parking with Elevator	12.21	1000sqft	0.00	12,210.00	0
Regional Shopping Center	5.70	1000sqft	0.00	5,700.00	0
Regional Shopping Center	9.60	1000sqft	0.00	9,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Kaiser Center - Master Plan 1 - Simultaneous Construction - San Francisco Bay Area Air Basin, Annual

Project Characteristics - Based on PG&E's GHG emission factor for 2016
https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

Land Use - Proposed Land uses for Master Plan 1

Construction Phase - Schedule provided by applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Trips and VMT - Data from applicant (except hauling trips during demolition)

Demolition -

Grading - Data from applicant

Architectural Coating - Default corrected per Appendix D

Vehicle Trips - Adjusted based on project traffic data
Passby trips for retail uses already accounted for in trip rate

Energy Use -

Water And Wastewater - 20% reduction in indoor water use assumed in compliance with the City's CalGreencode
100% aerobic digestion assumed

Construction Off-road Equipment Mitigation - All Tier 4 equipment assumed as part of BACT for construction equipment

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps - From project applicant

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	250.00	150.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	6.00	44.00
tblConstructionPhase	NumDays	220.00	394.00
tblConstructionPhase	NumDays	10.00	175.00
tblConstructionPhase	NumDays	10.00	45.00
tblGrading	AcresOfGrading	88.00	2.20
tblGrading	AcresOfGrading	0.00	2.20
tblGrading	MaterialExported	0.00	33,000.00
tblGrading	MaterialImported	0.00	6,000.00
tblLandUse	LotAcreage	10.73	0.00
tblLandUse	LotAcreage	19.87	2.20
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	0.70	0.00
tblLandUse	LotAcreage	0.13	0.00
tblLandUse	LotAcreage	0.22	0.00
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tblOffRoadEquipment	HorsePower	64.00	120.00

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tblOffRoadEquipment	UsageHours	8.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
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tblProjectCharacteristics	CO2IntensityFactor	641.35	294
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tblTripsAndVMT	WorkerTripNumber	88.00	80.00
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tblTripsAndVMT	WorkerTripNumber	38.00	70.00
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tblTripsAndVMT	WorkerTripNumber	90.00	200.00

tblTripsAndVMT	WorkerTripNumber	13.00	150.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	ST_TR	2.46	1.19
tblVehicleTrips	ST_TR	49.97	19.55
tblVehicleTrips	SU_TR	1.05	0.51
tblVehicleTrips	SU_TR	25.24	9.88
tblVehicleTrips	WD_TR	11.03	5.31
tblVehicleTrips	WD_TR	42.70	16.71
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	236,897,758.03	189,518,206.42
tblWater	IndoorWaterUseRate	1,133,309.58	906,647.66
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tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

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					
2020	0.7117	5.7168	4.9006	0.0132	0.4992	0.2406	0.7398	0.1161	0.2276	0.3438	0.0000	1,171.3967	1,171.3967	0.1818	0.0000	1,175.9428
2021	3.2314	4.0226	4.2607	0.0139	0.6557	0.1189	0.7746	0.1751	0.1150	0.2901	0.0000	1,239.5423	1,239.5423	0.1133	0.0000	1,242.3744
2022	4.6118	1.2632	1.3606	4.2500e-003	0.2693	0.0379	0.3072	0.0705	0.0364	0.1070	0.0000	380.0681	380.0681	0.0322	0.0000	380.8719
Maximum	**4.6118**	**5.7168**	**4.9006**	**0.0139**	**0.6557**	**0.2406**	**0.7746**	**0.1751**	**0.2276**	**0.3438**	**0.0000**	**1,239.5423**	**1,239.5423**	**0.1818**	**0.0000**	**1,242.3744**

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					
2020	0.2341	2.1353	5.3480	0.0132	0.4992	0.0175	0.5167	0.1161	0.0172	0.1333	0.0000	1,171.3959	1,171.3959	0.1818	0.0000	1,175.9420
2021	2.9293	2.8336	4.3938	0.0139	0.6557	0.0142	0.6699	0.1751	0.0137	0.1887	0.0000	1,239.5419	1,239.5419	0.1133	0.0000	1,242.3739
2022	4.5171	0.8977	1.3096	4.2500e-003	0.2693	4.1000e-003	0.2734	0.0705	3.9600e-003	0.0745	0.0000	380.0680	380.0680	0.0322	0.0000	380.8718
Maximum	**4.5171**	**2.8336**	**5.3480**	**0.0139**	**0.6557**	**0.0175**	**0.6699**	**0.1751**	**0.0172**	**0.1887**	**0.0000**	**1,239.5419**	**1,239.5419**	**0.1818**	**0.0000**	**1,242.3739**

Kaiser Center - Master Plan 1 - Simultaneous Construction - San Francisco Bay Area Air Basin, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**10.22**	**46.68**	**-5.03**	**0.00**	**0.00**	**91.02**	**19.86**	**0.00**	**90.82**	**46.48**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2020**	**3-31-2020**	2.1960	0.5882
2	**4-1-2020**	**6-30-2020**	1.5642	0.3955
3	**7-1-2020**	**9-30-2020**	1.5131	0.6284
4	**10-1-2020**	**12-31-2020**	1.1480	0.7508
5	**1-1-2021**	**3-31-2021**	1.0274	0.6929
6	**4-1-2021**	**6-30-2021**	1.0223	0.6841
7	**7-1-2021**	**9-30-2021**	1.0335	0.6916
8	**10-1-2021**	**12-31-2021**	4.1037	3.6317
9	**1-1-2022**	**3-31-2022**	3.4228	3.1949
10	**4-1-2022**	**6-30-2022**	2.4841	2.2528
		Highest	4.1037	3.6317

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	6.8330	1.2000e-004	0.0128	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0249	0.0249	7.0000e-005	0.0000	0.0265
Energy	0.1393	1.2664	1.0638	7.6000e-003		0.0963	0.0963		0.0963	0.0963	0.0000	3,651.8433	3,651.8433	0.2507	0.0717	3,679.4663
Mobile	1.2925	5.7447	14.8374	0.0555	4.9728	0.0454	5.0182	1.3346	0.0424	1.3770	0.0000	5,097.3509	5,097.3509	0.1760	0.0000	5,101.7515
Stationary	0.1513	0.6766	0.3858	7.3000e-004		0.0223	0.0223		0.0223	0.0223	0.0000	70.2190	70.2190	9.8400e-003	0.0000	70.4651
Waste						0.0000	0.0000		0.0000	0.0000	254.8856	0.0000	254.8856	15.0633	0.0000	631.4683
Water						0.0000	0.0000		0.0000	0.0000	67.3726	205.5024	272.8750	0.2522	0.1507	324.0898
Total	**8.4161**	**7.6879**	**16.2998**	**0.0638**	**4.9728**	**0.1639**	**5.1367**	**1.3346**	**0.1609**	**1.4956**	**322.2582**	**9,024.9404**	**9,347.1986**	**15.7521**	**0.2224**	**9,807.2675**

2.2 Overall Operational

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	6.8330	1.2000e-004	0.0128	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0249	0.0249	7.0000e-005	0.0000	0.0265
Energy	0.1393	1.2664	1.0638	7.6000e-003		0.0963	0.0963		0.0963	0.0963	0.0000	3,651.8433	3,651.8433	0.2507	0.0717	3,679.4663
Mobile	1.2925	5.7447	14.8374	0.0555	4.9728	0.0454	5.0182	1.3346	0.0424	1.3770	0.0000	5,097.3509	5,097.3509	0.1760	0.0000	5,101.7515
Stationary	0.1513	0.6766	0.3858	7.3000e-004		0.0223	0.0223		0.0223	0.0223	0.0000	70.2190	70.2190	9.8400e-003	0.0000	70.4651
Waste						0.0000	0.0000		0.0000	0.0000	254.8856	0.0000	254.8856	15.0633	0.0000	631.4683
Water						0.0000	0.0000		0.0000	0.0000	67.3726	205.5024	272.8750	0.2522	0.1507	324.0898
Total	**8.4161**	**7.6879**	**16.2998**	**0.0638**	**4.9728**	**0.1639**	**5.1367**	**1.3346**	**0.1609**	**1.4956**	**322.2582**	**9,024.9404**	**9,347.1986**	**15.7521**	**0.2224**	**9,807.2675**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**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

Construction Phase

Kaiser Center - Master Plan 1 - Simultaneous Construction - San Francisco Bay Area Air Basin, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2020	4/1/2020	5	66	
2	Site Preparation	Site Preparation	4/2/2020	6/2/2020	5	44	
3	Grading	Grading	6/3/2020	8/3/2020	5	44	
4	Building Construction	Building Construction	8/4/2020	2/4/2022	5	394	
5	Architectural Coating	Architectural Coating	10/4/2021	6/4/2022	5	175	
6	Paving	Paving	4/4/2022	6/4/2022	5	45	

Acres of Grading (Site Preparation Phase): 2.2

Acres of Grading (Grading Phase): 2.2

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 2,022,270; Non-Residential Outdoor: 674,090; Striped Parking Area: 2,573 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Aerial Lifts	8	4.00	120	0.31
Demolition	Air Compressors	6	4.00	150	0.48
Demolition	Concrete/Industrial Saws	8	4.00	20	0.73
Demolition	Crushing/Proc. Equipment	1	6.00	285	0.78
Demolition	Dumpers/Tenders	4	8.00	325	0.38
Demolition	Excavators	2	9.70	385	0.38
Demolition	Generator Sets	2	8.00	50	0.74
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Rubber Tired Loaders	3	8.00	120	0.36
Demolition	Sweepers/Scrubbers	1	4.00	120	0.46

Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Dumpers/Tenders	4	8.00	325	0.38
Site Preparation	Generator Sets	2	8.00	50	0.74
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rubber Tired Loaders	4	8.00	120	0.36
Site Preparation	Scrapers	0	0.00	367	0.48
Site Preparation	Sweepers/Scrubbers	1	4.00	120	0.46
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	250	0.37
Grading	Dumpers/Tenders	4	8.00	325	0.38
Grading	Generator Sets	2	8.00	50	0.74
Grading	Graders	0	0.00	0	0.41
Grading	Off-Highway Trucks	2	8.00	330	0.38
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Rubber Tired Loaders	4	8.00	120	0.36
Grading	Scrapers	2	8.00	350	0.48
Grading	Sweepers/Scrubbers	1	4.00	120	0.46
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Bore/Drill Rigs	2	0.80	225	0.50
Building Construction	Cranes	0	8.00	231	0.29
Building Construction	Excavators	4	1.20	385	0.38
Building Construction	Forklifts	0	0.00	89	0.20
Building Construction	Generator Sets	0	0.00	84	0.74
Building Construction	Sweepers/Scrubbers	1	4.00	120	0.46
Building Construction	Tractors/Loaders/Backhoes	3	2.00	150	0.37
Building Construction	Welders	8	8.00	35	0.45
Architectural Coating	Air Compressors	0	0.00	78	0.48
Architectural Coating	Sweepers/Scrubbers	1	2.20	120	0.46

Architectural Coating	Welders	7	5.90	35	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Dumpers/Tenders	1	8.00	225	0.38
Paving	Other Construction Equipment	1	4.00	44	0.42
Paving	Pavers	0	0.00	130	0.42
Paving	Paving Equipment	1	8.00	175	0.36
Paving	Rollers	1	8.00	40	0.38
Paving	Sweepers/Scrubbers	1	8.00	120	0.46
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	35	80.00	18.00	1,274.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	13	70.00	18.00	440.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	15	70.00	14.00	528.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	450.00	30.00	11,820.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	8	200.00	16.00	2,800.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	150.00	10.00	450.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2020

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					0.1378	0.0000	0.1378	0.0209	0.0000	0.0209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2192	1.7308	1.6208	3.6500e-003		0.0844	0.0844		0.0806	0.0806	0.0000	318.5333	318.5333	0.0633	0.0000	320.1157
Total	**0.2192**	**1.7308**	**1.6208**	**3.6500e-003**	**0.1378**	**0.0844**	**0.2222**	**0.0209**	**0.0806**	**0.1015**	**0.0000**	**318.5333**	**318.5333**	**0.0633**	**0.0000**	**320.1157**

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	5.3200e-003	0.1862	0.0374	5.0000e-004	0.0108	6.0000e-004	0.0114	2.9600e-003	5.7000e-004	3.5300e-003	0.0000	48.8180	48.8180	2.5100e-003	0.0000	48.8808
Vendor	2.3000e-003	0.0685	0.0172	1.6000e-004	3.9000e-003	3.3000e-004	4.2300e-003	1.1300e-003	3.2000e-004	1.4500e-003	0.0000	15.5521	15.5521	8.0000e-004	0.0000	15.5721
Worker	8.7500e-003	6.2600e-003	0.0648	2.0000e-004	0.0209	1.4000e-004	0.0210	5.5500e-003	1.3000e-004	5.6800e-003	0.0000	18.2762	18.2762	4.4000e-004	0.0000	18.2873
Total	**0.0164**	**0.2610**	**0.1195**	**8.6000e-004**	**0.0355**	**1.0700e-003**	**0.0366**	**9.6400e-003**	**1.0200e-003**	**0.0107**	**0.0000**	**82.6463**	**82.6463**	**3.7500e-003**	**0.0000**	**82.7402**

3.2 Demolition - 2020

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					0.1378	0.0000	0.1378	0.0209	0.0000	0.0209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0416	0.2759	1.9512	3.6500e-003		5.2000e-003	5.2000e-003		5.2000e-003	5.2000e-003	0.0000	318.5329	318.5329	0.0633	0.0000	320.1154
Total	**0.0416**	**0.2759**	**1.9512**	**3.6500e-003**	**0.1378**	**5.2000e-003**	**0.1430**	**0.0209**	**5.2000e-003**	**0.0261**	**0.0000**	**318.5329**	**318.5329**	**0.0633**	**0.0000**	**320.1154**

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	5.3200e-003	0.1862	0.0374	5.0000e-004	0.0108	6.0000e-004	0.0114	2.9600e-003	5.7000e-004	3.5300e-003	0.0000	48.8180	48.8180	2.5100e-003	0.0000	48.8808
Vendor	2.3000e-003	0.0685	0.0172	1.6000e-004	3.9000e-003	3.3000e-004	4.2300e-003	1.1300e-003	3.2000e-004	1.4500e-003	0.0000	15.5521	15.5521	8.0000e-004	0.0000	15.5721
Worker	8.7500e-003	6.2600e-003	0.0648	2.0000e-004	0.0209	1.4000e-004	0.0210	5.5500e-003	1.3000e-004	5.6800e-003	0.0000	18.2762	18.2762	4.4000e-004	0.0000	18.2873
Total	**0.0164**	**0.2610**	**0.1195**	**8.6000e-004**	**0.0355**	**1.0700e-003**	**0.0366**	**9.6400e-003**	**1.0200e-003**	**0.0107**	**0.0000**	**82.6463**	**82.6463**	**3.7500e-003**	**0.0000**	**82.7402**

3.3 Site Preparation - 2020

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					1.1700e-003	0.0000	1.1700e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0788	0.6758	0.5063	9.2000e-004		0.0405	0.0405		0.0377	0.0377	0.0000	78.3730	78.3730	0.0222	0.0000	78.9274
Total	**0.0788**	**0.6758**	**0.5063**	**9.2000e-004**	**1.1700e-003**	**0.0405**	**0.0417**	**1.3000e-004**	**0.0377**	**0.0378**	**0.0000**	**78.3730**	**78.3730**	**0.0222**	**0.0000**	**78.9274**

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	1.8400e-003	0.0643	0.0129	1.7000e-004	3.7200e-003	2.1000e-004	3.9200e-003	1.0200e-003	2.0000e-004	1.2200e-003	0.0000	16.8602	16.8602	8.7000e-004	0.0000	16.8819
Vendor	1.5300e-003	0.0457	0.0115	1.1000e-004	2.6000e-003	2.2000e-004	2.8200e-003	7.5000e-004	2.1000e-004	9.6000e-004	0.0000	10.3681	10.3681	5.3000e-004	0.0000	10.3814
Worker	5.1000e-003	3.6500e-003	0.0378	1.2000e-004	0.0122	8.0000e-005	0.0123	3.2400e-003	8.0000e-005	3.3100e-003	0.0000	10.6611	10.6611	2.6000e-004	0.0000	10.6676
Total	**8.4700e-003**	**0.1137**	**0.0622**	**4.0000e-004**	**0.0185**	**5.1000e-004**	**0.0190**	**5.0100e-003**	**4.9000e-004**	**5.4900e-003**	**0.0000**	**37.8894**	**37.8894**	**1.6600e-003**	**0.0000**	**37.9309**

3.3 Site Preparation - 2020

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					1.1700e-003	0.0000	1.1700e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0124	0.1176	0.5519	9.2000e-004		1.4300e-003	1.4300e-003		1.4300e-003	1.4300e-003	0.0000	78.3729	78.3729	0.0222	0.0000	78.9273
Total	**0.0124**	**0.1176**	**0.5519**	**9.2000e-004**	**1.1700e-003**	**1.4300e-003**	**2.6000e-003**	**1.3000e-004**	**1.4300e-003**	**1.5600e-003**	**0.0000**	**78.3729**	**78.3729**	**0.0222**	**0.0000**	**78.9273**

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	1.8400e-003	0.0643	0.0129	1.7000e-004	3.7200e-003	2.1000e-004	3.9200e-003	1.0200e-003	2.0000e-004	1.2200e-003	0.0000	16.8602	16.8602	8.7000e-004	0.0000	16.8819
Vendor	1.5300e-003	0.0457	0.0115	1.1000e-004	2.6000e-003	2.2000e-004	2.8200e-003	7.5000e-004	2.1000e-004	9.6000e-004	0.0000	10.3681	10.3681	5.3000e-004	0.0000	10.3814
Worker	5.1000e-003	3.6500e-003	0.0378	1.2000e-004	0.0122	8.0000e-005	0.0123	3.2400e-003	8.0000e-005	3.3100e-003	0.0000	10.6611	10.6611	2.6000e-004	0.0000	10.6676
Total	**8.4700e-003**	**0.1137**	**0.0622**	**4.0000e-004**	**0.0185**	**5.1000e-004**	**0.0190**	**5.0100e-003**	**4.9000e-004**	**5.4900e-003**	**0.0000**	**37.8894**	**37.8894**	**1.6600e-003**	**0.0000**	**37.9309**

3.4 Grading - 2020

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					3.3700e-003	0.0000	3.3700e-003	4.6000e-004	0.0000	4.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1283	1.2007	0.8710	1.6900e-003		0.0616	0.0616		0.0571	0.0571	0.0000	145.4757	145.4757	0.0439	0.0000	146.5726
Total	**0.1283**	**1.2007**	**0.8710**	**1.6900e-003**	**3.3700e-003**	**0.0616**	**0.0650**	**4.6000e-004**	**0.0571**	**0.0576**	**0.0000**	**145.4757**	**145.4757**	**0.0439**	**0.0000**	**146.5726**

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	2.2000e-003	0.0772	0.0155	2.1000e-004	4.4600e-003	2.5000e-004	4.7100e-003	1.2300e-003	2.4000e-004	1.4600e-003	0.0000	20.2323	20.2323	1.0400e-003	0.0000	20.2583
Vendor	1.1900e-003	0.0355	8.9300e-003	8.0000e-005	2.0200e-003	1.7000e-004	2.1900e-003	5.8000e-004	1.7000e-004	7.5000e-004	0.0000	8.0640	8.0640	4.2000e-004	0.0000	8.0744
Worker	5.1000e-003	3.6500e-003	0.0378	1.2000e-004	0.0122	8.0000e-005	0.0123	3.2400e-003	8.0000e-005	3.3100e-003	0.0000	10.6611	10.6611	2.6000e-004	0.0000	10.6676
Total	**8.4900e-003**	**0.1164**	**0.0623**	**4.1000e-004**	**0.0187**	**5.0000e-004**	**0.0192**	**5.0500e-003**	**4.9000e-004**	**5.5200e-003**	**0.0000**	**38.9574**	**38.9574**	**1.7200e-003**	**0.0000**	**39.0003**

3.4 Grading - 2020

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					3.3700e-003	0.0000	3.3700e-003	4.6000e-004	0.0000	4.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0218	0.1581	0.8949	1.6900e-003		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	145.4755	145.4755	0.0439	0.0000	146.5725
Total	**0.0218**	**0.1581**	**0.8949**	**1.6900e-003**	**3.3700e-003**	**2.6700e-003**	**6.0400e-003**	**4.6000e-004**	**2.6700e-003**	**3.1300e-003**	**0.0000**	**145.4755**	**145.4755**	**0.0439**	**0.0000**	**146.5725**

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	2.2000e-003	0.0772	0.0155	2.1000e-004	4.4600e-003	2.5000e-004	4.7100e-003	1.2300e-003	2.4000e-004	1.4600e-003	0.0000	20.2323	20.2323	1.0400e-003	0.0000	20.2583
Vendor	1.1900e-003	0.0355	8.9300e-003	8.0000e-005	2.0200e-003	1.7000e-004	2.1900e-003	5.8000e-004	1.7000e-004	7.5000e-004	0.0000	8.0640	8.0640	4.2000e-004	0.0000	8.0744
Worker	5.1000e-003	3.6500e-003	0.0378	1.2000e-004	0.0122	8.0000e-005	0.0123	3.2400e-003	8.0000e-005	3.3100e-003	0.0000	10.6611	10.6611	2.6000e-004	0.0000	10.6676
Total	**8.4900e-003**	**0.1164**	**0.0623**	**4.1000e-004**	**0.0187**	**5.0000e-004**	**0.0192**	**5.0500e-003**	**4.9000e-004**	**5.5200e-003**	**0.0000**	**38.9574**	**38.9574**	**1.7200e-003**	**0.0000**	**39.0003**

3.5 Building Construction - 2020

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	0.1517	0.9002	0.9195	1.6700e-003		0.0483	0.0483		0.0467	0.0467	0.0000	134.7303	134.7303	0.0327	0.0000	135.5480
Total	**0.1517**	**0.9002**	**0.9195**	**1.6700e-003**		**0.0483**	**0.0483**		**0.0467**	**0.0467**	**0.0000**	**134.7303**	**134.7303**	**0.0327**	**0.0000**	**135.5480**

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	0.0135	0.4736	0.0952	1.2800e-003	0.0816	1.5300e-003	0.0831	0.0208	1.4600e-003	0.0223	0.0000	124.1525	124.1525	6.3900e-003	0.0000	124.3122
Vendor	6.2700e-003	0.1869	0.0470	4.4000e-004	0.0106	9.1000e-004	0.0115	3.0700e-003	8.7000e-004	3.9400e-003	0.0000	42.4148	42.4148	2.1900e-003	0.0000	42.4694
Worker	0.0805	0.0576	0.5968	1.8600e-003	0.1920	1.2900e-003	0.1933	0.0511	1.1900e-003	0.0523	0.0000	168.2242	168.2242	4.0700e-003	0.0000	168.3260
Total	**0.1003**	**0.7182**	**0.7390**	**3.5800e-003**	**0.2842**	**3.7300e-003**	**0.2880**	**0.0750**	**3.5200e-003**	**0.0785**	**0.0000**	**334.7914**	**334.7914**	**0.0127**	**0.0000**	**335.1077**

3.5 Building Construction - 2020

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	0.0247	0.3745	0.9670	1.6700e-003		2.3300e-003	2.3300e-003		2.3300e-003	2.3300e-003	0.0000	134.7301	134.7301	0.0327	0.0000	135.5479
Total	**0.0247**	**0.3745**	**0.9670**	**1.6700e-003**		**2.3300e-003**	**2.3300e-003**		**2.3300e-003**	**2.3300e-003**	**0.0000**	**134.7301**	**134.7301**	**0.0327**	**0.0000**	**135.5479**

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	0.0135	0.4736	0.0952	1.2800e-003	0.0816	1.5300e-003	0.0831	0.0208	1.4600e-003	0.0223	0.0000	124.1525	124.1525	6.3900e-003	0.0000	124.3122
Vendor	6.2700e-003	0.1869	0.0470	4.4000e-004	0.0106	9.1000e-004	0.0115	3.0700e-003	8.7000e-004	3.9400e-003	0.0000	42.4148	42.4148	2.1900e-003	0.0000	42.4694
Worker	0.0805	0.0576	0.5968	1.8600e-003	0.1920	1.2900e-003	0.1933	0.0511	1.1900e-003	0.0523	0.0000	168.2242	168.2242	4.0700e-003	0.0000	168.3260
Total	**0.1003**	**0.7182**	**0.7390**	**3.5800e-003**	**0.2842**	**3.7300e-003**	**0.2880**	**0.0750**	**3.5200e-003**	**0.0785**	**0.0000**	**334.7914**	**334.7914**	**0.0127**	**0.0000**	**335.1077**

3.5 Building Construction - 2021

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	0.3253	1.9972	2.1750	4.0300e-003		0.0988	0.0988		0.0956	0.0956	0.0000	325.5292	325.5292	0.0764	0.0000	327.4391
Total	**0.3253**	**1.9972**	**2.1750**	**4.0300e-003**		**0.0988**	**0.0988**		**0.0956**	**0.0956**	**0.0000**	**325.5292**	**325.5292**	**0.0764**	**0.0000**	**327.4391**

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	0.0308	1.0566	0.2251	3.0500e-003	0.0914	3.2700e-003	0.0946	0.0244	3.1300e-003	0.0275	0.0000	296.1867	296.1867	0.0151	0.0000	296.5645
Vendor	0.0124	0.4089	0.1021	1.0600e-003	0.0257	8.9000e-004	0.0266	7.4300e-003	8.5000e-004	8.2800e-003	0.0000	101.5332	101.5332	4.9900e-003	0.0000	101.6579
Worker	0.1802	0.1243	1.3171	4.3400e-003	0.4640	3.0400e-003	0.4671	0.1235	2.8000e-003	0.1262	0.0000	392.2772	392.2772	8.8000e-003	0.0000	392.4971
Total	**0.2235**	**1.5898**	**1.6443**	**8.4500e-003**	**0.5811**	**7.2000e-003**	**0.5883**	**0.1553**	**6.7800e-003**	**0.1620**	**0.0000**	**789.9970**	**789.9970**	**0.0289**	**0.0000**	**790.7195**

3.5 Building Construction - 2021

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	0.0596	0.9049	2.3370	4.0300e-003		5.6300e-003	5.6300e-003		5.6300e-003	5.6300e-003	0.0000	325.5289	325.5289	0.0764	0.0000	327.4388
Total	**0.0596**	**0.9049**	**2.3370**	**4.0300e-003**		**5.6300e-003**	**5.6300e-003**		**5.6300e-003**	**5.6300e-003**	**0.0000**	**325.5289**	**325.5289**	**0.0764**	**0.0000**	**327.4388**

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	0.0308	1.0566	0.2251	3.0500e-003	0.0914	3.2700e-003	0.0946	0.0244	3.1300e-003	0.0275	0.0000	296.1867	296.1867	0.0151	0.0000	296.5645
Vendor	0.0124	0.4089	0.1021	1.0600e-003	0.0257	8.9000e-004	0.0266	7.4300e-003	8.5000e-004	8.2800e-003	0.0000	101.5332	101.5332	4.9900e-003	0.0000	101.6579
Worker	0.1802	0.1243	1.3171	4.3400e-003	0.4640	3.0400e-003	0.4671	0.1235	2.8000e-003	0.1262	0.0000	392.2772	392.2772	8.8000e-003	0.0000	392.4971
Total	**0.2235**	**1.5898**	**1.6443**	**8.4500e-003**	**0.5811**	**7.2000e-003**	**0.5883**	**0.1553**	**6.7800e-003**	**0.1620**	**0.0000**	**789.9970**	**789.9970**	**0.0289**	**0.0000**	**790.7195**

3.5 Building Construction - 2022

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	0.0282	0.1744	0.2055	3.9000e-004		7.9500e-003	7.9500e-003		7.7100e-003	7.7100e-003	0.0000	31.1884	31.1884	7.1700e-003	0.0000	31.3676
Total	**0.0282**	**0.1744**	**0.2055**	**3.9000e-004**		**7.9500e-003**	**7.9500e-003**		**7.7100e-003**	**7.7100e-003**	**0.0000**	**31.1884**	**31.1884**	**7.1700e-003**	**0.0000**	**31.3676**

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	2.7900e-003	0.0930	0.0212	2.9000e-004	0.0763	2.7000e-004	0.0766	0.0189	2.6000e-004	0.0192	0.0000	27.9840	27.9840	1.4100e-003	0.0000	28.0193
Vendor	1.1100e-003	0.0371	9.1900e-003	1.0000e-004	2.4600e-003	7.0000e-005	2.5300e-003	7.1000e-004	7.0000e-005	7.8000e-004	0.0000	9.6300	9.6300	4.6000e-004	0.0000	9.6415
Worker	0.0161	0.0107	0.1159	4.0000e-004	0.0445	2.8000e-004	0.0447	0.0118	2.6000e-004	0.0121	0.0000	36.1969	36.1969	7.6000e-004	0.0000	36.2158
Total	**0.0200**	**0.1408**	**0.1463**	**7.9000e-004**	**0.1232**	**6.2000e-004**	**0.1238**	**0.0315**	**5.9000e-004**	**0.0320**	**0.0000**	**73.8109**	**73.8109**	**2.6300e-003**	**0.0000**	**73.8766**

3.5 Building Construction - 2022

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	5.7100e-003	0.0867	0.2239	3.9000e-004		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	31.1883	31.1883	7.1700e-003	0.0000	31.3675
Total	**5.7100e-003**	**0.0867**	**0.2239**	**3.9000e-004**		**5.4000e-004**	**5.4000e-004**		**5.4000e-004**	**5.4000e-004**	**0.0000**	**31.1883**	**31.1883**	**7.1700e-003**	**0.0000**	**31.3675**

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	2.7900e-003	0.0930	0.0212	2.9000e-004	0.0763	2.7000e-004	0.0766	0.0189	2.6000e-004	0.0192	0.0000	27.9840	27.9840	1.4100e-003	0.0000	28.0193
Vendor	1.1100e-003	0.0371	9.1900e-003	1.0000e-004	2.4600e-003	7.0000e-005	2.5300e-003	7.1000e-004	7.0000e-005	7.8000e-004	0.0000	9.6300	9.6300	4.6000e-004	0.0000	9.6415
Worker	0.0161	0.0107	0.1159	4.0000e-004	0.0445	2.8000e-004	0.0447	0.0118	2.6000e-004	0.0121	0.0000	36.1969	36.1969	7.6000e-004	0.0000	36.2158
Total	**0.0200**	**0.1408**	**0.1463**	**7.9000e-004**	**0.1232**	**6.2000e-004**	**0.1238**	**0.0315**	**5.9000e-004**	**0.0320**	**0.0000**	**73.8109**	**73.8109**	**2.6300e-003**	**0.0000**	**73.8766**

3.6 Architectural Coating - 2021

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	2.6144					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0425	0.2271	0.2521	3.7000e-004		0.0120	0.0120		0.0118	0.0118	0.0000	27.7707	27.7707	4.3400e-003	0.0000	27.8791
Total	**2.6569**	**0.2271**	**0.2521**	**3.7000e-004**		**0.0120**	**0.0120**		**0.0118**	**0.0118**	**0.0000**	**27.7707**	**27.7707**	**4.3400e-003**	**0.0000**	**27.8791**

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	4.1000e-003	0.1403	0.0299	4.1000e-004	0.0199	4.3000e-004	0.0203	5.1500e-003	4.2000e-004	5.5600e-003	0.0000	39.3402	39.3402	2.0100e-003	0.0000	39.3904
Vendor	1.6500e-003	0.0543	0.0136	1.4000e-004	3.4100e-003	1.2000e-004	3.5300e-003	9.9000e-004	1.1000e-004	1.1000e-003	0.0000	13.4859	13.4859	6.6000e-004	0.0000	13.5025
Worker	0.0200	0.0138	0.1458	4.8000e-004	0.0514	3.4000e-004	0.0517	0.0137	3.1000e-004	0.0140	0.0000	43.4194	43.4194	9.7000e-004	0.0000	43.4437
Total	**0.0257**	**0.2084**	**0.1893**	**1.0300e-003**	**0.0747**	**8.9000e-004**	**0.0756**	**0.0198**	**8.4000e-004**	**0.0206**	**0.0000**	**96.2455**	**96.2455**	**3.6400e-003**	**0.0000**	**96.3366**

3.6 Architectural Coating - 2021

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	2.6144					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1100e-003	0.1304	0.2233	3.7000e-004		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	27.7706	27.7706	4.3400e-003	0.0000	27.8791
Total	**2.6205**	**0.1304**	**0.2233**	**3.7000e-004**		**4.4000e-004**	**4.4000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**27.7706**	**27.7706**	**4.3400e-003**	**0.0000**	**27.8791**

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	4.1000e-003	0.1403	0.0299	4.1000e-004	0.0199	4.3000e-004	0.0203	5.1500e-003	4.2000e-004	5.5600e-003	0.0000	39.3402	39.3402	2.0100e-003	0.0000	39.3904
Vendor	1.6500e-003	0.0543	0.0136	1.4000e-004	3.4100e-003	1.2000e-004	3.5300e-003	9.9000e-004	1.1000e-004	1.1000e-003	0.0000	13.4859	13.4859	6.6000e-004	0.0000	13.5025
Worker	0.0200	0.0138	0.1458	4.8000e-004	0.0514	3.4000e-004	0.0517	0.0137	3.1000e-004	0.0140	0.0000	43.4194	43.4194	9.7000e-004	0.0000	43.4437
Total	**0.0257**	**0.2084**	**0.1893**	**1.0300e-003**	**0.0747**	**8.9000e-004**	**0.0756**	**0.0198**	**8.4000e-004**	**0.0206**	**0.0000**	**96.2455**	**96.2455**	**3.6400e-003**	**0.0000**	**96.3366**

3.6 Architectural Coating - 2022

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	4.4244					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0653	0.3672	0.4207	6.2000e-004		0.0172	0.0172		0.0170	0.0170	0.0000	46.9965	46.9965	6.9100e-003	0.0000	47.1694
Total	**4.4897**	**0.3672**	**0.4207**	**6.2000e-004**		**0.0172**	**0.0172**		**0.0170**	**0.0170**	**0.0000**	**46.9965**	**46.9965**	**6.9100e-003**	**0.0000**	**47.1694**

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	6.5400e-003	0.2183	0.0497	6.8000e-004	0.0214	6.3000e-004	0.0221	5.7000e-003	6.0000e-004	6.3000e-003	0.0000	65.6691	65.6691	3.3200e-003	0.0000	65.7520
Vendor	2.6100e-003	0.0871	0.0216	2.3000e-004	5.7700e-003	1.7000e-004	5.9400e-003	1.6700e-003	1.7000e-004	1.8300e-003	0.0000	22.5985	22.5985	1.0700e-003	0.0000	22.6253
Worker	0.0315	0.0209	0.2267	7.8000e-004	0.0869	5.6000e-004	0.0875	0.0231	5.1000e-004	0.0236	0.0000	70.7851	70.7851	1.4800e-003	0.0000	70.8220
Total	**0.0406**	**0.3262**	**0.2980**	**1.6900e-003**	**0.1141**	**1.3600e-003**	**0.1155**	**0.0305**	**1.2800e-003**	**0.0318**	**0.0000**	**159.0526**	**159.0526**	**5.8700e-003**	**0.0000**	**159.1993**

3.6 Architectural Coating - 2022

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	4.4244					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0104	0.2207	0.3779	6.2000e-004		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	46.9964	46.9964	6.9100e-003	0.0000	47.1693
Total	**4.4348**	**0.2207**	**0.3779**	**6.2000e-004**		**7.5000e-004**	**7.5000e-004**		**7.5000e-004**	**7.5000e-004**	**0.0000**	**46.9964**	**46.9964**	**6.9100e-003**	**0.0000**	**47.1693**

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	6.5400e-003	0.2183	0.0497	6.8000e-004	0.0214	6.3000e-004	0.0221	5.7000e-003	6.0000e-004	6.3000e-003	0.0000	65.6691	65.6691	3.3200e-003	0.0000	65.7520
Vendor	2.6100e-003	0.0871	0.0216	2.3000e-004	5.7700e-003	1.7000e-004	5.9400e-003	1.6700e-003	1.7000e-004	1.8300e-003	0.0000	22.5985	22.5985	1.0700e-003	0.0000	22.6253
Worker	0.0315	0.0209	0.2267	7.8000e-004	0.0869	5.6000e-004	0.0875	0.0231	5.1000e-004	0.0236	0.0000	70.7851	70.7851	1.4800e-003	0.0000	70.8220
Total	**0.0406**	**0.3262**	**0.2980**	**1.6900e-003**	**0.1141**	**1.3600e-003**	**0.1155**	**0.0305**	**1.2800e-003**	**0.0318**	**0.0000**	**159.0526**	**159.0526**	**5.8700e-003**	**0.0000**	**159.1993**

3.7 Paving - 2022

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	0.0213	0.1702	0.2023	2.8000e-004		0.0104	0.0104		9.5600e-003	9.5600e-003	0.0000	24.7332	24.7332	8.0000e-003	0.0000	24.9331
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0213**	**0.1702**	**0.2023**	**2.8000e-004**		**0.0104**	**0.0104**		**9.5600e-003**	**9.5600e-003**	**0.0000**	**24.7332**	**24.7332**	**8.0000e-003**	**0.0000**	**24.9331**

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	1.6700e-003	0.0558	0.0127	1.7000e-004	3.8000e-003	1.6000e-004	3.9600e-003	1.0500e-003	1.5000e-004	1.2000e-003	0.0000	16.7904	16.7904	8.5000e-004	0.0000	16.8116
Vendor	6.7000e-004	0.0223	5.5200e-003	6.0000e-005	1.4800e-003	4.0000e-005	1.5200e-003	4.3000e-004	4.0000e-005	4.7000e-004	0.0000	5.7780	5.7780	2.7000e-004	0.0000	5.7849
Worker	9.6500e-003	6.4100e-003	0.0696	2.4000e-004	0.0267	1.7000e-004	0.0268	7.0900e-003	1.6000e-004	7.2500e-003	0.0000	21.7181	21.7181	4.5000e-004	0.0000	21.7295
Total	**0.0120**	**0.0845**	**0.0878**	**4.7000e-004**	**0.0320**	**3.7000e-004**	**0.0323**	**8.5700e-003**	**3.5000e-004**	**8.9200e-003**	**0.0000**	**44.2866**	**44.2866**	**1.5700e-003**	**0.0000**	**44.3260**

3.7 Paving - 2022

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	3.9800e-003	0.0389	0.1758	2.8000e-004		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	24.7331	24.7331	8.0000e-003	0.0000	24.9331
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.9800e-003**	**0.0389**	**0.1758**	**2.8000e-004**		**4.5000e-004**	**4.5000e-004**		**4.5000e-004**	**4.5000e-004**	**0.0000**	**24.7331**	**24.7331**	**8.0000e-003**	**0.0000**	**24.9331**

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	1.6700e-003	0.0558	0.0127	1.7000e-004	3.8000e-003	1.6000e-004	3.9600e-003	1.0500e-003	1.5000e-004	1.2000e-003	0.0000	16.7904	16.7904	8.5000e-004	0.0000	16.8116
Vendor	6.7000e-004	0.0223	5.5200e-003	6.0000e-005	1.4800e-003	4.0000e-005	1.5200e-003	4.3000e-004	4.0000e-005	4.7000e-004	0.0000	5.7780	5.7780	2.7000e-004	0.0000	5.7849
Worker	9.6500e-003	6.4100e-003	0.0696	2.4000e-004	0.0267	1.7000e-004	0.0268	7.0900e-003	1.6000e-004	7.2500e-003	0.0000	21.7181	21.7181	4.5000e-004	0.0000	21.7295
Total	**0.0120**	**0.0845**	**0.0878**	**4.7000e-004**	**0.0320**	**3.7000e-004**	**0.0323**	**8.5700e-003**	**3.5000e-004**	**8.9200e-003**	**0.0000**	**44.2866**	**44.2866**	**1.5700e-003**	**0.0000**	**44.3260**

4.0 Operational Detail - Mobile

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	1.2925	5.7447	14.8374	0.0555	4.9728	0.0454	5.0182	1.3346	0.0424	1.3770	0.0000	5,097.3509	5,097.3509	0.1760	0.0000	5,101.7515
Unmitigated	1.2925	5.7447	14.8374	0.0555	4.9728	0.0454	5.0182	1.3346	0.0424	1.3770	0.0000	5,097.3509	5,097.3509	0.1760	0.0000	5,101.7515

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Enclosed Parking with Elevator	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	4,596.02	1,029.99	441.43	8,347,579	8,347,579
General Office Building	2,481.58	556.13	238.34	4,507,195	4,507,195
Regional Shopping Center	95.25	111.44	56.32	189,143	189,143
Regional Shopping Center	160.42	187.68	94.85	318,557	318,557
Total	7,333.26	1,885.24	830.93	13,362,475	13,362,475

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
General Office Building	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Regional Shopping Center	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kaiser Center - Master Plan 1 - Simultaneous Construction - San Francisco Bay Area Air Basin, Annual

	ROG	NOx	CO	SO2	Fugitive 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						0.0000	0.0000		0.0000	0.0000	0.0000	2,273.1920	2,273.1920	0.2242	0.0464	2,292.6223
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,273.1920	2,273.1920	0.2242	0.0464	2,292.6223
NaturalGas Mitigated	0.1393	1.2664	1.0638	7.6000e-003		0.0963	0.0963		0.0963	0.0963	0.0000	1,378.6513	1,378.6513	0.0264	0.0253	1,386.8440
NaturalGas Unmitigated	0.1393	1.2664	1.0638	7.6000e-003		0.0963	0.0963		0.0963	0.0963	0.0000	1,378.6513	1,378.6513	0.0264	0.0253	1,386.8440

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/yr	tons/yr										MT/yr					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	1.67309e+007	0.0902	0.8201	0.6889	4.9200e-003		0.0623	0.0623		0.0623	0.0623	0.0000	892.8239	892.8239	0.0171	0.0164	898.1295
General Office Building	9.03368e+006	0.0487	0.4428	0.3720	2.6600e-003		0.0337	0.0337		0.0337	0.0337	0.0000	482.0717	482.0717	9.2400e-003	8.8400e-003	484.9364
Regional Shopping Center	26220	1.4000e-004	1.2900e-003	1.0800e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.3992	1.3992	3.0000e-005	3.0000e-005	1.4075
Regional Shopping Center	44160	2.4000e-004	2.1600e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3566	2.3566	5.0000e-005	4.0000e-005	2.3706
Total		**0.1393**	**1.2664**	**1.0638**	**7.6000e-003**		**0.0962**	**0.0962**		**0.0962**	**0.0962**	**0.0000**	**1,378.6513**	**1,378.6513**	**0.0264**	**0.0253**	**1,386.8440**

5.2 Energy by Land Use - NaturalGas

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/yr	tons/yr										MT/yr					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	9.03368e+006	0.0487	0.4428	0.3720	2.6600e-003		0.0337	0.0337		0.0337	0.0337	0.0000	482.0717	482.0717	9.2400e-003	8.8400e-003	484.9364
General Office Building	1.67309e+007	0.0902	0.8201	0.6889	4.9200e-003		0.0623	0.0623		0.0623	0.0623	0.0000	892.8239	892.8239	0.0171	0.0164	898.1295
Regional Shopping Center	26220	1.4000e-004	1.2900e-003	1.0800e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.3992	1.3992	3.0000e-005	3.0000e-005	1.4075
Regional Shopping Center	44160	2.4000e-004	2.1600e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3566	2.3566	5.0000e-005	4.0000e-005	2.3706
Total		**0.1393**	**1.2664**	**1.0638**	**7.6000e-003**		**0.0962**	**0.0962**		**0.0962**	**0.0962**	**0.0000**	**1,378.6513**	**1,378.6513**	**0.0264**	**0.0253**	**1,386.8440**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	179785	23.9754	2.3600e-003	4.9000e-004	24.1803
Enclosed Parking with Elevator	71550.6	9.5417	9.4000e-004	1.9000e-004	9.6233
General Office Building	1.08019e+007	1,440.5051	0.1421	0.0294	1,452.8180
General Office Building	5.8324e+006	777.7869	0.0767	0.0159	784.4351
Regional Shopping Center	100608	13.4167	1.3200e-003	2.7000e-004	13.5314
Regional Shopping Center	59736	7.9662	7.9000e-004	1.6000e-004	8.0343
Total		**2,273.1920**	**0.2242**	**0.0464**	**2,292.6223**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	179785	23.9754	2.3600e-003	4.9000e-004	24.1803
Enclosed Parking with Elevator	71550.6	9.5417	9.4000e-004	1.9000e-004	9.6233
General Office Building	1.08019e+007	1,440.5051	0.1421	0.0294	1,452.8180
General Office Building	5.8324e+006	777.7869	0.0767	0.0159	784.4351
Regional Shopping Center	100608	13.4167	1.3200e-003	2.7000e-004	13.5314
Regional Shopping Center	59736	7.9662	7.9000e-004	1.6000e-004	8.0343
Total		**2,273.1920**	**0.2242**	**0.0464**	**2,292.6223**

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	6.8330	1.2000e-004	0.0128	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0249	0.0249	7.0000e-005	0.0000	0.0265
Unmitigated	6.8330	1.2000e-004	0.0128	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0249	0.0249	7.0000e-005	0.0000	0.0265

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	1.5637					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.2681					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1800e-003	1.2000e-004	0.0128	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0249	0.0249	7.0000e-005	0.0000	0.0265
Total	**6.8330**	**1.2000e-004**	**0.0128**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0249**	**0.0249**	**7.0000e-005**	**0.0000**	**0.0265**

6.2 Area by SubCategory

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	1.5637					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.2681					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1800e-003	1.2000e-004	0.0128	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0249	0.0249	7.0000e-005	0.0000	0.0265
Total	**6.8330**	**1.2000e-004**	**0.0128**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0249**	**0.0249**	**7.0000e-005**	**0.0000**	**0.0265**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	272.8750	0.2522	0.1507	324.0898
Unmitigated	272.8750	0.2522	0.1507	324.0898

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	189.518 / 145.195	271.5758	0.2510	0.1500	322.5467
Regional Shopping Center	0.906648 / 0.694609	1.2992	1.2000e-003	7.2000e-004	1.5431
Total		**272.8750**	**0.2522**	**0.1507**	**324.0898**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	189.518 / 145.195	271.5758	0.2510	0.1500	322.5467
Regional Shopping Center	0.906648 / 0.694609	1.2992	1.2000e-003	7.2000e-004	1.5431
Total		**272.8750**	**0.2522**	**0.1507**	**324.0898**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	254.8856	15.0633	0.0000	631.4683
Unmitigated	254.8856	15.0633	0.0000	631.4683

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	1239.58	251.6235	14.8705	0.0000	623.3867
Regional Shopping Center	16.07	3.2621	0.1928	0.0000	8.0816
Total		**254.8856**	**15.0633**	**0.0000**	**631.4683**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	1239.58	251.6235	14.8705	0.0000	623.3867
Regional Shopping Center	16.07	3.2621	0.1928	0.0000	8.0816
Total		**254.8856**	**15.0633**	**0.0000**	**631.4683**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	2012	0.73	Diesel
Emergency Generator	1	1	50	1676	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.1513	0.6766	0.3858	7.3000e-004		0.0223	0.0223		0.0223	0.0223	0.0000	70.2190	70.2190	9.8400e-003	0.0000	70.4651
Total	**0.1513**	**0.6766**	**0.3858**	**7.3000e-004**		**0.0223**	**0.0223**		**0.0223**	**0.0223**	**0.0000**	**70.2190**	**70.2190**	**9.8400e-003**	**0.0000**	**70.4651**

11.0 Vegetation

Kaiser Center - Master Plan 1 - 20th St Office Tower

San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	467.34	1000sqft	0.89	467,340.00	0
Enclosed Parking with Elevator	12.21	1000sqft	0.00	12,210.00	0
Regional Shopping Center	9.60	1000sqft	0.00	9,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on PG&E's GHG emission factor for 2016
https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

Land Use - Proposed Land uses for 20th St Office Tower under Master Plan 1

Construction Phase - Schedule provided by applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Trips and VMT - Data from applicant (except hauling trips during demolition)

Demolition -

Grading - Data from applicant

Vehicle Trips - Adjusted based on project traffic data
Passby trips for retail uses already accounted for in the trip rate

Woodstoves -

Energy Use -

Water And Wastewater - 20% reduction in indoor water use assumed in compliance with the City's CalGreencode
100% aerobic digestion assumed

Construction Off-road Equipment Mitigation - All Tier 4 equipment assumed as part of BACT for construction equipment

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps -

Architectural Coating - Defaults corrected per Appendix D

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	250.00	150.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00

tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	10.00	43.00
tblConstructionPhase	NumDays	1.00	45.00
tblConstructionPhase	NumDays	2.00	45.00
tblConstructionPhase	NumDays	100.00	283.00
tblConstructionPhase	NumDays	5.00	131.00
tblConstructionPhase	NumDays	5.00	22.00
tblGrading	AcresOfGrading	45.00	0.89
tblGrading	AcresOfGrading	0.00	0.89
tblGrading	MaterialExported	0.00	15,000.00
tblGrading	MaterialImported	0.00	1,000.00
tblLandUse	LotAcreage	10.73	0.89
tblLandUse	LotAcreage	0.28	0.00
tblLandUse	LotAcreage	0.22	0.00
tblOffRoadEquipment	HorsePower	81.00	20.00
tblOffRoadEquipment	HorsePower	80.00	40.00
tblOffRoadEquipment	HorsePower	97.00	150.00
tblOffRoadEquipment	HorsePower	97.00	250.00
tblOffRoadEquipment	HorsePower	63.00	120.00
tblOffRoadEquipment	HorsePower	78.00	150.00

tblOffRoadEquipment	HorsePower	221.00	225.00
tblOffRoadEquipment	HorsePower	85.00	285.00
tblOffRoadEquipment	HorsePower	16.00	325.00
tblOffRoadEquipment	HorsePower	16.00	325.00
tblOffRoadEquipment	HorsePower	16.00	325.00
tblOffRoadEquipment	HorsePower	16.00	225.00
tblOffRoadEquipment	HorsePower	158.00	385.00
tblOffRoadEquipment	HorsePower	158.00	385.00
tblOffRoadEquipment	HorsePower	84.00	50.00
tblOffRoadEquipment	HorsePower	84.00	50.00
tblOffRoadEquipment	HorsePower	84.00	50.00
tblOffRoadEquipment	HorsePower	402.00	330.00
tblOffRoadEquipment	HorsePower	172.00	44.00
tblOffRoadEquipment	HorsePower	132.00	175.00
tblOffRoadEquipment	HorsePower	203.00	120.00
tblOffRoadEquipment	HorsePower	203.00	120.00
tblOffRoadEquipment	HorsePower	203.00	120.00
tblOffRoadEquipment	HorsePower	367.00	350.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	46.00	35.00
tblOffRoadEquipment	HorsePower	46.00	35.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	2.30
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00

Kaiser Center - Master Plan 1 - 20th St Office Tower - San Francisco Bay Area Air Basin, Annual

tblOffRoadEquipment	UsageHours	7.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblTripsAndVMT	HaulingTripNumber	0.00	360.00
tblTripsAndVMT	HaulingTripNumber	2,000.00	450.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,660.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,310.00
tblTripsAndVMT	HaulingTripNumber	0.00	220.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	80.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	35.00	50.00
tblTripsAndVMT	WorkerTripNumber	20.00	40.00
tblTripsAndVMT	WorkerTripNumber	23.00	40.00
tblTripsAndVMT	WorkerTripNumber	158.00	200.00
tblTripsAndVMT	WorkerTripNumber	32.00	100.00
tblTripsAndVMT	WorkerTripNumber	13.00	80.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	ST_TR	2.46	1.20
tblVehicleTrips	ST_TR	49.97	19.34
tblVehicleTrips	SU_TR	1.05	0.51
tblVehicleTrips	SU_TR	25.24	9.77
tblVehicleTrips	WD_TR	11.03	5.37
tblVehicleTrips	WD_TR	42.70	16.53

tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	83,062,089.79	66,449,671.83
tblWater	IndoorWaterUseRate	711,096.21	568,876.97
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

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					
2020	0.3634	3.0827	2.4298	7.2000e-003	0.2559	0.1220	0.3780	0.0609	0.1151	0.1760	0.0000	646.8297	646.8297	0.0952	0.0000	649.2107
2021	2.7732	2.0788	1.9479	6.2800e-003	0.2506	0.0653	0.3159	0.0670	0.0627	0.1297	0.0000	562.1796	562.1796	0.0564	0.0000	563.5898
Maximum	**2.7732**	**3.0827**	**2.4298**	**7.2000e-003**	**0.2559**	**0.1220**	**0.3780**	**0.0670**	**0.1151**	**0.1760**	**0.0000**	**646.8297**	**646.8297**	**0.0952**	**0.0000**	**649.2107**

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					
2020	0.1272	1.3326	2.6781	7.2000e-003	0.2559	9.6600e-003	0.2656	0.0609	9.4700e-003	0.0703	0.0000	646.8293	646.8293	0.0952	0.0000	649.2103
2021	2.6175	1.4135	1.9781	6.2800e-003	0.2506	6.6600e-003	0.2573	0.0670	6.4600e-003	0.0735	0.0000	562.1794	562.1794	0.0564	0.0000	563.5896
Maximum	**2.6175**	**1.4135**	**2.6781**	**7.2000e-003**	**0.2559**	**9.6600e-003**	**0.2656**	**0.0670**	**9.4700e-003**	**0.0735**	**0.0000**	**646.8293**	**646.8293**	**0.0952**	**0.0000**	**649.2103**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**12.50**	**46.80**	**-6.36**	**0.00**	**0.00**	**91.29**	**24.64**	**0.00**	**91.04**	**52.96**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2020	3-31-2020	1.0101	0.3139
2	4-1-2020	6-30-2020	1.0142	0.2646
3	7-1-2020	9-30-2020	0.7088	0.4317
4	10-1-2020	12-31-2020	0.7031	0.4468
5	1-1-2021	3-31-2021	0.6267	0.4112
6	4-1-2021	6-30-2021	1.1003	0.8465
7	7-1-2021	9-30-2021	1.8607	1.6548
		Highest	1.8607	1.6548

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	2.4170	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.7400e-003	8.7400e-003	2.0000e-005	0.0000	9.3200e-003
Energy	0.0490	0.4450	0.3738	2.6700e-003		0.0338	0.0338		0.0338	0.0338	0.0000	1,285.1735	1,285.1735	0.0883	0.0252	1,294.8967
Mobile	0.5157	2.5474	5.8366	0.0209	1.8132	0.0190	1.8321	0.4867	0.0178	0.5044	0.0000	1,922.2910	1,922.2910	0.0706	0.0000	1,924.0556
Stationary	0.0688	0.3075	0.1753	3.3000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	31.9108	31.9108	4.4700e-003	0.0000	32.0227
Waste						0.0000	0.0000		0.0000	0.0000	90.2721	0.0000	90.2721	5.3349	0.0000	223.6453
Water						0.0000	0.0000		0.0000	0.0000	23.7113	72.3250	96.0362	0.0888	0.0530	114.0609
Total	**3.0504**	**3.2999**	**6.3902**	**0.0239**	**1.8132**	**0.0629**	**1.8761**	**0.4867**	**0.0617**	**0.5484**	**113.9834**	**3,311.7091**	**3,425.6924**	**5.5870**	**0.0783**	**3,588.6905**

2.2 Overall Operational

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	2.4170	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.7400e-003	8.7400e-003	2.0000e-005	0.0000	9.3200e-003
Energy	0.0490	0.4450	0.3738	2.6700e-003		0.0338	0.0338		0.0338	0.0338	0.0000	1,285.1735	1,285.1735	0.0883	0.0252	1,294.8967
Mobile	0.5157	2.5474	5.8366	0.0209	1.8132	0.0190	1.8321	0.4867	0.0178	0.5044	0.0000	1,922.2910	1,922.2910	0.0706	0.0000	1,924.0556
Stationary	0.0688	0.3075	0.1753	3.3000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	31.9108	31.9108	4.4700e-003	0.0000	32.0227
Waste						0.0000	0.0000		0.0000	0.0000	90.2721	0.0000	90.2721	5.3349	0.0000	223.6453
Water						0.0000	0.0000		0.0000	0.0000	23.7113	72.3250	96.0362	0.0888	0.0530	114.0609
Total	**3.0504**	**3.2999**	**6.3902**	**0.0239**	**1.8132**	**0.0629**	**1.8761**	**0.4867**	**0.0617**	**0.5484**	**113.9834**	**3,311.7091**	**3,425.6924**	**5.5870**	**0.0783**	**3,588.6905**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**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

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2020	3/1/2020	5	43	
2	Site Preparation	Site Preparation	3/2/2020	5/2/2020	5	45	
3	Grading	Grading	5/3/2020	7/3/2020	5	45	
4	Building Construction	Building Construction	7/4/2020	8/4/2021	5	283	
5	Architectural Coating	Architectural Coating	6/4/2021	12/4/2021	5	131	
6	Paving	Paving	11/4/2021	12/4/2021	5	22	

Acres of Grading (Site Preparation Phase): 0.89

Acres of Grading (Grading Phase): 0.89

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 715,410; Non-Residential Outdoor: 238,470; Striped Parking Area: 733 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Aerial Lifts	3	4.00	120	0.31
Demolition	Air Compressors	2	4.00	150	0.48
Demolition	Concrete/Industrial Saws	3	4.00	20	0.73
Demolition	Crushing/Proc. Equipment	1	6.00	285	0.78
Demolition	Dumpers/Tenders	1	8.00	325	0.38
Demolition	Excavators	1	11.20	385	0.38
Demolition	Generator Sets	1	8.00	50	0.74
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Rubber Tired Loaders	1	8.00	120	0.36
Demolition	Sweepers/Scrubbers	1	4.00	120	0.46

Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Dumpers/Tenders	2	8.00	325	0.38
Site Preparation	Generator Sets	2	4.00	50	0.74
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rubber Tired Loaders	2	8.00	120	0.36
Site Preparation	Sweepers/Scrubbers	1	4.00	120	0.46
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	250	0.37
Grading	Concrete/Industrial Saws	0	0.00	81	0.73
Grading	Dumpers/Tenders	2	8.00	325	0.38
Grading	Generator Sets	2	4.00	50	0.74
Grading	Off-Highway Trucks	1	8.00	330	0.38
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Rubber Tired Loaders	2	8.00	120	0.36
Grading	Scrapers	1	8.00	350	0.48
Grading	Sweepers/Scrubbers	1	4.00	120	0.46
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Bore/Drill Rigs	1	1.70	225	0.50
Building Construction	Cranes	0	0.00	231	0.29
Building Construction	Excavators	2	1.70	385	0.38
Building Construction	Forklifts	0	0.00	89	0.20
Building Construction	Sweepers/Scrubbers	1	4.00	120	0.46
Building Construction	Tractors/Loaders/Backhoes	1	2.30	150	0.37
Building Construction	Welders	4	8.00	35	0.45
Architectural Coating	Air Compressors	0	0.00	78	0.48
Architectural Coating	Sweepers/Scrubbers	1	2.80	120	0.46
Architectural Coating	Welders	4	8.00	35	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56

Paving	Dumpers/Tenders	1	8.00	225	0.38
Paving	Other Construction Equipment	1	4.00	44	0.42
Paving	Pavers	0	0.00	130	0.42
Paving	Paving Equipment	1	8.00	175	0.36
Paving	Rollers	1	8.00	40	0.38
Paving	Sweepers/Scrubbers	1	4.00	120	0.46
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	14	50.00	12.00	580.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	8	40.00	12.00	360.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	40.00	12.00	450.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	200.00	20.00	5,660.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	5	100.00	10.00	1,310.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	80.00	8.00	220.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2020

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					0.0628	0.0000	0.0628	9.5000e-003	0.0000	9.5000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0723	0.5620	0.4886	1.2500e-003		0.0264	0.0264		0.0252	0.0252	0.0000	111.8043	111.8043	0.0208	0.0000	112.3254
Total	**0.0723**	**0.5620**	**0.4886**	**1.2500e-003**	**0.0628**	**0.0264**	**0.0891**	**9.5000e-003**	**0.0252**	**0.0347**	**0.0000**	**111.8043**	**111.8043**	**0.0208**	**0.0000**	**112.3254**

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	2.4200e-003	0.0848	0.0170	2.3000e-004	4.9000e-003	2.7000e-004	5.1700e-003	1.3500e-003	2.6000e-004	1.6100e-003	0.0000	22.2248	22.2248	1.1400e-003	0.0000	22.2534
Vendor	1.0000e-003	0.0298	7.4800e-003	7.0000e-005	1.6900e-003	1.5000e-004	1.8400e-003	4.9000e-004	1.4000e-004	6.3000e-004	0.0000	6.7549	6.7549	3.5000e-004	0.0000	6.7637
Worker	3.5600e-003	2.5500e-003	0.0264	8.0000e-005	8.4900e-003	6.0000e-005	8.5500e-003	2.2600e-003	5.0000e-005	2.3100e-003	0.0000	7.4420	7.4420	1.8000e-004	0.0000	7.4465
Total	**6.9800e-003**	**0.1171**	**0.0509**	**3.8000e-004**	**0.0151**	**4.8000e-004**	**0.0156**	**4.1000e-003**	**4.5000e-004**	**4.5500e-003**	**0.0000**	**36.4218**	**36.4218**	**1.6700e-003**	**0.0000**	**36.4636**

3.2 Demolition - 2020

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					0.0628	0.0000	0.0628	9.5000e-003	0.0000	9.5000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0147	0.0947	0.6405	1.2500e-003		1.8400e-003	1.8400e-003		1.8400e-003	1.8400e-003	0.0000	111.8042	111.8042	0.0208	0.0000	112.3252
Total	**0.0147**	**0.0947**	**0.6405**	**1.2500e-003**	**0.0628**	**1.8400e-003**	**0.0646**	**9.5000e-003**	**1.8400e-003**	**0.0113**	**0.0000**	**111.8042**	**111.8042**	**0.0208**	**0.0000**	**112.3252**

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	2.4200e-003	0.0848	0.0170	2.3000e-004	4.9000e-003	2.7000e-004	5.1700e-003	1.3500e-003	2.6000e-004	1.6100e-003	0.0000	22.2248	22.2248	1.1400e-003	0.0000	22.2534
Vendor	1.0000e-003	0.0298	7.4800e-003	7.0000e-005	1.6900e-003	1.5000e-004	1.8400e-003	4.9000e-004	1.4000e-004	6.3000e-004	0.0000	6.7549	6.7549	3.5000e-004	0.0000	6.7637
Worker	3.5600e-003	2.5500e-003	0.0264	8.0000e-005	8.4900e-003	6.0000e-005	8.5500e-003	2.2600e-003	5.0000e-005	2.3100e-003	0.0000	7.4420	7.4420	1.8000e-004	0.0000	7.4465
Total	**6.9800e-003**	**0.1171**	**0.0509**	**3.8000e-004**	**0.0151**	**4.8000e-004**	**0.0156**	**4.1000e-003**	**4.5000e-004**	**4.5500e-003**	**0.0000**	**36.4218**	**36.4218**	**1.6700e-003**	**0.0000**	**36.4636**

3.3 Site Preparation - 2020

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					4.7000e-004	0.0000	4.7000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0432	0.3701	0.2799	5.0000e-004		0.0227	0.0227		0.0211	0.0211	0.0000	42.4325	42.4325	0.0121	0.0000	42.7350
Total	**0.0432**	**0.3701**	**0.2799**	**5.0000e-004**	**4.7000e-004**	**0.0227**	**0.0231**	**5.0000e-005**	**0.0211**	**0.0211**	**0.0000**	**42.4325**	**42.4325**	**0.0121**	**0.0000**	**42.7350**

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	1.5000e-003	0.0526	0.0106	1.4000e-004	3.0400e-003	1.7000e-004	3.2100e-003	8.4000e-004	1.6000e-004	1.0000e-003	0.0000	13.7947	13.7947	7.1000e-004	0.0000	13.8125
Vendor	1.0400e-003	0.0312	7.8300e-003	7.0000e-005	1.7700e-003	1.5000e-004	1.9200e-003	5.1000e-004	1.5000e-004	6.6000e-004	0.0000	7.0691	7.0691	3.6000e-004	0.0000	7.0782
Worker	2.9800e-003	2.1300e-003	0.0221	7.0000e-005	7.1100e-003	5.0000e-005	7.1600e-003	1.8900e-003	4.0000e-005	1.9400e-003	0.0000	6.2305	6.2305	1.5000e-004	0.0000	6.2343
Total	**5.5200e-003**	**0.0859**	**0.0405**	**2.8000e-004**	**0.0119**	**3.7000e-004**	**0.0123**	**3.2400e-003**	**3.5000e-004**	**3.6000e-003**	**0.0000**	**27.0944**	**27.0944**	**1.2200e-003**	**0.0000**	**27.1250**

3.3 Site Preparation - 2020

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					4.7000e-004	0.0000	4.7000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6800e-003	0.0615	0.3025	5.0000e-004		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004	0.0000	42.4325	42.4325	0.0121	0.0000	42.7350
Total	**6.6800e-003**	**0.0615**	**0.3025**	**5.0000e-004**	**4.7000e-004**	**7.7000e-004**	**1.2400e-003**	**5.0000e-005**	**7.7000e-004**	**8.2000e-004**	**0.0000**	**42.4325**	**42.4325**	**0.0121**	**0.0000**	**42.7350**

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	1.5000e-003	0.0526	0.0106	1.4000e-004	3.0400e-003	1.7000e-004	3.2100e-003	8.4000e-004	1.6000e-004	1.0000e-003	0.0000	13.7947	13.7947	7.1000e-004	0.0000	13.8125
Vendor	1.0400e-003	0.0312	7.8300e-003	7.0000e-005	1.7700e-003	1.5000e-004	1.9200e-003	5.1000e-004	1.5000e-004	6.6000e-004	0.0000	7.0691	7.0691	3.6000e-004	0.0000	7.0782
Worker	2.9800e-003	2.1300e-003	0.0221	7.0000e-005	7.1100e-003	5.0000e-005	7.1600e-003	1.8900e-003	4.0000e-005	1.9400e-003	0.0000	6.2305	6.2305	1.5000e-004	0.0000	6.2343
Total	**5.5200e-003**	**0.0859**	**0.0405**	**2.8000e-004**	**0.0119**	**3.7000e-004**	**0.0123**	**3.2400e-003**	**3.5000e-004**	**3.6000e-003**	**0.0000**	**27.0944**	**27.0944**	**1.2200e-003**	**0.0000**	**27.1250**

3.4 Grading - 2020

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					1.3800e-003	0.0000	1.3800e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0684	0.6386	0.4664	8.9000e-004		0.0335	0.0335		0.0310	0.0310	0.0000	76.7464	76.7464	0.0232	0.0000	77.3264
Total	**0.0684**	**0.6386**	**0.4664**	**8.9000e-004**	**1.3800e-003**	**0.0335**	**0.0349**	**1.9000e-004**	**0.0310**	**0.0312**	**0.0000**	**76.7464**	**76.7464**	**0.0232**	**0.0000**	**77.3264**

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	1.8800e-003	0.0658	0.0132	1.8000e-004	3.8000e-003	2.1000e-004	4.0100e-003	1.0500e-003	2.0000e-004	1.2500e-003	0.0000	17.2434	17.2434	8.9000e-004	0.0000	17.2656
Vendor	1.0400e-003	0.0312	7.8300e-003	7.0000e-005	1.7700e-003	1.5000e-004	1.9200e-003	5.1000e-004	1.5000e-004	6.6000e-004	0.0000	7.0691	7.0691	3.6000e-004	0.0000	7.0782
Worker	2.9800e-003	2.1300e-003	0.0221	7.0000e-005	7.1100e-003	5.0000e-005	7.1600e-003	1.8900e-003	4.0000e-005	1.9400e-003	0.0000	6.2305	6.2305	1.5000e-004	0.0000	6.2343
Total	**5.9000e-003**	**0.0991**	**0.0432**	**3.2000e-004**	**0.0127**	**4.1000e-004**	**0.0131**	**3.4500e-003**	**3.9000e-004**	**3.8500e-003**	**0.0000**	**30.5431**	**30.5431**	**1.4000e-003**	**0.0000**	**30.5781**

3.4 Grading - 2020

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					1.3800e-003	0.0000	1.3800e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.0823	0.4779	8.9000e-004		1.4100e-003	1.4100e-003		1.4100e-003	1.4100e-003	0.0000	76.7463	76.7463	0.0232	0.0000	77.3263
Total	**0.0115**	**0.0823**	**0.4779**	**8.9000e-004**	**1.3800e-003**	**1.4100e-003**	**2.7900e-003**	**1.9000e-004**	**1.4100e-003**	**1.6000e-003**	**0.0000**	**76.7463**	**76.7463**	**0.0232**	**0.0000**	**77.3263**

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	1.8800e-003	0.0658	0.0132	1.8000e-004	3.8000e-003	2.1000e-004	4.0100e-003	1.0500e-003	2.0000e-004	1.2500e-003	0.0000	17.2434	17.2434	8.9000e-004	0.0000	17.2656
Vendor	1.0400e-003	0.0312	7.8300e-003	7.0000e-005	1.7700e-003	1.5000e-004	1.9200e-003	5.1000e-004	1.5000e-004	6.6000e-004	0.0000	7.0691	7.0691	3.6000e-004	0.0000	7.0782
Worker	2.9800e-003	2.1300e-003	0.0221	7.0000e-005	7.1100e-003	5.0000e-005	7.1600e-003	1.8900e-003	4.0000e-005	1.9400e-003	0.0000	6.2305	6.2305	1.5000e-004	0.0000	6.2343
Total	**5.9000e-003**	**0.0991**	**0.0432**	**3.2000e-004**	**0.0127**	**4.1000e-004**	**0.0131**	**3.4500e-003**	**3.9000e-004**	**3.8500e-003**	**0.0000**	**30.5431**	**30.5431**	**1.4000e-003**	**0.0000**	**30.5781**

3.5 Building Construction - 2020

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	0.1027	0.6534	0.6304	1.2200e-003		0.0357	0.0357		0.0342	0.0342	0.0000	99.8463	99.8463	0.0258	0.0000	100.4914
Total	**0.1027**	**0.6534**	**0.6304**	**1.2200e-003**		**0.0357**	**0.0357**		**0.0342**	**0.0342**	**0.0000**	**99.8463**	**99.8463**	**0.0258**	**0.0000**	**100.4914**

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	0.0108	0.3772	0.0758	1.0200e-003	0.0413	1.2200e-003	0.0425	0.0108	1.1600e-003	0.0119	0.0000	98.8621	98.8621	5.0900e-003	0.0000	98.9894
Vendor	4.9900e-003	0.1488	0.0374	3.5000e-004	8.4600e-003	7.3000e-004	9.1800e-003	2.4500e-003	6.9000e-004	3.1400e-003	0.0000	33.7747	33.7747	1.7400e-003	0.0000	33.8183
Worker	0.0428	0.0306	0.3168	9.9000e-004	0.1019	6.9000e-004	0.1026	0.0271	6.3000e-004	0.0278	0.0000	89.3042	89.3042	2.1600e-003	0.0000	89.3582
Total	**0.0585**	**0.5566**	**0.4301**	**2.3600e-003**	**0.1517**	**2.6400e-003**	**0.1543**	**0.0403**	**2.4800e-003**	**0.0428**	**0.0000**	**221.9410**	**221.9410**	**8.9900e-003**	**0.0000**	**222.1659**

3.5 Building Construction - 2020

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	0.0175	0.2354	0.6926	1.2200e-003		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	99.8461	99.8461	0.0258	0.0000	100.4912
Total	**0.0175**	**0.2354**	**0.6926**	**1.2200e-003**		**1.7500e-003**	**1.7500e-003**		**1.7500e-003**	**1.7500e-003**	**0.0000**	**99.8461**	**99.8461**	**0.0258**	**0.0000**	**100.4912**

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	0.0108	0.3772	0.0758	1.0200e-003	0.0413	1.2200e-003	0.0425	0.0108	1.1600e-003	0.0119	0.0000	98.8621	98.8621	5.0900e-003	0.0000	98.9894
Vendor	4.9900e-003	0.1488	0.0374	3.5000e-004	8.4600e-003	7.3000e-004	9.1800e-003	2.4500e-003	6.9000e-004	3.1400e-003	0.0000	33.7747	33.7747	1.7400e-003	0.0000	33.8183
Worker	0.0428	0.0306	0.3168	9.9000e-004	0.1019	6.9000e-004	0.1026	0.0271	6.3000e-004	0.0278	0.0000	89.3042	89.3042	2.1600e-003	0.0000	89.3582
Total	**0.0585**	**0.5566**	**0.4301**	**2.3600e-003**	**0.1517**	**2.6400e-003**	**0.1543**	**0.0403**	**2.4800e-003**	**0.0428**	**0.0000**	**221.9410**	**221.9410**	**8.9900e-003**	**0.0000**	**222.1659**

3.5 Building Construction - 2021

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	0.1086	0.7096	0.7370	1.4500e-003		0.0358	0.0358		0.0344	0.0344	0.0000	119.1786	119.1786	0.0300	0.0000	119.9292
Total	**0.1086**	**0.7096**	**0.7370**	**1.4500e-003**		**0.0358**	**0.0358**		**0.0344**	**0.0344**	**0.0000**	**119.1786**	**119.1786**	**0.0300**	**0.0000**	**119.9292**

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	0.0121	0.4156	0.0886	1.2000e-003	0.0423	1.2900e-003	0.0436	0.0112	1.2300e-003	0.0124	0.0000	116.5077	116.5077	5.9500e-003	0.0000	116.6563
Vendor	4.8900e-003	0.1609	0.0402	4.2000e-004	0.0101	3.5000e-004	0.0105	2.9200e-003	3.3000e-004	3.2600e-003	0.0000	39.9390	39.9390	1.9600e-003	0.0000	39.9881
Worker	0.0473	0.0326	0.3454	1.1400e-003	0.1217	8.0000e-004	0.1225	0.0324	7.3000e-004	0.0331	0.0000	102.8705	102.8705	2.3100e-003	0.0000	102.9281
Total	**0.0643**	**0.6091**	**0.4741**	**2.7600e-003**	**0.1741**	**2.4400e-003**	**0.1765**	**0.0465**	**2.2900e-003**	**0.0488**	**0.0000**	**259.3171**	**259.3171**	**0.0102**	**0.0000**	**259.5725**

3.5 Building Construction - 2021

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	0.0208	0.2811	0.8268	1.4500e-003		2.0900e-003	2.0900e-003		2.0900e-003	2.0900e-003	0.0000	119.1785	119.1785	0.0300	0.0000	119.9290
Total	**0.0208**	**0.2811**	**0.8268**	**1.4500e-003**		**2.0900e-003**	**2.0900e-003**		**2.0900e-003**	**2.0900e-003**	**0.0000**	**119.1785**	**119.1785**	**0.0300**	**0.0000**	**119.9290**

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	0.0121	0.4156	0.0886	1.2000e-003	0.0423	1.2900e-003	0.0436	0.0112	1.2300e-003	0.0124	0.0000	116.5077	116.5077	5.9500e-003	0.0000	116.6563
Vendor	4.8900e-003	0.1609	0.0402	4.2000e-004	0.0101	3.5000e-004	0.0105	2.9200e-003	3.3000e-004	3.2600e-003	0.0000	39.9390	39.9390	1.9600e-003	0.0000	39.9881
Worker	0.0473	0.0326	0.3454	1.1400e-003	0.1217	8.0000e-004	0.1225	0.0324	7.3000e-004	0.0331	0.0000	102.8705	102.8705	2.3100e-003	0.0000	102.9281
Total	**0.0643**	**0.6091**	**0.4741**	**2.7600e-003**	**0.1741**	**2.4400e-003**	**0.1765**	**0.0465**	**2.2900e-003**	**0.0488**	**0.0000**	**259.3171**	**259.3171**	**0.0102**	**0.0000**	**259.5725**

3.6 Architectural Coating - 2021

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	2.4895					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0702	0.3892	0.4265	6.2000e-004		0.0213	0.0213		0.0208	0.0208	0.0000	47.1210	47.1210	7.9900e-003	0.0000	47.3207
Total	**2.5597**	**0.3892**	**0.4265**	**6.2000e-004**		**0.0213**	**0.0213**		**0.0208**	**0.0208**	**0.0000**	**47.1210**	**47.1210**	**7.9900e-003**	**0.0000**	**47.3207**

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	5.1600e-003	0.1768	0.0377	5.1000e-004	0.0111	5.5000e-004	0.0116	3.0400e-003	5.2000e-004	3.5700e-003	0.0000	49.5536	49.5536	2.5300e-003	0.0000	49.6168
Vendor	2.0800e-003	0.0684	0.0171	1.8000e-004	4.3000e-003	1.5000e-004	4.4400e-003	1.2400e-003	1.4000e-004	1.3800e-003	0.0000	16.9870	16.9870	8.4000e-004	0.0000	17.0079
Worker	0.0201	0.0139	0.1469	4.8000e-004	0.0518	3.4000e-004	0.0521	0.0138	3.1000e-004	0.0141	0.0000	43.7534	43.7534	9.8000e-004	0.0000	43.7779
Total	**0.0273**	**0.2591**	**0.2017**	**1.1700e-003**	**0.0671**	**1.0400e-003**	**0.0682**	**0.0181**	**9.7000e-004**	**0.0190**	**0.0000**	**110.2940**	**110.2940**	**4.3500e-003**	**0.0000**	**110.4026**

3.6 Architectural Coating - 2021

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	2.4895					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0101	0.2059	0.3810	6.2000e-004		7.6000e-004	7.6000e-004		7.6000e-004	7.6000e-004	0.0000	47.1209	47.1209	7.9900e-003	0.0000	47.3207
Total	**2.4996**	**0.2059**	**0.3810**	**6.2000e-004**		**7.6000e-004**	**7.6000e-004**		**7.6000e-004**	**7.6000e-004**	**0.0000**	**47.1209**	**47.1209**	**7.9900e-003**	**0.0000**	**47.3207**

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	5.1600e-003	0.1768	0.0377	5.1000e-004	0.0111	5.5000e-004	0.0116	3.0400e-003	5.2000e-004	3.5700e-003	0.0000	49.5536	49.5536	2.5300e-003	0.0000	49.6168
Vendor	2.0800e-003	0.0684	0.0171	1.8000e-004	4.3000e-003	1.5000e-004	4.4400e-003	1.2400e-003	1.4000e-004	1.3800e-003	0.0000	16.9870	16.9870	8.4000e-004	0.0000	17.0079
Worker	0.0201	0.0139	0.1469	4.8000e-004	0.0518	3.4000e-004	0.0521	0.0138	3.1000e-004	0.0141	0.0000	43.7534	43.7534	9.8000e-004	0.0000	43.7779
Total	**0.0273**	**0.2591**	**0.2017**	**1.1700e-003**	**0.0671**	**1.0400e-003**	**0.0682**	**0.0181**	**9.7000e-004**	**0.0190**	**0.0000**	**110.2940**	**110.2940**	**4.3500e-003**	**0.0000**	**110.4026**

3.7 Paving - 2021

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	9.4700e-003	0.0711	0.0803	1.1000e-004		4.5100e-003	4.5100e-003		4.1500e-003	4.1500e-003	0.0000	9.7865	9.7865	3.1700e-003	0.0000	9.8657
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.4700e-003**	**0.0711**	**0.0803**	**1.1000e-004**		**4.5100e-003**	**4.5100e-003**		**4.1500e-003**	**4.1500e-003**	**0.0000**	**9.7865**	**9.7865**	**3.1700e-003**	**0.0000**	**9.8657**

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	8.7000e-004	0.0297	6.3300e-003	9.0000e-005	1.8600e-003	9.0000e-005	1.9500e-003	5.1000e-004	9.0000e-005	6.0000e-004	0.0000	8.3220	8.3220	4.2000e-004	0.0000	8.3326
Vendor	2.8000e-004	9.1900e-003	2.2900e-003	2.0000e-005	5.8000e-004	2.0000e-005	6.0000e-004	1.7000e-004	2.0000e-005	1.9000e-004	0.0000	2.2822	2.2822	1.1000e-004	0.0000	2.2850
Worker	2.7000e-003	1.8600e-003	0.0197	6.0000e-005	6.9500e-003	5.0000e-005	7.0000e-003	1.8500e-003	4.0000e-005	1.8900e-003	0.0000	5.8783	5.8783	1.3000e-004	0.0000	5.8816
Total	**3.8500e-003**	**0.0407**	**0.0284**	**1.7000e-004**	**9.3900e-003**	**1.6000e-004**	**9.5500e-003**	**2.5300e-003**	**1.5000e-004**	**2.6800e-003**	**0.0000**	**16.4825**	**16.4825**	**6.6000e-004**	**0.0000**	**16.4992**

3.7 Paving - 2021

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	1.6200e-003	0.0176	0.0661	1.1000e-004		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	9.7865	9.7865	3.1700e-003	0.0000	9.8656
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.6200e-003**	**0.0176**	**0.0661**	**1.1000e-004**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**	**0.0000**	**9.7865**	**9.7865**	**3.1700e-003**	**0.0000**	**9.8656**

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	8.7000e-004	0.0297	6.3300e-003	9.0000e-005	1.8600e-003	9.0000e-005	1.9500e-003	5.1000e-004	9.0000e-005	6.0000e-004	0.0000	8.3220	8.3220	4.2000e-004	0.0000	8.3326
Vendor	2.8000e-004	9.1900e-003	2.2900e-003	2.0000e-005	5.8000e-004	2.0000e-005	6.0000e-004	1.7000e-004	2.0000e-005	1.9000e-004	0.0000	2.2822	2.2822	1.1000e-004	0.0000	2.2850
Worker	2.7000e-003	1.8600e-003	0.0197	6.0000e-005	6.9500e-003	5.0000e-005	7.0000e-003	1.8500e-003	4.0000e-005	1.8900e-003	0.0000	5.8783	5.8783	1.3000e-004	0.0000	5.8816
Total	**3.8500e-003**	**0.0407**	**0.0284**	**1.7000e-004**	**9.3900e-003**	**1.6000e-004**	**9.5500e-003**	**2.5300e-003**	**1.5000e-004**	**2.6800e-003**	**0.0000**	**16.4825**	**16.4825**	**6.6000e-004**	**0.0000**	**16.4992**

4.0 Operational Detail - Mobile

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	0.5157	2.5474	5.8366	0.0209	1.8132	0.0190	1.8321	0.4867	0.0178	0.5044	0.0000	1,922.2910	1,922.2910	0.0706	0.0000	1,924.0556
Unmitigated	0.5157	2.5474	5.8366	0.0209	1.8132	0.0190	1.8321	0.4867	0.0178	0.5044	0.0000	1,922.2910	1,922.2910	0.0706	0.0000	1,924.0556

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	2,509.62	560.81	238.34	4,556,654	4,556,654
Regional Shopping Center	158.69	185.66	93.79	315,117	315,117
Total	2,668.30	746.47	332.14	4,871,772	4,871,772

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768
General Office Building	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768
Regional Shopping Center	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

5.0 Energy Detail

Historical Energy Use: N

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						0.0000	0.0000		0.0000	0.0000	0.0000	800.7453	800.7453	0.0790	0.0163	807.5898
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	800.7453	800.7453	0.0790	0.0163	807.5898
NaturalGas Mitigated	0.0490	0.4450	0.3738	2.6700e-003		0.0338	0.0338		0.0338	0.0338	0.0000	484.4282	484.4282	9.2800e-003	8.8800e-003	487.3070
NaturalGas Unmitigated	0.0490	0.4450	0.3738	2.6700e-003		0.0338	0.0338		0.0338	0.0338	0.0000	484.4282	484.4282	9.2800e-003	8.8800e-003	487.3070

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/yr	tons/yr										MT/yr					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	9.03368e+006	0.0487	0.4428	0.3720	2.6600e-003		0.0337	0.0337		0.0337	0.0337	0.0000	482.0717	482.0717	9.2400e-003	8.8400e-003	484.9364
Regional Shopping Center	44160	2.4000e-004	2.1600e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3566	2.3566	5.0000e-005	4.0000e-005	2.3706
Total		**0.0490**	**0.4450**	**0.3738**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**	**0.0000**	**484.4282**	**484.4282**	**9.2900e-003**	**8.8800e-003**	**487.3070**

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/yr	tons/yr										MT/yr					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	9.03368e+006	0.0487	0.4428	0.3720	2.6600e-003		0.0337	0.0337		0.0337	0.0337	0.0000	482.0717	482.0717	9.2400e-003	8.8400e-003	484.9364
Regional Shopping Center	44160	2.4000e-004	2.1600e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3566	2.3566	5.0000e-005	4.0000e-005	2.3706
Total		**0.0490**	**0.4450**	**0.3738**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**	**0.0000**	**484.4282**	**484.4282**	**9.2900e-003**	**8.8800e-003**	**487.3070**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	71550.6	9.5417	9.4000e-004	1.9000e-004	9.6233
General Office Building	5.8324e+006	777.7869	0.0767	0.0159	784.4351
Regional Shopping Center	100608	13.4167	1.3200e-003	2.7000e-004	13.5314
Total		**800.7453**	**0.0790**	**0.0163**	**807.5898**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	71550.6	9.5417	9.4000e-004	1.9000e-004	9.6233
General Office Building	5.8324e+006	777.7869	0.0767	0.0159	784.4351
Regional Shopping Center	100608	13.4167	1.3200e-003	2.7000e-004	13.5314
Total		**800.7453**	**0.0790**	**0.0163**	**807.5898**

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	2.4170	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.7400e-003	8.7400e-003	2.0000e-005	0.0000	9.3200e-003
Unmitigated	2.4170	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.7400e-003	8.7400e-003	2.0000e-005	0.0000	9.3200e-003

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	0.5531					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.8635					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.2000e-004	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.7400e-003	8.7400e-003	2.0000e-005	0.0000	9.3200e-003
Total	**2.4170**	**4.0000e-005**	**4.5000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.7400e-003**	**8.7400e-003**	**2.0000e-005**	**0.0000**	**9.3200e-003**

6.2 Area by SubCategory

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	0.5531					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.8635					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.2000e-004	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.7400e-003	8.7400e-003	2.0000e-005	0.0000	9.3200e-003
Total	**2.4170**	**4.0000e-005**	**4.5000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.7400e-003**	**8.7400e-003**	**2.0000e-005**	**0.0000**	**9.3200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	96.0362	0.0888	0.0530	114.0609
Unmitigated	96.0362	0.0888	0.0530	114.0609

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	66.4497 / 50.909	95.2210	0.0880	0.0526	113.0927
Regional Shopping Center	0.568877 / 0.435833	0.8152	7.5000e-004	4.5000e-004	0.9682
Total		**96.0362**	**0.0887**	**0.0530**	**114.0609**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	66.4497 / 50.909	95.2210	0.0880	0.0526	113.0927
Regional Shopping Center	0.568877 / 0.435833	0.8152	7.5000e-004	4.5000e-004	0.9682
Total		**96.0362**	**0.0887**	**0.0530**	**114.0609**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	90.2721	5.3349	0.0000	223.6453
Unmitigated	90.2721	5.3349	0.0000	223.6453

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	434.63	88.2260	5.2140	0.0000	218.5761
Regional Shopping Center	10.08	2.0462	0.1209	0.0000	5.0693
Total		**90.2721**	**5.3349**	**0.0000**	**223.6453**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	434.63	88.2260	5.2140	0.0000	218.5761
Regional Shopping Center	10.08	2.0462	0.1209	0.0000	5.0693
Total		**90.2721**	**5.3349**	**0.0000**	**223.6453**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	1676	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0688	0.3075	0.1753	3.3000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	31.9108	31.9108	4.4700e-003	0.0000	32.0227
Total	**0.0688**	**0.3075**	**0.1753**	**3.3000e-004**		**0.0101**	**0.0101**		**0.0101**	**0.0101**	**0.0000**	**31.9108**	**31.9108**	**4.4700e-003**	**0.0000**	**32.0227**

11.0 Vegetation

Kaiser Center - Master Plan 1 - Webster St Office Tower

San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	865.54	1000sqft	0.88	865,540.00	0
Enclosed Parking with Elevator	30.68	1000sqft	0.00	30,680.00	0
Regional Shopping Center	5.70	1000sqft	0.00	5,700.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on PG&E's GHG emission factor for 2016
https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

Land Use - Proposed Land uses for Webster Office Tower under Master Plan 1

Construction Phase - Schedule provided by applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Trips and VMT - Data from applicant (except hauling trips during demolition)

Demolition -

Grading - Data from applicant

Vehicle Trips - Adjusted based on project traffic data
Passby trips for retail uses already accounted for in trip rate

Woodstoves -

Energy Use -

Water And Wastewater - 20% reduction in indoor water use assumed in compliance with the City's CalGreencode
100% aerobic digestion assumed

Construction Off-road Equipment Mitigation - All Tier 4 equipment assumed as part of BACT for construction equipment

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps -

Architectural Coating - Defaults corrected per Appendix D

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	250.00	150.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00

tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	2.00	44.00
tblConstructionPhase	NumDays	100.00	392.00
tblConstructionPhase	NumDays	5.00	174.00
tblConstructionPhase	NumDays	5.00	44.00
tblGrading	AcresOfGrading	44.00	0.88
tblGrading	AcresOfGrading	0.00	0.88
tblGrading	MaterialExported	0.00	18,000.00
tblGrading	MaterialImported	0.00	5,000.00
tblLandUse	LotAcreage	19.87	0.88
tblLandUse	LotAcreage	0.70	0.00
tblLandUse	LotAcreage	0.13	0.00
tblOffRoadEquipment	HorsePower	81.00	20.00
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tblOffRoadEquipment	HorsePower	46.00	35.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
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tblOffRoadEquipment	UsageHours	6.00	0.00
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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	0.00
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tblOffRoadEquipment	UsageHours	1.00	0.00
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tblOffRoadEquipment	UsageHours	6.00	0.00
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tblProjectCharacteristics	CO2IntensityFactor	641.35	294
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tblTripsAndVMT	HaulingTripNumber	2,875.00	440.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,840.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,740.00
tblTripsAndVMT	HaulingTripNumber	0.00	440.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
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tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	148.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	55.00	50.00
tblTripsAndVMT	WorkerTripNumber	18.00	40.00
tblTripsAndVMT	WorkerTripNumber	20.00	40.00
tblTripsAndVMT	WorkerTripNumber	292.00	260.00
tblTripsAndVMT	WorkerTripNumber	58.00	140.00
tblTripsAndVMT	WorkerTripNumber	13.00	80.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	ST_TR	2.46	1.18
tblVehicleTrips	ST_TR	49.97	19.91
tblVehicleTrips	SU_TR	1.05	0.50
tblVehicleTrips	SU_TR	25.24	10.05
tblVehicleTrips	WD_TR	11.03	5.28
tblVehicleTrips	WD_TR	42.70	17.01
tblWater	AerobicPercent	87.46	100.00

tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
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tblWater	IndoorWaterUseRate	153,835,668.24	123,068,534.59
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tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

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					
2021	0.0426	0.3417	0.3288	8.3000e-004	0.0327	0.0146	0.0473	6.0200e-003	0.0140	0.0200	0.0000	75.0014	75.0014	0.0109	0.0000	75.2742
2022	0.3711	2.8303	2.8122	7.8100e-003	0.2881	0.1051	0.3932	0.0703	0.1000	0.1702	0.0000	693.6849	693.6849	0.0955	0.0000	696.0718
2023	2.5548	2.5590	3.1097	9.3700e-003	0.4055	0.0789	0.4844	0.1083	0.0765	0.1849	0.0000	825.3286	825.3286	0.0760	0.0000	827.2291
2024	2.4886	0.5811	0.7043	2.0200e-003	0.1409	0.0197	0.1606	0.0366	0.0186	0.0552	0.0000	180.9692	180.9692	0.0183	0.0000	181.4271
Maximum	**2.5548**	**2.8303**	**3.1097**	**9.3700e-003**	**0.4055**	**0.1051**	**0.4844**	**0.1083**	**0.1000**	**0.1849**	**0.0000**	**825.3286**	**825.3286**	**0.0955**	**0.0000**	**827.2291**

2.1 Overall Construction

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					
2021	0.0104	0.0901	0.3899	8.3000e-004	0.0327	1.1100e-003	0.0338	6.0200e-003	1.1100e-003	7.1200e-003	0.0000	75.0013	75.0013	0.0109	0.0000	75.2741
2022	0.1338	1.3447	3.0567	7.8100e-003	0.2881	9.1200e-003	0.2972	0.0703	8.9700e-003	0.0792	0.0000	693.6844	693.6844	0.0955	0.0000	696.0714
2023	2.3277	1.7597	3.1499	9.3700e-003	0.4055	8.0000e-003	0.4135	0.1083	7.8000e-003	0.1161	0.0000	825.3283	825.3283	0.0760	0.0000	827.2288
2024	2.4437	0.3503	0.6633	2.0200e-003	0.1409	1.7300e-003	0.1426	0.0366	1.6800e-003	0.0383	0.0000	180.9692	180.9692	0.0183	0.0000	181.4270
Maximum	**2.4437**	**1.7597**	**3.1499**	**9.3700e-003**	**0.4055**	**9.1200e-003**	**0.4135**	**0.1083**	**8.9700e-003**	**0.1161**	**0.0000**	**825.3283**	**825.3283**	**0.0955**	**0.0000**	**827.2288**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**9.92**	**43.84**	**-4.38**	**0.00**	**0.00**	**90.86**	**18.27**	**0.00**	**90.64**	**44.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**12-4-2021**	**3-3-2022**	1.1548	0.3170
2	**3-4-2022**	**6-3-2022**	0.6564	0.2000
3	**6-4-2022**	**9-3-2022**	0.7976	0.4061
4	**9-4-2022**	**12-3-2022**	0.7522	0.5030
5	**12-4-2022**	**3-3-2023**	0.6792	0.4498
6	**3-4-2023**	**6-3-2023**	0.6584	0.4318
7	**6-4-2023**	**9-3-2023**	0.6564	0.4297
8	**9-4-2023**	**12-3-2023**	2.5762	2.2525

9	**12-4-2023**	**3-3-2024**	2.2316	2.0493
10	**3-4-2024**	**6-3-2024**	1.6376	1.4435
		Highest	2.5762	2.2525

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	4.4160	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Energy	0.0904	0.8214	0.6900	4.9300e-003		0.0624	0.0624		0.0624	0.0624	0.0000	2,366.6698	2,366.6698	0.1624	0.0464	2,384.5696
Mobile	0.7297	3.4073	8.2801	0.0331	3.1587	0.0269	3.1856	0.8476	0.0251	0.8727	0.0000	3,044.6686	3,044.6686	0.1016	0.0000	3,047.2089
Stationary	0.0826	0.3691	0.2105	4.0000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.3082	38.3082	5.3700e-003	0.0000	38.4425
Waste						0.0000	0.0000		0.0000	0.0000	164.6135	0.0000	164.6135	9.7284	0.0000	407.8230
Water						0.0000	0.0000		0.0000	0.0000	43.6613	133.1774	176.8387	0.1634	0.0977	210.0289
Total	**5.3186**	**4.5979**	**9.1889**	**0.0384**	**3.1587**	**0.1015**	**3.2602**	**0.8476**	**0.0997**	**0.9473**	**208.2748**	**5,582.8401**	**5,791.1149**	**10.1612**	**0.1441**	**6,088.0900**

2.2 Overall Operational

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	4.4160	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Energy	0.0904	0.8214	0.6900	4.9300e-003		0.0624	0.0624		0.0624	0.0624	0.0000	2,366.6698	2,366.6698	0.1624	0.0464	2,384.5696
Mobile	0.7297	3.4073	8.2801	0.0331	3.1587	0.0269	3.1856	0.8476	0.0251	0.8727	0.0000	3,044.6686	3,044.6686	0.1016	0.0000	3,047.2089
Stationary	0.0826	0.3691	0.2105	4.0000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.3082	38.3082	5.3700e-003	0.0000	38.4425
Waste						0.0000	0.0000		0.0000	0.0000	164.6135	0.0000	164.6135	9.7284	0.0000	407.8230
Water						0.0000	0.0000		0.0000	0.0000	43.6613	133.1774	176.8387	0.1634	0.0977	210.0289
Total	**5.3186**	**4.5979**	**9.1889**	**0.0384**	**3.1587**	**0.1015**	**3.2602**	**0.8476**	**0.0997**	**0.9473**	**208.2748**	**5,582.8401**	**5,791.1149**	**10.1612**	**0.1441**	**6,088.0900**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**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

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	12/4/2021	3/4/2022	5	65	
2	Site Preparation	Site Preparation	3/5/2022	5/5/2022	5	44	
3	Grading	Grading	5/6/2022	7/6/2022	5	44	
4	Building Construction	Building Construction	7/7/2022	1/7/2024	5	392	
5	Architectural Coating	Architectural Coating	9/7/2023	5/7/2024	5	174	
6	Paving	Paving	3/7/2024	5/7/2024	5	44	

Acres of Grading (Site Preparation Phase): 0.88

Acres of Grading (Grading Phase): 0.88

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,306,860; Non-Residential Outdoor: 435,620; Striped Parking Area: 1,841 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Aerial Lifts	5	4.00	120	0.31
Demolition	Air Compressors	4	4.00	150	0.48
Demolition	Concrete/Industrial Saws	5	4.00	20	0.73
Demolition	Crushing/Proc. Equipment	1	6.00	285	0.78
Demolition	Dumpers/Tenders	2	8.00	325	0.38
Demolition	Excavators	1	9.80	285	0.38
Demolition	Generator Sets	1	8.00	50	0.74
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Rubber Tired Loaders	2	8.00	120	0.36
Demolition	Sweepers/Scrubbers	1	4.00	120	0.46

Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Dumpers/Tenders	2	8.00	325	0.38
Site Preparation	Generator Sets	1	4.00	50	0.74
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rubber Tired Loaders	2	8.00	120	0.36
Site Preparation	Sweepers/Scrubbers	1	4.00	120	0.46
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	250	0.37
Grading	Concrete/Industrial Saws	0	0.00	81	0.73
Grading	Dumpers/Tenders	2	8.00	325	0.38
Grading	Generator Sets	1	4.00	50	0.74
Grading	Off-Highway Trucks	1	8.00	330	0.38
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Rubber Tired Loaders	2	8.00	120	0.36
Grading	Scrapers	1	8.00	350	0.48
Grading	Sweepers/Scrubbers	1	4.00	120	0.46
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Bore/Drill Rigs	1	1.20	225	0.50
Building Construction	Cranes	0	0.00	231	0.29
Building Construction	Excavators	2	1.20	385	0.38
Building Construction	Forklifts	0	0.00	89	0.20
Building Construction	Sweepers/Scrubbers	1	4.00	120	0.46
Building Construction	Tractors/Loaders/Backhoes	2	2.00	150	0.37
Building Construction	Welders	8	8.00	35	0.45
Architectural Coating	Air Compressors	0	0.00	78	0.48
Architectural Coating	Sweepers/Scrubbers	1	4.30	120	0.46
Architectural Coating	Welders	3	8.00	35	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56

Paving	Dumpers/Tenders	1	8.00	225	0.38
Paving	Other Construction Equipment	1	4.00	44	0.42
Paving	Pavers	0	0.00	130	0.42
Paving	Paving Equipment	1	8.00	175	0.36
Paving	Rollers	1	8.00	40	0.38
Paving	Sweepers/Scrubbers	1	8.00	120	0.46
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	22	50.00	12.00	694.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	40.00	12.00	352.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	40.00	12.00	440.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	14	260.00	20.00	7,840.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	4	140.00	10.00	1,740.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	80.00	8.00	440.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2021

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					0.0231	0.0000	0.0231	3.5000e-003	0.0000	3.5000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0399	0.2993	0.3083	6.8000e-004		0.0145	0.0145		0.0139	0.0139	0.0000	60.4718	60.4718	0.0103	0.0000	60.7286
Total	**0.0399**	**0.2993**	**0.3083**	**6.8000e-004**	**0.0231**	**0.0145**	**0.0376**	**3.5000e-003**	**0.0139**	**0.0174**	**0.0000**	**60.4718**	**60.4718**	**0.0103**	**0.0000**	**60.7286**

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	8.4000e-004	0.0288	6.1400e-003	8.0000e-005	4.8400e-003	9.0000e-005	4.9300e-003	1.2400e-003	9.0000e-005	1.3300e-003	0.0000	8.0776	8.0776	4.1000e-004	0.0000	8.0879
Vendor	3.8000e-004	0.0125	3.1300e-003	3.0000e-005	7.9000e-004	3.0000e-005	8.1000e-004	2.3000e-004	3.0000e-005	2.5000e-004	0.0000	3.1121	3.1121	1.5000e-004	0.0000	3.1160
Worker	1.5300e-003	1.0600e-003	0.0112	4.0000e-005	3.9500e-003	3.0000e-005	3.9800e-003	1.0500e-003	2.0000e-005	1.0700e-003	0.0000	3.3400	3.3400	7.0000e-005	0.0000	3.3418
Total	**2.7500e-003**	**0.0424**	**0.0205**	**1.5000e-004**	**9.5800e-003**	**1.5000e-004**	**9.7200e-003**	**2.5200e-003**	**1.4000e-004**	**2.6500e-003**	**0.0000**	**14.5296**	**14.5296**	**6.3000e-004**	**0.0000**	**14.5456**

3.2 Demolition - 2021

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					0.0231	0.0000	0.0231	3.5000e-003	0.0000	3.5000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.6700e-003	0.0477	0.3694	6.8000e-004		9.7000e-004	9.7000e-004		9.7000e-004	9.7000e-004	0.0000	60.4717	60.4717	0.0103	0.0000	60.7285
Total	**7.6700e-003**	**0.0477**	**0.3694**	**6.8000e-004**	**0.0231**	**9.7000e-004**	**0.0241**	**3.5000e-003**	**9.7000e-004**	**4.4700e-003**	**0.0000**	**60.4717**	**60.4717**	**0.0103**	**0.0000**	**60.7285**

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	8.4000e-004	0.0288	6.1400e-003	8.0000e-005	4.8400e-003	9.0000e-005	4.9300e-003	1.2400e-003	9.0000e-005	1.3300e-003	0.0000	8.0776	8.0776	4.1000e-004	0.0000	8.0879
Vendor	3.8000e-004	0.0125	3.1300e-003	3.0000e-005	7.9000e-004	3.0000e-005	8.1000e-004	2.3000e-004	3.0000e-005	2.5000e-004	0.0000	3.1121	3.1121	1.5000e-004	0.0000	3.1160
Worker	1.5300e-003	1.0600e-003	0.0112	4.0000e-005	3.9500e-003	3.0000e-005	3.9800e-003	1.0500e-003	2.0000e-005	1.0700e-003	0.0000	3.3400	3.3400	7.0000e-005	0.0000	3.3418
Total	**2.7500e-003**	**0.0424**	**0.0205**	**1.5000e-004**	**9.5800e-003**	**1.5000e-004**	**9.7200e-003**	**2.5200e-003**	**1.4000e-004**	**2.6500e-003**	**0.0000**	**14.5296**	**14.5296**	**6.3000e-004**	**0.0000**	**14.5456**

3.2 Demolition - 2022

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					0.0520	0.0000	0.0520	7.8700e-003	0.0000	7.8700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0832	0.6043	0.6888	1.5300e-003		0.0280	0.0280		0.0268	0.0268	0.0000	136.0682	136.0682	0.0229	0.0000	136.6416
Total	**0.0832**	**0.6043**	**0.6888**	**1.5300e-003**	**0.0520**	**0.0280**	**0.0800**	**7.8700e-003**	**0.0268**	**0.0347**	**0.0000**	**136.0682**	**136.0682**	**0.0229**	**0.0000**	**136.6416**

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	1.7800e-003	0.0596	0.0136	1.8000e-004	5.4100e-003	1.7000e-004	5.5800e-003	1.4500e-003	1.6000e-004	1.6100e-003	0.0000	17.9270	17.9270	9.1000e-004	0.0000	17.9496
Vendor	8.0000e-004	0.0267	6.6200e-003	7.0000e-005	1.7700e-003	5.0000e-005	1.8200e-003	5.1000e-004	5.0000e-005	5.6000e-004	0.0000	6.9336	6.9336	3.3000e-004	0.0000	6.9419
Worker	3.2200e-003	2.1400e-003	0.0232	8.0000e-005	8.8900e-003	6.0000e-005	8.9500e-003	2.3600e-003	5.0000e-005	2.4200e-003	0.0000	7.2394	7.2394	1.5000e-004	0.0000	7.2432
Total	**5.8000e-003**	**0.0884**	**0.0434**	**3.3000e-004**	**0.0161**	**2.8000e-004**	**0.0164**	**4.3200e-003**	**2.6000e-004**	**4.5900e-003**	**0.0000**	**32.1000**	**32.1000**	**1.3900e-003**	**0.0000**	**32.1346**

3.2 Demolition - 2022

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					0.0520	0.0000	0.0520	7.8700e-003	0.0000	7.8700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0173	0.1073	0.8311	1.5300e-003		2.1800e-003	2.1800e-003		2.1800e-003	2.1800e-003	0.0000	136.0681	136.0681	0.0229	0.0000	136.6414
Total	**0.0173**	**0.1073**	**0.8311**	**1.5300e-003**	**0.0520**	**2.1800e-003**	**0.0541**	**7.8700e-003**	**2.1800e-003**	**0.0101**	**0.0000**	**136.0681**	**136.0681**	**0.0229**	**0.0000**	**136.6414**

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	1.7800e-003	0.0596	0.0136	1.8000e-004	5.4100e-003	1.7000e-004	5.5800e-003	1.4500e-003	1.6000e-004	1.6100e-003	0.0000	17.9270	17.9270	9.1000e-004	0.0000	17.9496
Vendor	8.0000e-004	0.0267	6.6200e-003	7.0000e-005	1.7700e-003	5.0000e-005	1.8200e-003	5.1000e-004	5.0000e-005	5.6000e-004	0.0000	6.9336	6.9336	3.3000e-004	0.0000	6.9419
Worker	3.2200e-003	2.1400e-003	0.0232	8.0000e-005	8.8900e-003	6.0000e-005	8.9500e-003	2.3600e-003	5.0000e-005	2.4200e-003	0.0000	7.2394	7.2394	1.5000e-004	0.0000	7.2432
Total	**5.8000e-003**	**0.0884**	**0.0434**	**3.3000e-004**	**0.0161**	**2.8000e-004**	**0.0164**	**4.3200e-003**	**2.6000e-004**	**4.5900e-003**	**0.0000**	**32.1000**	**32.1000**	**1.3900e-003**	**0.0000**	**32.1346**

3.3 Site Preparation - 2022

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					4.7000e-004	0.0000	4.7000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0295	0.2605	0.2377	4.4000e-004		0.0149	0.0149		0.0138	0.0138	0.0000	37.8015	37.8015	0.0114	0.0000	38.0854
Total	**0.0295**	**0.2605**	**0.2377**	**4.4000e-004**	**4.7000e-004**	**0.0149**	**0.0153**	**5.0000e-005**	**0.0138**	**0.0138**	**0.0000**	**37.8015**	**37.8015**	**0.0114**	**0.0000**	**38.0854**

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	1.3100e-003	0.0437	9.9400e-003	1.4000e-004	2.9700e-003	1.3000e-004	3.1000e-003	8.2000e-004	1.2000e-004	9.4000e-004	0.0000	13.1338	13.1338	6.6000e-004	0.0000	13.1504
Vendor	7.8000e-004	0.0261	6.4700e-003	7.0000e-005	1.7300e-003	5.0000e-005	1.7800e-003	5.0000e-004	5.0000e-005	5.5000e-004	0.0000	6.7796	6.7796	3.2000e-004	0.0000	6.7876
Worker	2.5200e-003	1.6700e-003	0.0181	6.0000e-005	6.9500e-003	4.0000e-005	7.0000e-003	1.8500e-003	4.0000e-005	1.8900e-003	0.0000	5.6628	5.6628	1.2000e-004	0.0000	5.6658
Total	**4.6100e-003**	**0.0714**	**0.0346**	**2.7000e-004**	**0.0117**	**2.2000e-004**	**0.0119**	**3.1700e-003**	**2.1000e-004**	**3.3800e-003**	**0.0000**	**25.5762**	**25.5762**	**1.1000e-003**	**0.0000**	**25.6038**

3.3 Site Preparation - 2022

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					4.7000e-004	0.0000	4.7000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6700e-003	0.0405	0.2692	4.4000e-004		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	37.8015	37.8015	0.0114	0.0000	38.0853
Total	**5.6700e-003**	**0.0405**	**0.2692**	**4.4000e-004**	**4.7000e-004**	**7.0000e-004**	**1.1700e-003**	**5.0000e-005**	**7.0000e-004**	**7.5000e-004**	**0.0000**	**37.8015**	**37.8015**	**0.0114**	**0.0000**	**38.0853**

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	1.3100e-003	0.0437	9.9400e-003	1.4000e-004	2.9700e-003	1.3000e-004	3.1000e-003	8.2000e-004	1.2000e-004	9.4000e-004	0.0000	13.1338	13.1338	6.6000e-004	0.0000	13.1504
Vendor	7.8000e-004	0.0261	6.4700e-003	7.0000e-005	1.7300e-003	5.0000e-005	1.7800e-003	5.0000e-004	5.0000e-005	5.5000e-004	0.0000	6.7796	6.7796	3.2000e-004	0.0000	6.7876
Worker	2.5200e-003	1.6700e-003	0.0181	6.0000e-005	6.9500e-003	4.0000e-005	7.0000e-003	1.8500e-003	4.0000e-005	1.8900e-003	0.0000	5.6628	5.6628	1.2000e-004	0.0000	5.6658
Total	**4.6100e-003**	**0.0714**	**0.0346**	**2.7000e-004**	**0.0117**	**2.2000e-004**	**0.0119**	**3.1700e-003**	**2.1000e-004**	**3.3800e-003**	**0.0000**	**25.5762**	**25.5762**	**1.1000e-003**	**0.0000**	**25.6038**

3.4 Grading - 2022

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					1.7700e-003	0.0000	1.7700e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0495	0.4509	0.3904	8.2000e-004		0.0224	0.0224		0.0207	0.0207	0.0000	71.4335	71.4335	0.0222	0.0000	71.9893
Total	**0.0495**	**0.4509**	**0.3904**	**8.2000e-004**	**1.7700e-003**	**0.0224**	**0.0242**	**2.5000e-004**	**0.0207**	**0.0210**	**0.0000**	**71.4335**	**71.4335**	**0.0222**	**0.0000**	**71.9893**

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	1.6300e-003	0.0546	0.0124	1.7000e-004	3.7200e-003	1.6000e-004	3.8700e-003	1.0200e-003	1.5000e-004	1.1700e-003	0.0000	16.4173	16.4173	8.3000e-004	0.0000	16.4380
Vendor	7.8000e-004	0.0261	6.4700e-003	7.0000e-005	1.7300e-003	5.0000e-005	1.7800e-003	5.0000e-004	5.0000e-005	5.5000e-004	0.0000	6.7796	6.7796	3.2000e-004	0.0000	6.7876
Worker	2.5200e-003	1.6700e-003	0.0181	6.0000e-005	6.9500e-003	4.0000e-005	7.0000e-003	1.8500e-003	4.0000e-005	1.8900e-003	0.0000	5.6628	5.6628	1.2000e-004	0.0000	5.6658
Total	**4.9300e-003**	**0.0824**	**0.0370**	**3.0000e-004**	**0.0124**	**2.5000e-004**	**0.0127**	**3.3700e-003**	**2.4000e-004**	**3.6100e-003**	**0.0000**	**28.8596**	**28.8596**	**1.2700e-003**	**0.0000**	**28.8914**

3.4 Grading - 2022

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					1.7700e-003	0.0000	1.7700e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0104	0.0608	0.4407	8.2000e-004		1.3200e-003	1.3200e-003		1.3200e-003	1.3200e-003	0.0000	71.4334	71.4334	0.0222	0.0000	71.9892
Total	**0.0104**	**0.0608**	**0.4407**	**8.2000e-004**	**1.7700e-003**	**1.3200e-003**	**3.0900e-003**	**2.5000e-004**	**1.3200e-003**	**1.5700e-003**	**0.0000**	**71.4334**	**71.4334**	**0.0222**	**0.0000**	**71.9892**

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	1.6300e-003	0.0546	0.0124	1.7000e-004	3.7200e-003	1.6000e-004	3.8700e-003	1.0200e-003	1.5000e-004	1.1700e-003	0.0000	16.4173	16.4173	8.3000e-004	0.0000	16.4380
Vendor	7.8000e-004	0.0261	6.4700e-003	7.0000e-005	1.7300e-003	5.0000e-005	1.7800e-003	5.0000e-004	5.0000e-005	5.5000e-004	0.0000	6.7796	6.7796	3.2000e-004	0.0000	6.7876
Worker	2.5200e-003	1.6700e-003	0.0181	6.0000e-005	6.9500e-003	4.0000e-005	7.0000e-003	1.8500e-003	4.0000e-005	1.8900e-003	0.0000	5.6628	5.6628	1.2000e-004	0.0000	5.6658
Total	**4.9300e-003**	**0.0824**	**0.0370**	**3.0000e-004**	**0.0124**	**2.5000e-004**	**0.0127**	**3.3700e-003**	**2.4000e-004**	**3.6100e-003**	**0.0000**	**28.8596**	**28.8596**	**1.2700e-003**	**0.0000**	**28.8914**

3.5 Building Construction - 2022

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	0.1332	0.8003	0.9373	1.6200e-003		0.0371	0.0371		0.0361	0.0361	0.0000	128.2178	128.2178	0.0266	0.0000	128.8839
Total	**0.1332**	**0.8003**	**0.9373**	**1.6200e-003**		**0.0371**	**0.0371**		**0.0361**	**0.0361**	**0.0000**	**128.2178**	**128.2178**	**0.0266**	**0.0000**	**128.8839**

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	9.4300e-003	0.3150	0.0717	9.8000e-004	0.0550	9.1000e-004	0.0559	0.0141	8.7000e-004	0.0150	0.0000	94.7724	94.7724	4.7900e-003	0.0000	94.8922
Vendor	3.7600e-003	0.1256	0.0311	3.4000e-004	8.3300e-003	2.5000e-004	8.5800e-003	2.4100e-003	2.4000e-004	2.6500e-003	0.0000	32.6137	32.6137	1.5500e-003	0.0000	32.6524
Worker	0.0472	0.0313	0.3403	1.1700e-003	0.1305	8.3000e-004	0.1313	0.0347	7.7000e-004	0.0355	0.0000	106.2419	106.2419	2.2200e-003	0.0000	106.2974
Total	**0.0604**	**0.4720**	**0.4431**	**2.4900e-003**	**0.1937**	**1.9900e-003**	**0.1957**	**0.0512**	**1.8800e-003**	**0.0531**	**0.0000**	**233.6281**	**233.6281**	**8.5600e-003**	**0.0000**	**233.8419**

3.5 Building Construction - 2022

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	0.0247	0.4219	0.9576	1.6200e-003		2.1700e-003	2.1700e-003		2.1700e-003	2.1700e-003	0.0000	128.2177	128.2177	0.0266	0.0000	128.8838
Total	**0.0247**	**0.4219**	**0.9576**	**1.6200e-003**		**2.1700e-003**	**2.1700e-003**		**2.1700e-003**	**2.1700e-003**	**0.0000**	**128.2177**	**128.2177**	**0.0266**	**0.0000**	**128.8838**

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	9.4300e-003	0.3150	0.0717	9.8000e-004	0.0550	9.1000e-004	0.0559	0.0141	8.7000e-004	0.0150	0.0000	94.7724	94.7724	4.7900e-003	0.0000	94.8922
Vendor	3.7600e-003	0.1256	0.0311	3.4000e-004	8.3300e-003	2.5000e-004	8.5800e-003	2.4100e-003	2.4000e-004	2.6500e-003	0.0000	32.6137	32.6137	1.5500e-003	0.0000	32.6524
Worker	0.0472	0.0313	0.3403	1.1700e-003	0.1305	8.3000e-004	0.1313	0.0347	7.7000e-004	0.0355	0.0000	106.2419	106.2419	2.2200e-003	0.0000	106.2974
Total	**0.0604**	**0.4720**	**0.4431**	**2.4900e-003**	**0.1937**	**1.9900e-003**	**0.1957**	**0.0512**	**1.8800e-003**	**0.0531**	**0.0000**	**233.6281**	**233.6281**	**8.5600e-003**	**0.0000**	**233.8419**

3.5 Building Construction - 2023

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	0.2518	1.5591	1.9035	3.3200e-003		0.0661	0.0661		0.0643	0.0643	0.0000	262.6016	262.6016	0.0530	0.0000	263.9269
Total	**0.2518**	**1.5591**	**1.9035**	**3.3200e-003**		**0.0661**	**0.0661**		**0.0643**	**0.0643**	**0.0000**	**262.6016**	**262.6016**	**0.0530**	**0.0000**	**263.9269**

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	0.0132	0.4314	0.1332	1.9200e-003	0.0606	7.7000e-004	0.0614	0.0162	7.4000e-004	0.0169	0.0000	186.6278	186.6278	8.8300e-003	0.0000	186.8484
Vendor	5.7800e-003	0.1983	0.0571	6.7000e-004	0.0171	2.3000e-004	0.0173	4.9300e-003	2.2000e-004	5.1500e-003	0.0000	64.8970	64.8970	2.7000e-003	0.0000	64.9645
Worker	0.0904	0.0577	0.6408	2.3100e-003	0.2671	1.6700e-003	0.2688	0.0711	1.5400e-003	0.0726	0.0000	209.1734	209.1734	4.0700e-003	0.0000	209.2751
Total	**0.1094**	**0.6874**	**0.8311**	**4.9000e-003**	**0.3447**	**2.6700e-003**	**0.3474**	**0.0922**	**2.5000e-003**	**0.0947**	**0.0000**	**460.6982**	**460.6982**	**0.0156**	**0.0000**	**461.0881**

3.5 Building Construction - 2023

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	0.0506	0.8637	1.9605	3.3200e-003		4.4400e-003	4.4400e-003		4.4400e-003	4.4400e-003	0.0000	262.6013	262.6013	0.0530	0.0000	263.9265
Total	**0.0506**	**0.8637**	**1.9605**	**3.3200e-003**		**4.4400e-003**	**4.4400e-003**		**4.4400e-003**	**4.4400e-003**	**0.0000**	**262.6013**	**262.6013**	**0.0530**	**0.0000**	**263.9265**

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	0.0132	0.4314	0.1332	1.9200e-003	0.0606	7.7000e-004	0.0614	0.0162	7.4000e-004	0.0169	0.0000	186.6278	186.6278	8.8300e-003	0.0000	186.8484
Vendor	5.7800e-003	0.1983	0.0571	6.7000e-004	0.0171	2.3000e-004	0.0173	4.9300e-003	2.2000e-004	5.1500e-003	0.0000	64.8970	64.8970	2.7000e-003	0.0000	64.9645
Worker	0.0904	0.0577	0.6408	2.3100e-003	0.2671	1.6700e-003	0.2688	0.0711	1.5400e-003	0.0726	0.0000	209.1734	209.1734	4.0700e-003	0.0000	209.2751
Total	**0.1094**	**0.6874**	**0.8311**	**4.9000e-003**	**0.3447**	**2.6700e-003**	**0.3474**	**0.0922**	**2.5000e-003**	**0.0947**	**0.0000**	**460.6982**	**460.6982**	**0.0156**	**0.0000**	**461.0881**

3.5 Building Construction - 2024

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	4.5200e-003	0.0288	0.0364	6.0000e-005		1.1100e-003	1.1100e-003		1.0800e-003	1.0800e-003	0.0000	5.0510	5.0510	1.0000e-003	0.0000	5.0760
Total	**4.5200e-003**	**0.0288**	**0.0364**	**6.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**5.0510**	**5.0510**	**1.0000e-003**	**0.0000**	**5.0760**

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	2.5000e-004	8.1200e-003	2.5700e-003	4.0000e-005	0.0498	1.0000e-005	0.0498	0.0122	1.0000e-005	0.0123	0.0000	3.5622	3.5622	1.7000e-004	0.0000	3.5664
Vendor	1.1000e-004	3.7700e-003	1.0600e-003	1.0000e-005	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	1.2396	1.2396	5.0000e-005	0.0000	1.2409
Worker	1.6300e-003	1.0000e-003	0.0114	4.0000e-005	5.1400e-003	3.0000e-005	5.1700e-003	1.3700e-003	3.0000e-005	1.4000e-003	0.0000	3.8634	3.8634	7.0000e-005	0.0000	3.8651
Total	**1.9900e-003**	**0.0129**	**0.0151**	**9.0000e-005**	**0.0552**	**4.0000e-005**	**0.0553**	**0.0137**	**4.0000e-005**	**0.0138**	**0.0000**	**8.6652**	**8.6652**	**2.9000e-004**	**0.0000**	**8.6724**

3.5 Building Construction - 2024

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	9.7000e-004	0.0166	0.0377	6.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	5.0510	5.0510	1.0000e-003	0.0000	5.0760
Total	**9.7000e-004**	**0.0166**	**0.0377**	**6.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**5.0510**	**5.0510**	**1.0000e-003**	**0.0000**	**5.0760**

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	2.5000e-004	8.1200e-003	2.5700e-003	4.0000e-005	0.0498	1.0000e-005	0.0498	0.0122	1.0000e-005	0.0123	0.0000	3.5622	3.5622	1.7000e-004	0.0000	3.5664
Vendor	1.1000e-004	3.7700e-003	1.0600e-003	1.0000e-005	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	1.2396	1.2396	5.0000e-005	0.0000	1.2409
Worker	1.6300e-003	1.0000e-003	0.0114	4.0000e-005	5.1400e-003	3.0000e-005	5.1700e-003	1.3700e-003	3.0000e-005	1.4000e-003	0.0000	3.8634	3.8634	7.0000e-005	0.0000	3.8651
Total	**1.9900e-003**	**0.0129**	**0.0151**	**9.0000e-005**	**0.0552**	**4.0000e-005**	**0.0553**	**0.0137**	**4.0000e-005**	**0.0138**	**0.0000**	**8.6652**	**8.6652**	**2.9000e-004**	**0.0000**	**8.6724**

3.6 Architectural Coating - 2023

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	2.1440					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0313	0.2034	0.2363	3.4000e-004		9.6500e-003	9.6500e-003		9.3000e-003	9.3000e-003	0.0000	26.8430	26.8430	4.9100e-003	0.0000	26.9656
Total	**2.1753**	**0.2034**	**0.2363**	**3.4000e-004**		**9.6500e-003**	**9.6500e-003**		**9.3000e-003**	**9.3000e-003**	**0.0000**	**26.8430**	**26.8430**	**4.9100e-003**	**0.0000**	**26.9656**

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	2.0800e-003	0.0680	0.0210	3.0000e-004	0.0127	1.2000e-004	0.0129	3.3300e-003	1.2000e-004	3.4500e-003	0.0000	29.4298	29.4298	1.3900e-003	0.0000	29.4646
Vendor	9.1000e-004	0.0313	9.0000e-003	1.1000e-004	2.6900e-003	4.0000e-005	2.7200e-003	7.8000e-004	3.0000e-005	8.1000e-004	0.0000	10.2338	10.2338	4.3000e-004	0.0000	10.2444
Worker	0.0154	9.8000e-003	0.1088	3.9000e-004	0.0454	2.8000e-004	0.0456	0.0121	2.6000e-004	0.0123	0.0000	35.5223	35.5223	6.9000e-004	0.0000	35.5396
Total	**0.0183**	**0.1091**	**0.1388**	**8.0000e-004**	**0.0608**	**4.4000e-004**	**0.0612**	**0.0162**	**4.1000e-004**	**0.0166**	**0.0000**	**75.1859**	**75.1859**	**2.5100e-003**	**0.0000**	**75.2486**

3.6 Architectural Coating - 2023

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	2.1440					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3900e-003	0.0995	0.2195	3.4000e-004		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	26.8429	26.8429	4.9100e-003	0.0000	26.9656
Total	**2.1494**	**0.0995**	**0.2195**	**3.4000e-004**		**4.4000e-004**	**4.4000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**26.8429**	**26.8429**	**4.9100e-003**	**0.0000**	**26.9656**

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	2.0800e-003	0.0680	0.0210	3.0000e-004	0.0127	1.2000e-004	0.0129	3.3300e-003	1.2000e-004	3.4500e-003	0.0000	29.4298	29.4298	1.3900e-003	0.0000	29.4646
Vendor	9.1000e-004	0.0313	9.0000e-003	1.1000e-004	2.6900e-003	4.0000e-005	2.7200e-003	7.8000e-004	3.0000e-005	8.1000e-004	0.0000	10.2338	10.2338	4.3000e-004	0.0000	10.2444
Worker	0.0154	9.8000e-003	0.1088	3.9000e-004	0.0454	2.8000e-004	0.0456	0.0121	2.6000e-004	0.0123	0.0000	35.5223	35.5223	6.9000e-004	0.0000	35.5396
Total	**0.0183**	**0.1091**	**0.1388**	**8.0000e-004**	**0.0608**	**4.4000e-004**	**0.0612**	**0.0162**	**4.1000e-004**	**0.0166**	**0.0000**	**75.1859**	**75.1859**	**2.5100e-003**	**0.0000**	**75.2486**

3.6 Architectural Coating - 2024

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	2.4054					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0328	0.2196	0.2636	3.9000e-004		9.5200e-003	9.5200e-003		9.1600e-003	9.1600e-003	0.0000	30.1165	30.1165	5.3700e-003	0.0000	30.2506
Total	**2.4382**	**0.2196**	**0.2636**	**3.9000e-004**		**9.5200e-003**	**9.5200e-003**		**9.1600e-003**	**9.1600e-003**	**0.0000**	**30.1165**	**30.1165**	**5.3700e-003**	**0.0000**	**30.2506**

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	2.3100e-003	0.0747	0.0236	3.4000e-004	0.0130	1.3000e-004	0.0131	3.4100e-003	1.3000e-004	3.5400e-003	0.0000	32.7723	32.7723	1.5600e-003	0.0000	32.8113
Vendor	9.9000e-004	0.0347	9.7200e-003	1.2000e-004	3.0200e-003	4.0000e-005	3.0600e-003	8.7000e-004	4.0000e-005	9.1000e-004	0.0000	11.4043	11.4043	4.7000e-004	0.0000	11.4160
Worker	0.0162	9.9300e-003	0.1131	4.2000e-004	0.0509	3.1000e-004	0.0512	0.0135	2.9000e-004	0.0138	0.0000	38.2770	38.2770	7.0000e-004	0.0000	38.2945
Total	**0.0195**	**0.1193**	**0.1465**	**8.8000e-004**	**0.0669**	**4.8000e-004**	**0.0674**	**0.0178**	**4.6000e-004**	**0.0183**	**0.0000**	**82.4537**	**82.4537**	**2.7300e-003**	**0.0000**	**82.5217**

3.6 Architectural Coating - 2024

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	2.4054					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0400e-003	0.1117	0.2462	3.9000e-004		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	30.1165	30.1165	5.3700e-003	0.0000	30.2506
Total	**2.4115**	**0.1117**	**0.2462**	**3.9000e-004**		**5.0000e-004**	**5.0000e-004**		**5.0000e-004**	**5.0000e-004**	**0.0000**	**30.1165**	**30.1165**	**5.3700e-003**	**0.0000**	**30.2506**

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	2.3100e-003	0.0747	0.0236	3.4000e-004	0.0130	1.3000e-004	0.0131	3.4100e-003	1.3000e-004	3.5400e-003	0.0000	32.7723	32.7723	1.5600e-003	0.0000	32.8113
Vendor	9.9000e-004	0.0347	9.7200e-003	1.2000e-004	3.0200e-003	4.0000e-005	3.0600e-003	8.7000e-004	4.0000e-005	9.1000e-004	0.0000	11.4043	11.4043	4.7000e-004	0.0000	11.4160
Worker	0.0162	9.9300e-003	0.1131	4.2000e-004	0.0509	3.1000e-004	0.0512	0.0135	2.9000e-004	0.0138	0.0000	38.2770	38.2770	7.0000e-004	0.0000	38.2945
Total	**0.0195**	**0.1193**	**0.1465**	**8.8000e-004**	**0.0669**	**4.8000e-004**	**0.0674**	**0.0178**	**4.6000e-004**	**0.0183**	**0.0000**	**82.4537**	**82.4537**	**2.7300e-003**	**0.0000**	**82.5217**

3.7 Paving - 2024

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	0.0185	0.1487	0.1969	2.8000e-004		8.3700e-003	8.3700e-003		7.7000e-003	7.7000e-003	0.0000	24.1850	24.1850	7.8200e-003	0.0000	24.3805
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0185**	**0.1487**	**0.1969**	**2.8000e-004**		**8.3700e-003**	**8.3700e-003**		**7.7000e-003**	**7.7000e-003**	**0.0000**	**24.1850**	**24.1850**	**7.8200e-003**	**0.0000**	**24.3805**

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	1.1000e-003	0.0357	0.0113	1.6000e-004	3.7200e-003	6.0000e-005	3.7800e-003	1.0200e-003	6.0000e-005	1.0800e-003	0.0000	15.6737	15.6737	7.4000e-004	0.0000	15.6923
Vendor	3.8000e-004	0.0133	3.7200e-003	5.0000e-005	1.1500e-003	2.0000e-005	1.1700e-003	3.3000e-004	1.0000e-005	3.5000e-004	0.0000	4.3634	4.3634	1.8000e-004	0.0000	4.3679
Worker	4.4300e-003	2.7100e-003	0.0309	1.2000e-004	0.0139	9.0000e-005	0.0140	3.7000e-003	8.0000e-005	3.7800e-003	0.0000	10.4608	10.4608	1.9000e-004	0.0000	10.4656
Total	**5.9100e-003**	**0.0517**	**0.0459**	**3.3000e-004**	**0.0188**	**1.7000e-004**	**0.0189**	**5.0500e-003**	**1.5000e-004**	**5.2100e-003**	**0.0000**	**30.4979**	**30.4979**	**1.1100e-003**	**0.0000**	**30.5258**

3.7 Paving - 2024

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	3.8900e-003	0.0380	0.1719	2.8000e-004		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	24.1849	24.1849	7.8200e-003	0.0000	24.3805
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.8900e-003**	**0.0380**	**0.1719**	**2.8000e-004**		**4.4000e-004**	**4.4000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**24.1849**	**24.1849**	**7.8200e-003**	**0.0000**	**24.3805**

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	1.1000e-003	0.0357	0.0113	1.6000e-004	3.7200e-003	6.0000e-005	3.7800e-003	1.0200e-003	6.0000e-005	1.0800e-003	0.0000	15.6737	15.6737	7.4000e-004	0.0000	15.6923
Vendor	3.8000e-004	0.0133	3.7200e-003	5.0000e-005	1.1500e-003	2.0000e-005	1.1700e-003	3.3000e-004	1.0000e-005	3.5000e-004	0.0000	4.3634	4.3634	1.8000e-004	0.0000	4.3679
Worker	4.4300e-003	2.7100e-003	0.0309	1.2000e-004	0.0139	9.0000e-005	0.0140	3.7000e-003	8.0000e-005	3.7800e-003	0.0000	10.4608	10.4608	1.9000e-004	0.0000	10.4656
Total	**5.9100e-003**	**0.0517**	**0.0459**	**3.3000e-004**	**0.0188**	**1.7000e-004**	**0.0189**	**5.0500e-003**	**1.5000e-004**	**5.2100e-003**	**0.0000**	**30.4979**	**30.4979**	**1.1100e-003**	**0.0000**	**30.5258**

4.0 Operational Detail - Mobile

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	0.7297	3.4073	8.2801	0.0331	3.1587	0.0269	3.1856	0.8476	0.0251	0.8727	0.0000	3,044.6686	3,044.6686	0.1016	0.0000	3,047.2089
Unmitigated	0.7297	3.4073	8.2801	0.0331	3.1587	0.0269	3.1856	0.8476	0.0251	0.8727	0.0000	3,044.6686	3,044.6686	0.1016	0.0000	3,047.2089

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	4,570.05	1,021.34	432.77	8,297,346	8,297,346
Regional Shopping Center	96.96	113.49	57.29	192,542	192,542
Total	4,667.01	1,134.82	490.06	8,489,888	8,489,888

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.581705	0.037849	0.193793	0.109044	0.014574	0.005304	0.018664	0.026966	0.002656	0.002072	0.005755	0.000900	0.000719
General Office Building	0.581705	0.037849	0.193793	0.109044	0.014574	0.005304	0.018664	0.026966	0.002656	0.002072	0.005755	0.000900	0.000719
Regional Shopping Center	0.581705	0.037849	0.193793	0.109044	0.014574	0.005304	0.018664	0.026966	0.002656	0.002072	0.005755	0.000900	0.000719

5.0 Energy Detail

Historical Energy Use: N

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						0.0000	0.0000		0.0000	0.0000	0.0000	1,472.4467	1,472.4467	0.1452	0.0301	1,485.0326
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,472.4467	1,472.4467	0.1452	0.0301	1,485.0326
NaturalGas Mitigated	0.0904	0.8214	0.6900	4.9300e-003		0.0624	0.0624		0.0624	0.0624	0.0000	894.2231	894.2231	0.0171	0.0164	899.5370
NaturalGas Unmitigated	0.0904	0.8214	0.6900	4.9300e-003		0.0624	0.0624		0.0624	0.0624	0.0000	894.2231	894.2231	0.0171	0.0164	899.5370

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/yr	tons/yr										MT/yr					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	1.67309e+007	0.0902	0.8201	0.6889	4.9200e-003		0.0623	0.0623		0.0623	0.0623	0.0000	892.8239	892.8239	0.0171	0.0164	898.1295
Regional Shopping Center	26220	1.4000e-004	1.2900e-003	1.0800e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.3992	1.3992	3.0000e-005	3.0000e-005	1.4075
Total		**0.0904**	**0.8214**	**0.6900**	**4.9300e-003**		**0.0624**	**0.0624**		**0.0624**	**0.0624**	**0.0000**	**894.2231**	**894.2231**	**0.0171**	**0.0164**	**899.5370**

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/yr	tons/yr										MT/yr					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	1.67309e+007	0.0902	0.8201	0.6889	4.9200e-003		0.0623	0.0623		0.0623	0.0623	0.0000	892.8239	892.8239	0.0171	0.0164	898.1295
Regional Shopping Center	26220	1.4000e-004	1.2900e-003	1.0800e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.3992	1.3992	3.0000e-005	3.0000e-005	1.4075
Total		**0.0904**	**0.8214**	**0.6900**	**4.9300e-003**		**0.0624**	**0.0624**		**0.0624**	**0.0624**	**0.0000**	**894.2231**	**894.2231**	**0.0171**	**0.0164**	**899.5370**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	179785	23.9754	2.3600e-003	4.9000e-004	24.1803
General Office Building	1.08019e+007	1,440.5051	0.1421	0.0294	1,452.8180
Regional Shopping Center	59736	7.9662	7.9000e-004	1.6000e-004	8.0343
Total		**1,472.4467**	**0.1452**	**0.0301**	**1,485.0326**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	179785	23.9754	2.3600e-003	4.9000e-004	24.1803
General Office Building	1.08019e+007	1,440.5051	0.1421	0.0294	1,452.8180
Regional Shopping Center	59736	7.9662	7.9000e-004	1.6000e-004	8.0343
Total		**1,472.4467**	**0.1452**	**0.0301**	**1,485.0326**

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	4.4160	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Unmitigated	4.4160	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172

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	1.0106					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.4046					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6000e-004	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Total	**4.4160**	**7.0000e-005**	**8.2700e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0161**	**0.0161**	**4.0000e-005**	**0.0000**	**0.0172**

6.2 Area by SubCategory

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	1.0106					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.4046					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6000e-004	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Total	**4.4160**	**7.0000e-005**	**8.2700e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0161**	**0.0161**	**4.0000e-005**	**0.0000**	**0.0172**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	176.8387	0.1634	0.0977	210.0289
Unmitigated	176.8387	0.1634	0.0977	210.0289

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	123.069 / 94.2864	176.3547	0.1630	0.0974	209.4540
Regional Shopping Center	0.337771 / 0.258776	0.4840	4.5000e-004	2.7000e-004	0.5749
Total		**176.8388**	**0.1634**	**0.0977**	**210.0289**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	123.069 / 94.2864	176.3547	0.1630	0.0974	209.4540
Regional Shopping Center	0.337771 / 0.258776	0.4840	4.5000e-004	2.7000e-004	0.5749
Total		**176.8388**	**0.1634**	**0.0977**	**210.0289**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	164.6135	9.7284	0.0000	407.8230
Unmitigated	164.6135	9.7284	0.0000	407.8230

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	804.95	163.3976	9.6565	0.0000	404.8106
Regional Shopping Center	5.99	1.2159	0.0719	0.0000	3.0124
Total		**164.6135**	**9.7284**	**0.0000**	**407.8230**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	804.95	163.3976	9.6565	0.0000	404.8106
Regional Shopping Center	5.99	1.2159	0.0719	0.0000	3.0124
Total		**164.6135**	**9.7284**	**0.0000**	**407.8230**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	2012	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0826	0.3691	0.2105	4.0000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.3082	38.3082	5.3700e-003	0.0000	38.4425
Total	**0.0826**	**0.3691**	**0.2105**	**4.0000e-004**		**0.0121**	**0.0121**		**0.0121**	**0.0121**	**0.0000**	**38.3082**	**38.3082**	**5.3700e-003**	**0.0000**	**38.4425**

11.0 Vegetation

Kaiser Center - Master Plan 2 - Simultaneous Construction

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	865.54	1000sqft	2.20	865,540.00	0
Enclosed Parking with Elevator	30.98	1000sqft	0.00	30,980.00	0
Enclosed Parking with Elevator	60.00	1000sqft	0.00	60,000.00	0
Apartments High Rise	580.00	Dwelling Unit	0.00	512,800.00	1170
Regional Shopping Center	5.70	1000sqft	0.00	5,700.00	0
Regional Shopping Center	13.15	1000sqft	0.00	13,150.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

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Project Characteristics - Based on PG&E's GHG emission factor for 2016
https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

Land Use - Proposed Land uses for Master Plan 2

Construction Phase - Schedule provided by applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Trips and VMT - Data from applicant (except hauling trips during demolition)

Demolition -

Grading - Data from applicant

Vehicle Trips - Adjusted based on project traffic data
Passby trips for retail uses already accounted for in trip rate

Woodstoves - No woodstoves
Default number of fireplaces - all gas fired

Energy Use -

Water And Wastewater - 20% reduction in indoor water use assumed in compliance with the City's CalGreencode
100% aerobic digestion assumed

Construction Off-road Equipment Mitigation - All Tier 4 equipment assumed as part of BACT for construction equipment

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps -

Architectural Coating - Defaults corrected per Appendix D

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	250.00	150.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00

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tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	15.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	43.00
tblConstructionPhase	NumDays	3.00	45.00
tblConstructionPhase	NumDays	6.00	44.00
tblConstructionPhase	NumDays	220.00	435.00
tblConstructionPhase	NumDays	10.00	175.00
tblConstructionPhase	NumDays	10.00	45.00
tblFireplaces	NumberGas	87.00	515.00
tblFireplaces	NumberNoFireplace	23.20	65.00
tblFireplaces	NumberWood	98.60	0.00
tblGrading	AcresOfGrading	88.00	2.20
tblGrading	AcresOfGrading	0.00	2.20
tblGrading	MaterialExported	0.00	37,000.00
tblGrading	MaterialImported	0.00	6,000.00
tblLandUse	LandUseSquareFeet	580,000.00	512,800.00
tblLandUse	LotAcreage	19.87	2.20
tblLandUse	LotAcreage	0.71	0.00
tblLandUse	LotAcreage	1.38	0.00
tblLandUse	LotAcreage	9.35	0.00
tblLandUse	LotAcreage	0.30	0.00

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tblLandUse	LotAcreage	0.13	0.00
tblLandUse	Population	1,659.00	1,170.00
tblOffRoadEquipment	HorsePower	63.00	120.00
tblOffRoadEquipment	HorsePower	78.00	150.00
tblOffRoadEquipment	HorsePower	81.00	20.00
tblOffRoadEquipment	HorsePower	85.00	385.00
tblOffRoadEquipment	HorsePower	16.00	325.00
tblOffRoadEquipment	HorsePower	158.00	385.00
tblOffRoadEquipment	HorsePower	84.00	50.00
tblOffRoadEquipment	HorsePower	203.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	16.00	325.00
tblOffRoadEquipment	HorsePower	84.00	50.00
tblOffRoadEquipment	HorsePower	203.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	97.00	250.00
tblOffRoadEquipment	HorsePower	16.00	325.00
tblOffRoadEquipment	HorsePower	402.00	330.00
tblOffRoadEquipment	HorsePower	203.00	120.00
tblOffRoadEquipment	HorsePower	367.00	350.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	221.00	225.00
tblOffRoadEquipment	HorsePower	158.00	385.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	97.00	150.00
tblOffRoadEquipment	HorsePower	46.00	35.00
tblOffRoadEquipment	HorsePower	16.00	225.00

tblOffRoadEquipment	HorsePower	172.00	44.00
tblOffRoadEquipment	HorsePower	132.00	175.00
tblOffRoadEquipment	HorsePower	80.00	40.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	46.00	35.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	1.80
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblTripsAndVMT	HaulingTripNumber	0.00	630.00
tblTripsAndVMT	HaulingTripNumber	5,375.00	792.00
tblTripsAndVMT	HaulingTripNumber	0.00	13,050.00
tblTripsAndVMT	HaulingTripNumber	0.00	630.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,450.00
tblTripsAndVMT	VendorTripNumber	0.00	18.00
tblTripsAndVMT	VendorTripNumber	0.00	18.00
tblTripsAndVMT	VendorTripNumber	0.00	14.00
tblTripsAndVMT	VendorTripNumber	222.00	24.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	16.00

tblTripsAndVMT	WorkerTripNumber	88.00	80.00
tblTripsAndVMT	WorkerTripNumber	33.00	70.00
tblTripsAndVMT	WorkerTripNumber	33.00	70.00
tblTripsAndVMT	WorkerTripNumber	739.00	420.00
tblTripsAndVMT	WorkerTripNumber	13.00	80.00
tblTripsAndVMT	WorkerTripNumber	148.00	160.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	ST_TR	4.98	2.71
tblVehicleTrips	ST_TR	2.46	1.18
tblVehicleTrips	ST_TR	49.97	19.70
tblVehicleTrips	SU_TR	3.65	1.99
tblVehicleTrips	SU_TR	1.05	0.50
tblVehicleTrips	SU_TR	25.24	9.95
tblVehicleTrips	WD_TR	4.20	2.29
tblVehicleTrips	WD_TR	11.03	5.28
tblVehicleTrips	WD_TR	42.70	16.83
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	37,789,334.86	30,231,467.89
tblWater	IndoorWaterUseRate	153,835,668.24	123,068,534.59

tblWater	IndoorWaterUseRate	1,396,267.03	1,117,013.62
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	11.60	0.00
tblWoodstoves	NumberNoncatalytic	11.60	0.00

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					
2020	0.6573	5.2663	4.4566	0.0123	0.5311	0.2169	0.7480	0.1246	0.2050	0.3296	0.0000	1,100.9184	1,100.9184	0.1546	0.0000	1,104.7825
2021	2.6882	3.6564	3.8924	0.0123	0.6004	0.1106	0.7110	0.1600	0.1073	0.2673	0.0000	1,097.9949	1,097.9949	0.0924	0.0000	1,100.3054
2022	6.3647	1.6448	1.7153	5.1400e-003	0.2875	0.0493	0.3369	0.0754	0.0479	0.1233	0.0000	455.5829	455.5829	0.0379	0.0000	456.5311
Maximum	**6.3647**	**5.2663**	**4.4566**	**0.0123**	**0.6004**	**0.2169**	**0.7480**	**0.1600**	**0.2050**	**0.3296**	**0.0000**	**1,100.9184**	**1,100.9184**	**0.1546**	**0.0000**	**1,104.7825**

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					
2020	0.2294	2.1757	4.7087	0.0123	0.5311	0.0159	0.5470	0.1246	0.0155	0.1401	0.0000	1,100.9177	1,100.9177	0.1546	0.0000	1,104.7818
2021	2.4003	2.6242	3.8925	0.0123	0.6004	0.0124	0.6128	0.1600	0.0119	0.1719	0.0000	1,097.9945	1,097.9945	0.0924	0.0000	1,100.3050
2022	6.2284	1.2035	1.6286	5.1400e-003	0.2875	5.0000e-003	0.2925	0.0754	4.8400e-003	0.0803	0.0000	455.5828	455.5828	0.0379	0.0000	456.5310
Maximum	**6.2284**	**2.6242**	**4.7087**	**0.0123**	**0.6004**	**0.0159**	**0.6128**	**0.1600**	**0.0155**	**0.1719**	**0.0000**	**1,100.9177**	**1,100.9177**	**0.1546**	**0.0000**	**1,104.7818**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**8.77**	**43.19**	**-1.64**	**0.00**	**0.00**	**91.18**	**19.13**	**0.00**	**91.03**	**45.53**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2020**	**3-31-2020**	1.9791	0.5953
2	**4-1-2020**	**6-30-2020**	1.8207	0.3974
3	**7-1-2020**	**9-30-2020**	1.0652	0.6973
4	**10-1-2020**	**12-31-2020**	1.0612	0.7110
5	**1-1-2021**	**3-31-2021**	0.9533	0.6568
6	**4-1-2021**	**6-30-2021**	0.9482	0.6484
7	**7-1-2021**	**9-30-2021**	0.9586	0.6555
8	**10-1-2021**	**12-31-2021**	3.4045	2.9889
9	**1-1-2022**	**3-31-2022**	4.1390	3.8201
10	**4-1-2022**	**6-30-2022**	3.8373	3.5804
11	**7-1-2022**	**9-30-2022**	0.0435	0.0401
		Highest	4.1390	3.8201

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	7.4298	0.1053	4.3401	5.8000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	71.3444	71.3444	8.0400e-003	1.1800e-003	71.8967
Energy	0.1180	1.0577	0.7918	6.4400e-003		0.0815	0.0815		0.0815	0.0815	0.0000	3,032.1704	3,032.1704	0.2063	0.0595	3,055.0463
Mobile	1.1708	5.1960	13.3836	0.0499	4.4724	0.0409	4.5133	1.2003	0.0382	1.2385	0.0000	4,588.2298	4,588.2298	0.1588	0.0000	4,592.1996
Stationary	0.1513	0.6766	0.3858	7.3000e-004		0.0223	0.0223		0.0223	0.0223	0.0000	70.2190	70.2190	9.8400e-003	0.0000	70.4651
Waste						0.0000	0.0000		0.0000	0.0000	221.5728	0.0000	221.5728	13.0946	0.0000	548.9371
Water						0.0000	0.0000		0.0000	0.0000	54.6330	166.9527	221.5857	0.2045	0.1222	263.1188
Total	**8.8699**	**7.0356**	**18.9013**	**0.0577**	**4.4724**	**0.1730**	**4.6454**	**1.2003**	**0.1703**	**1.3706**	**276.2057**	**7,928.9163**	**8,205.1220**	**13.6820**	**0.1829**	**8,601.6636**

2.2 Overall Operational

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	7.4298	0.1053	4.3401	5.8000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	71.3444	71.3444	8.0400e-003	1.1800e-003	71.8967
Energy	0.1180	1.0577	0.7918	6.4400e-003		0.0815	0.0815		0.0815	0.0815	0.0000	3,032.1704	3,032.1704	0.2063	0.0595	3,055.0463
Mobile	1.1708	5.1960	13.3836	0.0499	4.4724	0.0409	4.5133	1.2003	0.0382	1.2385	0.0000	4,588.2298	4,588.2298	0.1588	0.0000	4,592.1996
Stationary	0.1513	0.6766	0.3858	7.3000e-004		0.0223	0.0223		0.0223	0.0223	0.0000	70.2190	70.2190	9.8400e-003	0.0000	70.4651
Waste						0.0000	0.0000		0.0000	0.0000	221.5728	0.0000	221.5728	13.0946	0.0000	548.9371
Water						0.0000	0.0000		0.0000	0.0000	54.6330	166.9527	221.5857	0.2045	0.1222	263.1188
Total	**8.8699**	**7.0356**	**18.9013**	**0.0577**	**4.4724**	**0.1730**	**4.6454**	**1.2003**	**0.1703**	**1.3706**	**276.2057**	**7,928.9163**	**8,205.1220**	**13.6820**	**0.1829**	**8,601.6636**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**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

Construction Phase

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2020	3/1/2020	5	43	
2	Site Preparation	Site Preparation	3/1/2020	5/1/2020	5	45	
3	Grading	Grading	5/1/2020	7/1/2020	5	44	
4	Building Construction	Building Construction	7/1/2020	3/1/2022	5	435	
5	Architectural Coating	Architectural Coating	11/1/2021	7/1/2022	5	175	
6	Paving	Paving	5/1/2022	7/1/2022	5	45	

Acres of Grading (Site Preparation Phase): 2.2

Acres of Grading (Grading Phase): 2.2

Acres of Paving: 0

Residential Indoor: 1,038,420; Residential Outdoor: 346,140; Non-Residential Indoor: 1,326,585; Non-Residential Outdoor: 442,195; Striped Parking Area: 5,459 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Aerial Lifts	8	4.00	120	0.31
Demolition	Air Compressors	6	4.00	150	0.48
Demolition	Concrete/Industrial Saws	8	4.00	20	0.73
Demolition	Crushing/Proc. Equipment	1	6.00	385	0.78
Demolition	Dumpers/Tenders	4	8.00	325	0.38
Demolition	Excavators	2	6.00	385	0.38
Demolition	Generator Sets	2	8.00	50	0.74
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Rubber Tired Loaders	3	8.00	120	0.36
Demolition	Sweepers/Scrubbers	1	4.00	120	0.46

Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Dumpers/Tenders	4	8.00	325	0.38
Site Preparation	Generator Sets	2	8.00	50	0.74
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rubber Tired Loaders	4	8.00	120	0.36
Site Preparation	Scrapers	0	0.00	367	0.48
Site Preparation	Sweepers/Scrubbers	1	8.00	120	0.46
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	250	0.37
Grading	Dumpers/Tenders	4	8.00	325	0.38
Grading	Graders	0	0.00	187	0.41
Grading	Off-Highway Trucks	2	8.00	330	0.38
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Rubber Tired Loaders	4	8.00	120	0.36
Grading	Scrapers	2	8.00	350	0.48
Grading	Sweepers/Scrubbers	1	4.00	120	0.46
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Bore/Drill Rigs	2	0.70	225	0.50
Building Construction	Cranes	0	0.00	231	0.29
Building Construction	Excavators	2	1.10	385	0.38
Building Construction	Forklifts	0	0.00	89	0.20
Building Construction	Generator Sets	0	0.00	84	0.74
Building Construction	Sweepers/Scrubbers	1	4.00	120	0.46
Building Construction	Tractors/Loaders/Backhoes	3	1.80	150	0.37
Building Construction	Welders	8	8.00	35	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Dumpers/Tenders	1	8.00	225	0.38
Paving	Other Construction Equipment	1	4.00	44	0.42

Paving	Pavers	0	0.00	130	0.42
Paving	Paving Equipment	1	8.00	175	0.36
Paving	Rollers	1	8.00	40	0.38
Paving	Sweepers/Scrubbers	1	4.00	120	0.46
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Architectural Coating	Air Compressors	0	0.00	78	0.48
Architectural Coating	Sweepers/Scrubbers	1	2.20	120	0.46
Architectural Coating	Welders	7	8.00	35	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	35	80.00	18.00	1,274.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	13	70.00	18.00	630.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	13	70.00	14.00	792.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	16	420.00	24.00	13,050.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	80.00	10.00	630.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	8	160.00	16.00	2,450.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2020

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					0.1378	0.0000	0.1378	0.0209	0.0000	0.0209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1412	1.0869	1.0233	2.2400e-003		0.0537	0.0537		0.0515	0.0515	0.0000	197.0722	197.0722	0.0347	0.0000	197.9388
Total	**0.1412**	**1.0869**	**1.0233**	**2.2400e-003**	**0.1378**	**0.0537**	**0.1916**	**0.0209**	**0.0515**	**0.0723**	**0.0000**	**197.0722**	**197.0722**	**0.0347**	**0.0000**	**197.9388**

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	5.3200e-003	0.1862	0.0374	5.0000e-004	0.0108	6.0000e-004	0.0114	2.9600e-003	5.7000e-004	3.5300e-003	0.0000	48.8180	48.8180	2.5100e-003	0.0000	48.8808
Vendor	1.5000e-003	0.0447	0.0112	1.1000e-004	2.5400e-003	2.2000e-004	2.7600e-003	7.3000e-004	2.1000e-004	9.4000e-004	0.0000	10.1324	10.1324	5.2000e-004	0.0000	10.1455
Worker	5.7000e-003	4.0800e-003	0.0422	1.3000e-004	0.0136	9.0000e-005	0.0137	3.6200e-003	8.0000e-005	3.7000e-003	0.0000	11.9072	11.9072	2.9000e-004	0.0000	11.9144
Total	**0.0125**	**0.2350**	**0.0909**	**7.4000e-004**	**0.0269**	**9.1000e-004**	**0.0278**	**7.3100e-003**	**8.6000e-004**	**8.1700e-003**	**0.0000**	**70.8576**	**70.8576**	**3.3200e-003**	**0.0000**	**70.9407**

3.2 Demolition - 2020

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					0.1378	0.0000	0.1378	0.0209	0.0000	0.0209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0254	0.1722	1.2072	2.2400e-003		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	197.0720	197.0720	0.0347	0.0000	197.9385
Total	**0.0254**	**0.1722**	**1.2072**	**2.2400e-003**	**0.1378**	**3.1600e-003**	**0.1410**	**0.0209**	**3.1600e-003**	**0.0240**	**0.0000**	**197.0720**	**197.0720**	**0.0347**	**0.0000**	**197.9385**

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	5.3200e-003	0.1862	0.0374	5.0000e-004	0.0108	6.0000e-004	0.0114	2.9600e-003	5.7000e-004	3.5300e-003	0.0000	48.8180	48.8180	2.5100e-003	0.0000	48.8808
Vendor	1.5000e-003	0.0447	0.0112	1.1000e-004	2.5400e-003	2.2000e-004	2.7600e-003	7.3000e-004	2.1000e-004	9.4000e-004	0.0000	10.1324	10.1324	5.2000e-004	0.0000	10.1455
Worker	5.7000e-003	4.0800e-003	0.0422	1.3000e-004	0.0136	9.0000e-005	0.0137	3.6200e-003	8.0000e-005	3.7000e-003	0.0000	11.9072	11.9072	2.9000e-004	0.0000	11.9144
Total	**0.0125**	**0.2350**	**0.0909**	**7.4000e-004**	**0.0269**	**9.1000e-004**	**0.0278**	**7.3100e-003**	**8.6000e-004**	**8.1700e-003**	**0.0000**	**70.8576**	**70.8576**	**3.3200e-003**	**0.0000**	**70.9407**

3.3 Site Preparation - 2020

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					1.1700e-003	0.0000	1.1700e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0863	0.7402	0.5597	1.0000e-003		0.0453	0.0453		0.0422	0.0422	0.0000	84.8650	84.8650	0.0242	0.0000	85.4701
Total	**0.0863**	**0.7402**	**0.5597**	**1.0000e-003**	**1.1700e-003**	**0.0453**	**0.0465**	**1.3000e-004**	**0.0422**	**0.0423**	**0.0000**	**84.8650**	**84.8650**	**0.0242**	**0.0000**	**85.4701**

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	2.6300e-003	0.0921	0.0185	2.5000e-004	5.3200e-003	3.0000e-004	5.6200e-003	1.4600e-003	2.8000e-004	1.7500e-003	0.0000	24.1408	24.1408	1.2400e-003	0.0000	24.1718
Vendor	1.5700e-003	0.0467	0.0118	1.1000e-004	2.6600e-003	2.3000e-004	2.8800e-003	7.7000e-004	2.2000e-004	9.9000e-004	0.0000	10.6037	10.6037	5.5000e-004	0.0000	10.6174
Worker	5.2200e-003	3.7400e-003	0.0387	1.2000e-004	0.0125	8.0000e-005	0.0125	3.3100e-003	8.0000e-005	3.3900e-003	0.0000	10.9034	10.9034	2.6000e-004	0.0000	10.9100
Total	**9.4200e-003**	**0.1426**	**0.0689**	**4.8000e-004**	**0.0204**	**6.1000e-004**	**0.0210**	**5.5400e-003**	**5.8000e-004**	**6.1300e-003**	**0.0000**	**45.6479**	**45.6479**	**2.0500e-003**	**0.0000**	**45.6992**

3.3 Site Preparation - 2020

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					1.1700e-003	0.0000	1.1700e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0134	0.1231	0.6049	1.0000e-003		1.5500e-003	1.5500e-003		1.5500e-003	1.5500e-003	0.0000	84.8649	84.8649	0.0242	0.0000	85.4700
Total	**0.0134**	**0.1231**	**0.6049**	**1.0000e-003**	**1.1700e-003**	**1.5500e-003**	**2.7200e-003**	**1.3000e-004**	**1.5500e-003**	**1.6800e-003**	**0.0000**	**84.8649**	**84.8649**	**0.0242**	**0.0000**	**85.4700**

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	2.6300e-003	0.0921	0.0185	2.5000e-004	5.3200e-003	3.0000e-004	5.6200e-003	1.4600e-003	2.8000e-004	1.7500e-003	0.0000	24.1408	24.1408	1.2400e-003	0.0000	24.1718
Vendor	1.5700e-003	0.0467	0.0118	1.1000e-004	2.6600e-003	2.3000e-004	2.8800e-003	7.7000e-004	2.2000e-004	9.9000e-004	0.0000	10.6037	10.6037	5.5000e-004	0.0000	10.6174
Worker	5.2200e-003	3.7400e-003	0.0387	1.2000e-004	0.0125	8.0000e-005	0.0125	3.3100e-003	8.0000e-005	3.3900e-003	0.0000	10.9034	10.9034	2.6000e-004	0.0000	10.9100
Total	**9.4200e-003**	**0.1426**	**0.0689**	**4.8000e-004**	**0.0204**	**6.1000e-004**	**0.0210**	**5.5400e-003**	**5.8000e-004**	**6.1300e-003**	**0.0000**	**45.6479**	**45.6479**	**2.0500e-003**	**0.0000**	**45.6992**

3.4 Grading - 2020

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					3.6000e-003	0.0000	3.6000e-003	4.9000e-004	0.0000	4.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1084	1.0837	0.7563	1.4900e-003		0.0560	0.0560		0.0515	0.0515	0.0000	130.6727	130.6727	0.0423	0.0000	131.7292
Total	**0.1084**	**1.0837**	**0.7563**	**1.4900e-003**	**3.6000e-003**	**0.0560**	**0.0596**	**4.9000e-004**	**0.0515**	**0.0520**	**0.0000**	**130.6727**	**130.6727**	**0.0423**	**0.0000**	**131.7292**

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	3.3100e-003	0.1158	0.0233	3.1000e-004	6.6900e-003	3.7000e-004	7.0600e-003	1.8400e-003	3.6000e-004	2.2000e-003	0.0000	30.3484	30.3484	1.5600e-003	0.0000	30.3874
Vendor	1.1900e-003	0.0355	8.9300e-003	8.0000e-005	2.0200e-003	1.7000e-004	2.1900e-003	5.8000e-004	1.7000e-004	7.5000e-004	0.0000	8.0640	8.0640	4.2000e-004	0.0000	8.0744
Worker	5.1000e-003	3.6500e-003	0.0378	1.2000e-004	0.0122	8.0000e-005	0.0123	3.2400e-003	8.0000e-005	3.3100e-003	0.0000	10.6611	10.6611	2.6000e-004	0.0000	10.6676
Total	**9.6000e-003**	**0.1550**	**0.0700**	**5.1000e-004**	**0.0209**	**6.2000e-004**	**0.0215**	**5.6600e-003**	**6.1000e-004**	**6.2600e-003**	**0.0000**	**49.0735**	**49.0735**	**2.2400e-003**	**0.0000**	**49.1295**

3.4 Grading - 2020

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					3.6000e-003	0.0000	3.6000e-003	4.9000e-004	0.0000	4.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0183	0.0794	0.7886	1.4900e-003		2.4400e-003	2.4400e-003		2.4400e-003	2.4400e-003	0.0000	130.6725	130.6725	0.0423	0.0000	131.7291
Total	**0.0183**	**0.0794**	**0.7886**	**1.4900e-003**	**3.6000e-003**	**2.4400e-003**	**6.0400e-003**	**4.9000e-004**	**2.4400e-003**	**2.9300e-003**	**0.0000**	**130.6725**	**130.6725**	**0.0423**	**0.0000**	**131.7291**

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	3.3100e-003	0.1158	0.0233	3.1000e-004	6.6900e-003	3.7000e-004	7.0600e-003	1.8400e-003	3.6000e-004	2.2000e-003	0.0000	30.3484	30.3484	1.5600e-003	0.0000	30.3874
Vendor	1.1900e-003	0.0355	8.9300e-003	8.0000e-005	2.0200e-003	1.7000e-004	2.1900e-003	5.8000e-004	1.7000e-004	7.5000e-004	0.0000	8.0640	8.0640	4.2000e-004	0.0000	8.0744
Worker	5.1000e-003	3.6500e-003	0.0378	1.2000e-004	0.0122	8.0000e-005	0.0123	3.2400e-003	8.0000e-005	3.3100e-003	0.0000	10.6611	10.6611	2.6000e-004	0.0000	10.6676
Total	**9.6000e-003**	**0.1550**	**0.0700**	**5.1000e-004**	**0.0209**	**6.2000e-004**	**0.0215**	**5.6600e-003**	**6.1000e-004**	**6.2600e-003**	**0.0000**	**49.0735**	**49.0735**	**2.2400e-003**	**0.0000**	**49.1295**

3.5 Building Construction - 2020

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	0.1753	0.9956	1.0443	1.7300e-003		0.0554	0.0554		0.0538	0.0538	0.0000	137.6152	137.6152	0.0312	0.0000	138.3959
Total	**0.1753**	**0.9956**	**1.0443**	**1.7300e-003**		**0.0554**	**0.0554**		**0.0538**	**0.0538**	**0.0000**	**137.6152**	**137.6152**	**0.0312**	**0.0000**	**138.3959**

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	0.0165	0.5789	0.1163	1.5600e-003	0.0909	1.8700e-003	0.0928	0.0233	1.7900e-003	0.0251	0.0000	151.7419	151.7419	7.8100e-003	0.0000	151.9372
Vendor	6.1300e-003	0.1828	0.0460	4.3000e-004	0.0104	8.9000e-004	0.0113	3.0000e-003	8.5000e-004	3.8600e-003	0.0000	41.4722	41.4722	2.1400e-003	0.0000	41.5257
Worker	0.0919	0.0657	0.6808	2.1200e-003	0.2190	1.4700e-003	0.2205	0.0583	1.3600e-003	0.0596	0.0000	191.9002	191.9002	4.6400e-003	0.0000	192.0163
Total	**0.1145**	**0.8274**	**0.8431**	**4.1100e-003**	**0.3203**	**4.2300e-003**	**0.3246**	**0.0846**	**4.0000e-003**	**0.0886**	**0.0000**	**385.1143**	**385.1143**	**0.0146**	**0.0000**	**385.4792**

3.5 Building Construction - 2020

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	0.0263	0.4412	1.0350	1.7300e-003		2.3400e-003	2.3400e-003		2.3400e-003	2.3400e-003	0.0000	137.6151	137.6151	0.0312	0.0000	138.3958
Total	**0.0263**	**0.4412**	**1.0350**	**1.7300e-003**		**2.3400e-003**	**2.3400e-003**		**2.3400e-003**	**2.3400e-003**	**0.0000**	**137.6151**	**137.6151**	**0.0312**	**0.0000**	**138.3958**

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	0.0165	0.5789	0.1163	1.5600e-003	0.0909	1.8700e-003	0.0928	0.0233	1.7900e-003	0.0251	0.0000	151.7419	151.7419	7.8100e-003	0.0000	151.9372
Vendor	6.1300e-003	0.1828	0.0460	4.3000e-004	0.0104	8.9000e-004	0.0113	3.0000e-003	8.5000e-004	3.8600e-003	0.0000	41.4722	41.4722	2.1400e-003	0.0000	41.5257
Worker	0.0919	0.0657	0.6808	2.1200e-003	0.2190	1.4700e-003	0.2205	0.0583	1.3600e-003	0.0596	0.0000	191.9002	191.9002	4.6400e-003	0.0000	192.0163
Total	**0.1145**	**0.8274**	**0.8431**	**4.1100e-003**	**0.3203**	**4.2300e-003**	**0.3246**	**0.0846**	**4.0000e-003**	**0.0886**	**0.0000**	**385.1143**	**385.1143**	**0.0146**	**0.0000**	**385.4792**

3.5 Building Construction - 2021

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	0.3067	1.8217	2.0195	3.4300e-003		0.0926	0.0926		0.0899	0.0899	0.0000	272.0945	272.0945	0.0591	0.0000	273.5723
Total	**0.3067**	**1.8217**	**2.0195**	**3.4300e-003**		**0.0926**	**0.0926**		**0.0899**	**0.0899**	**0.0000**	**272.0945**	**272.0945**	**0.0591**	**0.0000**	**273.5723**

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	0.0308	1.0566	0.2251	3.0500e-003	0.0991	3.2700e-003	0.1024	0.0263	3.1300e-003	0.0294	0.0000	296.1867	296.1867	0.0151	0.0000	296.5645
Vendor	9.9400e-003	0.3271	0.0817	8.5000e-004	0.0205	7.1000e-004	0.0213	5.9400e-003	6.8000e-004	6.6200e-003	0.0000	81.2265	81.2265	3.9900e-003	0.0000	81.3264
Worker	0.1682	0.1161	1.2293	4.0500e-003	0.4331	2.8300e-003	0.4359	0.1152	2.6100e-003	0.1178	0.0000	366.1253	366.1253	8.2100e-003	0.0000	366.3306
Total	**0.2090**	**1.4998**	**1.5361**	**7.9500e-003**	**0.5528**	**6.8100e-003**	**0.5596**	**0.1475**	**6.4200e-003**	**0.1539**	**0.0000**	**743.5385**	**743.5385**	**0.0273**	**0.0000**	**744.2214**

3.5 Building Construction - 2021

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	0.0521	0.8723	2.0465	3.4300e-003		4.6200e-003	4.6200e-003		4.6200e-003	4.6200e-003	0.0000	272.0942	272.0942	0.0591	0.0000	273.5720
Total	**0.0521**	**0.8723**	**2.0465**	**3.4300e-003**		**4.6200e-003**	**4.6200e-003**		**4.6200e-003**	**4.6200e-003**	**0.0000**	**272.0942**	**272.0942**	**0.0591**	**0.0000**	**273.5720**

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	0.0308	1.0566	0.2251	3.0500e-003	0.0991	3.2700e-003	0.1024	0.0263	3.1300e-003	0.0294	0.0000	296.1867	296.1867	0.0151	0.0000	296.5645
Vendor	9.9400e-003	0.3271	0.0817	8.5000e-004	0.0205	7.1000e-004	0.0213	5.9400e-003	6.8000e-004	6.6200e-003	0.0000	81.2265	81.2265	3.9900e-003	0.0000	81.3264
Worker	0.1682	0.1161	1.2293	4.0500e-003	0.4331	2.8300e-003	0.4359	0.1152	2.6100e-003	0.1178	0.0000	366.1253	366.1253	8.2100e-003	0.0000	366.3306
Total	**0.2090**	**1.4998**	**1.5361**	**7.9500e-003**	**0.5528**	**6.8100e-003**	**0.5596**	**0.1475**	**6.4200e-003**	**0.1539**	**0.0000**	**743.5385**	**743.5385**	**0.0273**	**0.0000**	**744.2214**

3.5 Building Construction - 2022

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	0.0447	0.2708	0.3207	5.5000e-004		0.0126	0.0126		0.0122	0.0122	0.0000	43.7951	43.7951	9.2600e-003	0.0000	44.0267
Total	**0.0447**	**0.2708**	**0.3207**	**5.5000e-004**		**0.0126**	**0.0126**		**0.0122**	**0.0122**	**0.0000**	**43.7951**	**43.7951**	**9.2600e-003**	**0.0000**	**44.0267**

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	4.6800e-003	0.1563	0.0356	4.8000e-004	0.0852	4.5000e-004	0.0856	0.0212	4.3000e-004	0.0217	0.0000	47.0131	47.0131	2.3800e-003	0.0000	47.0725
Vendor	1.4900e-003	0.0499	0.0124	1.3000e-004	3.3100e-003	1.0000e-004	3.4000e-003	9.6000e-004	9.0000e-005	1.0500e-003	0.0000	12.9428	12.9428	6.1000e-004	0.0000	12.9581
Worker	0.0252	0.0167	0.1818	6.3000e-004	0.0697	4.5000e-004	0.0701	0.0185	4.1000e-004	0.0190	0.0000	56.7568	56.7568	1.1800e-003	0.0000	56.7864
Total	**0.0314**	**0.2229**	**0.2297**	**1.2400e-003**	**0.1582**	**1.0000e-003**	**0.1592**	**0.0407**	**9.3000e-004**	**0.0417**	**0.0000**	**116.7126**	**116.7126**	**4.1700e-003**	**0.0000**	**116.8170**

3.5 Building Construction - 2022

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	8.3800e-003	0.1404	0.3293	5.5000e-004		7.4000e-004	7.4000e-004		7.4000e-004	7.4000e-004	0.0000	43.7951	43.7951	9.2600e-003	0.0000	44.0266
Total	**8.3800e-003**	**0.1404**	**0.3293**	**5.5000e-004**		**7.4000e-004**	**7.4000e-004**		**7.4000e-004**	**7.4000e-004**	**0.0000**	**43.7951**	**43.7951**	**9.2600e-003**	**0.0000**	**44.0266**

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	4.6800e-003	0.1563	0.0356	4.8000e-004	0.0852	4.5000e-004	0.0856	0.0212	4.3000e-004	0.0217	0.0000	47.0131	47.0131	2.3800e-003	0.0000	47.0725
Vendor	1.4900e-003	0.0499	0.0124	1.3000e-004	3.3100e-003	1.0000e-004	3.4000e-003	9.6000e-004	9.0000e-005	1.0500e-003	0.0000	12.9428	12.9428	6.1000e-004	0.0000	12.9581
Worker	0.0252	0.0167	0.1818	6.3000e-004	0.0697	4.5000e-004	0.0701	0.0185	4.1000e-004	0.0190	0.0000	56.7568	56.7568	1.1800e-003	0.0000	56.7864
Total	**0.0314**	**0.2229**	**0.2297**	**1.2400e-003**	**0.1582**	**1.0000e-003**	**0.1592**	**0.0407**	**9.3000e-004**	**0.0417**	**0.0000**	**116.7126**	**116.7126**	**4.1700e-003**	**0.0000**	**116.8170**

3.6 Architectural Coating - 2021

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	2.1189					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.2047	0.2286	3.4000e-004		0.0106	0.0106		0.0105	0.0105	0.0000	25.1467	25.1467	3.7800e-003	0.0000	25.2411
Total	**2.1579**	**0.2047**	**0.2286**	**3.4000e-004**		**0.0106**	**0.0106**		**0.0105**	**0.0105**	**0.0000**	**25.1467**	**25.1467**	**3.7800e-003**	**0.0000**	**25.2411**

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	2.4800e-003	0.0850	0.0181	2.5000e-004	0.0168	2.6000e-004	0.0171	4.2900e-003	2.5000e-004	4.5400e-003	0.0000	23.8311	23.8311	1.2200e-003	0.0000	23.8615
Vendor	1.1400e-003	0.0376	9.3900e-003	1.0000e-004	2.3600e-003	8.0000e-005	2.4400e-003	6.8000e-004	8.0000e-005	7.6000e-004	0.0000	9.3364	9.3364	4.6000e-004	0.0000	9.3479
Worker	0.0111	7.6200e-003	0.0807	2.7000e-004	0.0285	1.9000e-004	0.0286	7.5700e-003	1.7000e-004	7.7400e-003	0.0000	24.0476	24.0476	5.4000e-004	0.0000	24.0611
Total	**0.0147**	**0.1302**	**0.1082**	**6.2000e-004**	**0.0476**	**5.3000e-004**	**0.0482**	**0.0125**	**5.0000e-004**	**0.0130**	**0.0000**	**57.2151**	**57.2151**	**2.2200e-003**	**0.0000**	**57.2705**

3.6 Architectural Coating - 2021

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	2.1189					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6100e-003	0.1219	0.2017	3.4000e-004		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	25.1467	25.1467	3.7800e-003	0.0000	25.2411
Total	**2.1246**	**0.1219**	**0.2017**	**3.4000e-004**		**4.0000e-004**	**4.0000e-004**		**4.0000e-004**	**4.0000e-004**	**0.0000**	**25.1467**	**25.1467**	**3.7800e-003**	**0.0000**	**25.2411**

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	2.4800e-003	0.0850	0.0181	2.5000e-004	0.0168	2.6000e-004	0.0171	4.2900e-003	2.5000e-004	4.5400e-003	0.0000	23.8311	23.8311	1.2200e-003	0.0000	23.8615
Vendor	1.1400e-003	0.0376	9.3900e-003	1.0000e-004	2.3600e-003	8.0000e-005	2.4400e-003	6.8000e-004	8.0000e-005	7.6000e-004	0.0000	9.3364	9.3364	4.6000e-004	0.0000	9.3479
Worker	0.0111	7.6200e-003	0.0807	2.7000e-004	0.0285	1.9000e-004	0.0286	7.5700e-003	1.7000e-004	7.7400e-003	0.0000	24.0476	24.0476	5.4000e-004	0.0000	24.0611
Total	**0.0147**	**0.1302**	**0.1082**	**6.2000e-004**	**0.0476**	**5.3000e-004**	**0.0482**	**0.0125**	**5.0000e-004**	**0.0130**	**0.0000**	**57.2151**	**57.2151**	**2.2200e-003**	**0.0000**	**57.2705**

3.6 Architectural Coating - 2022

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	6.1214					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1023	0.5669	0.6513	9.7000e-004		0.0262	0.0262		0.0258	0.0258	0.0000	72.6461	72.6461	0.0102	0.0000	72.9016
Total	**6.2237**	**0.5669**	**0.6513**	**9.7000e-004**		**0.0262**	**0.0262**		**0.0258**	**0.0258**	**0.0000**	**72.6461**	**72.6461**	**0.0102**	**0.0000**	**72.9016**

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	6.7600e-003	0.2257	0.0514	7.0000e-004	0.0194	6.5000e-004	0.0200	5.2100e-003	6.2000e-004	5.8300e-003	0.0000	67.9078	67.9078	3.4300e-003	0.0000	67.9936
Vendor	3.0800e-003	0.1029	0.0255	2.8000e-004	6.8200e-003	2.0000e-004	7.0300e-003	1.9700e-003	2.0000e-004	2.1700e-003	0.0000	26.7073	26.7073	1.2700e-003	0.0000	26.7390
Worker	0.0298	0.0197	0.2144	7.4000e-004	0.0822	5.3000e-004	0.0827	0.0219	4.8000e-004	0.0224	0.0000	66.9241	66.9241	1.4000e-003	0.0000	66.9590
Total	**0.0396**	**0.3483**	**0.2912**	**1.7200e-003**	**0.1084**	**1.3800e-003**	**0.1097**	**0.0290**	**1.3000e-003**	**0.0304**	**0.0000**	**161.5392**	**161.5392**	**6.1000e-003**	**0.0000**	**161.6916**

3.6 Architectural Coating - 2022

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	6.1214					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0162	0.3521	0.5826	9.7000e-004		1.1500e-003	1.1500e-003		1.1500e-003	1.1500e-003	0.0000	72.6460	72.6460	0.0102	0.0000	72.9015
Total	**6.1376**	**0.3521**	**0.5826**	**9.7000e-004**		**1.1500e-003**	**1.1500e-003**		**1.1500e-003**	**1.1500e-003**	**0.0000**	**72.6460**	**72.6460**	**0.0102**	**0.0000**	**72.9015**

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	6.7600e-003	0.2257	0.0514	7.0000e-004	0.0194	6.5000e-004	0.0200	5.2100e-003	6.2000e-004	5.8300e-003	0.0000	67.9078	67.9078	3.4300e-003	0.0000	67.9936
Vendor	3.0800e-003	0.1029	0.0255	2.8000e-004	6.8200e-003	2.0000e-004	7.0300e-003	1.9700e-003	2.0000e-004	2.1700e-003	0.0000	26.7073	26.7073	1.2700e-003	0.0000	26.7390
Worker	0.0298	0.0197	0.2144	7.4000e-004	0.0822	5.3000e-004	0.0827	0.0219	4.8000e-004	0.0224	0.0000	66.9241	66.9241	1.4000e-003	0.0000	66.9590
Total	**0.0396**	**0.3483**	**0.2912**	**1.7200e-003**	**0.1084**	**1.3800e-003**	**0.1097**	**0.0290**	**1.3000e-003**	**0.0304**	**0.0000**	**161.5392**	**161.5392**	**6.1000e-003**	**0.0000**	**161.6916**

3.7 Paving - 2022

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	0.0172	0.1322	0.1619	2.3000e-004		7.8500e-003	7.8500e-003		7.2300e-003	7.2300e-003	0.0000	20.0223	20.0223	6.4800e-003	0.0000	20.1842
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0172**	**0.1322**	**0.1619**	**2.3000e-004**		**7.8500e-003**	**7.8500e-003**		**7.2300e-003**	**7.2300e-003**	**0.0000**	**20.0223**	**20.0223**	**6.4800e-003**	**0.0000**	**20.1842**

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	2.3400e-003	0.0781	0.0178	2.4000e-004	5.3200e-003	2.3000e-004	5.5500e-003	1.4600e-003	2.2000e-004	1.6800e-003	0.0000	23.5066	23.5066	1.1900e-003	0.0000	23.5362
Vendor	6.7000e-004	0.0223	5.5200e-003	6.0000e-005	1.4800e-003	4.0000e-005	1.5200e-003	4.3000e-004	4.0000e-005	4.7000e-004	0.0000	5.7780	5.7780	2.7000e-004	0.0000	5.7849
Worker	5.1500e-003	3.4200e-003	0.0371	1.3000e-004	0.0142	9.0000e-005	0.0143	3.7800e-003	8.0000e-005	3.8700e-003	0.0000	11.5830	11.5830	2.4000e-004	0.0000	11.5891
Total	**8.1600e-003**	**0.1038**	**0.0604**	**4.3000e-004**	**0.0210**	**3.6000e-004**	**0.0214**	**5.6700e-003**	**3.4000e-004**	**6.0200e-003**	**0.0000**	**40.8676**	**40.8676**	**1.7000e-003**	**0.0000**	**40.9102**

3.7 Paving - 2022

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	3.3200e-003	0.0360	0.1353	2.3000e-004		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	20.0223	20.0223	6.4800e-003	0.0000	20.1842
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.3200e-003**	**0.0360**	**0.1353**	**2.3000e-004**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**	**0.0000**	**20.0223**	**20.0223**	**6.4800e-003**	**0.0000**	**20.1842**

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	2.3400e-003	0.0781	0.0178	2.4000e-004	5.3200e-003	2.3000e-004	5.5500e-003	1.4600e-003	2.2000e-004	1.6800e-003	0.0000	23.5066	23.5066	1.1900e-003	0.0000	23.5362
Vendor	6.7000e-004	0.0223	5.5200e-003	6.0000e-005	1.4800e-003	4.0000e-005	1.5200e-003	4.3000e-004	4.0000e-005	4.7000e-004	0.0000	5.7780	5.7780	2.7000e-004	0.0000	5.7849
Worker	5.1500e-003	3.4200e-003	0.0371	1.3000e-004	0.0142	9.0000e-005	0.0143	3.7800e-003	8.0000e-005	3.8700e-003	0.0000	11.5830	11.5830	2.4000e-004	0.0000	11.5891
Total	**8.1600e-003**	**0.1038**	**0.0604**	**4.3000e-004**	**0.0210**	**3.6000e-004**	**0.0214**	**5.6700e-003**	**3.4000e-004**	**6.0200e-003**	**0.0000**	**40.8676**	**40.8676**	**1.7000e-003**	**0.0000**	**40.9102**

4.0 Operational Detail - Mobile

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	1.1708	5.1960	13.3836	0.0499	4.4724	0.0409	4.5133	1.2003	0.0382	1.2385	0.0000	4,588.2298	4,588.2298	0.1588	0.0000	4,592.1996
Unmitigated	1.1708	5.1960	13.3836	0.0499	4.4724	0.0409	4.5133	1.2003	0.0382	1.2385	0.0000	4,588.2298	4,588.2298	0.1588	0.0000	4,592.1996

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments High Rise	1,328.20	1,571.80	1154.20	3,090,585	3,090,585
Enclosed Parking with Elevator	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	4,570.05	1,021.34	432.77	8,297,346	8,297,346
Regional Shopping Center	95.93	112.29	56.72	190,516	190,516
Regional Shopping Center	221.31	259.06	130.84	439,524	439,524
Total	6,215.50	2,964.48	1,774.53	12,017,971	12,017,971

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
Apartments High Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments High Rise	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Enclosed Parking with Elevator	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
General Office Building	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Regional Shopping Center	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kaiser Center - Master Plan 2 - Simultaneous Construction - San Francisco Bay Area Air Basin, Annual

	ROG	NOx	CO	SO2	Fugitive 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						0.0000	0.0000		0.0000	0.0000	0.0000	1,864.5037	1,864.5037	0.1839	0.0381	1,880.4407
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,864.5037	1,864.5037	0.1839	0.0381	1,880.4407
NaturalGas Mitigated	0.1180	1.0577	0.7918	6.4400e-003		0.0815	0.0815		0.0815	0.0815	0.0000	1,167.6667	1,167.6667	0.0224	0.0214	1,174.6056
NaturalGas Unmitigated	0.1180	1.0577	0.7918	6.4400e-003		0.0815	0.0815		0.0815	0.0815	0.0000	1,167.6667	1,167.6667	0.0224	0.0214	1,174.6056

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/yr	tons/yr										MT/yr					
Apartments High Rise	5.06365e+006	0.0273	0.2333	0.0993	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	270.2156	270.2156	5.1800e-003	4.9500e-003	271.8214
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	1.67309e+007	0.0902	0.8201	0.6889	4.9200e-003		0.0623	0.0623		0.0623	0.0623	0.0000	892.8239	892.8239	0.0171	0.0164	898.1295
Regional Shopping Center	26220	1.4000e-004	1.2900e-003	1.0800e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.3992	1.3992	3.0000e-005	3.0000e-005	1.4075
Regional Shopping Center	60490	3.3000e-004	2.9700e-003	2.4900e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.2280	3.2280	6.0000e-005	6.0000e-005	3.2472
Total		**0.1180**	**1.0577**	**0.7918**	**6.4400e-003**		**0.0815**	**0.0815**		**0.0815**	**0.0815**	**0.0000**	**1,167.6667**	**1,167.6667**	**0.0224**	**0.0214**	**1,174.6056**

5.2 Energy by Land Use - NaturalGas

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/yr	tons/yr										MT/yr					
Apartments High Rise	5.06365e+006	0.0273	0.2333	0.0993	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	270.2156	270.2156	5.1800e-003	4.9500e-003	271.8214
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	1.67309e+007	0.0902	0.8201	0.6889	4.9200e-003		0.0623	0.0623		0.0623	0.0623	0.0000	892.8239	892.8239	0.0171	0.0164	898.1295
Regional Shopping Center	26220	1.4000e-004	1.2900e-003	1.0800e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.3992	1.3992	3.0000e-005	3.0000e-005	1.4075
Regional Shopping Center	60490	3.3000e-004	2.9700e-003	2.4900e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.2280	3.2280	6.0000e-005	6.0000e-005	3.2472
Total		**0.1180**	**1.0577**	**0.7918**	**6.4400e-003**		**0.0815**	**0.0815**		**0.0815**	**0.0815**	**0.0000**	**1,167.6667**	**1,167.6667**	**0.0224**	**0.0214**	**1,174.6056**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	2.44875e+006	326.5565	0.0322	6.6600e-003	329.3477
Enclosed Parking with Elevator	181543	24.2099	2.3900e-003	4.9000e-004	24.4168
Enclosed Parking with Elevator	351600	46.8880	4.6300e-003	9.6000e-004	47.2888
General Office Building	1.08019e+007	1,440.5051	0.1421	0.0294	1,452.8180
Regional Shopping Center	137812	18.3781	1.8100e-003	3.8000e-004	18.5352
Regional Shopping Center	59736	7.9662	7.9000e-004	1.6000e-004	8.0343
Total		**1,864.5037**	**0.1839**	**0.0381**	**1,880.4408**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	2.44875e+006	326.5565	0.0322	6.6600e-003	329.3477
Enclosed Parking with Elevator	181543	24.2099	2.3900e-003	4.9000e-004	24.4168
Enclosed Parking with Elevator	351600	46.8880	4.6300e-003	9.6000e-004	47.2888
General Office Building	1.08019e+007	1,440.5051	0.1421	0.0294	1,452.8180
Regional Shopping Center	137812	18.3781	1.8100e-003	3.8000e-004	18.5352
Regional Shopping Center	59736	7.9662	7.9000e-004	1.6000e-004	8.0343
Total		**1,864.5037**	**0.1839**	**0.0381**	**1,880.4408**

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	7.4298	0.1053	4.3401	5.8000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	71.3444	71.3444	8.0400e-003	1.1800e-003	71.8967
Unmitigated	7.4298	0.1053	4.3401	5.8000e-004		0.0284	0.0284		0.0284	0.0284	0.0000	71.3444	71.3444	8.0400e-003	1.1800e-003	71.8967

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	1.8301					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.4626					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.5000e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003	0.0000	64.2922	64.2922	1.2300e-003	1.1800e-003	64.6743
Landscaping	0.1306	0.0497	4.3165	2.3000e-004		0.0239	0.0239		0.0239	0.0239	0.0000	7.0521	7.0521	6.8100e-003	0.0000	7.2224
Total	**7.4298**	**0.1053**	**4.3401**	**5.8000e-004**		**0.0284**	**0.0284**		**0.0284**	**0.0284**	**0.0000**	**71.3444**	**71.3444**	**8.0400e-003**	**1.1800e-003**	**71.8967**

6.2 Area by SubCategory

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	1.8301					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.4626					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.5000e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003	0.0000	64.2922	64.2922	1.2300e-003	1.1800e-003	64.6743
Landscaping	0.1306	0.0497	4.3165	2.3000e-004		0.0239	0.0239		0.0239	0.0239	0.0000	7.0521	7.0521	6.8100e-003	0.0000	7.2224
Total	**7.4298**	**0.1053**	**4.3401**	**5.8000e-004**		**0.0284**	**0.0284**		**0.0284**	**0.0284**	**0.0000**	**71.3444**	**71.3444**	**8.0400e-003**	**1.1800e-003**	**71.8967**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	221.5857	0.2045	0.1222	263.1188
Unmitigated	221.5857	0.2045	0.1222	263.1188

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	30.2315 / 23.8237	43.6303	0.0401	0.0239	51.7637
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	123.069 / 94.2864	176.3547	0.1630	0.0974	209.4540
Regional Shopping Center	1.11701 / 0.855777	1.6007	1.4800e-003	8.8000e-004	1.9011
Total		**221.5857**	**0.2045**	**0.1222**	**263.1188**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	30.2315 / 23.8237	43.6303	0.0401	0.0239	51.7637
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	123.069 / 94.2864	176.3547	0.1630	0.0974	209.4540
Regional Shopping Center	1.11701 / 0.855777	1.6007	1.4800e-003	8.8000e-004	1.9011
Total		**221.5857**	**0.2045**	**0.1222**	**263.1188**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	221.5728	13.0946	0.0000	548.9371
Unmitigated	221.5728	13.0946	0.0000	548.9371

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	266.8	54.1580	3.2007	0.0000	134.1741
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	804.95	163.3976	9.6565	0.0000	404.8106
Regional Shopping Center	19.79	4.0172	0.2374	0.0000	9.9524
Total		**221.5728**	**13.0946**	**0.0000**	**548.9371**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	266.8	54.1580	3.2007	0.0000	134.1741
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	804.95	163.3976	9.6565	0.0000	404.8106
Regional Shopping Center	19.79	4.0172	0.2374	0.0000	9.9524
Total		**221.5728**	**13.0946**	**0.0000**	**548.9371**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	2012	0.73	Diesel
Emergency Generator	1	1	50	1676	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.1513	0.6766	0.3858	7.3000e-004		0.0223	0.0223		0.0223	0.0223	0.0000	70.2190	70.2190	9.8400e-003	0.0000	70.4651
Total	**0.1513**	**0.6766**	**0.3858**	**7.3000e-004**		**0.0223**	**0.0223**		**0.0223**	**0.0223**	**0.0000**	**70.2190**	**70.2190**	**9.8400e-003**	**0.0000**	**70.4651**

11.0 Vegetation

Kaiser Center - Master Plan 2 - Residential Tower

San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	0.00	1000sqft	0.00	0.00	0
Enclosed Parking with Elevator	0.00	1000sqft	0.00	0.00	0
Enclosed Parking with Elevator	60.00	1000sqft	0.00	60,000.00	0
Apartments High Rise	580.00	Dwelling Unit	0.89	512,800.00	1170
Regional Shopping Center	0.00	1000sqft	0.00	0.00	0
Regional Shopping Center	13.15	1000sqft	0.00	13,150.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Kaiser Center - Master Plan 2 - Residential Tower - San Francisco Bay Area Air Basin, Annual

Project Characteristics - Based on PG&E's GHG emission factor for 2016
https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

Land Use - Proposed Land uses for Residential Tower under Master Plan 2

Construction Phase - Schedule provided by applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Trips and VMT - Data from applicant (except hauling trips during demolition)

Demolition -

Grading - Data from applicant

Vehicle Trips - Adjusted based on project traffic data
Passby trips for retail uses already accounted for in trip rate

Woodstoves - No woodstoves
Default number of fireplaces - all gas fired

Energy Use -

Water And Wastewater - 20% reduction in indoor water use assumed in compliance with the City's CalGreencode
100% aerobic digestion assumed

Construction Off-road Equipment Mitigation - All Tier 4 equipment assumed as part of BACT for construction equipment

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps -

Architectural Coating - Defaults corrected per Appendix D

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	250.00	150.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00

tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	10.00	43.00
tblConstructionPhase	NumDays	1.00	45.00
tblConstructionPhase	NumDays	2.00	44.00
tblConstructionPhase	NumDays	100.00	435.00
tblConstructionPhase	NumDays	5.00	175.00
tblConstructionPhase	NumDays	5.00	45.00
tblFireplaces	NumberGas	87.00	515.00
tblFireplaces	NumberNoFireplace	23.20	65.00
tblFireplaces	NumberWood	98.60	0.00
tblGrading	AcresOfGrading	44.00	0.89
tblGrading	AcresOfGrading	0.00	0.89
tblGrading	MaterialExported	0.00	19,000.00
tblGrading	MaterialImported	0.00	1,000.00
tblLandUse	LandUseSquareFeet	580,000.00	512,800.00
tblLandUse	LotAcreage	1.38	0.00
tblLandUse	LotAcreage	9.35	0.89
tblLandUse	LotAcreage	0.30	0.00
tblLandUse	Population	1,659.00	1,170.00
tblOffRoadEquipment	HorsePower	81.00	20.00

tblOffRoadEquipment	HorsePower	80.00	40.00
tblOffRoadEquipment	HorsePower	97.00	150.00
tblOffRoadEquipment	HorsePower	97.00	250.00
tblOffRoadEquipment	HorsePower	63.00	120.00
tblOffRoadEquipment	HorsePower	78.00	150.00
tblOffRoadEquipment	HorsePower	221.00	225.00
tblOffRoadEquipment	HorsePower	85.00	285.00
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tblOffRoadEquipment	HorsePower	16.00	325.00
tblOffRoadEquipment	HorsePower	16.00	325.00
tblOffRoadEquipment	HorsePower	16.00	225.00
tblOffRoadEquipment	HorsePower	158.00	385.00
tblOffRoadEquipment	HorsePower	158.00	385.00
tblOffRoadEquipment	HorsePower	84.00	50.00
tblOffRoadEquipment	HorsePower	84.00	50.00
tblOffRoadEquipment	HorsePower	84.00	50.00
tblOffRoadEquipment	HorsePower	402.00	330.00
tblOffRoadEquipment	HorsePower	172.00	44.00
tblOffRoadEquipment	HorsePower	132.00	175.00
tblOffRoadEquipment	HorsePower	203.00	120.00
tblOffRoadEquipment	HorsePower	203.00	120.00
tblOffRoadEquipment	HorsePower	203.00	120.00
tblOffRoadEquipment	HorsePower	367.00	350.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00

tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	64.00	120.00
tblOffRoadEquipment	HorsePower	46.00	35.00
tblOffRoadEquipment	HorsePower	46.00	35.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00

tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	1.80
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblTripsAndVMT	HaulingTripNumber	0.00	360.00
tblTripsAndVMT	HaulingTripNumber	2,500.00	440.00
tblTripsAndVMT	HaulingTripNumber	0.00	8,700.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,750.00
tblTripsAndVMT	HaulingTripNumber	0.00	450.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	74.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	63.00	50.00
tblTripsAndVMT	WorkerTripNumber	20.00	40.00
tblTripsAndVMT	WorkerTripNumber	23.00	40.00
tblTripsAndVMT	WorkerTripNumber	447.00	180.00
tblTripsAndVMT	WorkerTripNumber	89.00	80.00
tblTripsAndVMT	WorkerTripNumber	13.00	80.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	ST_TR	4.98	2.71

tblVehicleTrips	ST_TR	2.46	0.00
tblVehicleTrips	ST_TR	49.97	19.61
tblVehicleTrips	SU_TR	3.65	1.99
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	SU_TR	25.24	9.91
tblVehicleTrips	WD_TR	4.20	2.29
tblVehicleTrips	WD_TR	11.03	0.00
tblVehicleTrips	WD_TR	42.70	16.76
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	37,789,334.86	30,231,467.89
tblWater	IndoorWaterUseRate	974,053.66	779,242.93
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	11.60	0.00
tblWoodstoves	NumberNoncatalytic	11.60	0.00

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					
2020	0.4408	3.5625	2.9510	7.9100e-003	0.2674	0.1487	0.4160	0.0635	0.1412	0.2047	0.0000	701.5428	701.5428	0.1034	0.0000	704.1287
2021	1.3272	2.7484	2.6170	7.8800e-003	0.2965	0.0894	0.3860	0.0791	0.0863	0.1654	0.0000	699.6359	699.6359	0.0727	0.0000	701.4530
2022	2.9052	1.2165	1.2028	3.4400e-003	0.1678	0.0399	0.2077	0.0439	0.0383	0.0822	0.0000	305.2036	305.2036	0.0312	0.0000	305.9843
Maximum	**2.9052**	**3.5625**	**2.9510**	**7.9100e-003**	**0.2965**	**0.1487**	**0.4160**	**0.0791**	**0.1412**	**0.2047**	**0.0000**	**701.5428**	**701.5428**	**0.1034**	**0.0000**	**704.1287**

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					
2020	0.1348	1.5354	3.1432	7.9100e-003	0.2674	0.0106	0.2779	0.0635	0.0104	0.0739	0.0000	701.5423	701.5423	0.1034	0.0000	704.1283
2021	1.1037	1.8534	2.6466	7.8800e-003	0.2965	8.4700e-003	0.3050	0.0791	8.2300e-003	0.0874	0.0000	699.6356	699.6356	0.0727	0.0000	701.4527
2022	2.8066	0.8155	1.1479	3.4400e-003	0.1678	3.5300e-003	0.1713	0.0439	3.4400e-003	0.0474	0.0000	305.2035	305.2035	0.0312	0.0000	305.9842
Maximum	**2.8066**	**1.8534**	**3.1432**	**7.9100e-003**	**0.2965**	**0.0106**	**0.3050**	**0.0791**	**0.0104**	**0.0874**	**0.0000**	**701.5423**	**701.5423**	**0.1034**	**0.0000**	**704.1283**

Kaiser Center - Master Plan 2 - Residential Tower - San Francisco Bay Area Air Basin, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**13.44**	**44.15**	**-2.46**	**0.00**	**0.00**	**91.89**	**25.30**	**0.00**	**91.71**	**53.89**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2020**	**3-31-2020**	1.3547	0.3983
2	**4-1-2020**	**6-30-2020**	1.0664	0.2890
3	**7-1-2020**	**9-30-2020**	0.7930	0.4857
4	**10-1-2020**	**12-31-2020**	0.7900	0.4924
5	**1-1-2021**	**3-31-2021**	0.7077	0.4561
6	**4-1-2021**	**6-30-2021**	0.7070	0.4526
7	**7-1-2021**	**9-30-2021**	0.7148	0.4576
8	**10-1-2021**	**12-31-2021**	1.9033	1.5522
9	**1-1-2022**	**3-31-2022**	2.1490	1.8821
10	**4-1-2022**	**6-30-2022**	1.9552	1.7245
11	**7-1-2022**	**9-30-2022**	0.0227	0.0196
		Highest	2.1490	1.8821

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	3.0138	0.1052	4.3318	5.8000e-004		0.0283	0.0283		0.0283	0.0283	0.0000	71.3282	71.3282	8.0000e-003	1.1800e-003	71.8795
Energy	0.0276	0.2363	0.1018	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	665.2661	665.2661	0.0439	0.0130	670.2402
Mobile	0.3509	1.5507	3.9630	0.0147	1.3130	0.0121	1.3251	0.3524	0.0113	0.3636	0.0000	1,350.2660	1,350.2660	0.0470	0.0000	1,351.4418
Stationary	0.0688	0.3075	0.1753	3.3000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	31.9108	31.9108	4.4700e-003	0.0000	32.0227
Waste						0.0000	0.0000		0.0000	0.0000	56.9613	0.0000	56.9613	3.3663	0.0000	141.1192
Water						0.0000	0.0000		0.0000	0.0000	10.9716	33.7753	44.7469	0.0411	0.0246	53.0899
Total	**3.4611**	**2.1996**	**8.5719**	**0.0171**	**1.3130**	**0.0696**	**1.3826**	**0.3524**	**0.0688**	**0.4212**	**67.9329**	**2,152.5465**	**2,220.4794**	**3.5108**	**0.0387**	**2,319.7933**

2.2 Overall Operational

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	3.0138	0.1052	4.3318	5.8000e-004		0.0283	0.0283		0.0283	0.0283	0.0000	71.3282	71.3282	8.0000e-003	1.1800e-003	71.8795
Energy	0.0276	0.2363	0.1018	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	665.2661	665.2661	0.0439	0.0130	670.2402
Mobile	0.3509	1.5507	3.9630	0.0147	1.3130	0.0121	1.3251	0.3524	0.0113	0.3636	0.0000	1,350.2660	1,350.2660	0.0470	0.0000	1,351.4418
Stationary	0.0688	0.3075	0.1753	3.3000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	31.9108	31.9108	4.4700e-003	0.0000	32.0227
Waste						0.0000	0.0000		0.0000	0.0000	56.9613	0.0000	56.9613	3.3663	0.0000	141.1192
Water						0.0000	0.0000		0.0000	0.0000	10.9716	33.7753	44.7469	0.0411	0.0246	53.0899
Total	**3.4611**	**2.1996**	**8.5719**	**0.0171**	**1.3130**	**0.0696**	**1.3826**	**0.3524**	**0.0688**	**0.4212**	**67.9329**	**2,152.5465**	**2,220.4794**	**3.5108**	**0.0387**	**2,319.7933**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**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

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2020	3/1/2020	5	43	
2	Site Preparation	Site Preparation	3/1/2020	5/1/2020	5	45	
3	Grading	Grading	5/1/2020	7/1/2020	5	44	
4	Building Construction	Building Construction	7/1/2020	3/1/2022	5	435	
5	Architectural Coating	Architectural Coating	11/1/2021	7/1/2022	5	175	
6	Paving	Paving	5/1/2022	7/1/2022	5	45	

Acres of Grading (Site Preparation Phase): 0.89

Acres of Grading (Grading Phase): 0.89

Acres of Paving: 0

Residential Indoor: 1,038,420; Residential Outdoor: 346,140; Non-Residential Indoor: 19,725; Non-Residential Outdoor: 6,575; Striped Parking Area: 3,600 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Aerial Lifts	5	4.00	120	0.31
Demolition	Air Compressors	4	4.00	150	0.48
Demolition	Concrete/Industrial Saws	5	4.00	20	0.73
Demolition	Crushing/Proc. Equipment	1	6.00	285	0.78
Demolition	Dumpers/Tenders	3	8.00	325	0.38
Demolition	Excavators	2	6.00	385	0.38
Demolition	Generator Sets	2	8.00	50	0.74
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Rubber Tired Loaders	2	8.00	120	0.36
Demolition	Sweepers/Scrubbers	1	4.00	120	0.46

Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Dumpers/Tenders	2	8.00	325	0.38
Site Preparation	Generator Sets	2	8.00	50	0.74
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rubber Tired Loaders	2	8.00	120	0.36
Site Preparation	Sweepers/Scrubbers	1	4.00	120	0.46
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	250	0.37
Grading	Concrete/Industrial Saws	0	0.00	81	0.73
Grading	Dumpers/Tenders	2	8.00	325	0.38
Grading	Generator Sets	2	4.00	50	0.74
Grading	Off-Highway Trucks	1	8.00	330	0.38
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Rubber Tired Loaders	2	8.00	120	0.36
Grading	Scrapers	1	8.00	350	0.48
Grading	Sweepers/Scrubbers	1	4.00	120	0.46
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Bore/Drill Rigs	1	0.70	225	0.50
Building Construction	Cranes	0	0.00	231	0.29
Building Construction	Excavators	2	1.10	385	0.38
Building Construction	Forklifts	0	0.00	89	0.20
Building Construction	Sweepers/Scrubbers	1	4.00	120	0.46
Building Construction	Tractors/Loaders/Backhoes	3	1.80	150	0.37
Building Construction	Welders	6	8.00	35	0.45
Architectural Coating	Air Compressors	0	0.00	78	0.48
Architectural Coating	Sweepers/Scrubbers	1	4.00	120	0.46
Architectural Coating	Welders	4	8.00	35	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56

Paving	Dumpers/Tenders	1	8.00	225	0.38
Paving	Other Construction Equipment	1	4.00	44	0.42
Paving	Pavers	0	0.00	130	0.42
Paving	Paving Equipment	1	8.00	175	0.36
Paving	Rollers	1	8.00	40	0.38
Paving	Sweepers/Scrubbers	1	4.00	120	0.46
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	25	50.00	12.00	580.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	8	40.00	12.00	360.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	40.00	12.00	440.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	13	180.00	20.00	8,700.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	5	80.00	10.00	1,750.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	80.00	8.00	450.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2020

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					0.0628	0.0000	0.0628	9.5000e-003	0.0000	9.5000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1075	0.8249	0.7606	1.7200e-003		0.0405	0.0405		0.0388	0.0388	0.0000	151.2962	151.2962	0.0277	0.0000	151.9890
Total	**0.1075**	**0.8249**	**0.7606**	**1.7200e-003**	**0.0628**	**0.0405**	**0.1032**	**9.5000e-003**	**0.0388**	**0.0483**	**0.0000**	**151.2962**	**151.2962**	**0.0277**	**0.0000**	**151.9890**

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	2.4200e-003	0.0848	0.0170	2.3000e-004	4.9000e-003	2.7000e-004	5.1700e-003	1.3500e-003	2.6000e-004	1.6100e-003	0.0000	22.2248	22.2248	1.1400e-003	0.0000	22.2534
Vendor	1.0000e-003	0.0298	7.4800e-003	7.0000e-005	1.6900e-003	1.5000e-004	1.8400e-003	4.9000e-004	1.4000e-004	6.3000e-004	0.0000	6.7549	6.7549	3.5000e-004	0.0000	6.7637
Worker	3.5600e-003	2.5500e-003	0.0264	8.0000e-005	8.4900e-003	6.0000e-005	8.5500e-003	2.2600e-003	5.0000e-005	2.3100e-003	0.0000	7.4420	7.4420	1.8000e-004	0.0000	7.4465
Total	**6.9800e-003**	**0.1171**	**0.0509**	**3.8000e-004**	**0.0151**	**4.8000e-004**	**0.0156**	**4.1000e-003**	**4.5000e-004**	**4.5500e-003**	**0.0000**	**36.4218**	**36.4218**	**1.6700e-003**	**0.0000**	**36.4636**

3.2 Demolition - 2020

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					0.0628	0.0000	0.0628	9.5000e-003	0.0000	9.5000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0201	0.1496	0.9184	1.7200e-003		2.4600e-003	2.4600e-003		2.4600e-003	2.4600e-003	0.0000	151.2960	151.2960	0.0277	0.0000	151.9888
Total	**0.0201**	**0.1496**	**0.9184**	**1.7200e-003**	**0.0628**	**2.4600e-003**	**0.0652**	**9.5000e-003**	**2.4600e-003**	**0.0120**	**0.0000**	**151.2960**	**151.2960**	**0.0277**	**0.0000**	**151.9888**

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	2.4200e-003	0.0848	0.0170	2.3000e-004	4.9000e-003	2.7000e-004	5.1700e-003	1.3500e-003	2.6000e-004	1.6100e-003	0.0000	22.2248	22.2248	1.1400e-003	0.0000	22.2534
Vendor	1.0000e-003	0.0298	7.4800e-003	7.0000e-005	1.6900e-003	1.5000e-004	1.8400e-003	4.9000e-004	1.4000e-004	6.3000e-004	0.0000	6.7549	6.7549	3.5000e-004	0.0000	6.7637
Worker	3.5600e-003	2.5500e-003	0.0264	8.0000e-005	8.4900e-003	6.0000e-005	8.5500e-003	2.2600e-003	5.0000e-005	2.3100e-003	0.0000	7.4420	7.4420	1.8000e-004	0.0000	7.4465
Total	**6.9800e-003**	**0.1171**	**0.0509**	**3.8000e-004**	**0.0151**	**4.8000e-004**	**0.0156**	**4.1000e-003**	**4.5000e-004**	**4.5500e-003**	**0.0000**	**36.4218**	**36.4218**	**1.6700e-003**	**0.0000**	**36.4636**

3.3 Site Preparation - 2020

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					4.7000e-004	0.0000	4.7000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0533	0.4299	0.3385	6.0000e-004		0.0255	0.0255		0.0239	0.0239	0.0000	50.0023	50.0023	0.0129	0.0000	50.3254
Total	**0.0533**	**0.4299**	**0.3385**	**6.0000e-004**	**4.7000e-004**	**0.0255**	**0.0260**	**5.0000e-005**	**0.0239**	**0.0240**	**0.0000**	**50.0023**	**50.0023**	**0.0129**	**0.0000**	**50.3254**

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	1.5000e-003	0.0526	0.0106	1.4000e-004	3.0400e-003	1.7000e-004	3.2100e-003	8.4000e-004	1.6000e-004	1.0000e-003	0.0000	13.7947	13.7947	7.1000e-004	0.0000	13.8125
Vendor	1.0400e-003	0.0312	7.8300e-003	7.0000e-005	1.7700e-003	1.5000e-004	1.9200e-003	5.1000e-004	1.5000e-004	6.6000e-004	0.0000	7.0691	7.0691	3.6000e-004	0.0000	7.0782
Worker	2.9800e-003	2.1300e-003	0.0221	7.0000e-005	7.1100e-003	5.0000e-005	7.1600e-003	1.8900e-003	4.0000e-005	1.9400e-003	0.0000	6.2305	6.2305	1.5000e-004	0.0000	6.2343
Total	**5.5200e-003**	**0.0859**	**0.0405**	**2.8000e-004**	**0.0119**	**3.7000e-004**	**0.0123**	**3.2400e-003**	**3.5000e-004**	**3.6000e-003**	**0.0000**	**27.0944**	**27.0944**	**1.2200e-003**	**0.0000**	**27.1250**

3.3 Site Preparation - 2020

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					4.7000e-004	0.0000	4.7000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.4400e-003	0.1018	0.3568	6.0000e-004		8.9000e-004	8.9000e-004		8.9000e-004	8.9000e-004	0.0000	50.0022	50.0022	0.0129	0.0000	50.3254
Total	**8.4400e-003**	**0.1018**	**0.3568**	**6.0000e-004**	**4.7000e-004**	**8.9000e-004**	**1.3600e-003**	**5.0000e-005**	**8.9000e-004**	**9.4000e-004**	**0.0000**	**50.0022**	**50.0022**	**0.0129**	**0.0000**	**50.3254**

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	1.5000e-003	0.0526	0.0106	1.4000e-004	3.0400e-003	1.7000e-004	3.2100e-003	8.4000e-004	1.6000e-004	1.0000e-003	0.0000	13.7947	13.7947	7.1000e-004	0.0000	13.8125
Vendor	1.0400e-003	0.0312	7.8300e-003	7.0000e-005	1.7700e-003	1.5000e-004	1.9200e-003	5.1000e-004	1.5000e-004	6.6000e-004	0.0000	7.0691	7.0691	3.6000e-004	0.0000	7.0782
Worker	2.9800e-003	2.1300e-003	0.0221	7.0000e-005	7.1100e-003	5.0000e-005	7.1600e-003	1.8900e-003	4.0000e-005	1.9400e-003	0.0000	6.2305	6.2305	1.5000e-004	0.0000	6.2343
Total	**5.5200e-003**	**0.0859**	**0.0405**	**2.8000e-004**	**0.0119**	**3.7000e-004**	**0.0123**	**3.2400e-003**	**3.5000e-004**	**3.6000e-003**	**0.0000**	**27.0944**	**27.0944**	**1.2200e-003**	**0.0000**	**27.1250**

3.4 Grading - 2020

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					1.6000e-003	0.0000	1.6000e-003	2.2000e-004	0.0000	2.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0669	0.6244	0.4560	8.7000e-004		0.0327	0.0327		0.0303	0.0303	0.0000	75.0409	75.0409	0.0227	0.0000	75.6080
Total	**0.0669**	**0.6244**	**0.4560**	**8.7000e-004**	**1.6000e-003**	**0.0327**	**0.0343**	**2.2000e-004**	**0.0303**	**0.0306**	**0.0000**	**75.0409**	**75.0409**	**0.0227**	**0.0000**	**75.6080**

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	1.8400e-003	0.0643	0.0129	1.7000e-004	3.7200e-003	2.1000e-004	3.9200e-003	1.0200e-003	2.0000e-004	1.2200e-003	0.0000	16.8602	16.8602	8.7000e-004	0.0000	16.8819
Vendor	1.0200e-003	0.0305	7.6600e-003	7.0000e-005	1.7300e-003	1.5000e-004	1.8800e-003	5.0000e-004	1.4000e-004	6.4000e-004	0.0000	6.9120	6.9120	3.6000e-004	0.0000	6.9210
Worker	2.9200e-003	2.0900e-003	0.0216	7.0000e-005	6.9500e-003	5.0000e-005	7.0000e-003	1.8500e-003	4.0000e-005	1.8900e-003	0.0000	6.0921	6.0921	1.5000e-004	0.0000	6.0958
Total	**5.7800e-003**	**0.0969**	**0.0422**	**3.1000e-004**	**0.0124**	**4.1000e-004**	**0.0128**	**3.3700e-003**	**3.8000e-004**	**3.7500e-003**	**0.0000**	**29.8643**	**29.8643**	**1.3800e-003**	**0.0000**	**29.8986**

3.4 Grading - 2020

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					1.6000e-003	0.0000	1.6000e-003	2.2000e-004	0.0000	2.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0112	0.0804	0.4672	8.7000e-004		1.3800e-003	1.3800e-003		1.3800e-003	1.3800e-003	0.0000	75.0408	75.0408	0.0227	0.0000	75.6079
Total	**0.0112**	**0.0804**	**0.4672**	**8.7000e-004**	**1.6000e-003**	**1.3800e-003**	**2.9800e-003**	**2.2000e-004**	**1.3800e-003**	**1.6000e-003**	**0.0000**	**75.0408**	**75.0408**	**0.0227**	**0.0000**	**75.6079**

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	1.8400e-003	0.0643	0.0129	1.7000e-004	3.7200e-003	2.1000e-004	3.9200e-003	1.0200e-003	2.0000e-004	1.2200e-003	0.0000	16.8602	16.8602	8.7000e-004	0.0000	16.8819
Vendor	1.0200e-003	0.0305	7.6600e-003	7.0000e-005	1.7300e-003	1.5000e-004	1.8800e-003	5.0000e-004	1.4000e-004	6.4000e-004	0.0000	6.9120	6.9120	3.6000e-004	0.0000	6.9210
Worker	2.9200e-003	2.0900e-003	0.0216	7.0000e-005	6.9500e-003	5.0000e-005	7.0000e-003	1.8500e-003	4.0000e-005	1.8900e-003	0.0000	6.0921	6.0921	1.5000e-004	0.0000	6.0958
Total	**5.7800e-003**	**0.0969**	**0.0422**	**3.1000e-004**	**0.0124**	**4.1000e-004**	**0.0128**	**3.3700e-003**	**3.8000e-004**	**3.7500e-003**	**0.0000**	**29.8643**	**29.8643**	**1.3800e-003**	**0.0000**	**29.8986**

3.5 Building Construction - 2020

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	0.1393	0.8171	0.8546	1.4200e-003		0.0461	0.0461		0.0445	0.0445	0.0000	113.8586	113.8586	0.0269	0.0000	114.5302
Total	**0.1393**	**0.8171**	**0.8546**	**1.4200e-003**		**0.0461**	**0.0461**		**0.0445**	**0.0445**	**0.0000**	**113.8586**	**113.8586**	**0.0269**	**0.0000**	**114.5302**

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	0.0110	0.3859	0.0776	1.0400e-003	0.0606	1.2500e-003	0.0618	0.0155	1.1900e-003	0.0167	0.0000	101.1613	101.1613	5.2100e-003	0.0000	101.2915
Vendor	5.1100e-003	0.1523	0.0383	3.6000e-004	8.6600e-003	7.4000e-004	9.4000e-003	2.5000e-003	7.1000e-004	3.2100e-003	0.0000	34.5602	34.5602	1.7800e-003	0.0000	34.6047
Worker	0.0394	0.0282	0.2918	9.1000e-004	0.0939	6.3000e-004	0.0945	0.0250	5.8000e-004	0.0256	0.0000	82.2429	82.2429	1.9900e-003	0.0000	82.2927
Total	**0.0555**	**0.5664**	**0.4076**	**2.3100e-003**	**0.1631**	**2.6200e-003**	**0.1658**	**0.0430**	**2.4800e-003**	**0.0455**	**0.0000**	**217.9644**	**217.9644**	**8.9800e-003**	**0.0000**	**218.1889**

3.5 Building Construction - 2020

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	0.0212	0.3374	0.8595	1.4200e-003		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	113.8585	113.8585	0.0269	0.0000	114.5301
Total	**0.0212**	**0.3374**	**0.8595**	**1.4200e-003**		**1.9500e-003**	**1.9500e-003**		**1.9500e-003**	**1.9500e-003**	**0.0000**	**113.8585**	**113.8585**	**0.0269**	**0.0000**	**114.5301**

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	0.0110	0.3859	0.0776	1.0400e-003	0.0606	1.2500e-003	0.0618	0.0155	1.1900e-003	0.0167	0.0000	101.1613	101.1613	5.2100e-003	0.0000	101.2915
Vendor	5.1100e-003	0.1523	0.0383	3.6000e-004	8.6600e-003	7.4000e-004	9.4000e-003	2.5000e-003	7.1000e-004	3.2100e-003	0.0000	34.5602	34.5602	1.7800e-003	0.0000	34.6047
Worker	0.0394	0.0282	0.2918	9.1000e-004	0.0939	6.3000e-004	0.0945	0.0250	5.8000e-004	0.0256	0.0000	82.2429	82.2429	1.9900e-003	0.0000	82.2927
Total	**0.0555**	**0.5664**	**0.4076**	**2.3100e-003**	**0.1631**	**2.6200e-003**	**0.1658**	**0.0430**	**2.4800e-003**	**0.0455**	**0.0000**	**217.9644**	**217.9644**	**8.9800e-003**	**0.0000**	**218.1889**

3.5 Building Construction - 2021

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	0.2436	1.4869	1.6540	2.8100e-003		0.0768	0.0768		0.0742	0.0742	0.0000	225.0973	225.0973	0.0511	0.0000	226.3757
Total	**0.2436**	**1.4869**	**1.6540**	**2.8100e-003**		**0.0768**	**0.0768**		**0.0742**	**0.0742**	**0.0000**	**225.0973**	**225.0973**	**0.0511**	**0.0000**	**226.3757**

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	0.0206	0.7044	0.1501	2.0300e-003	0.0661	2.1800e-003	0.0683	0.0175	2.0900e-003	0.0196	0.0000	197.4578	197.4578	0.0101	0.0000	197.7097
Vendor	8.2900e-003	0.2726	0.0681	7.0000e-004	0.0171	5.9000e-004	0.0177	4.9500e-003	5.7000e-004	5.5200e-003	0.0000	67.6888	67.6888	3.3300e-003	0.0000	67.7720
Worker	0.0721	0.0497	0.5269	1.7300e-003	0.1856	1.2100e-003	0.1868	0.0494	1.1200e-003	0.0505	0.0000	156.9109	156.9109	3.5200e-003	0.0000	156.9988
Total	**0.1009**	**1.0267**	**0.7450**	**4.4600e-003**	**0.2688**	**3.9800e-003**	**0.2728**	**0.0719**	**3.7800e-003**	**0.0756**	**0.0000**	**422.0574**	**422.0574**	**0.0169**	**0.0000**	**422.4805**

3.5 Building Construction - 2021

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	0.0420	0.6670	1.6994	2.8100e-003		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003	0.0000	225.0971	225.0971	0.0511	0.0000	226.3755
Total	**0.0420**	**0.6670**	**1.6994**	**2.8100e-003**		**3.8600e-003**	**3.8600e-003**		**3.8600e-003**	**3.8600e-003**	**0.0000**	**225.0971**	**225.0971**	**0.0511**	**0.0000**	**226.3755**

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	0.0206	0.7044	0.1501	2.0300e-003	0.0661	2.1800e-003	0.0683	0.0175	2.0900e-003	0.0196	0.0000	197.4578	197.4578	0.0101	0.0000	197.7097
Vendor	8.2900e-003	0.2726	0.0681	7.0000e-004	0.0171	5.9000e-004	0.0177	4.9500e-003	5.7000e-004	5.5200e-003	0.0000	67.6888	67.6888	3.3300e-003	0.0000	67.7720
Worker	0.0721	0.0497	0.5269	1.7300e-003	0.1856	1.2100e-003	0.1868	0.0494	1.1200e-003	0.0505	0.0000	156.9109	156.9109	3.5200e-003	0.0000	156.9988
Total	**0.1009**	**1.0267**	**0.7450**	**4.4600e-003**	**0.2688**	**3.9800e-003**	**0.2728**	**0.0719**	**3.7800e-003**	**0.0756**	**0.0000**	**422.0574**	**422.0574**	**0.0169**	**0.0000**	**422.4805**

3.5 Building Construction - 2022

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	0.0354	0.2198	0.2627	4.5000e-004		0.0104	0.0104		0.0101	0.0101	0.0000	36.2298	36.2298	8.0400e-003	0.0000	36.4308
Total	**0.0354**	**0.2198**	**0.2627**	**4.5000e-004**		**0.0104**	**0.0104**		**0.0101**	**0.0101**	**0.0000**	**36.2298**	**36.2298**	**8.0400e-003**	**0.0000**	**36.4308**

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	3.1200e-003	0.1042	0.0237	3.2000e-004	0.0568	3.0000e-004	0.0571	0.0142	2.9000e-004	0.0144	0.0000	31.3421	31.3421	1.5800e-003	0.0000	31.3817
Vendor	1.2400e-003	0.0416	0.0103	1.1000e-004	2.7500e-003	8.0000e-005	2.8400e-003	8.0000e-004	8.0000e-005	8.8000e-004	0.0000	10.7856	10.7856	5.1000e-004	0.0000	10.7984
Worker	0.0108	7.1800e-003	0.0779	2.7000e-004	0.0299	1.9000e-004	0.0301	7.9500e-003	1.8000e-004	8.1200e-003	0.0000	24.3243	24.3243	5.1000e-004	0.0000	24.3370
Total	**0.0152**	**0.1529**	**0.1119**	**7.0000e-004**	**0.0894**	**5.7000e-004**	**0.0900**	**0.0229**	**5.5000e-004**	**0.0234**	**0.0000**	**66.4520**	**66.4520**	**2.6000e-003**	**0.0000**	**66.5171**

3.5 Building Construction - 2022

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	6.7600e-003	0.1073	0.2735	4.5000e-004		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	36.2298	36.2298	8.0400e-003	0.0000	36.4308
Total	**6.7600e-003**	**0.1073**	**0.2735**	**4.5000e-004**		**6.2000e-004**	**6.2000e-004**		**6.2000e-004**	**6.2000e-004**	**0.0000**	**36.2298**	**36.2298**	**8.0400e-003**	**0.0000**	**36.4308**

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	3.1200e-003	0.1042	0.0237	3.2000e-004	0.0568	3.0000e-004	0.0571	0.0142	2.9000e-004	0.0144	0.0000	31.3421	31.3421	1.5800e-003	0.0000	31.3817
Vendor	1.2400e-003	0.0416	0.0103	1.1000e-004	2.7500e-003	8.0000e-005	2.8400e-003	8.0000e-004	8.0000e-005	8.8000e-004	0.0000	10.7856	10.7856	5.1000e-004	0.0000	10.7984
Worker	0.0108	7.1800e-003	0.0779	2.7000e-004	0.0299	1.9000e-004	0.0301	7.9500e-003	1.8000e-004	8.1200e-003	0.0000	24.3243	24.3243	5.1000e-004	0.0000	24.3370
Total	**0.0152**	**0.1529**	**0.1119**	**7.0000e-004**	**0.0894**	**5.7000e-004**	**0.0900**	**0.0229**	**5.5000e-004**	**0.0234**	**0.0000**	**66.4520**	**66.4520**	**2.6000e-003**	**0.0000**	**66.5171**

3.6 Architectural Coating - 2021

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	0.9491					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0256	0.1467	0.1589	2.3000e-004		8.2700e-003	8.2700e-003		8.0100e-003	8.0100e-003	0.0000	17.5998	17.5998	3.2000e-003	0.0000	17.6799
Total	**0.9746**	**0.1467**	**0.1589**	**2.3000e-004**		**8.2700e-003**	**8.2700e-003**		**8.0100e-003**	**8.0100e-003**	**0.0000**	**17.5998**	**17.5998**	**3.2000e-003**	**0.0000**	**17.6799**

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	1.7700e-003	0.0607	0.0129	1.8000e-004	0.0120	1.9000e-004	0.0122	3.0600e-003	1.8000e-004	3.2400e-003	0.0000	17.0222	17.0222	8.7000e-004	0.0000	17.0439
Vendor	7.1000e-004	0.0235	5.8700e-003	6.0000e-005	1.4800e-003	5.0000e-005	1.5300e-003	4.3000e-004	5.0000e-005	4.8000e-004	0.0000	5.8352	5.8352	2.9000e-004	0.0000	5.8424
Worker	5.5200e-003	3.8100e-003	0.0404	1.3000e-004	0.0142	9.0000e-005	0.0143	3.7800e-003	9.0000e-005	3.8700e-003	0.0000	12.0238	12.0238	2.7000e-004	0.0000	12.0306
Total	**8.0000e-003**	**0.0880**	**0.0592**	**3.7000e-004**	**0.0277**	**3.3000e-004**	**0.0281**	**7.2700e-003**	**3.2000e-004**	**7.5900e-003**	**0.0000**	**34.8813**	**34.8813**	**1.4300e-003**	**0.0000**	**34.9169**

3.6 Architectural Coating - 2021

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	0.9491					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6600e-003	0.0716	0.1430	2.3000e-004		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	17.5998	17.5998	3.2000e-003	0.0000	17.6799
Total	**0.9528**	**0.0716**	**0.1430**	**2.3000e-004**		**2.9000e-004**	**2.9000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**17.5998**	**17.5998**	**3.2000e-003**	**0.0000**	**17.6799**

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	1.7700e-003	0.0607	0.0129	1.8000e-004	0.0120	1.9000e-004	0.0122	3.0600e-003	1.8000e-004	3.2400e-003	0.0000	17.0222	17.0222	8.7000e-004	0.0000	17.0439
Vendor	7.1000e-004	0.0235	5.8700e-003	6.0000e-005	1.4800e-003	5.0000e-005	1.5300e-003	4.3000e-004	5.0000e-005	4.8000e-004	0.0000	5.8352	5.8352	2.9000e-004	0.0000	5.8424
Worker	5.5200e-003	3.8100e-003	0.0404	1.3000e-004	0.0142	9.0000e-005	0.0143	3.7800e-003	9.0000e-005	3.8700e-003	0.0000	12.0238	12.0238	2.7000e-004	0.0000	12.0306
Total	**8.0000e-003**	**0.0880**	**0.0592**	**3.7000e-004**	**0.0277**	**3.3000e-004**	**0.0281**	**7.2700e-003**	**3.2000e-004**	**7.5900e-003**	**0.0000**	**34.8813**	**34.8813**	**1.4300e-003**	**0.0000**	**34.9169**

3.6 Architectural Coating - 2022

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	2.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0665	0.3993	0.4523	6.6000e-004		0.0200	0.0200		0.0194	0.0194	0.0000	50.8440	50.8440	8.8600e-003	0.0000	51.0654
Total	**2.8083**	**0.3993**	**0.4523**	**6.6000e-004**		**0.0200**	**0.0200**		**0.0194**	**0.0194**	**0.0000**	**50.8440**	**50.8440**	**8.8600e-003**	**0.0000**	**51.0654**

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	4.8300e-003	0.1612	0.0367	5.0000e-004	0.0138	4.7000e-004	0.0143	3.7200e-003	4.4000e-004	4.1600e-003	0.0000	48.5056	48.5056	2.4500e-003	0.0000	48.5669
Vendor	1.9200e-003	0.0643	0.0159	1.7000e-004	4.2600e-003	1.3000e-004	4.3900e-003	1.2300e-003	1.2000e-004	1.3600e-003	0.0000	16.6921	16.6921	7.9000e-004	0.0000	16.7119
Worker	0.0149	9.8700e-003	0.1072	3.7000e-004	0.0411	2.6000e-004	0.0414	0.0109	2.4000e-004	0.0112	0.0000	33.4620	33.4620	7.0000e-004	0.0000	33.4795
Total	**0.0216**	**0.2354**	**0.1598**	**1.0400e-003**	**0.0592**	**8.6000e-004**	**0.0600**	**0.0159**	**8.0000e-004**	**0.0167**	**0.0000**	**98.6597**	**98.6597**	**3.9400e-003**	**0.0000**	**98.7582**

3.6 Architectural Coating - 2022

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	2.7418					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0106	0.2068	0.4132	6.6000e-004		8.3000e-004	8.3000e-004		8.3000e-004	8.3000e-004	0.0000	50.8439	50.8439	8.8600e-003	0.0000	51.0653
Total	**2.7524**	**0.2068**	**0.4132**	**6.6000e-004**		**8.3000e-004**	**8.3000e-004**		**8.3000e-004**	**8.3000e-004**	**0.0000**	**50.8439**	**50.8439**	**8.8600e-003**	**0.0000**	**51.0653**

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	4.8300e-003	0.1612	0.0367	5.0000e-004	0.0138	4.7000e-004	0.0143	3.7200e-003	4.4000e-004	4.1600e-003	0.0000	48.5056	48.5056	2.4500e-003	0.0000	48.5669
Vendor	1.9200e-003	0.0643	0.0159	1.7000e-004	4.2600e-003	1.3000e-004	4.3900e-003	1.2300e-003	1.2000e-004	1.3600e-003	0.0000	16.6921	16.6921	7.9000e-004	0.0000	16.7119
Worker	0.0149	9.8700e-003	0.1072	3.7000e-004	0.0411	2.6000e-004	0.0414	0.0109	2.4000e-004	0.0112	0.0000	33.4620	33.4620	7.0000e-004	0.0000	33.4795
Total	**0.0216**	**0.2354**	**0.1598**	**1.0400e-003**	**0.0592**	**8.6000e-004**	**0.0600**	**0.0159**	**8.0000e-004**	**0.0167**	**0.0000**	**98.6597**	**98.6597**	**3.9400e-003**	**0.0000**	**98.7582**

3.7 Paving - 2022

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	0.0172	0.1322	0.1619	2.3000e-004		7.8500e-003	7.8500e-003		7.2300e-003	7.2300e-003	0.0000	20.0223	20.0223	6.4800e-003	0.0000	20.1842
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0172**	**0.1322**	**0.1619**	**2.3000e-004**		**7.8500e-003**	**7.8500e-003**		**7.2300e-003**	**7.2300e-003**	**0.0000**	**20.0223**	**20.0223**	**6.4800e-003**	**0.0000**	**20.1842**

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	1.6700e-003	0.0558	0.0127	1.7000e-004	3.8000e-003	1.6000e-004	3.9600e-003	1.0500e-003	1.5000e-004	1.2000e-003	0.0000	16.7904	16.7904	8.5000e-004	0.0000	16.8116
Vendor	5.3000e-004	0.0178	4.4100e-003	5.0000e-005	1.1800e-003	4.0000e-005	1.2200e-003	3.4000e-004	3.0000e-005	3.8000e-004	0.0000	4.6224	4.6224	2.2000e-004	0.0000	4.6279
Worker	5.1500e-003	3.4200e-003	0.0371	1.3000e-004	0.0142	9.0000e-005	0.0143	3.7800e-003	8.0000e-005	3.8700e-003	0.0000	11.5830	11.5830	2.4000e-004	0.0000	11.5891
Total	**7.3500e-003**	**0.0770**	**0.0542**	**3.5000e-004**	**0.0192**	**2.9000e-004**	**0.0195**	**5.1700e-003**	**2.6000e-004**	**5.4500e-003**	**0.0000**	**32.9958**	**32.9958**	**1.3100e-003**	**0.0000**	**33.0286**

3.7 Paving - 2022

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	3.3200e-003	0.0360	0.1353	2.3000e-004		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	20.0223	20.0223	6.4800e-003	0.0000	20.1842
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.3200e-003**	**0.0360**	**0.1353**	**2.3000e-004**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**	**0.0000**	**20.0223**	**20.0223**	**6.4800e-003**	**0.0000**	**20.1842**

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	1.6700e-003	0.0558	0.0127	1.7000e-004	3.8000e-003	1.6000e-004	3.9600e-003	1.0500e-003	1.5000e-004	1.2000e-003	0.0000	16.7904	16.7904	8.5000e-004	0.0000	16.8116
Vendor	5.3000e-004	0.0178	4.4100e-003	5.0000e-005	1.1800e-003	4.0000e-005	1.2200e-003	3.4000e-004	3.0000e-005	3.8000e-004	0.0000	4.6224	4.6224	2.2000e-004	0.0000	4.6279
Worker	5.1500e-003	3.4200e-003	0.0371	1.3000e-004	0.0142	9.0000e-005	0.0143	3.7800e-003	8.0000e-005	3.8700e-003	0.0000	11.5830	11.5830	2.4000e-004	0.0000	11.5891
Total	**7.3500e-003**	**0.0770**	**0.0542**	**3.5000e-004**	**0.0192**	**2.9000e-004**	**0.0195**	**5.1700e-003**	**2.6000e-004**	**5.4500e-003**	**0.0000**	**32.9958**	**32.9958**	**1.3100e-003**	**0.0000**	**33.0286**

4.0 Operational Detail - Mobile

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	0.3509	1.5507	3.9630	0.0147	1.3130	0.0121	1.3251	0.3524	0.0113	0.3636	0.0000	1,350.2660	1,350.2660	0.0470	0.0000	1,351.4418
Unmitigated	0.3509	1.5507	3.9630	0.0147	1.3130	0.0121	1.3251	0.3524	0.0113	0.3636	0.0000	1,350.2660	1,350.2660	0.0470	0.0000	1,351.4418

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments High Rise	1,328.20	1,571.80	1154.20	3,090,585	3,090,585
Enclosed Parking with Elevator	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
Regional Shopping Center	220.39	257.87	130.32	437,670	437,670
Total	1,548.59	1,829.67	1,284.52	3,528,255	3,528,255

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
Apartments High Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments High Rise	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Enclosed Parking with Elevator	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
General Office Building	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Regional Shopping Center	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kaiser Center - Master Plan 2 - Residential Tower - San Francisco Bay Area Air Basin, Annual

	ROG	NOx	CO	SO2	Fugitive 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						0.0000	0.0000		0.0000	0.0000	0.0000	391.8226	391.8226	0.0387	8.0000e-003	395.1717
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	391.8226	391.8226	0.0387	8.0000e-003	395.1717
NaturalGas Mitigated	0.0276	0.2363	0.1018	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	273.4436	273.4436	5.2400e-003	5.0100e-003	275.0685
NaturalGas Unmitigated	0.0276	0.2363	0.1018	1.5100e-003		0.0191	0.0191		0.0191	0.0191	0.0000	273.4436	273.4436	5.2400e-003	5.0100e-003	275.0685

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/yr	tons/yr										MT/yr					
Apartments High Rise	5.06365e+006	0.0273	0.2333	0.0993	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	270.2156	270.2156	5.1800e-003	4.9500e-003	271.8214
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	60490	3.3000e-004	2.9700e-003	2.4900e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.2280	3.2280	6.0000e-005	6.0000e-005	3.2472
Total		**0.0276**	**0.2363**	**0.1018**	**1.5100e-003**		**0.0191**	**0.0191**		**0.0191**	**0.0191**	**0.0000**	**273.4436**	**273.4436**	**5.2400e-003**	**5.0100e-003**	**275.0685**

5.2 Energy by Land Use - NaturalGas

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/yr	tons/yr										MT/yr					
Apartments High Rise	5.06365e+006	0.0273	0.2333	0.0993	1.4900e-003		0.0189	0.0189		0.0189	0.0189	0.0000	270.2156	270.2156	5.1800e-003	4.9500e-003	271.8214
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	60490	3.3000e-004	2.9700e-003	2.4900e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.2280	3.2280	6.0000e-005	6.0000e-005	3.2472
Total		**0.0276**	**0.2363**	**0.1018**	**1.5100e-003**		**0.0191**	**0.0191**		**0.0191**	**0.0191**	**0.0000**	**273.4436**	**273.4436**	**5.2400e-003**	**5.0100e-003**	**275.0685**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	2.44875e+006	326.5565	0.0322	6.6600e-003	329.3477
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	351600	46.8880	4.6300e-003	9.6000e-004	47.2888
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	137812	18.3781	1.8100e-003	3.8000e-004	18.5352
Total		**391.8226**	**0.0387**	**8.0000e-003**	**395.1717**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	2.44875e+006	326.5565	0.0322	6.6600e-003	329.3477
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	351600	46.8880	4.6300e-003	9.6000e-004	47.2888
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	137812	18.3781	1.8100e-003	3.8000e-004	18.5352
Total		**391.8226**	**0.0387**	**8.0000e-003**	**395.1717**

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	3.0138	0.1052	4.3318	5.8000e-004		0.0283	0.0283		0.0283	0.0283	0.0000	71.3282	71.3282	8.0000e-003	1.1800e-003	71.8795
Unmitigated	3.0138	0.1052	4.3318	5.8000e-004		0.0283	0.0283		0.0283	0.0283	0.0000	71.3282	71.3282	8.0000e-003	1.1800e-003	71.8795

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	0.8195					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.0580					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.5000e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003	0.0000	64.2922	64.2922	1.2300e-003	1.1800e-003	64.6743
Landscaping	0.1298	0.0497	4.3082	2.3000e-004		0.0238	0.0238		0.0238	0.0238	0.0000	7.0360	7.0360	6.7700e-003	0.0000	7.2052
Total	**3.0138**	**0.1052**	**4.3318**	**5.8000e-004**		**0.0283**	**0.0283**		**0.0283**	**0.0283**	**0.0000**	**71.3283**	**71.3283**	**8.0000e-003**	**1.1800e-003**	**71.8795**

6.2 Area by SubCategory

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	0.8195					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.0580					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.5000e-003	0.0555	0.0236	3.5000e-004		4.4900e-003	4.4900e-003		4.4900e-003	4.4900e-003	0.0000	64.2922	64.2922	1.2300e-003	1.1800e-003	64.6743
Landscaping	0.1298	0.0497	4.3082	2.3000e-004		0.0238	0.0238		0.0238	0.0238	0.0000	7.0360	7.0360	6.7700e-003	0.0000	7.2052
Total	**3.0138**	**0.1052**	**4.3318**	**5.8000e-004**		**0.0283**	**0.0283**		**0.0283**	**0.0283**	**0.0000**	**71.3283**	**71.3283**	**8.0000e-003**	**1.1800e-003**	**71.8795**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	44.7469	0.0411	0.0246	53.0899
Unmitigated	44.7469	0.0411	0.0246	53.0899

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	30.2315 / 23.8237	43.6303	0.0401	0.0239	51.7637
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.779243 / 0.597001	1.1166	1.0300e-003	6.2000e-004	1.3262
Total		**44.7470**	**0.0411**	**0.0246**	**53.0899**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	30.2315 / 23.8237	43.6303	0.0401	0.0239	51.7637
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.779243 / 0.597001	1.1166	1.0300e-003	6.2000e-004	1.3262
Total		**44.7470**	**0.0411**	**0.0246**	**53.0899**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	56.9613	3.3663	0.0000	141.1192
Unmitigated	56.9613	3.3663	0.0000	141.1192

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	266.8	54.1580	3.2007	0.0000	134.1741
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	13.81	2.8033	0.1657	0.0000	6.9451
Total		**56.9613**	**3.3663**	**0.0000**	**141.1192**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	266.8	54.1580	3.2007	0.0000	134.1741
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	13.81	2.8033	0.1657	0.0000	6.9451
Total		**56.9613**	**3.3663**	**0.0000**	**141.1192**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	1676	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0688	0.3075	0.1753	3.3000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	31.9108	31.9108	4.4700e-003	0.0000	32.0227
Total	**0.0688**	**0.3075**	**0.1753**	**3.3000e-004**		**0.0101**	**0.0101**		**0.0101**	**0.0101**	**0.0000**	**31.9108**	**31.9108**	**4.4700e-003**	**0.0000**	**32.0227**

11.0 Vegetation

Kaiser Center - Master Plan 2 - Webster St Office Tower

San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	865.54	1000sqft	0.88	865,540.00	0
Enclosed Parking with Elevator	30.98	1000sqft	0.00	30,980.00	0
Enclosed Parking with Elevator	0.00	1000sqft	0.00	0.00	0
Apartments High Rise	0.00	Dwelling Unit	0.00	0.00	0
Regional Shopping Center	5.70	1000sqft	0.00	5,700.00	0
Regional Shopping Center	0.00	1000sqft	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on PG&E's GHG emission factor for 2016
https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

Land Use - Proposed Land uses for Office Tower under Master Plan 2

Construction Phase - Schedule provided by applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Off-road Equipment - Data from applicant

Trips and VMT - Data from applicant (except hauling trips during demolition)

Demolition -

Grading - Data from applicant

Vehicle Trips - Adjusted based on project traffic data
Passby trips for retail uses already accounted for in trip rate

Woodstoves -

Energy Use -

Water And Wastewater - 20% reduction in indoor water use assumed in compliance with the City's CalGreencode
100% aerobic digestion assumed

Construction Off-road Equipment Mitigation - All Tier 4 equipment assumed as part of BACT for construction equipment

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps -

Architectural Coating - Defaults corrected per Appendix D

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	250.00	150.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00

tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	2.00	45.00
tblConstructionPhase	NumDays	100.00	390.00
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tblConstructionPhase	NumDays	5.00	45.00
tblGrading	AcresOfGrading	45.00	0.88
tblGrading	AcresOfGrading	0.00	0.88
tblGrading	MaterialExported	0.00	18,000.00
tblGrading	MaterialImported	0.00	5,000.00
tblLandUse	LotAcreage	19.87	0.88
tblLandUse	LotAcreage	0.71	0.00
tblLandUse	LotAcreage	0.13	0.00
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tblOffRoadEquipment	HorsePower	97.00	250.00
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tblOffRoadEquipment	HorsePower	78.00	150.00

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tblOffRoadEquipment	HorsePower	16.00	325.00
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tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	7.80
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	2.10
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00

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tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblTripsAndVMT	HaulingTripNumber	0.00	360.00
tblTripsAndVMT	HaulingTripNumber	2,875.00	450.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,800.00
tblTripsAndVMT	HaulingTripNumber	0.00	450.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,750.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	148.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	55.00	50.00
tblTripsAndVMT	WorkerTripNumber	18.00	40.00
tblTripsAndVMT	WorkerTripNumber	20.00	40.00
tblTripsAndVMT	WorkerTripNumber	292.00	260.00
tblTripsAndVMT	WorkerTripNumber	13.00	80.00
tblTripsAndVMT	WorkerTripNumber	58.00	140.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	ST_TR	4.98	0.00
tblVehicleTrips	ST_TR	2.46	1.18
tblVehicleTrips	ST_TR	49.97	19.91
tblVehicleTrips	SU_TR	3.65	0.00
tblVehicleTrips	SU_TR	1.05	0.50
tblVehicleTrips	SU_TR	25.24	10.05
tblVehicleTrips	WD_TR	4.20	0.00

tblVehicleTrips	WD_TR	11.03	5.28
tblVehicleTrips	WD_TR	42.70	17.01
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	153,835,668.24	123,068,534.59
tblWater	IndoorWaterUseRate	422,213.37	337,770.70
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

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					
2022	0.1903	1.5982	1.5479	3.9800e-003	0.1179	0.0673	0.1852	0.0227	0.0636	0.0863	0.0000	357.3256	357.3256	0.0593	0.0000	358.8079
2023	0.3559	2.3052	2.7175	8.0800e-003	0.3262	0.0740	0.4002	0.0869	0.0713	0.1582	0.0000	711.3804	711.3804	0.0757	0.0000	713.2720
2024	4.8757	2.1410	2.6240	7.8500e-003	0.3618	0.0638	0.4256	0.0964	0.0613	0.1577	0.0000	695.4456	695.4456	0.0646	0.0000	697.0600
Maximum	**4.8757**	**2.3052**	**2.7175**	**8.0800e-003**	**0.3618**	**0.0740**	**0.4256**	**0.0964**	**0.0713**	**0.1582**	**0.0000**	**711.3804**	**711.3804**	**0.0757**	**0.0000**	**713.2720**

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					
2022	0.0513	0.4658	1.8135	3.9800e-003	0.1179	5.2800e-003	0.1232	0.0227	5.2400e-003	0.0279	0.0000	357.3253	357.3253	0.0593	0.0000	358.8076
2023	0.1530	1.4702	2.8034	8.0800e-003	0.3262	7.2800e-003	0.3335	0.0869	7.1200e-003	0.0940	0.0000	711.3801	711.3801	0.0757	0.0000	713.2717
2024	4.7000	1.4454	2.6074	7.8500e-003	0.3618	6.7100e-003	0.3685	0.0964	6.5400e-003	0.1030	0.0000	695.4453	695.4453	0.0646	0.0000	697.0597
Maximum	**4.7000**	**1.4702**	**2.8034**	**8.0800e-003**	**0.3618**	**7.2800e-003**	**0.3685**	**0.0964**	**7.1200e-003**	**0.1030**	**0.0000**	**711.3801**	**711.3801**	**0.0757**	**0.0000**	**713.2717**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**9.55**	**44.06**	**-4.86**	**0.00**	**0.00**	**90.60**	**18.38**	**0.00**	**90.37**	**44.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-1-2022**	**9-30-2022**	1.1399	0.3165
2	**10-1-2022**	**12-31-2022**	0.6583	0.2019
3	**1-1-2023**	**3-31-2023**	0.6954	0.3397
4	**4-1-2023**	**6-30-2023**	0.6506	0.4253
5	**7-1-2023**	**9-30-2023**	0.6577	0.4300
6	**10-1-2023**	**12-31-2023**	0.6645	0.4368
7	**1-1-2024**	**3-31-2024**	0.6318	0.4262
8	**4-1-2024**	**6-30-2024**	2.5255	2.2279
9	**7-1-2024**	**9-30-2024**	2.4341	2.1437
		Highest	2.5255	2.2279

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	4.4160	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Energy	0.0904	0.8214	0.6900	4.9300e-003		0.0624	0.0624		0.0624	0.0624	0.0000	2,366.9042	2,366.9042	0.1624	0.0465	2,384.8061
Mobile	0.7297	3.4073	8.2801	0.0331	3.1587	0.0269	3.1856	0.8476	0.0251	0.8727	0.0000	3,044.6686	3,044.6686	0.1016	0.0000	3,047.2089
Stationary	0.0826	0.3691	0.2105	4.0000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.3082	38.3082	5.3700e-003	0.0000	38.4425
Waste						0.0000	0.0000		0.0000	0.0000	164.6135	0.0000	164.6135	9.7284	0.0000	407.8230
Water						0.0000	0.0000		0.0000	0.0000	43.6613	133.1774	176.8387	0.1634	0.0977	210.0289
Total	**5.3187**	**4.5979**	**9.1889**	**0.0384**	**3.1587**	**0.1015**	**3.2602**	**0.8476**	**0.0997**	**0.9473**	**208.2748**	**5,583.0745**	**5,791.3494**	**10.1612**	**0.1441**	**6,088.3265**

2.2 Overall Operational

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	4.4160	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Energy	0.0904	0.8214	0.6900	4.9300e-003		0.0624	0.0624		0.0624	0.0624	0.0000	2,366.9042	2,366.9042	0.1624	0.0465	2,384.8061
Mobile	0.7297	3.4073	8.2801	0.0331	3.1587	0.0269	3.1856	0.8476	0.0251	0.8727	0.0000	3,044.6686	3,044.6686	0.1016	0.0000	3,047.2089
Stationary	0.0826	0.3691	0.2105	4.0000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.3082	38.3082	5.3700e-003	0.0000	38.4425
Waste						0.0000	0.0000		0.0000	0.0000	164.6135	0.0000	164.6135	9.7284	0.0000	407.8230
Water						0.0000	0.0000		0.0000	0.0000	43.6613	133.1774	176.8387	0.1634	0.0977	210.0289
Total	**5.3187**	**4.5979**	**9.1889**	**0.0384**	**3.1587**	**0.1015**	**3.2602**	**0.8476**	**0.0997**	**0.9473**	**208.2748**	**5,583.0745**	**5,791.3494**	**10.1612**	**0.1441**	**6,088.3265**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**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

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2022	10/1/2022	5	66	
2	Site Preparation	Site Preparation	10/2/2022	12/2/2022	5	45	
3	Grading	Grading	12/3/2022	2/3/2023	5	45	
4	Building Construction	Building Construction	2/4/2023	8/4/2024	5	390	
5	Architectural Coating	Architectural Coating	4/4/2024	12/4/2024	5	175	
6	Paving	Paving	8/4/2024	10/4/2024	5	45	

Acres of Grading (Site Preparation Phase): 0.88

Acres of Grading (Grading Phase): 0.88

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,306,860; Non-Residential Outdoor: 435,620; Striped Parking Area: 1,859 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Aerial Lifts	5	4.00	120	0.31
Demolition	Air Compressors	4	4.00	150	0.48
Demolition	Concrete/Industrial Saws	5	4.00	20	0.73
Demolition	Crushing/Proc. Equipment	1	6.00	285	0.78
Demolition	Dumpers/Tenders	2	8.00	325	0.38
Demolition	Excavators	1	10.00	285	0.38
Demolition	Generator Sets	1	8.00	50	0.74
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Rubber Tired Loaders	2	8.00	120	0.36
Demolition	Sweepers/Scrubbers	1	4.00	120	0.46

Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Dumpers/Tenders	2	8.00	325	0.38
Site Preparation	Generator Sets	1	4.00	50	0.74
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rubber Tired Loaders	2	8.00	120	0.36
Site Preparation	Sweepers/Scrubbers	1	4.00	120	0.46
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	250	0.37
Grading	Concrete/Industrial Saws	0	0.00	81	0.73
Grading	Dumpers/Tenders	2	8.00	325	0.38
Grading	Generator Sets	1	4.00	50	0.74
Grading	Off-Highway Trucks	1	8.00	330	0.38
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Rubber Tired Loaders	2	8.00	120	0.36
Grading	Scrapers	1	8.00	350	0.48
Grading	Sweepers/Scrubbers	1	4.00	120	0.46
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Bore/Drill Rigs	1	1.20	225	0.50
Building Construction	Cranes	0	0.00	231	0.29
Building Construction	Excavators	2	1.20	385	0.38
Building Construction	Forklifts	0	0.00	89	0.20
Building Construction	Sweepers/Scrubbers	1	4.00	120	0.46
Building Construction	Tractors/Loaders/Backhoes	2	2.10	150	0.37
Building Construction	Welders	8	8.00	35	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Dumpers/Tenders	1	7.80	225	0.38
Paving	Other Construction Equipment	1	3.90	44	0.42
Paving	Pavers	0	0.00	130	0.42

Paving	Paving Equipment	1	7.80	175	0.36
Paving	Rollers	1	7.80	40	0.38
Paving	Sweepers/Scrubbers	1	7.80	120	0.46
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Architectural Coating	Air Compressors	0	0.00	78	0.48
Architectural Coating	Sweepers/Scrubbers	1	4.30	120	0.46
Architectural Coating	Welders	3	8.00	35	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	22	50.00	12.00	694.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	40.00	12.00	360.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	40.00	12.00	450.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	14	260.00	20.00	7,800.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	80.00	8.00	450.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	4	140.00	10.00	1,750.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2022

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					0.0751	0.0000	0.0751	0.0114	0.0000	0.0114	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1222	0.8880	1.0119	2.2500e-003		0.0411	0.0411		0.0394	0.0394	0.0000	200.2382	200.2382	0.0339	0.0000	201.0846
Total	**0.1222**	**0.8880**	**1.0119**	**2.2500e-003**	**0.0751**	**0.0411**	**0.1162**	**0.0114**	**0.0394**	**0.0508**	**0.0000**	**200.2382**	**200.2382**	**0.0339**	**0.0000**	**201.0846**

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	2.5800e-003	0.0861	0.0196	2.7000e-004	5.8600e-003	2.5000e-004	6.1100e-003	1.6100e-003	2.4000e-004	1.8500e-003	0.0000	25.8945	25.8945	1.3100e-003	0.0000	25.9272
Vendor	1.1700e-003	0.0392	9.7100e-003	1.1000e-004	2.6000e-003	8.0000e-005	2.6700e-003	7.5000e-004	7.0000e-005	8.3000e-004	0.0000	10.1693	10.1693	4.8000e-004	0.0000	10.1814
Worker	4.7200e-003	3.1300e-003	0.0340	1.2000e-004	0.0130	8.0000e-005	0.0131	3.4700e-003	8.0000e-005	3.5500e-003	0.0000	10.6178	10.6178	2.2000e-004	0.0000	10.6233
Total	**8.4700e-003**	**0.1284**	**0.0633**	**5.0000e-004**	**0.0215**	**4.1000e-004**	**0.0219**	**5.8300e-003**	**3.9000e-004**	**6.2300e-003**	**0.0000**	**46.6816**	**46.6816**	**2.0100e-003**	**0.0000**	**46.7319**

3.2 Demolition - 2022

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					0.0751	0.0000	0.0751	0.0114	0.0000	0.0114	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0254	0.1578	1.2224	2.2500e-003		3.2100e-003	3.2100e-003		3.2100e-003	3.2100e-003	0.0000	200.2380	200.2380	0.0339	0.0000	201.0844
Total	**0.0254**	**0.1578**	**1.2224**	**2.2500e-003**	**0.0751**	**3.2100e-003**	**0.0783**	**0.0114**	**3.2100e-003**	**0.0146**	**0.0000**	**200.2380**	**200.2380**	**0.0339**	**0.0000**	**201.0844**

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	2.5800e-003	0.0861	0.0196	2.7000e-004	5.8600e-003	2.5000e-004	6.1100e-003	1.6100e-003	2.4000e-004	1.8500e-003	0.0000	25.8945	25.8945	1.3100e-003	0.0000	25.9272
Vendor	1.1700e-003	0.0392	9.7100e-003	1.1000e-004	2.6000e-003	8.0000e-005	2.6700e-003	7.5000e-004	7.0000e-005	8.3000e-004	0.0000	10.1693	10.1693	4.8000e-004	0.0000	10.1814
Worker	4.7200e-003	3.1300e-003	0.0340	1.2000e-004	0.0130	8.0000e-005	0.0131	3.4700e-003	8.0000e-005	3.5500e-003	0.0000	10.6178	10.6178	2.2000e-004	0.0000	10.6233
Total	**8.4700e-003**	**0.1284**	**0.0633**	**5.0000e-004**	**0.0215**	**4.1000e-004**	**0.0219**	**5.8300e-003**	**3.9000e-004**	**6.2300e-003**	**0.0000**	**46.6816**	**46.6816**	**2.0100e-003**	**0.0000**	**46.7319**

3.3 Site Preparation - 2022

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					4.7000e-004	0.0000	4.7000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0301	0.2664	0.2431	4.5000e-004		0.0152	0.0152		0.0141	0.0141	0.0000	38.6606	38.6606	0.0116	0.0000	38.9509
Total	**0.0301**	**0.2664**	**0.2431**	**4.5000e-004**	**4.7000e-004**	**0.0152**	**0.0157**	**5.0000e-005**	**0.0141**	**0.0141**	**0.0000**	**38.6606**	**38.6606**	**0.0116**	**0.0000**	**38.9509**

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	1.3400e-003	0.0447	0.0102	1.4000e-004	3.0400e-003	1.3000e-004	3.1700e-003	8.4000e-004	1.2000e-004	9.6000e-004	0.0000	13.4323	13.4323	6.8000e-004	0.0000	13.4493
Vendor	8.0000e-004	0.0267	6.6200e-003	7.0000e-005	1.7700e-003	5.0000e-005	1.8200e-003	5.1000e-004	5.0000e-005	5.6000e-004	0.0000	6.9336	6.9336	3.3000e-004	0.0000	6.9419
Worker	2.5700e-003	1.7100e-003	0.0186	6.0000e-005	7.1100e-003	5.0000e-005	7.1600e-003	1.8900e-003	4.0000e-005	1.9300e-003	0.0000	5.7915	5.7915	1.2000e-004	0.0000	5.7945
Total	**4.7100e-003**	**0.0731**	**0.0353**	**2.7000e-004**	**0.0119**	**2.3000e-004**	**0.0122**	**3.2400e-003**	**2.1000e-004**	**3.4500e-003**	**0.0000**	**26.1574**	**26.1574**	**1.1300e-003**	**0.0000**	**26.1857**

3.3 Site Preparation - 2022

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					4.7000e-004	0.0000	4.7000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8000e-003	0.0414	0.2753	4.5000e-004		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	38.6606	38.6606	0.0116	0.0000	38.9509
Total	**5.8000e-003**	**0.0414**	**0.2753**	**4.5000e-004**	**4.7000e-004**	**7.1000e-004**	**1.1800e-003**	**5.0000e-005**	**7.1000e-004**	**7.6000e-004**	**0.0000**	**38.6606**	**38.6606**	**0.0116**	**0.0000**	**38.9509**

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	1.3400e-003	0.0447	0.0102	1.4000e-004	3.0400e-003	1.3000e-004	3.1700e-003	8.4000e-004	1.2000e-004	9.6000e-004	0.0000	13.4323	13.4323	6.8000e-004	0.0000	13.4493
Vendor	8.0000e-004	0.0267	6.6200e-003	7.0000e-005	1.7700e-003	5.0000e-005	1.8200e-003	5.1000e-004	5.0000e-005	5.6000e-004	0.0000	6.9336	6.9336	3.3000e-004	0.0000	6.9419
Worker	2.5700e-003	1.7100e-003	0.0186	6.0000e-005	7.1100e-003	5.0000e-005	7.1600e-003	1.8900e-003	4.0000e-005	1.9300e-003	0.0000	5.7915	5.7915	1.2000e-004	0.0000	5.7945
Total	**4.7100e-003**	**0.0731**	**0.0353**	**2.7000e-004**	**0.0119**	**2.3000e-004**	**0.0122**	**3.2400e-003**	**2.1000e-004**	**3.4500e-003**	**0.0000**	**26.1574**	**26.1574**	**1.1300e-003**	**0.0000**	**26.1857**

3.4 Grading - 2022

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					1.7700e-003	0.0000	1.7700e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0225	0.2050	0.1774	3.7000e-004		0.0102	0.0102		9.4100e-003	9.4100e-003	0.0000	32.4698	32.4698	0.0101	0.0000	32.7224
Total	**0.0225**	**0.2050**	**0.1774**	**3.7000e-004**	**1.7700e-003**	**0.0102**	**0.0120**	**2.5000e-004**	**9.4100e-003**	**9.6600e-003**	**0.0000**	**32.4698**	**32.4698**	**0.0101**	**0.0000**	**32.7224**

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	7.4000e-004	0.0248	5.6500e-003	8.0000e-005	3.2700e-003	7.0000e-005	3.3400e-003	8.5000e-004	7.0000e-005	9.2000e-004	0.0000	7.4624	7.4624	3.8000e-004	0.0000	7.4718
Vendor	3.6000e-004	0.0119	2.9400e-003	3.0000e-005	7.9000e-004	2.0000e-005	8.1000e-004	2.3000e-004	2.0000e-005	2.5000e-004	0.0000	3.0816	3.0816	1.5000e-004	0.0000	3.0853
Worker	1.1400e-003	7.6000e-004	8.2400e-003	3.0000e-005	3.1600e-003	2.0000e-005	3.1800e-003	8.4000e-004	2.0000e-005	8.6000e-004	0.0000	2.5740	2.5740	5.0000e-005	0.0000	2.5754
Total	**2.2400e-003**	**0.0374**	**0.0168**	**1.4000e-004**	**7.2200e-003**	**1.1000e-004**	**7.3300e-003**	**1.9200e-003**	**1.1000e-004**	**2.0300e-003**	**0.0000**	**13.1180**	**13.1180**	**5.8000e-004**	**0.0000**	**13.1324**

3.4 Grading - 2022

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					1.7700e-003	0.0000	1.7700e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7000e-003	0.0276	0.2003	3.7000e-004		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004	0.0000	32.4697	32.4697	0.0101	0.0000	32.7224
Total	**4.7000e-003**	**0.0276**	**0.2003**	**3.7000e-004**	**1.7700e-003**	**6.0000e-004**	**2.3700e-003**	**2.5000e-004**	**6.0000e-004**	**8.5000e-004**	**0.0000**	**32.4697**	**32.4697**	**0.0101**	**0.0000**	**32.7224**

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	7.4000e-004	0.0248	5.6500e-003	8.0000e-005	3.2700e-003	7.0000e-005	3.3400e-003	8.5000e-004	7.0000e-005	9.2000e-004	0.0000	7.4624	7.4624	3.8000e-004	0.0000	7.4718
Vendor	3.6000e-004	0.0119	2.9400e-003	3.0000e-005	7.9000e-004	2.0000e-005	8.1000e-004	2.3000e-004	2.0000e-005	2.5000e-004	0.0000	3.0816	3.0816	1.5000e-004	0.0000	3.0853
Worker	1.1400e-003	7.6000e-004	8.2400e-003	3.0000e-005	3.1600e-003	2.0000e-005	3.1800e-003	8.4000e-004	2.0000e-005	8.6000e-004	0.0000	2.5740	2.5740	5.0000e-005	0.0000	2.5754
Total	**2.2400e-003**	**0.0374**	**0.0168**	**1.4000e-004**	**7.2200e-003**	**1.1000e-004**	**7.3300e-003**	**1.9200e-003**	**1.1000e-004**	**2.0300e-003**	**0.0000**	**13.1180**	**13.1180**	**5.8000e-004**	**0.0000**	**13.1324**

3.4 Grading - 2023

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					1.7700e-003	0.0000	1.7700e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2373	0.2179	4.7000e-004		0.0115	0.0115		0.0106	0.0106	0.0000	40.5949	40.5949	0.0126	0.0000	40.9104
Total	**0.0266**	**0.2373**	**0.2179**	**4.7000e-004**	**1.7700e-003**	**0.0115**	**0.0133**	**2.5000e-004**	**0.0106**	**0.0109**	**0.0000**	**40.5949**	**40.5949**	**0.0126**	**0.0000**	**40.9104**

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	6.3000e-004	0.0207	6.4000e-003	9.0000e-005	3.3800e-003	4.0000e-005	3.4100e-003	8.9000e-004	4.0000e-005	9.3000e-004	0.0000	8.9725	8.9725	4.2000e-004	0.0000	8.9831
Vendor	3.3000e-004	0.0114	3.2900e-003	4.0000e-005	9.8000e-004	1.0000e-005	1.0000e-003	2.8000e-004	1.0000e-005	3.0000e-004	0.0000	3.7441	3.7441	1.6000e-004	0.0000	3.7480
Worker	1.3400e-003	8.5000e-004	9.4800e-003	3.0000e-005	3.9500e-003	2.0000e-005	3.9800e-003	1.0500e-003	2.0000e-005	1.0700e-003	0.0000	3.0943	3.0943	6.0000e-005	0.0000	3.0958
Total	**2.3000e-003**	**0.0330**	**0.0192**	**1.6000e-004**	**8.3100e-003**	**7.0000e-005**	**8.3900e-003**	**2.2200e-003**	**7.0000e-005**	**2.3000e-003**	**0.0000**	**15.8108**	**15.8108**	**6.4000e-004**	**0.0000**	**15.8268**

3.4 Grading - 2023

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					1.7700e-003	0.0000	1.7700e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8800e-003	0.0345	0.2504	4.7000e-004		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	40.5949	40.5949	0.0126	0.0000	40.9104
Total	**5.8800e-003**	**0.0345**	**0.2504**	**4.7000e-004**	**1.7700e-003**	**7.5000e-004**	**2.5200e-003**	**2.5000e-004**	**7.5000e-004**	**1.0000e-003**	**0.0000**	**40.5949**	**40.5949**	**0.0126**	**0.0000**	**40.9104**

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	6.3000e-004	0.0207	6.4000e-003	9.0000e-005	3.3800e-003	4.0000e-005	3.4100e-003	8.9000e-004	4.0000e-005	9.3000e-004	0.0000	8.9725	8.9725	4.2000e-004	0.0000	8.9831
Vendor	3.3000e-004	0.0114	3.2900e-003	4.0000e-005	9.8000e-004	1.0000e-005	1.0000e-003	2.8000e-004	1.0000e-005	3.0000e-004	0.0000	3.7441	3.7441	1.6000e-004	0.0000	3.7480
Worker	1.3400e-003	8.5000e-004	9.4800e-003	3.0000e-005	3.9500e-003	2.0000e-005	3.9800e-003	1.0500e-003	2.0000e-005	1.0700e-003	0.0000	3.0943	3.0943	6.0000e-005	0.0000	3.0958
Total	**2.3000e-003**	**0.0330**	**0.0192**	**1.6000e-004**	**8.3100e-003**	**7.0000e-005**	**8.3900e-003**	**2.2200e-003**	**7.0000e-005**	**2.3000e-003**	**0.0000**	**15.8108**	**15.8108**	**6.4000e-004**	**0.0000**	**15.8268**

3.5 Building Construction - 2023

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	0.2281	1.4136	1.7293	3.0100e-003		0.0600	0.0600		0.0583	0.0583	0.0000	238.5744	238.5744	0.0483	0.0000	239.7821
Total	**0.2281**	**1.4136**	**1.7293**	**3.0100e-003**		**0.0600**	**0.0600**		**0.0583**	**0.0583**	**0.0000**	**238.5744**	**238.5744**	**0.0483**	**0.0000**	**239.7821**

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	0.0119	0.3899	0.1204	1.7300e-003	0.0593	7.0000e-004	0.0600	0.0157	6.7000e-004	0.0164	0.0000	168.6828	168.6828	7.9800e-003	0.0000	168.8822
Vendor	5.2200e-003	0.1792	0.0516	6.1000e-004	0.0154	2.1000e-004	0.0156	4.4600e-003	2.0000e-004	4.6500e-003	0.0000	58.6569	58.6569	2.4400e-003	0.0000	58.7179
Worker	0.0817	0.0521	0.5792	2.0900e-003	0.2414	1.5100e-003	0.2429	0.0642	1.3900e-003	0.0656	0.0000	189.0605	189.0605	3.6800e-003	0.0000	189.1525
Total	**0.0989**	**0.6213**	**0.7512**	**4.4300e-003**	**0.3161**	**2.4200e-003**	**0.3185**	**0.0844**	**2.2600e-003**	**0.0867**	**0.0000**	**416.4003**	**416.4003**	**0.0141**	**0.0000**	**416.7527**

3.5 Building Construction - 2023

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	0.0459	0.7814	1.7827	3.0100e-003		4.0400e-003	4.0400e-003		4.0400e-003	4.0400e-003	0.0000	238.5741	238.5741	0.0483	0.0000	239.7818
Total	**0.0459**	**0.7814**	**1.7827**	**3.0100e-003**		**4.0400e-003**	**4.0400e-003**		**4.0400e-003**	**4.0400e-003**	**0.0000**	**238.5741**	**238.5741**	**0.0483**	**0.0000**	**239.7818**

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	0.0119	0.3899	0.1204	1.7300e-003	0.0593	7.0000e-004	0.0600	0.0157	6.7000e-004	0.0164	0.0000	168.6828	168.6828	7.9800e-003	0.0000	168.8822
Vendor	5.2200e-003	0.1792	0.0516	6.1000e-004	0.0154	2.1000e-004	0.0156	4.4600e-003	2.0000e-004	4.6500e-003	0.0000	58.6569	58.6569	2.4400e-003	0.0000	58.7179
Worker	0.0817	0.0521	0.5792	2.0900e-003	0.2414	1.5100e-003	0.2429	0.0642	1.3900e-003	0.0656	0.0000	189.0605	189.0605	3.6800e-003	0.0000	189.1525
Total	**0.0989**	**0.6213**	**0.7512**	**4.4300e-003**	**0.3161**	**2.4200e-003**	**0.3185**	**0.0844**	**2.2600e-003**	**0.0867**	**0.0000**	**416.4003**	**416.4003**	**0.0141**	**0.0000**	**416.7527**

3.5 Building Construction - 2024

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	0.1406	0.8954	1.1345	1.9900e-003		0.0347	0.0347		0.0337	0.0337	0.0000	157.3899	157.3899	0.0313	0.0000	158.1711
Total	**0.1406**	**0.8954**	**1.1345**	**1.9900e-003**		**0.0347**	**0.0347**		**0.0337**	**0.0337**	**0.0000**	**157.3899**	**157.3899**	**0.0313**	**0.0000**	**158.1711**

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	7.7800e-003	0.2518	0.0796	1.1300e-003	0.0559	4.5000e-004	0.0564	0.0145	4.3000e-004	0.0149	0.0000	110.4285	110.4285	5.2400e-003	0.0000	110.5597
Vendor	3.3300e-003	0.1169	0.0328	4.0000e-004	0.0102	1.3000e-004	0.0103	2.9400e-003	1.3000e-004	3.0700e-003	0.0000	38.4275	38.4275	1.5800e-003	0.0000	38.4669
Worker	0.0507	0.0311	0.3539	1.3200e-003	0.1592	9.8000e-004	0.1602	0.0424	9.0000e-004	0.0433	0.0000	119.7643	119.7643	2.1800e-003	0.0000	119.8189
Total	**0.0618**	**0.3997**	**0.4663**	**2.8500e-003**	**0.2253**	**1.5600e-003**	**0.2269**	**0.0598**	**1.4600e-003**	**0.0613**	**0.0000**	**268.6203**	**268.6203**	**9.0000e-003**	**0.0000**	**268.8455**

3.5 Building Construction - 2024

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	0.0303	0.5154	1.1758	1.9900e-003		2.6600e-003	2.6600e-003		2.6600e-003	2.6600e-003	0.0000	157.3897	157.3897	0.0313	0.0000	158.1710
Total	**0.0303**	**0.5154**	**1.1758**	**1.9900e-003**		**2.6600e-003**	**2.6600e-003**		**2.6600e-003**	**2.6600e-003**	**0.0000**	**157.3897**	**157.3897**	**0.0313**	**0.0000**	**158.1710**

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	7.7800e-003	0.2518	0.0796	1.1300e-003	0.0559	4.5000e-004	0.0564	0.0145	4.3000e-004	0.0149	0.0000	110.4285	110.4285	5.2400e-003	0.0000	110.5597
Vendor	3.3300e-003	0.1169	0.0328	4.0000e-004	0.0102	1.3000e-004	0.0103	2.9400e-003	1.3000e-004	3.0700e-003	0.0000	38.4275	38.4275	1.5800e-003	0.0000	38.4669
Worker	0.0507	0.0311	0.3539	1.3200e-003	0.1592	9.8000e-004	0.1602	0.0424	9.0000e-004	0.0433	0.0000	119.7643	119.7643	2.1800e-003	0.0000	119.8189
Total	**0.0618**	**0.3997**	**0.4663**	**2.8500e-003**	**0.2253**	**1.5600e-003**	**0.2269**	**0.0598**	**1.4600e-003**	**0.0613**	**0.0000**	**268.6203**	**268.6203**	**9.0000e-003**	**0.0000**	**268.8455**

3.6 Architectural Coating - 2024

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	4.5494					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0623	0.4177	0.5014	7.3000e-004		0.0181	0.0181		0.0174	0.0174	0.0000	57.2868	57.2868	0.0102	0.0000	57.5420
Total	**4.6117**	**0.4177**	**0.5014**	**7.3000e-004**		**0.0181**	**0.0181**		**0.0174**	**0.0174**	**0.0000**	**57.2868**	**57.2868**	**0.0102**	**0.0000**	**57.5420**

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	4.3900e-003	0.1421	0.0449	6.4000e-004	0.0148	2.6000e-004	0.0150	4.0700e-003	2.5000e-004	4.3100e-003	0.0000	62.3387	62.3387	2.9600e-003	0.0000	62.4127
Vendor	1.8800e-003	0.0660	0.0185	2.3000e-004	5.7400e-003	8.0000e-005	5.8100e-003	1.6600e-003	7.0000e-005	1.7300e-003	0.0000	21.6929	21.6929	8.9000e-004	0.0000	21.7152
Worker	0.0308	0.0189	0.2151	8.0000e-004	0.0968	5.9000e-004	0.0974	0.0258	5.5000e-004	0.0263	0.0000	72.8096	72.8096	1.3300e-003	0.0000	72.8428
Total	**0.0371**	**0.2270**	**0.2786**	**1.6700e-003**	**0.1173**	**9.3000e-004**	**0.1182**	**0.0315**	**8.7000e-004**	**0.0323**	**0.0000**	**156.8412**	**156.8412**	**5.1800e-003**	**0.0000**	**156.9707**

3.6 Architectural Coating - 2024

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	4.5494					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.2124	0.4684	7.3000e-004		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	57.2867	57.2867	0.0102	0.0000	57.5419
Total	**4.5609**	**0.2124**	**0.4684**	**7.3000e-004**		**9.5000e-004**	**9.5000e-004**		**9.5000e-004**	**9.5000e-004**	**0.0000**	**57.2867**	**57.2867**	**0.0102**	**0.0000**	**57.5419**

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	4.3900e-003	0.1421	0.0449	6.4000e-004	0.0148	2.6000e-004	0.0150	4.0700e-003	2.5000e-004	4.3100e-003	0.0000	62.3387	62.3387	2.9600e-003	0.0000	62.4127
Vendor	1.8800e-003	0.0660	0.0185	2.3000e-004	5.7400e-003	8.0000e-005	5.8100e-003	1.6600e-003	7.0000e-005	1.7300e-003	0.0000	21.6929	21.6929	8.9000e-004	0.0000	21.7152
Worker	0.0308	0.0189	0.2151	8.0000e-004	0.0968	5.9000e-004	0.0974	0.0258	5.5000e-004	0.0263	0.0000	72.8096	72.8096	1.3300e-003	0.0000	72.8428
Total	**0.0371**	**0.2270**	**0.2786**	**1.6700e-003**	**0.1173**	**9.3000e-004**	**0.1182**	**0.0315**	**8.7000e-004**	**0.0323**	**0.0000**	**156.8412**	**156.8412**	**5.1800e-003**	**0.0000**	**156.9707**

3.7 Paving - 2024

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	0.0185	0.1483	0.1963	2.7000e-004		8.3500e-003	8.3500e-003		7.6800e-003	7.6800e-003	0.0000	24.1163	24.1163	7.8000e-003	0.0000	24.3113
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0185**	**0.1483**	**0.1963**	**2.7000e-004**		**8.3500e-003**	**8.3500e-003**		**7.6800e-003**	**7.6800e-003**	**0.0000**	**24.1163**	**24.1163**	**7.8000e-003**	**0.0000**	**24.3113**

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	1.1300e-003	0.0366	0.0116	1.6000e-004	3.8000e-003	7.0000e-005	3.8700e-003	1.0500e-003	6.0000e-005	1.1100e-003	0.0000	16.0300	16.0300	7.6000e-004	0.0000	16.0490
Vendor	3.9000e-004	0.0136	3.8000e-003	5.0000e-005	1.1800e-003	2.0000e-005	1.2000e-003	3.4000e-004	1.0000e-005	3.6000e-004	0.0000	4.4626	4.4626	1.8000e-004	0.0000	4.4671
Worker	4.5300e-003	2.7700e-003	0.0316	1.2000e-004	0.0142	9.0000e-005	0.0143	3.7800e-003	8.0000e-005	3.8600e-003	0.0000	10.6986	10.6986	2.0000e-004	0.0000	10.7034
Total	**6.0500e-003**	**0.0529**	**0.0470**	**3.3000e-004**	**0.0192**	**1.8000e-004**	**0.0194**	**5.1700e-003**	**1.5000e-004**	**5.3300e-003**	**0.0000**	**31.1911**	**31.1911**	**1.1400e-003**	**0.0000**	**31.2195**

3.7 Paving - 2024

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	3.8800e-003	0.0379	0.1714	2.7000e-004		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	24.1162	24.1162	7.8000e-003	0.0000	24.3112
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.8800e-003**	**0.0379**	**0.1714**	**2.7000e-004**		**4.4000e-004**	**4.4000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**24.1162**	**24.1162**	**7.8000e-003**	**0.0000**	**24.3112**

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	1.1300e-003	0.0366	0.0116	1.6000e-004	3.8000e-003	7.0000e-005	3.8700e-003	1.0500e-003	6.0000e-005	1.1100e-003	0.0000	16.0300	16.0300	7.6000e-004	0.0000	16.0490
Vendor	3.9000e-004	0.0136	3.8000e-003	5.0000e-005	1.1800e-003	2.0000e-005	1.2000e-003	3.4000e-004	1.0000e-005	3.6000e-004	0.0000	4.4626	4.4626	1.8000e-004	0.0000	4.4671
Worker	4.5300e-003	2.7700e-003	0.0316	1.2000e-004	0.0142	9.0000e-005	0.0143	3.7800e-003	8.0000e-005	3.8600e-003	0.0000	10.6986	10.6986	2.0000e-004	0.0000	10.7034
Total	**6.0500e-003**	**0.0529**	**0.0470**	**3.3000e-004**	**0.0192**	**1.8000e-004**	**0.0194**	**5.1700e-003**	**1.5000e-004**	**5.3300e-003**	**0.0000**	**31.1911**	**31.1911**	**1.1400e-003**	**0.0000**	**31.2195**

4.0 Operational Detail - Mobile

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	0.7297	3.4073	8.2801	0.0331	3.1587	0.0269	3.1856	0.8476	0.0251	0.8727	0.0000	3,044.6686	3,044.6686	0.1016	0.0000	3,047.2089
Unmitigated	0.7297	3.4073	8.2801	0.0331	3.1587	0.0269	3.1856	0.8476	0.0251	0.8727	0.0000	3,044.6686	3,044.6686	0.1016	0.0000	3,047.2089

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments High Rise	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	4,570.05	1,021.34	432.77	8,297,346	8,297,346
Regional Shopping Center	96.96	113.49	57.29	192,542	192,542
Regional Shopping Center	0.00	0.00	0.00		
Total	4,667.01	1,134.82	490.06	8,489,888	8,489,888

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
Apartments High Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	65	35	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments High Rise	0.581705	0.037849	0.193793	0.109044	0.014574	0.005304	0.018664	0.026966	0.002656	0.002072	0.005755	0.000900	0.000719
Enclosed Parking with Elevator	0.581705	0.037849	0.193793	0.109044	0.014574	0.005304	0.018664	0.026966	0.002656	0.002072	0.005755	0.000900	0.000719
General Office Building	0.581705	0.037849	0.193793	0.109044	0.014574	0.005304	0.018664	0.026966	0.002656	0.002072	0.005755	0.000900	0.000719
Regional Shopping Center	0.581705	0.037849	0.193793	0.109044	0.014574	0.005304	0.018664	0.026966	0.002656	0.002072	0.005755	0.000900	0.000719

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kaiser Center - Master Plan 2 - Webster St Office Tower - San Francisco Bay Area Air Basin, Annual

	ROG	NOx	CO	SO2	Fugitive 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						0.0000	0.0000		0.0000	0.0000	0.0000	1,472.6811	1,472.6811	0.1453	0.0301	1,485.2690
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,472.6811	1,472.6811	0.1453	0.0301	1,485.2690
NaturalGas Mitigated	0.0904	0.8214	0.6900	4.9300e-003		0.0624	0.0624		0.0624	0.0624	0.0000	894.2231	894.2231	0.0171	0.0164	899.5370
NaturalGas Unmitigated	0.0904	0.8214	0.6900	4.9300e-003		0.0624	0.0624		0.0624	0.0624	0.0000	894.2231	894.2231	0.0171	0.0164	899.5370

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/yr	tons/yr										MT/yr					
Apartments High Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	1.67309e+007	0.0902	0.8201	0.6889	4.9200e-003		0.0623	0.0623		0.0623	0.0623	0.0000	892.8239	892.8239	0.0171	0.0164	898.1295
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	26220	1.4000e-004	1.2900e-003	1.0800e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.3992	1.3992	3.0000e-005	3.0000e-005	1.4075
Total		**0.0904**	**0.8214**	**0.6900**	**4.9300e-003**		**0.0624**	**0.0624**		**0.0624**	**0.0624**	**0.0000**	**894.2231**	**894.2231**	**0.0171**	**0.0164**	**899.5370**

5.2 Energy by Land Use - NaturalGas

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/yr	tons/yr										MT/yr					
Apartments High Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	1.67309e+007	0.0902	0.8201	0.6889	4.9200e-003		0.0623	0.0623		0.0623	0.0623	0.0000	892.8239	892.8239	0.0171	0.0164	898.1295
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	26220	1.4000e-004	1.2900e-003	1.0800e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	1.3992	1.3992	3.0000e-005	3.0000e-005	1.4075
Total		**0.0904**	**0.8214**	**0.6900**	**4.9300e-003**		**0.0624**	**0.0624**		**0.0624**	**0.0624**	**0.0000**	**894.2231**	**894.2231**	**0.0171**	**0.0164**	**899.5370**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	181543	24.2099	2.3900e-003	4.9000e-004	24.4168
General Office Building	1.08019e+007	1,440.5051	0.1421	0.0294	1,452.8180
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	59736	7.9662	7.9000e-004	1.6000e-004	8.0343
Total		**1,472.6811**	**0.1453**	**0.0301**	**1,485.2690**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	181543	24.2099	2.3900e-003	4.9000e-004	24.4168
General Office Building	1.08019e+007	1,440.5051	0.1421	0.0294	1,452.8180
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	59736	7.9662	7.9000e-004	1.6000e-004	8.0343
Total		**1,472.6811**	**0.1453**	**0.0301**	**1,485.2690**

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	4.4160	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Unmitigated	4.4160	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172

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	1.0106					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.4046					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6000e-004	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Total	**4.4160**	**7.0000e-005**	**8.2700e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0161**	**0.0161**	**4.0000e-005**	**0.0000**	**0.0172**

6.2 Area by SubCategory

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	1.0106					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.4046					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6000e-004	7.0000e-005	8.2700e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0172
Total	**4.4160**	**7.0000e-005**	**8.2700e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0161**	**0.0161**	**4.0000e-005**	**0.0000**	**0.0172**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	176.8387	0.1634	0.0977	210.0289
Unmitigated	176.8387	0.1634	0.0977	210.0289

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	0 / 0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	123.069 / 94.2864	176.3547	0.1630	0.0974	209.4540
Regional Shopping Center	0.337771 / 0.258776	0.4840	4.5000e-004	2.7000e-004	0.5749
Total		**176.8388**	**0.1634**	**0.0977**	**210.0289**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	0 / 0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	123.069 / 94.2864	176.3547	0.1630	0.0974	209.4540
Regional Shopping Center	0.337771 / 0.258776	0.4840	4.5000e-004	2.7000e-004	0.5749
Total		**176.8388**	**0.1634**	**0.0977**	**210.0289**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	164.6135	9.7284	0.0000	407.8230
Unmitigated	164.6135	9.7284	0.0000	407.8230

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	804.95	163.3976	9.6565	0.0000	404.8106
Regional Shopping Center	5.99	1.2159	0.0719	0.0000	3.0124
Total		**164.6135**	**9.7284**	**0.0000**	**407.8230**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	804.95	163.3976	9.6565	0.0000	404.8106
Regional Shopping Center	5.99	1.2159	0.0719	0.0000	3.0124
Total		**164.6135**	**9.7284**	**0.0000**	**407.8230**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	2012	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0826	0.3691	0.2105	4.0000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.3082	38.3082	5.3700e-003	0.0000	38.4425
Total	**0.0826**	**0.3691**	**0.2105**	**4.0000e-004**		**0.0121**	**0.0121**		**0.0121**	**0.0121**	**0.0000**	**38.3082**	**38.3082**	**5.3700e-003**	**0.0000**	**38.4425**

11.0 Vegetation

Kaiser Center - Master Plan I Simultaneous Scenario - Uncontrolled
****
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.5.0
** Lakes Environmental Software Inc.
** Date: 10/4/2018
** File: C:\Lakes\AERMOD View\Kaiser Center\Kaiser Center.ADI
**
****
**
**
****
** AERMOD Control Pathway
****
**
**
CO STARTING
  TITLEONE C:\Lakes\AERMOD View\Kaiser Center\Kaiser Center.isc
  MODELOPT DFAULT CONC
  AVERTIME ANNUAL
  POLLUTID PM_10
  RUNORNOT RUN
  ERRORFIL "Kaiser Center.err"
CO FINISHED
**
****
** AERMOD Source Pathway
****
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
  LOCATION PAREA1   AREAPOLY   564625.394 4184963.328   7.000
** Source Parameters **
  SRCPARAM PAREA1   9.682E-07   5.000   12
  AREAVERT PAREA1   564625.394 4184963.328 564605.249 4184861.974
  AREAVERT PAREA1   564606.508 4184821.055 564726.118 4184789.579
  AREAVERT PAREA1   564736.820 4184788.319 564743.115 4184790.208
  AREAVERT PAREA1   564705.344 4184851.902 564730.525 4184864.492
  AREAVERT PAREA1   564749.411 4184877.712 564765.778 4184892.821
  AREAVERT PAREA1   564775.221 4184905.411 564778.998 4184931.851

** Variable Emissions Type: "By Hour / Seven Days (HRDOW7)"
** Variable Emission Scenario: "Scenario 1"
  EMISFACT PAREA1   HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1   HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1   HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1   HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1   HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1   HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1   HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

```
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  SRCGROUP ALL
SO FINISHED
**
**********************************************
** AERMOD Receptor Pathway
**********************************************
**
**
RE STARTING
  INCLUDED "Kaiser Center.rou"
RE FINISHED
**
**********************************************
** AERMOD Meteorology Pathway
**********************************************
**
**
ME STARTING
  SURFFILE "C:\Users\jni\Desktop\Kaiser towers\HRA\724930\724930.SFC"
  PROFFILE "C:\Users\jni\Desktop\Kaiser towers\HRA\724930\724930.PFL"
  SURFDATA 23230 2009 OAKLAND/WSO_AP
  UAIRDATA 23230 2009 OAKLAND/WSO_AP
  PROFBASE 10.0 METERS
ME FINISHED
**
**********************************************
** AERMOD Output Pathway
**********************************************
**
**
OU STARTING
** Auto-Generated Plotfiles
  PLOTFILE ANNUAL ALL "Kaiser Center.AD\AN00GALL.PLT" 31
  SUMMFILE "Kaiser Center.sum"
OU FINISHED

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** MODEL SETUP OPTIONS SUMMARY ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.

**Other Options Specified:
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: PM_10

**Model Calculates ANNUAL Averages Only

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3 Receptor(s)

with: 0 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 1 AREA type source(s)
and: 0 LINE source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 10.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.5 MB of RAM.

**Detailed Error/Message File: Kaiser Center.err
**File for Summary of Results: Kaiser Center.sum
*** AERMOD - VERSION 16216r *** *** C:\Lakes\AERMOD View\Kaiser Center\Kaiser Center.isc *** 10/04/18
*** AERMET - VERSION 14134 *** *** *** 16:05:55
PAGE 2
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	SCALAR VARY BY
PAREA1	0	0.96820E-06	564625.4	4184963.3	7.0	5.00	12	0.00	NO	HRDOW7

*** AERMOD - VERSION 16216r *** *** C:\Lakes\AERMOD View\Kaiser Center\Kaiser Center.isc *** 10/04/18
*** AERMET - VERSION 14134 *** *** *** 16:05:55
PAGE 3
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	PAREA1 ,

*** AERMOD - VERSION 16216r *** *** C:\Lakes\AERMOD View\Kaiser Center\Kaiser Center.isc *** 10/04/18
*** AERMET - VERSION 14134 *** *** *** 16:05:55
PAGE 4
*** MODELOPTs: RegDFAULT CONC ELEV RURAL

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = PAREA1 ; SOURCE TYPE = AREAPOLY :
HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

- - - -

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(564360.1, 4184715.6, 8.0, 8.0, 0.0); (564527.5, 4185181.2, 6.0, 6.0, 0.0);
(565058.0, 4184828.2, 5.1, 7.0, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-17.2	0.303	-9.000	-9.000	-999.	401.	147.2	0.63	0.86	1.00	2.36	81.	10.0	282.5	2.0
09	01	01	1	02	-21.8	0.383	-9.000	-9.000	-999.	569.	234.6	0.63	0.86	1.00	2.86	68.	10.0	282.0	2.0
09	01	01	1	03	-26.3	0.460	-9.000	-9.000	-999.	749.	337.1	0.63	0.86	1.00	3.36	84.	10.0	280.9	2.0
09	01	01	1	04	-15.4	0.270	-9.000	-9.000	-999.	368.	116.1	0.47	0.86	1.00	2.36	53.	10.0	280.9	2.0
09	01	01	1	05	-26.3	0.460	-9.000	-9.000	-999.	749.	336.3	0.63	0.86	1.00	3.36	73.	10.0	280.4	2.0
09	01	01	1	06	-21.9	0.383	-9.000	-9.000	-999.	573.	232.9	0.63	0.86	1.00	2.86	82.	10.0	280.4	2.0
09	01	01	1	07	-22.0	0.383	-9.000	-9.000	-999.	569.	232.5	0.63	0.86	1.00	2.86	95.	10.0	279.9	2.0
09	01	01	1	08	-11.2	0.196	-9.000	-9.000	-999.	238.	60.6	0.63	0.86	0.76	1.76	73.	10.0	279.9	2.0
09	01	01	1	09	-2.2	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.45	0.86	0.39	0.00	0.	10.0	280.4	2.0
09	01	01	1	10	6.8	0.266	0.264	0.016	98.	329.	-250.8	0.63	0.86	0.27	1.76	91.	10.0	280.9	2.0
09	01	01	1	11	15.5	-9.000	-9.000	-9.000	177.	-999.	-99999.0	0.45	0.86	0.22	0.00	0.	10.0	282.0	2.0
09	01	01	1	12	96.1	0.393	1.019	0.014	401.	591.	-57.4	0.22	0.86	0.21	3.36	266.	10.0	281.4	2.0
09	01	01	1	13	102.5	0.395	1.092	0.014	462.	595.	-54.4	0.22	0.86	0.20	3.36	283.	10.0	282.0	2.0
09	01	01	1	14	89.9	0.297	1.066	0.015	489.	394.	-26.5	0.22	0.86	0.21	2.36	249.	10.0	282.0	2.0
09	01	01	1	15	62.1	0.383	0.954	0.014	507.	569.	-82.1	0.22	0.86	0.24	3.36	242.	10.0	282.5	2.0
09	01	01	1	16	23.1	0.665	0.690	0.006	513.	1300.	-1150.4	0.52	0.86	0.33	4.86	304.	10.0	282.5	2.0
09	01	01	1	17	-37.0	0.486	-9.000	-9.000	-999.	846.	280.6	0.22	0.86	0.56	4.86	291.	10.0	281.4	2.0
09	01	01	1	18	-52.2	0.480	-9.000	-9.000	-999.	799.	191.9	0.52	0.86	1.00	3.86	307.	10.0	280.9	2.0
09	01	01	1	19	-25.6	0.224	-9.000	-9.000	-999.	327.	39.8	0.52	0.86	1.00	2.36	334.	10.0	280.4	2.0
09	01	01	1	20	-11.1	0.119	-9.000	-9.000	-999.	115.	13.8	0.52	0.86	1.00	1.76	317.	10.0	280.4	2.0
09	01	01	1	21	-10.3	0.119	-9.000	-9.000	-999.	98.	14.7	0.52	0.86	1.00	1.76	320.	10.0	280.4	2.0
09	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.45	0.86	1.00	0.00	0.	10.0	280.9	2.0
09	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.45	0.86	1.00	0.00	0.	10.0	281.4	2.0
09	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.45	0.86	1.00	0.00	0.	10.0	281.4	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	81.	2.36	282.6	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ***

INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
564360.07	4184715.58	0.00134	564527.46	4185181.23	0.00476
565058.04	4184828.18	0.02483			

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.02483 AT (565058.04, 4184828.18, 5.10, 7.00, 0.00) DC	
	2ND HIGHEST VALUE IS	0.00476 AT (564527.46, 4185181.23, 6.00, 6.00, 0.00) DC	
	3RD HIGHEST VALUE IS	0.00134 AT (564360.07, 4184715.58, 8.00, 8.00, 0.00) DC	
	4TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	5TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	6TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	7TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	8TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	9TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	10TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 7953 Informational Message(s)

A Total of 43872 Hours Were Processed

A Total of 7152 Calm Hours Identified

A Total of 801 Missing Hours Identified (1.83 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
MX W481 43873 MAIN: Data Remaining After End of Year. Number of Hours= 48

****
*** AERMOD Finishes Successfully ***
****

```
Kaiser Center - Maser Plan II Sequential Scenario - Uncontrolled
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.5.0
** Lakes Environmental Software Inc.
** Date: 10/4/2018
** File: C:\Lakes\AERMOD View\Kaiser Center - SeqMP2\Kaiser Center - SeqMP2.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
  TITLEONE C:\Lakes\AERMOD View\Kaiser Center - SeqMP2\Kaiser Center - SeqMP2.i
  MODELOPT DFAULT CONC
  AVERTIME ANNUAL
  POLLUTID PM_10
  RUNORNOT RUN
  ERRORFIL "Kaiser Center - SeqMP2.err"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
  LOCATION PAREA1      AREAPOLY   564625.394  4184963.328       7.000
** Source Parameters **
  SRCPARAM PAREA1      5.8184E-07     5.000       12
  AREAVERT PAREA1      564625.394 4184963.328 564605.249 4184861.974
  AREAVERT PAREA1      564606.508 4184821.055 564726.118 4184789.579
  AREAVERT PAREA1      564736.820 4184788.319 564743.115 4184790.208
  AREAVERT PAREA1      564705.344 4184851.902 564730.525 4184864.492
  AREAVERT PAREA1      564749.411 4184877.712 564765.778 4184892.821
  AREAVERT PAREA1      564775.221 4184905.411 564778.998 4184931.851

** Variable Emissions Type: "By Hour / Seven Days (HRDOW7)"
** Variable Emission Scenario: "Scenario 1"
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
```

```
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  SRCGROUP ALL
SO FINISHED
**
**********************************************
** AERMOD Receptor Pathway
**********************************************
**
**
RE STARTING
  INCLUDED "Kaiser Center - SeqMP2.rou"
RE FINISHED
**
**********************************************
** AERMOD Meteorology Pathway
**********************************************
**
**
ME STARTING
  SURFFILE "C:\Users\jni\Desktop\Kaiser towers\HRA\724930\724930.SFC"
  PROFFILE "C:\Users\jni\Desktop\Kaiser towers\HRA\724930\724930.PFL"
  SURFDATA 23230 2009 OAKLAND/WSO_AP
  UAIRDATA 23230 2009 OAKLAND/WSO_AP
  PROFBASE 10.0 METERS
ME FINISHED
**
**********************************************
** AERMOD Output Pathway
**********************************************
**
**
OU STARTING
** Auto-Generated Plotfiles
  PLOTFILE ANNUAL ALL "KAISER CENTER - SEQMP2.AD\AN00GALL.PLT" 31
  SUMMFILE "Kaiser Center - SeqMP2.sum"
OU FINISHED

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** MODEL SETUP OPTIONS SUMMARY ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.

**Other Options Specified:
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: PM_10

**Model Calculates ANNUAL Averages Only

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3 Receptor(s)

with: 0 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 1 AREA type source(s)
and: 0 LINE source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 10.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.5 MB of RAM.

**Detailed Error/Message File: Kaiser Center - SeqMP2.err
**File for Summary of Results: Kaiser Center - SeqMP2.sum

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	X (METERS)	Y (METERS)	ELEV. (METERS)	HEIGHT (METERS)	OF VERTS.	SZ (METERS)	SOURCE	SCALAR VARY BY
PAREA1	0	0.58184E-06	564625.4	4184963.3	7.0	5.00	12	0.00	NO	HRDOW7

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	PAREA1 ,

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = PAREA1 ; SOURCE TYPE = AREAPOLY :
HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

- - - -

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(564360.1, 4184715.6, 8.0, 8.0, 0.0); (564527.5, 4185181.2, 6.0, 6.0, 0.0);
(565058.0, 4184828.2, 5.1, 7.0, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-17.2	0.303	-9.000	-9.000	-999.	401.	147.2	0.63	0.86	1.00	2.36	81.	10.0	282.5	2.0
09	01	01	1	02	-21.8	0.383	-9.000	-9.000	-999.	569.	234.6	0.63	0.86	1.00	2.86	68.	10.0	282.0	2.0
09	01	01	1	03	-26.3	0.460	-9.000	-9.000	-999.	749.	337.1	0.63	0.86	1.00	3.36	84.	10.0	280.9	2.0
09	01	01	1	04	-15.4	0.270	-9.000	-9.000	-999.	368.	116.1	0.47	0.86	1.00	2.36	53.	10.0	280.9	2.0
09	01	01	1	05	-26.3	0.460	-9.000	-9.000	-999.	749.	336.3	0.63	0.86	1.00	3.36	73.	10.0	280.4	2.0
09	01	01	1	06	-21.9	0.383	-9.000	-9.000	-999.	573.	232.9	0.63	0.86	1.00	2.86	82.	10.0	280.4	2.0
09	01	01	1	07	-22.0	0.383	-9.000	-9.000	-999.	569.	232.5	0.63	0.86	1.00	2.86	95.	10.0	279.9	2.0
09	01	01	1	08	-11.2	0.196	-9.000	-9.000	-999.	238.	60.6	0.63	0.86	0.76	1.76	73.	10.0	279.9	2.0
09	01	01	1	09	-2.2	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.45	0.86	0.39	0.00	0.	10.0	280.4	2.0
09	01	01	1	10	6.8	0.266	0.264	0.016	98.	329.	-250.8	0.63	0.86	0.27	1.76	91.	10.0	280.9	2.0
09	01	01	1	11	15.5	-9.000	-9.000	-9.000	177.	-999.	-99999.0	0.45	0.86	0.22	0.00	0.	10.0	282.0	2.0
09	01	01	1	12	96.1	0.393	1.019	0.014	401.	591.	-57.4	0.22	0.86	0.21	3.36	266.	10.0	281.4	2.0
09	01	01	1	13	102.5	0.395	1.092	0.014	462.	595.	-54.4	0.22	0.86	0.20	3.36	283.	10.0	282.0	2.0
09	01	01	1	14	89.9	0.297	1.066	0.015	489.	394.	-26.5	0.22	0.86	0.21	2.36	249.	10.0	282.0	2.0
09	01	01	1	15	62.1	0.383	0.954	0.014	507.	569.	-82.1	0.22	0.86	0.24	3.36	242.	10.0	282.5	2.0
09	01	01	1	16	23.1	0.665	0.690	0.006	513.	1300.	-1150.4	0.52	0.86	0.33	4.86	304.	10.0	282.5	2.0
09	01	01	1	17	-37.0	0.486	-9.000	-9.000	-999.	846.	280.6	0.22	0.86	0.56	4.86	291.	10.0	281.4	2.0
09	01	01	1	18	-52.2	0.480	-9.000	-9.000	-999.	799.	191.9	0.52	0.86	1.00	3.86	307.	10.0	280.9	2.0
09	01	01	1	19	-25.6	0.224	-9.000	-9.000	-999.	327.	39.8	0.52	0.86	1.00	2.36	334.	10.0	280.4	2.0
09	01	01	1	20	-11.1	0.119	-9.000	-9.000	-999.	115.	13.8	0.52	0.86	1.00	1.76	317.	10.0	280.4	2.0
09	01	01	1	21	-10.3	0.119	-9.000	-9.000	-999.	98.	14.7	0.52	0.86	1.00	1.76	320.	10.0	280.4	2.0
09	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.45	0.86	1.00	0.00	0.	10.0	280.9	2.0
09	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.45	0.86	1.00	0.00	0.	10.0	281.4	2.0
09	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.45	0.86	1.00	0.00	0.	10.0	281.4	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	81.	2.36	282.6	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
564360.07	4184715.58	0.00081	564527.46	4185181.23	0.00286
565058.04	4184828.18	0.01492			

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.01492 AT (565058.04, 4184828.18, 5.10, 7.00, 0.00) DC	
	2ND HIGHEST VALUE IS	0.00286 AT (564527.46, 4185181.23, 6.00, 6.00, 0.00) DC	
	3RD HIGHEST VALUE IS	0.00081 AT (564360.07, 4184715.58, 8.00, 8.00, 0.00) DC	
	4TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	5TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	6TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	7TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	8TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	9TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	10TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** AERMOD - VERSION 16216r *** *** C:\Lakes\AERMOD View\Kaiser Center - SeqMP2\Kaiser Center - SeqMP2.i *** 10/04/18
*** AERMET - VERSION 14134 *** *** *** 16:01:25

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 7953 Informational Message(s)

A Total of 43872 Hours Were Processed

A Total of 7152 Calm Hours Identified

A Total of 801 Missing Hours Identified (1.83 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
MX W481 43873 MAIN: Data Remaining After End of Year. Number of Hours= 48

****
*** AERMOD Finishes Successfully ***
****

```
Kaiser Center - Master Plan II Sequential Office Tower only - Uncontrolled
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.5.0
** Lakes Environmental Software Inc.
** Date: 10/4/2018
** File: C:\Lakes\AERMOD View\Kaiser Center - MP2 OfficeTower\Kaiser Center - MP2 OfficeTower.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
  TITLEONE C:\Lakes\AERMOD View\Kaiser Center - MP2 OfficeTower\Kaiser Center -
  MODELOPT DFAULT CONC
  AVERTIME ANNUAL
  POLLUTID PM_10
  RUNORNOT RUN
  ERRORFIL "Kaiser Center - MP2 OfficeTower.err"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
  LOCATION PAREA1      AREAPOLY   564635.294  4184954.706       6.940
** Source Parameters **
  SRCPARAM PAREA1      3.1506E-06     5.000        4
  AREAVERT PAREA1      564635.294 4184954.706 564620.000 4184886.471
  AREAVERT PAREA1      564668.235 4184879.412 564677.647 4184945.294

** Variable Emissions Type: "By Hour / Seven Days (HRDOW7)"
** Variable Emission Scenario: "Scenario 1"
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
```

```
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  SRCGROUP ALL
SO FINISHED
**
**********************************
** AERMOD Receptor Pathway
**********************************
**
**
RE STARTING
  INCLUDED "Kaiser Center - MP2 OfficeTower.rou"
RE FINISHED
**
**********************************
** AERMOD Meteorology Pathway
**********************************
**
**
ME STARTING
  SURFFILE "C:\Users\jni\Desktop\Kaiser towers\HRA\724930\724930.SFC"
  PROFFILE "C:\Users\jni\Desktop\Kaiser towers\HRA\724930\724930.PFL"
  SURFDATA 23230 2009 OAKLAND/WSO_AP
  UAIRDATA 23230 2009 OAKLAND/WSO_AP
  PROFBASE 10.0 METERS
ME FINISHED
**
**********************************
** AERMOD Output Pathway
**********************************
**
**
OU STARTING
** Auto-Generated Plotfiles
  PLOTFILE ANNUAL ALL "Kaiser Center - MP2 OfficeTower.AD\AN00GALL.PLT" 31
  SUMMFILE "Kaiser Center - MP2 OfficeTower.sum"
OU FINISHED

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

 *** AERMOD - VERSION 16216r ***   *** C:\Lakes\AERMOD View\Kaiser Center - MP2 OfficeTower\Kaiser
Center - ***       10/04/18
 *** AERMET - VERSION  14134 ***   ***                                          ***       16:11:26
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** MODEL SETUP OPTIONS SUMMARY ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.

**Other Options Specified:
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: PM_10

**Model Calculates ANNUAL Averages Only

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3 Receptor(s)

with: 0 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 1 AREA type source(s)
and: 0 LINE source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 10.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.5 MB of RAM.

**Detailed Error/Message File: Kaiser Center - MP2 OfficeTower.err
**File for Summary of Results: Kaiser Center - MP2 OfficeTower.sum

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	X (METERS)	Y (METERS)	ELEV. (METERS)	HEIGHT (METERS)	OF VERTS.	SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.31506E-05	564635.3	4184954.7	6.9	5.00	4	0.00	NO	HRDOW7

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	PAREA1 ,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = PAREA1 ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

- -

DAY OF WEEK = MONDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = TUESDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = WEDNESDY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = THURSDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = FRIDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SATURDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(564660.0, 4184847.6, 4.9, 4.9, 0.0); (564362.9, 4184714.2, 8.0, 8.0, 0.0);
(564533.0, 4185182.7, 6.0, 6.0, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 09 01 01   1 01  -17.2  0.303 -9.000 -9.000 -999.  401.   147.2  0.63   0.86   1.00    2.36   81.   10.0  282.5    2.0
 09 01 01   1 02  -21.8  0.383 -9.000 -9.000 -999.  569.   234.6  0.63   0.86   1.00    2.86   68.   10.0  282.0    2.0
 09 01 01   1 03  -26.3  0.460 -9.000 -9.000 -999.  749.   337.1  0.63   0.86   1.00    3.36   84.   10.0  280.9    2.0
 09 01 01   1 04  -15.4  0.270 -9.000 -9.000 -999.  368.   116.1  0.47   0.86   1.00    2.36   53.   10.0  280.9    2.0
 09 01 01   1 05  -26.3  0.460 -9.000 -9.000 -999.  749.   336.3  0.63   0.86   1.00    3.36   73.   10.0  280.4    2.0
 09 01 01   1 06  -21.9  0.383 -9.000 -9.000 -999.  573.   232.9  0.63   0.86   1.00    2.86   82.   10.0  280.4    2.0
 09 01 01   1 07  -22.0  0.383 -9.000 -9.000 -999.  569.   232.5  0.63   0.86   1.00    2.86   95.   10.0  279.9    2.0
 09 01 01   1 08  -11.2  0.196 -9.000 -9.000 -999.  238.    60.6  0.63   0.86   0.76    1.76   73.   10.0  279.9    2.0
 09 01 01   1 09   -2.2 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.45   0.86   0.39    0.00    0.   10.0  280.4    2.0
 09 01 01   1 10    6.8  0.266  0.264  0.016   98.  329.   -250.8  0.63   0.86   0.27    1.76   91.   10.0  280.9    2.0
 09 01 01   1 11   15.5 -9.000 -9.000 -9.000  177. -999. -99999.0  0.45   0.86   0.22    0.00    0.   10.0  282.0    2.0
 09 01 01   1 12   96.1  0.393  1.019  0.014  401.  591.    -57.4  0.22   0.86   0.21    3.36  266.   10.0  281.4    2.0
 09 01 01   1 13  102.5  0.395  1.092  0.014  462.  595.    -54.4  0.22   0.86   0.20    3.36  283.   10.0  282.0    2.0
 09 01 01   1 14   89.9  0.297  1.066  0.015  489.  394.    -26.5  0.22   0.86   0.21    2.36  249.   10.0  282.0    2.0
 09 01 01   1 15   62.1  0.383  0.954  0.014  507.  569.    -82.1  0.22   0.86   0.24    3.36  242.   10.0  282.5    2.0
 09 01 01   1 16   23.1  0.665  0.690  0.006  513. 1300.  -1150.4  0.52   0.86   0.33    4.86  304.   10.0  282.5    2.0
 09 01 01   1 17  -37.0  0.486 -9.000 -9.000 -999.  846.   280.6  0.22   0.86   0.56    4.86  291.   10.0  281.4    2.0
 09 01 01   1 18  -52.2  0.480 -9.000 -9.000 -999.  799.   191.9  0.52   0.86   1.00    3.86  307.   10.0  280.9    2.0
 09 01 01   1 19  -25.6  0.224 -9.000 -9.000 -999.  327.    39.8  0.52   0.86   1.00    2.36  334.   10.0  280.4    2.0
 09 01 01   1 20  -11.1  0.119 -9.000 -9.000 -999.  115.    13.8  0.52   0.86   1.00    1.76  317.   10.0  280.4    2.0
 09 01 01   1 21  -10.3  0.119 -9.000 -9.000 -999.   98.    14.7  0.52   0.86   1.00    1.76  320.   10.0  280.4    2.0
 09 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.45   0.86   1.00    0.00    0.   10.0  280.9    2.0
 09 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.45   0.86   1.00    0.00    0.   10.0  281.4    2.0
 09 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.45   0.86   1.00    0.00    0.   10.0  281.4    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 09 01 01 01   10.0 1   81.    2.36   282.6   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION 16216r ***   *** C:\Lakes\AERMOD View\Kaiser Center - MP2 OfficeTower\Kaiser
Center - ***       10/04/18
 *** AERMET - VERSION  14134 ***   ***                                                    ***       16:11:26
                                                                                                  PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

            *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR
SOURCE GROUP: ALL      ***
                      INCLUDING SOURCE(S):     PAREA1     ,

                           *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                          ** CONC OF PM_10    IN MICROGRAMS/M**3                    **

     X-COORD (M)   Y-COORD (M)       CONC                X-COORD (M)   Y-COORD (M)       CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
       564660.00    4184847.65       0.05720              564362.88    4184714.21       0.00078
       564533.04    4185182.67       0.00334
 *** AERMOD - VERSION 16216r ***   *** C:\Lakes\AERMOD View\Kaiser Center - MP2 OfficeTower\Kaiser
Center - ***       10/04/18
 *** AERMET - VERSION  14134 ***   ***                                                    ***       16:11:26
                                                                                                  PAGE   9
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.05720 AT (564660.00, 4184847.65, 4.86, 4.86, 0.00) DC	
	2ND HIGHEST VALUE IS	0.00334 AT (564533.04, 4185182.67, 6.00, 6.00, 0.00) DC	
	3RD HIGHEST VALUE IS	0.00078 AT (564362.88, 4184714.21, 8.00, 8.00, 0.00) DC	
	4TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	5TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	6TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	7TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	8TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	9TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	10TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 7953 Informational Message(s)

A Total of 43872 Hours Were Processed

A Total of 7152 Calm Hours Identified

A Total of 801 Missing Hours Identified (1.83 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
MX W481 43873 MAIN: Data Remaining After End of Year. Number of Hours= 48

****
*** AERMOD Finishes Successfully ***
****

```
Kaiser Center - Master Plan II Sequential Office Tower Only - Tier 4
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.5.0
** Lakes Environmental Software Inc.
** Date: 10/4/2018
** File: C:\Lakes\AERMOD View\Kaiser Center - MP2 OfficeTower\Kaiser Center - MP2 OfficeTower.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
  TITLEONE C:\Lakes\AERMOD View\Kaiser Center - MP2 OfficeTower\Kaiser Center -
  MODELOPT DFAULT CONC
  AVERTIME ANNUAL
  POLLUTID PM_10
  RUNORNOT RUN
  ERRORFIL "Kaiser Center - MP2 OfficeTower.err"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
  LOCATION PAREA1      AREAPOLY   564635.294  4184954.706       6.940
** Source Parameters **
  SRCPARAM PAREA1      2.1662E-07     5.000        4
  AREAVERT PAREA1      564635.294 4184954.706 564620.000 4184886.471
  AREAVERT PAREA1      564668.235 4184879.412 564677.647 4184945.294

** Variable Emissions Type: "By Hour / Seven Days (HRDOW7)"
** Variable Emission Scenario: "Scenario 1"
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
```

```
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  EMISFACT PAREA1      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
  SRCGROUP ALL
SO FINISHED
**
**********************************
** AERMOD Receptor Pathway
**********************************
**
**
RE STARTING
  INCLUDED "Kaiser Center - MP2 OfficeTower.rou"
RE FINISHED
**
**********************************
** AERMOD Meteorology Pathway
**********************************
**
**
ME STARTING
  SURFFILE "C:\Users\jni\Desktop\Kaiser towers\HRA\724930\724930.SFC"
  PROFFILE "C:\Users\jni\Desktop\Kaiser towers\HRA\724930\724930.PFL"
  SURFDATA 23230 2009 OAKLAND/WSO_AP
  UAIRDATA 23230 2009 OAKLAND/WSO_AP
  PROFBASE 10.0 METERS
ME FINISHED
**
**********************************
** AERMOD Output Pathway
**********************************
**
**
OU STARTING
** Auto-Generated Plotfiles
  PLOTFILE ANNUAL ALL "Kaiser Center - MP2 OfficeTower.AD\AN00GALL.PLT" 31
  SUMMFILE "Kaiser Center - MP2 OfficeTower.sum"
OU FINISHED

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

 *** AERMOD - VERSION 16216r ***   *** C:\Lakes\AERMOD View\Kaiser Center - MP2 OfficeTower\Kaiser
Center - ***       10/04/18
 *** AERMET - VERSION  14134 ***   ***                                          ***       16:14:18
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** MODEL SETUP OPTIONS SUMMARY ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.

**Other Options Specified:
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: PM_10

**Model Calculates ANNUAL Averages Only

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3 Receptor(s)

with: 0 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 1 AREA type source(s)
and: 0 LINE source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 10.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.5 MB of RAM.

**Detailed Error/Message File: Kaiser Center - MP2 OfficeTower.err
**File for Summary of Results: Kaiser Center - MP2 OfficeTower.sum

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	X (METERS)	Y (METERS)	ELEV. (METERS)	HEIGHT (METERS)	OF VERTS.	SZ	URBAN SOURCE	SCALAR VARY BY
PAREA1	0	0.21662E-06	564635.3	4184954.7	6.9	5.00	4	0.00	NO	HRDOW7

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	PAREA1 ,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW7) *

SOURCE ID = PAREA1 ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

- -

DAY OF WEEK = MONDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = TUESDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = WEDNESDY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = THURSDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = FRIDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SATURDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00

9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00

17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(564660.0, 4184847.6, 4.9, 4.9, 0.0); (564362.9, 4184714.2, 8.0, 8.0, 0.0);
(564533.0, 4185182.7, 6.0, 6.0, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.00393 AT (564660.00, 4184847.65, 4.86, 4.86, 0.00)	DC
	2ND HIGHEST VALUE IS	0.00023 AT (564533.04, 4185182.67, 6.00, 6.00, 0.00)	DC
	3RD HIGHEST VALUE IS	0.00005 AT (564362.88, 4184714.21, 8.00, 8.00, 0.00)	DC
	4TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	5TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	6TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	7TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	8TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	9TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	10TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 7953 Informational Message(s)

A Total of 43872 Hours Were Processed

A Total of 7152 Calm Hours Identified

A Total of 801 Missing Hours Identified (1.83 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
MX W481 43873 MAIN: Data Remaining After End of Year. Number of Hours= 48

****
*** AERMOD Finishes Successfully ***
****

APPENDIX D

Non-CEQA Transportation Analysis

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FEHR PEERS

DRAFT MEMORANDUM

Date: April 18, 2019

To: Elizabeth Kanner, ESA

From: Francisco Martin and Sam Tabibnia, Fehr & Peers

Subject: Kaiser Center Expansion – Transportation Impact Review (non-CEQA)

OK18-0239

This memorandum summarizes the non-CEQA transportation assessment that Fehr & Peers completed for the proposed Kaiser Center Expansion Project in Oakland. In 2011, the City of Oakland certified the Kaiser Center Office Project EIR (2011 Project) for development of approximately 1,320,000 square feet of office and 46,000 square feet of retail. The current project (Revised Project) is considering two development alternatives, which differ in the type and size of land uses from the project in the certified 2011 EIR.

This document provides a brief description of the Revised Project alternatives, an estimate of Revised Project trip generation, a review of the Revised Project site plan, and a collision analysis. This memorandum also provides recommendations to improve multi-modal access, circulation, and safety.

PROJECT DESCRIPTION

The project site is bounded by 20th, Webster, Harrison, and 21st Streets in the Uptown District of Oakland. The existing land uses provided at the project site in addition to the existing uses that would remain or be demolished as part of the Revised Project are summarized in **Table 1**. The Revised Project would demolish the following existing buildings on-site:

- 20th Street Mall
    - 25,819 square feet of office space
    - 43,423 square feet of co-work office space
    - 20,038 square feet of ground-floor retail space
- Webster Street Mall
    - 29,640 square feet of ground-floor retail space

All existing uses that would be demolished by the Revised Project are currently occupied by office and retail tenants, except for about 1,600 square feet of retail in the 20th Street Mall area which is currently vacant. Both Master Plan I and II scenarios would demolish 155 existing off-street parking spaces and replace them with up to 234 new parking spaces, for a total increase of up to 79 parking spaces. The parking garage would continue to be accessed through driveways on the Kaiser Center Access Road and 21st Street.

TABLE 1
KAISER CENTER EXISTING USES SUMMARY[1]

Land Use	Existing Uses	Existing Uses to Remain	Existing Uses to be Demolished
Office	822 KSF	753 KSF	69 KSF
Retail	63 KSF	13 KSF	50 KSF

Notes:
1. KSF = 1,000 square feet.

Source: *Kaiser Center Expansion Amended Preliminary Development Plan*, Gensler, May 25, 2018.

The 2011 Project and Revised Project proposals are summarized in **Table 2**. The Revised Project would construct two building towers for each Master Plan development scenario as listed below.

- Revised Project Master Plan I
    - Office Tower 1
        - 865,540 square feet of office space
        - 5,700 square feet of ground-floor retail space
    - Office Tower 2
        - 467,340 square feet of office space
        - 9,600 square feet of ground floor retail space

- Revised Project Master Plan II
    - Office Tower 1
        - 865,540 square feet of office space
        - 5,700 square feet of ground-floor retail space
    - Residential Tower 2
        - 580 multi-family dwelling units
        - 13,150 square feet of ground-floor retail space

The Revised Project Master Plan I and II development scenarios would maintain the existing site access and parking garage driveways. For purposes of providing a conservative trip generation analysis, it was assumed that 64,000 square feet of parking could be converted into an additional 32,000 square feet of office space for Master Plan 1, and that 16,000 square feet of parking could be converted into 8,000 square feet of office space for Master Plan 2 relative to the floor area totals shown on the Revised Project site plans dated May 25, 2018.

TABLE 2
KAISER CENTER EXPANSION – 2011 PROEJCT AND REVISED PROJECT[1]

Land Use	2011 Project	Revised Project Master Plan I (2018)	Revised Project Master Plan II (2018)
Residential	n/a	n/a	580 DU
Office	1,320 KSF	1,333 KSF	866 KSF
Retail	46 KSF	15 KSF	19 KSF

Notes:
1. DU = dwelling units, KSF = 1,000 square feet.

Source: *Kaiser Center Office Project Environmental Impact Report*, ESA, April 2011; *Kaiser Center Expansion Amended Preliminary Development Plan*, Gensler, May 25, 2018.

TRIP GENERATION

AUTOMOBILE TRIP GENERATION

Trip generation is the process of estimating the number of vehicles that would likely access the project during a typical weekday. The trip generation estimates account for the removal of existing office and retail space that are currently leased and occupied but would be demolished as part of

the Revised Project. Trip generation for development scenarios Master Plan I and II are summarized in **Tables 3** and **4**, respectively. Trip generation data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual (10th Edition)* was used as a starting point to estimate the vehicle trip generation.

ITE's *Trip Generation Manual (10th Edition)* is primarily based on data collected at single-use mostly suburban sites where the automobile is often the only travel mode. However, the project site is in a dense mixed-use urban environment where many trips are walk, bike, or transit trips. Since the project site is within 0.5 miles of the 19th Street BART station, this analysis reduces the ITE based trip generation by about 47 percent to account for non-automobile trips. This reduction is consistent with the City of Oakland's TIRG and is based on US Census commute data for Alameda County from the 2014 5-Year Estimates of the American Community Survey (ACS), which shows that the non-automobile mode share for areas less than 0.5 miles from a BART Station is about 47 percent.

In addition, pass-by adjustments were applied for the retail uses. Pass-by trips are trips attracted to the site from 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 trips to the roadway network. According to the ITE *Trip Generation Handbook (2nd Edition)*, the average weekday PM peak hour pass-by reduction is 34 percent for retail uses (assuming ITE land use category 820). AM peak hour and daily pass-by reductions are not provided for ITE land use categories 820. Since AM peak hour and daily pass-by rates are not available, for the purposes of a conservative analysis a pass-by reduction was not applied for the AM peak hour, and a 17 percent reduction (half of the PM peak hour pass-by reduction) was applied to the daily trips for retail uses.

As summarized in Table 3 and 4, the net new automobile trip generation for the Revised Project is approximately 6,130 daily, 614 AM peak hour, and 644 PM peak hour automobile trips for Master Plan I and approximately 5,000 daily, 461 AM peak hour, and 495 PM peak hour automobile trips for Master Plan II. The net new automobile trip generation for the 2011 Project and current Revised Project development scenarios are summarized in **Table 5**. Both Master Plan I and II development scenarios are expected to generate fewer daily, AM and PM peak hour trips than estimated for the 2011 Project.

Non-Vehicular Trip Generation

Consistent with the City of Oakland TIRG, **Table 6** presents the estimates of Revised Project trip generation for all travel modes for each of the development options. The automobile trip generation shown in Table 6 does not account for pass-by reductions.

TABLE 3
KAISER EXPANSION PROJECT AUTOMOBILE TRIP GENERATION
REVISED PROJECT MASTER PLAN I

Land Use	ITE Code	Size[1]	Daily Trips	Weekday AM Peak Hour In	Weekday AM Peak Hour Out	Weekday AM Peak Hour Total	Weekday PM Peak Hour In	Weekday PM Peak Hour Out	Weekday PM Peak Hour Total
Office Tower 1									
Office[2]	710	866 KSF	8,610	722	118	840	142	743	885
Retail[3]	820	6 KSF	220	3	2	5	11	11	22
		Subtotal	8,830	725	120	845	153	754	907
		Non-Auto Reduction[4]	-4,140	-340	-56	-396	-72	-354	-425
		Pass-By Reduction[5]	-20	0	0	0	-2	-2	-4
Adjusted Tower 1 Project Trips			**4,670**	**385**	**64**	**449**	**79**	**398**	**477**
Office Tower 2									
Office[2]	710	467 KSF	4,730	401	65	466	79	414	493
Retail[3]	820	10 KSF	360	6	3	9	18	19	37
		Subtotal	5,090	407	68	475	97	433	530
		Non-Auto Reduction[4]	-2,390	-191	-32	-223	-45	-203	-249
		Pass-By Reduction[5]	-30	0	0	0	-3	-3	-7
Adjusted Tower 2 Project Trips			**2,670**	**216**	**36**	**252**	**49**	**227**	**276**
Adjusted Total Project Trips			**7,340**	**601**	**100**	**701**	**128**	**625**	**753**
Existing Conditions									
Office[3]	710	26 KSF	290	44	7	51	5	26	31
Co-Work Space[3]	710	43 KSF	470	58	9	67	8	44	52
Retail[4]	820	48 KSF	1,820	28	17	45	88	95	183
		Existing Conditions Sub Total	2,580	130	33	163	101	165	266
		Non-Auto Reduction[4]	-1,210	-61	-15	-76	-47	-77	-125
		Pass-By Reduction[5]	-160	0	0	0	-16	-17	-33
Existing Condition Trips			***1,210***	***69***	***18***	***87***	***38***	***71***	***109***
Net New Vehicle Trips			**6,130**	**532**	**82**	**614**	**90**	**554**	**644**

Notes:
1. DU = Dwelling Units, KSF = 1,000 square feet.
2. ITE Trip Generation (10th Edition) land use category 710 (General Office Building in General Urban/Suburban Setting):
   Daily: Ln(T) = 0.97Ln(X)+2.50
   AM Peak Hour: T = 0.94+26.49 (86% in, 14% out)

PM Peak Hour: T = Ln(T)=0.95Ln(X)+0.36 (16% in, 84% out)

3. ITE Trip Generation (10th Edition) land use category 820 (Shopping Center in General Urban/Suburban Setting):
   Daily: T = 37.75(X)
   AM Peak Hour: T = 0.94(X) (62% in, 38% out)
   PM Peak Hour: T = 3.81(X) (48% in, 52% out)
4. Reduction of 46.9% assumed, based on City of Oakland Transportation Impact Review Guidelines using Census data for urban environments within 0.5 miles of a BART Station.
5. Based on ITE Trip Generation Handbook (2nd Edition), the average PM peak hour pass-by rates for land use categories 820 is 34%. A 17% daily pass-by rate is applied to retail uses. This reduction was applied to trips after the non-auto reduction.

Source: Fehr & Peers, 2018.

TABLE 4

KAISER EXPANSION PROJECT AUTOMOBILE TRIP GENERATION
REVISED PROJECT MASTER PLAN II

Land Use	ITE Code	Size[1]	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				In	Out	Total	In	Out	Total
Office Tower 1									
Office[2]	710	866 KSF	8,610	722	118	840	142	743	885
Retail[3]	820	6 KSF	220	3	2	5	11	11	22
		Subtotal	8,830	725	120	845	153	754	907
		Non-Auto Reduction[5]	-4,140	-340	-56	-396	-72	-354	-425
		Pass-By Reduction[6]	-20	0	0	0	-2	-2	-4
Adjusted Tower 1 Project Trips			**4,670**	**385**	**64**	**449**	**79**	**398**	**477**
Residential Tower 2									
Residential[4]	222	580 DU	2,500	42	133	175	126	80	206
Office[2]	710	0 KSF	0	0	0	0	0	0	0
Retail[3]	820	13 KSF	500	7	5	12	24	26	50
		Subtotal	3,000	49	138	187	150	106	256
		Non-Auto Reduction[5]	-1,410	-23	-65	-88	-70	-50	-120
		Pass-By Reduction[6]	-50	0	0	0	-4	-5	-9
Adjusted Tower 2 Project Trips			**1,540**	**26**	**73**	**99**	**76**	**51**	**127**
Adjusted Total Project Trips			**6,210**	**411**	**137**	**548**	**155**	**449**	**604**
Existing Conditions									
Office[2]	710	26 KSF	290	44	7	51	5	26	31
Co-Work Space[3]	710	43 KSF	470	58	9	67	8	44	52
Retail[3]	820	48 KSF	1,820	28	17	45	88	95	183
		Existing Conditions Sub Total	2,580	130	33	163	101	165	266
		Non-Auto Reduction[5]	-1,210	-61	-15	-76	-47	-77	-125
		Pass-By Reduction[6]	-160	0	0	0	-16	-17	-33
Existing Condition Trips			***1,210***	***69***	***18***	***87***	***38***	***71***	***109***
Net New Vehicle Trips			**5,000**	**342**	**119**	**461**	**117**	**378**	**495**

Notes:
1. DU = Dwelling Units, KSF = 1,000 square feet.
2. ITE Trip Generation (10th Edition) land use category 710 (General Office Building in General Urban/Suburban Setting):
   Daily: Ln(T) = 0.97Ln(X)+2.50
   AM Peak Hour: T = 0.94+26.49 (86% in, 14% out)
   PM Peak Hour: T = Ln(T)=0.95Ln(X)+0.36 (16% in, 84% out)
3. ITE Trip Generation (10th Edition) land use category 820 (Shopping Center in General Urban/Suburban Setting):
   Daily: T = 37.75(X)
   AM Peak Hour: T = 0.94(X) (62% in, 38% out)
   PM Peak Hour: T = 3.81(X) (48% in, 52% out)
2. ITE Trip Generation (10th Edition) land use category 222 (High-Rise Multifamily Housing in General Urban/Suburban Setting):
   Daily: T = 3.94X+211.81
   AM Peak Hour: T = 0.28X+12.86 (24% in, 76% out)
   PM Peak Hour: T = 0.34X+8.56 (61% in, 39% out)
5. Reduction of 46.9% assumed, based on City of Oakland Transportation Impact Review Guidelines using Census data for urban environments within 0.5 miles of a BART Station.
6. Based on ITE Trip Generation Handbook (2nd Edition), the average PM peak hour pass-by rates for land use categories 820 is 34%. A 17% daily pass-by rate is applied to retail uses. This reduction was applied to trips after the non-auto reduction.

Source: Fehr & Peers, 2018.

TABLE 5
KAISER CENTER EXPANSION PROJECT AUTOMBILE TRIP GENERATION
2011 PROJECT AND REVISED PROJECT COMPARISON[1]

Land Use	2011 Project	Revised Project Master Plan I (2018)	Revised Project Master Plan II (2018)
Residential	n/a	n/a	580 DU
Office	1,320 KSF	1,333 KSF	866 KSF
Retail	46 KSF	15 KSF	19 KSF
Daily Trips	7,966	6,130	5,000
AM Peak Hour Trips	1,187	614	461
PM Peak Hour Trips	1,144	644	495

Notes:
1. DU = dwelling units, KSF = 1,000 square feet.

Source: Fehr & Peers, 2018.

TABLE 6
KAISER CENTER EXPANSION REVISED PROJECT TRIP GENERATION BY TRAVEL MODE

Mode	Mode Share Adjustment Factors[1]	Revised Project Master Plan I (2018)			Revised Project Master Plan II (2018)		
		Daily	AM Peak Hour	PM Peak Hour	Daily	AM Peak Hour	PM Peak Hour
Automobile	53.1%	7,390	701	763	6,280	548	618
Transit	29.7%	4,130	392	427	3,510	307	345
Bike	5.1%	710	67	73	600	53	59
Walk	10.5%	1,460	139	151	1,240	108	122
Total Trips		**13,690**	**1,299**	**1,414**	**11,630**	**1,016**	**1,144**

Notes:

1. Based on *City of Oakland Transportation Impact Study Guidelines* assuming project site is in an urban environment within 0.5 miles of a BART Station.

Source: Fehr & Peers, 2018.

TRIP DISTRIBUTION AND STUDY INTERSECTION SELECTION

The trip distribution and assignment process is used to estimate how the trips generated by the Revised Project would be distributed across the roadway network. Based on existing travel patterns, locations of complementary land uses, results of the Alameda County Transportation Commission's (Alameda CTC) Travel Demand Model, and the one-way street network and turn restrictions in Downtown Oakland, we determined directions of approach to and departure from the project site. **Figure 1** shows the resulting trip distribution; all figures are attached at the end of this memorandum. The trip distribution for office and residential uses are different, as shown on Figure 1.

Net new automobile trips generated by the project were assigned to the roadway network according to the trip distribution shown on Figure 1. Master Plan I development scenario trip generation assumptions, as shown in Table 3, were used to identify study intersections because the Master Plan I scenario is expected to generate the most peak hour trips.

According to the City of Oakland's TIRG, the criteria for selecting study intersections include:

- All intersection(s) of streets adjacent to project site;
- All signalized intersection(s), all-way stop-controlled intersection(s) or roundabouts where 100 or more peak hour trips are added by the project;
- All signalized intersection(s) with 50 or more project-related peak hour trips and existing LOS D-E-F; and
- Side-street stop-controlled intersection(s) where 50 or more peak hour trips are added by the project to any individual movement other than the major-street through movement.

Figure 2 shows the resulting trip assignment for the Master Plan I development scenario by roadway segment for the PM peak hour; this scenario represents the most conservative scenario for identifying study intersections. Following the criteria listed above, the following 13 intersections are evaluated as part of this study:

1. Telegraph Avenue/W Grand Avenue (Criterion 2)
2. Broadway/22nd Street (Criterion 2)
3. Broadway/20th Street (Criterion 2)
4. Franklin Street/21st Street (Criterion 2)
5. Franklin Street/20th Street (Criterion 2)
6. Webster Street/21st Street (Criteria 1 & 2)
7. Webster Street/20th Street (Criteria 1 & 2)
8. Kaiser Plaza/21st Street (Criterion 1)
9. Harrison Street/20th Street (Criterion 1)
10. Harrison Street/21st Street (Criteria 1 & 2)
11. Harrison Street/Grand Avenue (Criterion 2)
12. Harrison Street/27th Street/24th Street (Criterion 2)
13. Oakland Avenue/Perry Place/I-580 Off and On-Ramp (Criterion 2)

All intersections listed above, except intersection #2, were evaluated as part of the 2011 EIR. Traffic data, consisting of automobile turning movements, as well as pedestrian and bicycle counts, were collected at the 13 intersections from 7:00 AM to 9:00 AM (weekday AM) and from 4:00 PM to 6:00 PM (weekday PM) on October 23, 2018 (See **Attachment A** for existing intersection counts).

ACCESS AND CIRCULATION REVIEW

An evaluation of access and circulation for all travel modes by Fehr & Peers, based on the site plan dated May 25, 2018, is summarized below. The 2011 EIR findings that apply to the Revised Project site access are also described below.

2011 EIR FINDINGS

The 2011 EIR included a comprehensive evaluation of the project impacts on transportation and circulation including traffic operations, traffic hazards and safety, emergency access, and consistency with adopted policies, plans, and programs regarding public transit, bicycle, and pedestrian facilities. The 2011 EIR also recommended site plan modifications as part of a non-CEQA evaluation of site access. The mitigation measures requiring site access improvements and site plan recommendations identified in the 2011 EIR and their applicability to the Revised Project are summarized below.

2011 EIR Site Access Mitigation Measures

The mitigation measures identified in the 2011 EIR to address site access impacts, their current status, and their applicability to the Revised Project are described below.

- Mitigation Measures TRANS-1c, 3d, 5e, 7e, and 7f apply to the Harrison Street/20th Street/ Kaiser Center Access Road intersection. The City of Oakland is currently implementing Measure DD improvements along the west side of Lake Merritt, including improvements at this intersection. Furthermore, the upcoming 20th Streets Complete Streets project will also implement improvements to the 20th Street approach of the intersection. The current Measure DD and upcoming 20th Street improvements supersede the mitigation measure improvements identified in the 2011 EIR. The latest available intersection and traffic signal design plans dated December 13, 2018 and proposed as part of the 20th Complete Streets project are provided in **Attachment B**.

Recommendation 1: The Revised Project Applicant should coordinate with City of Oakland Department of Transportation to ensure that the Revised Project does not impact or preclude improvements proposed as part of the 20th Street Complete Streets project. The Revised Project should be responsible for implementing improvements proposed by the 20th Street

Complete Streets project on the Kaiser Center property. The improvements include but are not limited to eliminating the channelized right-turn lane along the Kaiser Center Access Road approach and widening the sidewalk at the northwest corner of the intersection. The Revised Project applicant should coordinate with the City staff to identify the 20th Street Complete Streets project improvements proposed on the Kaiser Center property that the Revised Project should be responsible for implementing. (See Revised Project Recommended Improvement Measure TRANS-A in the *Revised Kaiser Center Project CEQA Addendum/Checklist*).

- Mitigation Measure TRANS-9 applies to the loading berth operations proposed by the 2011 Project on the Kaiser Center Access Road. This mitigation measure would prohibit delivery and service vehicles from accessing the loading berth during the weekday AM and PM peak periods. In addition, the section of the Kaiser Center Access Road between Harrison Street/ 20th Street and the parking garage driveway should be restricted to delivery and service vehicles only during weekday off-peak periods. According to Mitigation Measure TRANS-9, the Kaiser Center Access Road approach at the Harrison Street/20th Street intersection should be separated off by bollards or other removable barriers to prevent passenger vehicles from crossing the site during weekday off-peak periods. Site management staff should also be made available to direct loading maneuvers to improve the safety of pedestrians, bicyclists, and drivers during deliveries into and out of the loading berths. The Revised Project Master Plan I development scenario would include similar loading berth operations on the Kaiser Center Access Road. The Kaiser Center Access Road loading berth is not proposed as part of Revised Project Master Plan II development scenario. City of Oakland staff confirmed that Mitigation Measure TRANS-9 is not required for the Revised Project.
- Mitigation Measure TRANS-10 applies to the vehicular site access out of the existing garage exit on 21st Street (just east of Kaiser Plaza) which may be hazardous to pedestrians on the adjacent sidewalk. This mitigation measure would redesign the East Exit of the Kaiser Center Garage on 21st Street to provide adequate sight distance between drivers and pedestrians. Redesign options shall include sidewalk widening. If sidewalk widening is infeasible, the Project Applicant shall install audible and visible warning devices such as bells and lights to alert pedestrians, and a speed hump to force drivers exiting the garage to slow down and be more alert. The Revised Project would continue to use the garage access on 21st Street for Master Plan I and II development scenarios. City of Oakland staff confirmed that Mitigation Measure TRANS-10 is not required for the Revised Project.

Recommendation 2: The Revised Project applicant should continue to coordinate with City of Oakland to ensure that the Revised Project provides adequate site access for passenger vehicles, delivery trucks, pedestrians, and bicyclist. (See Revised Project Recommended Improvement Measure TRANS-B in the *Revised Kaiser Center Project CEQA Addendum/ Checklist*).

2011 EIR Site Plan Recommendations

The 2011 EIR also identified the following recommendations as part of a non-CEQA evaluation of site access:

- Recommendation TRANS-1 would increase sidewalk capacity on the north side of 20th Street between Broadway and Harrison Street, including the following improvements:
    - Remove parking and widen the sidewalk between Broadway and Franklin Street.
    - Widen the sidewalk between Franklin and Webster Streets.
    - Redesign the Project frontage to be pedestrian-friendly between Webster and Harrison Streets. The sidewalk could be redesigned to reduce or eliminate the grade difference and better position the landscaping to buffer the sidewalk from the roadway as opposed to divide the sidewalk into two.
- Recommendation TRANS-2 would reduce traffic signal cycle times from 80 to 60- or 70-seconds at the Franklin Street/20th Street and Webster Street/20th Street intersections.
- Recommendation TRANS-3 would construct Class 2 bicycle lanes on 20th Street between Broadway and Harrison Street.
- Recommendation TRANS-4 would improve the bus waiting areas on 20th Street directly adjacent to the project site. Bus stop improvements should include a large system map, bus schedules, real-time arrival information, and wayfinding signage to other transit facilities (e.g., 19th Street BART Station).

Recommendations TRANS-1 to TRANS-4 would improve pedestrian, cyclist, and bus rider conditions along 20th Street. The City of Oakland is currently designing the 20th Street Complete Streets project and expects to implement the improvements within the next few years. As shown in Attachment B, the 20th Street Complete Streets project design plans dated December 13, 2018 indicate that the following improvements will be implemented along 20th Street between Harrison Street and Broadway:

- Sidewalk widening on the north side of 20th Street

- Implementing protected bicycle lanes separated by a raised curb along both directions
- Eliminating the channelized right-turn lane and re-aligning the Kaiser Center Access Road approach to allow left-turn access out from Kaiser Center Road at the Harrison Street/20th Street/Kaiser Center Access Road intersection
- Crosswalk enhancements with directional curb ramps at the 20th Street intersections with Broadway, and Franklin, Webster, and Harrison Streets
- Curb extensions at the southwest corner of the Harrison Street/20th Street/Kaiser Center Access Road intersection, and at the southeast corner of the Webster Street/20th Street intersection
- Traffic signal equipment upgrades, including video detection, signal phasing, and timing optimization at the 20th Street intersections with Broadway, and Franklin, Webster, and Harrison Streets
- Leading pedestrian intervals at the 20th Street intersections with Webster and Harrison Streets
- Removal of bus stops on 20th Street between Harrison Street and Broadway, AC Transit routes that operate along this segment of 20th Street will be re-routed to Grand Avenue

The City of Oakland will implement the 20th Street Complete Streets project improvements within the public right-or-way, therefore, Recommendations TRANS-1 through TRANS-4 are not applicable to the Revised Project, except for improvements within the Kaiser Center property. The Revised Project should be responsible for implementing the improvements proposed by the 20th Street Complete Streets project on the Kaiser Center property, which consist of eliminating the channelized right-turn lane along the Kaiser Center Access Road approach and widening the sidewalk at the northwest corner of the Harrison Street/20th Street/Kaiser Center Access Road intersection (Recommendation 1).

- Recommendation TRANS-5 consists of closing the Stanley Place minor approach at the Harrison Street/Stanley Place/I-580 EB Off-Ramp intersection.

Conditions at the Harrison Street/Stanley Place/I-580 EB Off-Ramp intersection remain similar to the conditions during the preparation of the 2011 EIR. Therefore, Recommendation TRANS-5 would continue to apply to the Revised Project.

AUTOMOBILE ACCESS AND CIRCULATION

The Revised Project Master Plan I and II development scenarios would maintain the existing site access and parking garage driveways described below:

- Full access side-street stop-controlled Kaiser Center Access Road driveway on 21st Street between Harrison Street and Kaiser Plaza
- Full access gate-controlled parking garage driveway with one inbound and one outbound lane on 21st Street between the Kaiser Center Access Road driveway and Kaiser Plaza
- Full access gate-controlled parking garage driveway with two inbound and two outbound lanes on 21st Street just east of Webster Street
- Full access gate-controlled parking garage driveway with two inbound and two outbound lanes on the Kaiser Center Access Road
- Right-turn inbound only unsignalized Porte Cochere driveway on Harrison Street between 21st and 20th Streets
- The signalized Kaiser Center Access Road and Porte Cochere exit driveway at the Harrison Street/20th Street intersection, the intersection, which is currently under construction, would allow all right-turns and inbound left-turns, but prohibits outbound left-turns

  Recommendation 3: The Revised Project should install and operate audible and visible warning devices such as bells and lights to alert pedestrians and drivers exiting the garage to slow down and be more alert at all three Kaiser Center garage driveways.

Both Master Plan development scenarios would demolish 155 existing off-street parking spaces and replace them with up to 234 new parking spaces. Access to the new parking spaces within the parking garage would continue to be provided via the existing driveways on 20th and 21st Streets. New site access or parking garage driveways are not proposed by either Master Plan development scenario. The existing parking garage driveways on 21st Street do not provide inbound queuing space on-site; however, the existing traffic volumes on 21st Street are low (fewer than 400 vehicles per hour during the AM and PM peak hours) and current queues do not extend to adjacent upstream signalized intersections or interfere with through traffic flow. Similarly, additional traffic generated by the Revised Project and using the garage driveways is expected to have minimal effect on queues at the driveways.

Neither Master Plan development scenario would alter access and circulation within the existing garage, except to expand the garage to provide additional spaces within the two new towers. The expanded parking garage within each tower would provide two-way drive aisles. Both Master Plan development scenarios would include dead-end drive aisles within each new tower; however, the two-way drive aisles would provide adequate space to maneuver out of the parking aisle if parking is fully occupied.

The Harrison Street/20th Street/Kaiser Center Access Road intersection is currently under construction as part of the Lakeside Green Streets improvement project funded by Measure DD. The Measure DD improvements will upgrade the traffic signal equipment and timings at the intersection. The upcoming 20th Street Complete Streets project will also implement improvements at the intersection, along with improvements on 20th Street between Harrison Street and Broadway. As described above, the Measure DD and the 20th Street Complete Streets project improvements supersede the improvements identified in 2011 EIR Mitigation Measures TRANS-1c, 3d, 5e, 7e, and 7f at this intersection. The Project Applicant shall update the site plan for both Master Plan development scenarios to show the Measure DD improvements under construction, and the planned 20th Street Complete Streets project improvements along the Kaiser Center frontage on 20th Street.

> **Recommendation 4:** Update the Revised Project site plans for both Master Plan development scenarios to incorporate the current Measure DD improvements under construction and the upcoming 20th Street Complete Streets project improvements for the Harrison Street/20th Street/Kaiser Center Access Road intersection.

AUTOMOBILE PARKING REQUIREMENTS

The *City of Oakland Planning Code* sets minimum and maximum parking requirements for the Revised Project, which is in a Central Business District Commercial zone (CBD-C) of Downtown Oakland. According to Section 17.116.060, the City of Oakland does not have a minimum off-street parking requirement and allows a maximum of 1.25 spaces per dwelling unit for residential developments in the CBD-C zone. Section 17.116.080 does not establish minimum off-street parking requirements for office or retail developments in the CBD-C zone and allows a maximum parking requirement of one space for each 300 square feet of ground floor area, and one space for each 500 square feet of above ground floor area for office and retail uses.

The existing Kaiser Center parking garage provides 1,340 off-street parking spaces for about 885,000 square feet of combined office and commercial floor area; which corresponds to about 1.5 spaces per thousand square feet. Both Revised Project Master Plan I and II scenarios would demolish 155 existing off-street parking spaces and replace them with up to 234 new parking spaces, for a total off-street parking supply of 1,419 spaces. The Master Plan II development scenario site plan does not indicate the amount of off-street parking supply, if any, that would be designated for residential use only.

> **Recommendation 5:** Update the Revised Project Master Plan II development scenario site plan to specify if any off-street parking spaces would be designated for residential uses only.

Table 7 summarizes the parking code requirements for both Master Plan I and II development scenarios. The on-site parking garage would be shared among the Revised Project and existing uses that would remain. The City of Oakland requires between zero and 4,268 and 4,071 parking spaces for Master Plan I and II development scenarios, respectively. Both Master Plan development scenarios would provide up to 1,419 shared off-street parking spaces. Therefore, the Revised Project would meet the minimum and maximum off-street parking requirements.

According to Section 17.116.105 of the Planning Code, the City of Oakland requires that a minimum of two off-street parking spaces be reserved for car-share services for up to 400 multi-family units, plus an additional parking space for each additional 200 units. The Revised Project Master Plan II development scenario proposes 580 multi-family dwelling units, which requires a minimum of two off-street parking spaces for car-share services. The current Revised Project site plan does not specify if car-share parking spaces would be provided within the parking garage as part of the Revised Project Master Plan II development scenario.

> **Recommendation 6:** Offer to designate a minimum of two off-street parking spaces for exclusive use by car share services as part of the Revised Project Master Plan II development scenario.

TABLE 7

REVISED PROJECT - AUTOMOBILE PARKING CODE REQUIREMENTS

Land Use	Size[1]	Required Off-Street Parking Supply		Parking Supply	Within Range?
		Minimum	Maximum		
Revised Project Master Plan I					
Revised Project Upper Level Office[2]	1,333 KSF	0	2,666	1,419	Yes
Revised Project Ground Level Retail[2]	15 KSF	0	51		
Existing Upper Level Office to Remain[2]	753 KSF	0	1,506		
Existing Ground Level Retail to Remain[2]	13 KSF	0	45		
	Total	**0**	**4,268**		
Revised Project Master Plan II					
Revised Project Residential[3]	580 DU	0	725	1,419	Yes
Revised Project Upper Level Office[2]	866 KSF	0	1,732		
Revised Project Ground Level Retail[2]	19 KSF	0	63		
Existing Upper Level Office to Remain[2]	753 KSF	0	1,506		
Existing Ground Level Retail to Remain[2]	13 KSF	0	45		
	Total	**0**	**4,071**		

Notes:

1. DU = Dwelling Unit; KSF = 1,000 square feet.
2. City of Oakland off-street maximum parking requirement for office and retail uses is one space for each 300 square feet of ground floor area, and one space for each 500 square feet of above ground floor area in a CBD-C zone. The City of Oakland does not establish a minimum off-street parking requirement for office or retail uses in a CBD-C zone (Planning Code Section 17.116.080).
3. City of Oakland off-street maximum parking requirement for multi-family residential in a CBD-C zone is 1.25 parking spaces per dwelling unit. The City of Oakland does not establish a minimum off-street parking requirement for residential uses in a CBD-C zone (Planning Code Section 17.116.080).

Source: *City of Oakland Planning Code*, Fehr & Peers, 2018.

LOADING EVALUATION

Both Revised Project Master Plan I and II development scenarios would demolish two existing loading berths on the Kaiser Center Access Road adjacent to the parking garage driveway as part of the demolition of the existing building, while retaining seven loading berths within the 300 Lakeside tower. Under both Master Plan development scenarios, Office Tower 1 would provide three loading berths on 21st Street. Trucks would access these loading berths on 21st Street by backing into them and pulling forward to leave.

Under Master Plan I development scenario, Office Tower 2 would provide three loading berths on the Kaiser Center Access Road at the same location as the existing loading berths that would be demolished. Trucks would access these loading docks by turning into the Kaiser Center Access Road from 21st Street, backing into to loading docks from the Kaiser Center Access Road. Trucks would leave these loading docks by pulling forward on the Kaiser Center Access Road and turning right onto 20th Street. Under Master Plan II development scenario, Residential Tower 2 would not provide any loading berths.

Table 8 summarizes the off-street loading requirements for the project, per City Planning Code Section 17.116.120. As shown in Table 8, the Master Plan I development scenario would meet the minimum off-street loading berth requirements, but the Master Plan II development scenario would not. Specifically, Office Tower 1 would meet the minimum off-street loading requirements under the Master Plan II development scenario; however, Residential Tower 2 would not as it is required to provide a minimum of one off-street loading berth. Although the Master Plan II development scenario would not meet the minimum off-street loading requirements for the Residential Tower 2 building, a total of 10 loading berths will be provided on-site (three berths in Office Tower 1 and seven berths in the 300 Lakeside building), which can be used for loading activities by Residential Tower 2 residents. Loading berths for new retail uses are not required since the total retail floor area would be less than 25,000 square feet. The Office Towers in both Master Plan development scenarios would meet the minimum loading berth requirements as if the building was separated from the project site for functional purposes and would comply with the minimum dimensions required in the City Planning Code.

> **Recommendation 7:** Provide one off-street loading berth for Residential Tower 2 under the Master Plan II development scenario. If feasible, the berth should be provided within the proposed garage near the residential lobby and elevators.

TABLE 8
OFF-STREET LOADING REQUIREMENTS

Building	Size[1]	Minimum Off-Street Loading Requirement
Revised Project Master Plans I Development Scenario		
Office Tower 1 & 2 – Office Uses[2]	1,333 KSF	6
Office Tower 1 & 2 – Retail Uses[3]	15 KSF	0
Master Plan I Minimum Off-Street Loading Requirement		*6*
Master Plan I Proposed Off-Street Loading Berths		***6***
Revised Project Master Plan II Development Scenario		
Office Tower 1 – Office Uses[2]	866 KSF	3
Residential Tower 2 – Residential Uses[4]	513 KSF	1
Office Tower 1 & Residential Tower 2 – Retail Uses[3]	19 KSF	0
Master Plan II Minimum Off-Street Loading Requirement		*4*
Master Plan II Proposed Off-Street Loading Berths		***3 (Does Not Meet Requirement)[5]***

Notes:
1. KSF = 1,000 square feet.
2. City of Oakland establishes a maximum requirement of three off-street loading berths for an office building in excess of 160,00 square feet of floor area (Planning Code Section 17.116.140).
3. City of Oakland does not require off-street loading berths for retail uses less than 25,000 square feet of floor area (Planning Code Section 17.116.140).
4. City of Oakland establishes a minimum requirement of one off-street loading berth for residential buildings with a floor area of 50,000 square feet or more (Planning Code Section 17.116.120).
5. Although Master Plan II development scenario would not meet the minimum off-street loading requirements for the Residential Tower 2 building, a total of 10 loading berths will be provided on-site (three berths in Office Tower 1 and seven berths in the 300 Lakeside building), which can be used for loading activities by Residential Tower 2 residents.

Source: *City of Oakland Planning Code*, Fehr & Peers, 2019.

2011 EIR Mitigation Measures

As previously discussed, the Master Plan I development scenario is required to implement Mitigation Measure TRANS-9 identified in the 2011 EIR, which prohibits accessing the loading berths located on the Kaiser Center Access Road (adjacent to the parking garage driveway) during

the weekday AM and PM peak periods. In addition, the section of the Kaiser Center Access Road between Harrison Street/20th Street and the parking garage driveway should be restricted to delivery and service vehicles only during off-peak periods. During off-peak periods, the Kaiser Center Access Road approach onto Harrison Street/20th Street should be separated off by bollards or other removable barriers to prevent passenger vehicles from crossing the site. Site management staff should also be available to direct loading maneuvers to improve the safety of pedestrians, bicyclists, and drivers during deliveries into and out of the loading berths.

ON-STREET PARKING AND LOADING

Adjacent to the project site, on-street parking spaces are provided along both sides of Webster and 21st Streets. These spaces are metered with a two-hour time limit between 8:00 AM and 6:00 PM on weekdays and Saturdays. Metered parking is also provided along both sides of the Porte Cochere, these spaces have a 20-minute time limit between 8:00 AM and 6:00 PM every day.

The Lakeside Green Streets project will provide four on-street parking spaces along southbound Harrison Street between 20th Street and Lakeside Drive (adjacent to the project site).

The City of Oakland provides the following on-street loading designations:

- Commercial loading spaces with yellow curb paint, which allow loading and unloading of passengers and materials between 7:00 AM and 6:00 PM Monday through Saturday. Passenger loading and unloading operations are limited to three minutes; commercial loading is limited to 30 minutes for vehicles with commercial license plates.
- Passenger loading spaces with white curb paint, which allow loading and unloading of passengers between 7:00 AM and 6:00 PM Monday through Sunday. Passenger loading and unloading operations are limited to three minutes. In some situations, such as passenger loading spaces in front of a place of public assembly, white curb parking restrictions are always in effect.

About 80 feet of on-street commercial (yellow curb) loading spaces are currently provided on Webster Street adjacent to the project site, however on-street passenger (white curb) loading spaces are not provided along project site frontage streets or the Porte Cochere. The Revised Project site plan for both Master Plan development scenarios do not currently specify if on-street commercial or passenger loading spaces would be provided as part of the Revised Project.

Recommendation 8: Maintain the existing 80 feet of commercial (yellow curb) loading space on Webster Street.

Recommendation 9: Designate a minimum of three parking spaces as passenger (white curb) loading spaces on 21st Street and the Porte Cochere to provide better access for private vehicles and transportation network company (TNC) vehicles to drop-off of pick-up residents, employees, and visitors. In addition, consider coordinating with TNC companies to geo-fence curb areas around the Kaiser Center frontage that should be prohibited for passenger loading operations.

BICYCLE ACCESS AND BICYCLE PARKING

The following bicycle facilities are currently provided within or adjacent to the project site:

- Class 1 multi-use path along the Lake Merritt perimeter, on the east side of Harrison Street
- Class 2 buffered bicycle lanes along both directions of 20th Street between Broadway and Harrison Street in the westbound direction and between Franklin and Harrison Streets in the eastbound direction
- Class 2 buffered bicycle lane along southbound Webster Street, which is a one-way street
- Short-term bicycle parking racks on 20th, 21st, and Webster Streets, with a total bicycle parking supply of about 22 spaces
- Long-term bicycle parking spaces (total supply not currently specified) in a locked enclosure located within the existing parking garage, with access provided via the eastern parking garage driveway on 21st Street
- Ford GoBike bikeshare station, with 24 bicycle docks, on the east side of Harrison Street, just south of 20th Street

The existing bicycle network provides comprehensive bicycle access to and from the Project site. The City of Oakland is currently constructing the Lakeside Green Streets project, which is expected to open in Spring 2019. When finished, the Lakeside Green Street project will provide Class 2 bicycle lanes on Harrison Street between 20th Street and Lakeside Drive, and Class 4 protected bicycle lanes on Harrison Street between Grand Avenue and Lakeside Drive.

The City of Oakland is currently designing the 20th Street Complete Streets project, which will upgrade the existing Class 2 buffered bicycle lanes on 20th Street to Class 4 protected bicycle lanes separated by a raised curb along both directions.

Chapter 17.117 of the Oakland Planning Code requires long-term and short-term bicycle parking for new buildings. Long-term bicycle parking includes lockers or locked enclosures, and short-term bicycle parking includes bicycle racks. **Tables 9** and **10** summarize the minimum bicycle parking requirements for the existing Kaiser Center uses to remain and the Revised Project Master Plan I and II development scenarios, respectively.

As shown in Tables 9 and 10, the existing Kaiser Center office and retail uses to remain would need to provide a minimum of 77 and 41 long-term and short-term bicycle parking spaces, respectively. Office Tower 1 requires a minimum of 89 and 46 long-term and short-term bicycle parking spaces, respectively, under both development scenarios. Office Tower 2 requires a minimum of 49 and 26 long-term and short-term bicycle parking spaces, respectively, under the Revised Project Master Plan I development scenario. Residential Tower 2 requires a minimum of 147 and 32 long-term and short-term bicycle parking spaces, respectively, under the Revised Project Master Plan II development scenario.

Currently, the project provides long-term bicycle parking in the form of a secure bicycle cage in the garage near the west driveway on 21st Street. Short-term bicycle parking is provided in the form of bicycle racks along the project frontage on 20th Street (four spaces), Webster Street (12 spaces), and 21st Street (six spaces).

The current Revised Project site plans for both Master Plan development scenarios do not specify the amount, type, or location of the bicycle parking proposed. Section 17.117.070 of the Planning Code requires that long-term bicycle parking be covered and located on-site or within 500 feet of the main building entrance.

TABLE 9
BICYCLE PARKING REQUIREMENTS – REVISED PROJECT MASTER PLAN I

Land Use	Size[1]	Long-Term Bicycle Parking		Short-Term Bicycle Parking	
		Spaces per Unit[2]	Spaces	Spaces per Unit[2]	Spaces
Existing Kaiser Center Uses to Remain					
Office[2]	753 KSF	1:10 KSF	75	1:20 KSF	38
Retail[3]	13 KSF	1: 12 KSF	2	1:5 KSF	3
Minimum Required Bicycle Parking (Existing Kaiser Center Uses)		--	*77*	--	*41*
Revised Project Master Plan I Development Scenario					
Office Tower 1 – Office Uses[2]	866 KSF	1:10 KSF	87	1:20 KSF	44
Office Tower 1 – Retail Uses[3]	6 KSF	1: 12 KSF	2	1:5 KSF	2
Office Tower 1 Minimum Bicycle Parking Requirement		--	*89*	--	*46*
Office Tower 2 – Office Uses[2]	467 KSF	1:10 KSF	47	1:20 KSF	24
Office Tower 2 – Retail Uses[3]	9 KSF	1: 12 KSF	2	1:5 KSF	2
Office Tower 2 Minimum Bicycle Parking Requirement		--	*49*	--	*26*
Minimum Required Bicycle Parking (Revised Project Master Plan I)		--	*138*	--	*72*
Minimum Required Bicycle Parking (Revised Project and Existing)		**--**	**215**	**--**	**113**

Notes:

1. KSF = 1,000 square feet
2. The Oakland Planning Code establishes a minimum long-term parking requirement of one space per 10,000 square feet of office floor area and minimum short-term parking requirement of one space per 20,000 square feet of office floor area (Section 17.117.110).
3. The Oakland Planning Code establishes a minimum long-term parking requirement of one space per 12,000 square feet of retail floor area and minimum short-term parking requirement of one space per 5,000 square feet of retail floor area (Section 17.117.110).

Source: Fehr & Peers, 2018.

TABLE 10
BICYCLE PARKING REQUIREMENTS – REVISED PROJECT MASTER PLAN II

Land Use	Size[1]	Long-Term Bicycle Parking		Short-Term Bicycle Parking	
		Spaces per Unit[2]	Spaces	Spaces per Unit[2]	Spaces
Existing Kaiser Center Uses to Remain					
Office[2]	753 KSF	1:10 KSF	75	1:20 KSF	38
Retail[3]	13 KSF	1:12 KSF	2	1:5 KSF	3
Minimum Required Bicycle Parking (Existing Kaiser Center Uses)		--	*77*	--	*41*
Revised Project Master Plan II Development Scenario					
Office Tower 1 – Office Uses[2]	866 KSF	1:10 KSF	87	1:20 KSF	44
Office Tower 1 – Retail Uses[3]	6 KSF	1:12 KSF	2	1:5 KSF	2
Office Tower 1 Minimum Bicycle Parking Requirement		--	*89*	--	*46*
Residential Tower 2 – Residential Uses[4]	580 DU	1:4 DU	145	1:20 DU	29
Residential Tower 2 – Retail Uses[4]	13 KSF	1:12 KSF	2	1:5 KSF	3
Residential Tower 2 Minimum Bicycle Parking Requirement		--	*147*	--	*32*
Minimum Required Bicycle Parking (Revised Project Master Plan II)		--	*236*	--	*78*
Minimum Required Bicycle Parking (Revised Project and Existing)		**--**	**313**	**--**	**119**

Notes:

1. DU = Dwelling Unit, KSF = 1,000 square feet
2. The Oakland Planning Code establishes a minimum long-term parking requirement of one space per 10,000 square feet of office floor area and a minimum short-term parking requirement of one space per 20,000 square feet of office floor area (Section 17.117.110).
3. The Oakland Planning Code establishes a minimum long-term parking requirement of one space per 12,000 square feet of retail floor area and a minimum short-term parking requirement of one space per 5,000 square feet of retail floor area (Section 17.117.110).
4. The Oakland Planning Code establishes a minimum long-term parking requirement of one space per four dwelling units and a minimum short-term parking requirement of one space per 20 dwelling units (Section 17.117.090).

Source: Fehr & Peers, 2018.

Recommendation 10: Update the Revised Project Master Plan I development scenario site plan to provide the following minimum long-term and short-term bicycle parking spaces:

- Existing on-site uses to remain: 77 long-term and 41 short-term spaces
- Office Tower 1: 89 long-term and 46 short-term spaces
- Office Tower 2: 49 long-term and 26 short-term spaces
- All long-term bicycle parking spaces can be shared in a central location within the on-site parking garage

Similarly, update the Revised Project Master Plan II development scenario site plan to provide the following minimum long-term and short-term bicycle parking spaces:

- Existing on-site uses to remain: 77 long-term and 41 short-term spaces
- Office Tower 1: 89 long-term and 46 short-term spaces
- Residential Tower 2: 147 long-term and 32 short-term spaces
- Long-term bicycle parking spaces for office and retail uses can be shared in a central location within the on-site parking garage; however, the 145 long-term bicycle spaces for residential uses should be provided in a separate location within Residential Tower 2

PEDESTRIAN ACCESS AND CIRCULATION

Primary pedestrian access for Office Tower 1 would be provided via a main lobby on Webster Street (under both Master Plan development scenarios); access to Office Tower 2 or Residential Tower 2 would be provided via a main lobby on 20th Street. Ground-floor retail uses will also provide additional pedestrian access points on Webster and 20th Streets under both development scenarios. Access to the rooftop garden proposed as part of both development scenarios would be provided via stairways located on Webster and 20th Streets; secondary access would be provided through each of the new office or residential towers proposed by the Revised Project.

Both Master Plan development scenarios would maintain the existing minimum width of 5.7 feet on the south side of 21st Street and the existing minimum width of 11 feet on the east side of Webster Street.

Recommendation 11: Explore the feasibility and if feasible, widen the existing sidewalk along the project site frontage on the south side of 21st Street to a minimum of 10 feet for

both Revised Project Master Plan development scenarios. Widening the existing sidewalk will require removal of on-street parking along 21st Street.

The sidewalk width proposed by both development scenarios on the north side of 20th Street is generally a minimum of 10 feet, however, the width would be reduced to about three feet between the curb and proposed tree planter on the north side of 20th Street just west of the Kaiser Center Access Road signalized intersection. The project site plan for neither Master Plan development scenario specifies if the tree planter will be at-grade or grade-separated.

Recommendation 12: Ensure that the sidewalk on the north side of 20th Street between Webster Street and the Kaiser Center Access Road provides a minimum continuous width of 10 feet for both Revised Project Master Plan development scenarios.

The Revised Project would also maintain the existing sidewalk widths on the Kaiser Center Access Road, which are typically less than three feet wide and cannot accommodate pedestrians passing in opposite directions. However, widening of the existing sidewalk is not feasible because it would affect truck access for the existing Kaiser Center building.

Pedestrian facilities at the intersections adjacent to the project site include:

- The signalized Harrison Street/20th Street/Kaiser Center Access Road intersection is currently under construction as part of the Lakeside Green Streets project. Construction is expected to be completed by Spring 2019. When completed, the intersection will provide marked crosswalks on all approaches with directional curb ramps and truncated domes for the crosswalks on the south and east sides of the intersection. Audible pedestrian signal heads with countdown timers and push buttons will also be provided for crosswalks on the south and east sides of the intersection. The existing crosswalks and curb ramps along the eastbound 20th Street approach and across the Kaiser Center Access Road and Porte Cochere will not be improved as part of the Lakeside Green Street project; however, they will be improved as part of the 20th Street Complete Streets project. The current configuration of the Kaiser Center Access Road and Porte Cochere connections to the Harrison Street/20th Street intersection require pedestrians to make a three-stage crossing on the north side of the intersection as pedestrians must cross the Porte Cochere crosswalk followed by two crosswalks across the Kaiser Center Access Road. The existing configuration can also create pedestrian confusion when crossing the intersection, which

may lead to pedestrians to cross the north side of the intersection outside the marked crosswalks.

- The signalized 20th Street/Webster Street intersection provides diagonal curb ramps on all four corners, marked crosswalks on all four approaches, and non-audible pedestrian countdown signal heads without push-buttons in all directions except for the eastbound crossing on the south side of the intersection, which does not have a pedestrian signal head. Only the northwest and southeast corners of the intersection provide truncated domes. The 20th Street Complete Streets Project will implement traffic signal equipment upgrades with audible pedestrian countdown signals and leading pedestrian intervals at this intersection, in addition to crosswalk enhancements, directional curb ramps with truncated domes on all four corners of the intersection, pedestrian refuge islands across 20th Street, and a curb extension at the southeast corner of the intersection.
- The signalized 21st Street/Webster Street intersection provides diagonal curb ramps on all four corners, and marked crosswalks on all four approaches. Non-audible pedestrian signal heads without countdown timers or push buttons are only provided for pedestrians walking eastbound across 21st Street on both sides of Webster Street. All corners of the intersection, except the northwest corner, provide truncated domes.
- The 21st Street/Kaiser Plaza intersection is an unsignalized intersection with a stop sign on the southbound Kaiser Plaza approach of the intersection. The intersection provides marked crosswalks on all three approaches. Directional curb ramps are provided on the northwest and northeast corners; however, the curb ramps are not aligned with the crosswalks. Curb ramps are not provided for the crosswalk on the west side of the intersection.
- The signalized 21st Street/Harrison Street intersection is currently under construction as part of the Lakeside Green Streets project. When completed, the intersection will provide directional curb ramps with truncated domes on all corners except the northwest corner, and marked crosswalks on all three approaches. In addition, audible pedestrian signal heads with countdown timers and push buttons will be provided at all crosswalks and median refuge islands will also be provided across Harrison Street on the north and south sides of the intersection.
- The Lakeside Drive/Harrison Street intersection is currently under construction as part of the Lakeside Green Street project, which will re-align the Lakeside Drive connection with Harrison Street. When completed, the intersection will provide marked crosswalks on the south and west sides of the intersection with directional curb ramps, truncated domes,

audible pedestrian signal heads with countdown timers and push buttons. In addition, a median refuge island will be provided across Harrison Street on the west side of the intersection.

Recommendation 13: Consider the following as part of the final design for the Revised Project Master Plan I and II development scenarios:

- Explore the feasibility and if feasible, install the following at the 21st Street/Webster Street intersection:
  - Directional curb ramps with truncated domes at all four corners of the intersection.
  - Audible pedestrian signal heads and countdown timers at all crosswalks.
  - Curb extensions (bulbouts) at all four corners of the intersection to reduce pedestrian crossing distances.
- Explore the feasibility and if feasible, install the following at the 21st Street/Kaiser Plaza intersection.
  - Directional curb ramps with truncated domes that align with all three crosswalks
  - Curb extensions (bulbouts) on all corners of the intersection to reduce the pedestrian crossing distances (this recommendation should be coordinated with Recommendation 11, which would widen the sidewalk along the south side of 21st Street).

As described in Recommendation 1 above, the Revised Project Master Plan I and II development scenarios should implement the improvements proposed as part of the upcoming 20th Street Complete Streets project within the Kaiser Center property.

2011 EIR Mitigation Measures and Pedestrian Access Recommendations

As previously discussed, the Master Plan I development scenario is required to implement Mitigation Measure TRANS-10 identified in the 2011 EIR. Mitigation Measure TRANS-10 would redesign the eastern Kaiser Center parking garage driveway on 21st Street to provide adequate sight distance between drivers exiting the driveway and pedestrians on the adjacent sidewalk. Redesign options shall include sidewalk widening, wherever feasible, which would be consistent with Recommendation 11. The Project Applicant shall install audible and visible warning devices

such as bells and lights to alert pedestrians, and a speed hump to force drivers exiting the garage to slow down and be more alert.

The 2011 EIR also identified the following recommendations as part of a non-CEQA evaluation of site access:

- Recommendation TRANS-1 would increase sidewalk capacity on the north side of 20th Street between Broadway and Harrison Street
- Recommendation TRANS-2 would reduce traffic signal cycle times from 80 to 60- or 70-seconds at the Franklin Street/20th Street and Webster Street/20th Street intersections.

The 20th Street Complete Streets project will implement sidewalk capacity improvements on the north side of 20th Street between Broadway and Harrison Street, in addition to traffic signal equipment upgrades and signal timing optimization at the 20th Street intersections with Broadway, and Franklin, Webster, and Harrison Streets. Therefore, Recommendations TRANS-1 and TRANS-2 are no longer applicable to the Revised Project except for the improvements proposed by the 20th Street Complete Streets Project on the Kaiser Center property.

TRANSIT ACCESS

Transit service providers in the Project vicinity include BART and AC Transit.

BART provides regional rail service throughout the East Bay and across the Bay. The project is located less than 600 feet from the nearest 19th Street BART Station portal on the northeast corner of the Broadway/20th Street intersection. The Revised Project would not modify access between the Project site and the BART Station portal.

AC Transit is the primary bus service provider in the City of Oakland. AC Transit operates multiple major routes along Harrison Street and 20th Street. The nearest bus stops to the project site are:

- On the north side of 20th Street (westbound), adjacent to the project site. Routes 33, 611 (local school service), 805 (night service), and NL (Transbay service) serve this stop. This bus stop currently provides two benches and a trash receptacle.
- On the south side of 20th Street (eastbound) just east of Webster Street. Routes 33, 611 (local school service), 805 (night service), and NL (Transbay service) serve this stop. This bus stop currently provides two benches and a trash receptacle. This stop can be accessed from the project site by crossing 20th Street at the signalized intersection at Webster Street.

- On the west side of Webster Street (southbound) just north of 20th Street. The Oakland Free Broadway shuttle ("Free B") currently serves this stop. Only a trash receptacle is provided at this bus stop. This stop can be accessed from the project site by crossing Webster Street at the signalized intersection at 20th Street.
- On the west side of Harrison Street (southbound) just north of 21st Street. Routes 33, 611 (local school service), and 805 (night service) serve this stop. Only a trash receptacle is provided at this bus stop. This stop can be accessed from the project site by crossing 21st Street at the signalized intersection at Harrison Street.

The Revised Project would not modify access between the Project site and the surrounding AC Transit bus stops. However, the City of Oakland in coordination with AC Transit is proposing to eliminate the existing bus stops along both directions of 20th Street between Harrison Street and Broadway, including the existing bus stop on the north side of 20th Street adjacent to Kaiser Center. AC Transit will re-route the existing transit lines (AC Transit lines 33, 611, 805, and NL) that operate along this segment of 20th Street to Grand Avenue. Re-routing the transit lines will also require removing the existing bus stop on the west side of Harrison Street (southbound) just north of 21st Street that currently serves AC Transit lines 33, 611, and 805.

2011 EIR Transit Access Recommendations

In addition to the sidewalk enhancements recommended in the 2011 EIR for the north side of 20th Street between Broadway and Harrison Street, the 2011 EIR also recommends improving the bus stop area on 20th Street directly adjacent to the project site. However, the 20th Street Complete Streets project would preclude the implementation of bus stop improvements since the existing bus stops will be removed.

COLLISION ANALYSIS

A five-year history (January 1, 2012 to December 31, 2016) of collision data in the study area was obtained from the Statewide Integrated Traffic Records System (SWITRS) and evaluated for this collision analysis. **Table 11** summarizes the collision data by type and location, and **Table 12** summarizes the collision data by severity and location.

As shown in Table 11, 89 collisions were reported during this five-year timeframe along the roadway segments adjacent to the project site and the 13 study intersections. The Telegraph Avenue/West Grand Avenue intersection had the greatest number of reported collisions with 16. The most

common reported collision type within the study area are broadside (45 percent) collisions. Most of the collisions within the study area were due to drivers not stopping at the stop line (43 percent), failing to signal (13 percent), and unsafe speeds (nine percent). Pedestrians were involved in eight (nine percent) of the reported collisions. As shown in Table 12, of the 89 reported collisions, 38 (43 percent) resulted in injuries, and none resulted in fatalities.

The Highway Safety Manual (HSM, Predictive Method - Volume 2, Part C) provides a methodology to predict the number of collisions for intersections and street segments based on roadway and intersection characteristics like vehicle and pedestrian volumes, number of lanes, signal phasing, on-street parking, and number of driveways. **Table 13** presents the predicted collision frequencies for the thirteen study intersections and five study segments using the HSM Predictive Method for Urban and Suburban Arterials and compares predicted collision frequencies to reported collision frequencies. **Attachment C** provides detailed predicted collision frequency calculation sheets based on the HSM methodology. Intersections or roadway segments with collision frequency greater than the predicted frequency should have their collision trends and potential roadway or intersection modifications evaluated in greater detail.

As shown in Table 13, all study intersections, except the Franklin Street/20th Street intersection, have a lower reported collision frequency than predicted by the HSM Predictive Method. The intersection has a collision frequency of 2.0 collisions per year (10 reported collisions over five years). However, the HSM predicts that it should experience 1.9 collisions per year, which is lower than the reported collision rate. About 80 percent of the collisions at the intersection were reported as broadside, which indicates that the yellow and red clearance intervals for the existing traffic signal may not be adequate for the intersection. Based on observations in December 2018, the Franklin Street/20th Street intersection currently provides three seconds of yellow time for all approaches, one second of red time for both directions of 20th Street and zero seconds of red time for northbound Franklin Street. Although the 20th Complete Streets Project will be upgrading the traffic signal equipment, installing video detection, and optimizing traffic signal timings at the Franklin Street/20th Street intersection, it is not yet known if the project will increase the yellow and/or red clearance intervals at the intersection.

> **Recommendation 14:** Consider increasing the yellow and/or red clearance intervals at the existing Franklin Street/20th Street intersection traffic signal

No additional intersection modifications beyond those already recommended are necessary for the remaining study locations.

CONCLUSION

Per the site plan review, the Revised Project would have adequate automobile, bicycle, pedestrian, and transit access and circulation with the inclusion of **Recommendations 1 through 14**. Please contact Francisco Martin with questions or comments.

Attachments

Figure 1 – Project Trip Distribution

Figure 2 – PM Peak Hour Trip Assignment and Study Intersections

Attachment A – Traffic Counts

Attachment B – 20th Street Complete Streets Project Design Plans

Attachment C – Predicted Crash Frequency Calculation Sheets

TABLE 11
Summary of Collisions By Type

Location	Head-On	Sideswipe	Rear-End	Broadside	Hit Object	Pedestrian -Involved	Bicycle-Involved	Total
Study Intersections								
Telegraph Avenue /West Grand Avenue	2	0	1	10	0	1	2	**16**
Broadway/22nd Street	0	1	0	3	1	0	0	**5**
Broadway/20th Street	0	3	1	2	1	1	3	**11**
Franklin Street/21st Street	0	0	0	0	0	0	0	**0**
Franklin Street/20th Street	0	0	0	8	0	1	1	**10**
Webster Street/21st Street	0	0	0	2	1	1	0	**4**
Webster Street/20th Street	0	2	0	2	0	1	0	**5**
Kaiser Plaza/21st Street	0	0	0	0	0	0	1	**1**
Harrison Street/20th Street	0	0	0	3	0	0	2	**5**
Harrison Street/21st Street	1	0	0	2	0	1	1	**5**
Harrison Street/Grand Avenue	0	1	2	3	0	2	2	**10**
Harrison Street/27th Street/24th Street	0	2	0	0	0	0	0	**2**
Oakland Ave/Perry Place/I-580 Off and On-Ramp	0	3	1	5	0	0	1	**10**
Study Roadway Segments								
Webster Street (20th Street to 21st Street)	0	0	0	0	0	0	1	1
Harrison Street (20th Street to 21st Street)	0	2	1	0	0	0	0	3
21st Street (Kaiser Plaza to Webster Street)	0	0	0	0	0	0	0	0
21st Street (Harrison Street to Kaiser Plaza)	0	0	0	0	0	0	0	0
20th Street (Harrison Street to Webster Street)	0	0	1	0	0	0	0	1
Total	**3**	**14**	**7**	**40**	**3**	**8**	**14**	**89**

Notes:
1. Based on SWITRS five-year collision data reported from January 1, 2012 to December 31, 2016.

Source: Fehr & Peers, 2018.

TABLE 12
Summary of Collision Severity

Location	Property Damage Only Collisions	Injury Collisions	Fatality Collisions	Total	Person-Injuries			
					Bike	Ped	Driver/ Passenger	Total
Study Intersections								
Telegraph Avenue /West Grand Avenue	10	6	0	16	1	1	4	**6**
Broadway/22nd Street	3	2	0	5	0	0	5	**5**
Broadway/20th Street	3	8	0	11	2	4	6	**12**
Franklin Street/21st Street	0	0	0	0	0	0	0	**0**
Franklin Street/20th Street	6	4	0	10	1	0	4	**5**
Webster Street/21st Street	3	1	0	4	0	1	0	**1**
Webster Street/20th Street	5	0	0	5	0	0	0	**0**
Kaiser Plaza/21st Street	1	0	0	1	0	0	0	**0**
Harrison Street/20th Street	2	3	0	5	1	0	2	**3**
Harrison Street/21st Street	2	3	0	5	0	1	4	**5**
Harrison Street/Grand Avenue	5	5	0	10	2	2	2	**6**
Harrison Street/27th Street/24th Street	2	0	0	2	0	0	0	**0**
Oakland Ave/Perry Place/I-580 Off and On-Ramp	6	4	0	10	0	0	5	**5**
Study Roadway Segments								
Webster Street (20th Street to 21st Street)	0	1	0	1	1	0	0	**1**
Harrison Street (20th Street to 21st Street)	3	0	0	3	0	0	0	**0**
21st Street (Kaiser Plaza to Webster Street)	0	0	0	0	0	0	0	**0**
21st Street (Harrison Street to Kaiser Plaza)	0	0	0	0	0	0	0	**0**
20th Street (Harrison Street to Webster Street)	1	1	0	2	0	1	0	**1**
Webster Street (20th Street to 21st Street)	0	0	0	0	0	0	0	**0**
Harrison Street (20th Street to 21st Street)	0	1	0	1	0	0	1	**1**
Total	**51**	**38**	**0**	**89**	**8**	**9**	**33**	**50**

Notes:
1. Based on SWITRS five-year collision data reported from January 1, 2012 to December 31, 2016.

Source: Fehr & Peers, 2018

TABLE 13
PREDICTED AND ACTUAL COLLISION FREQUENCIES

Location	Predicted Collision Frequency[1] (per year)	Actual Collision Frequency[2] (per year)	Difference	Higher Than Predicted?
Study Intersections				
Telegraph Avenue /West Grand Avenue	4.5	3.2	1.3	No
Broadway/22nd Street	3.2	1.0	2.2	No
Broadway/20th Street	4.7	2.2	2.5	No
Franklin Street/21st Street	1.6	0	1.6	No
Franklin Street/20th Street	**1.9**	**2.0**	**-0.1**	**Yes**
Webster Street/21st Street	1.7	0.8	0.9	No
Webster Street/20th Street	2.1	1.0	1.1	No
Kaiser Plaza/21st Street	0.5	0.2	0.3	No
Harrison Street/20th Street	2.4	1.0	1.4	No
Harrison Street/21st Street	3.1	1.0	2.1	No
Harrison Street/Grand Avenue	8.4	2.0	6.4	No
Harrison Street/27th Street/24th Street	4.1	0.4	3.7	No
Oakland Ave/Perry Place/I-580 Off and On-Ramp	3.0	2.0	1.0	No
Study Roadway Segments				
Webster Street (20th Street to 21st Street)	0.2	0.2	0.0	No
Harrison Street (20th Street to 21st Street)	0.7	0.6	0.1	No
21st Street (Kaiser Plaza to Webster Street)	0.5	0.0	0.5	No
21st Street (Harrison Street to Kaiser Plaza)	0.6	0.0	0.6	No
20th Street (Harrison Street to Webster Street)	0.2	0.2	0.0	No

Notes:

1. Based on the Highway Safety Manual Predictive Method (Volume 2, Part C).
2. Based on five-year collision data reported from January 1, 2012 to December 31, 2016.

Source: Fehr & Peers, 2018.

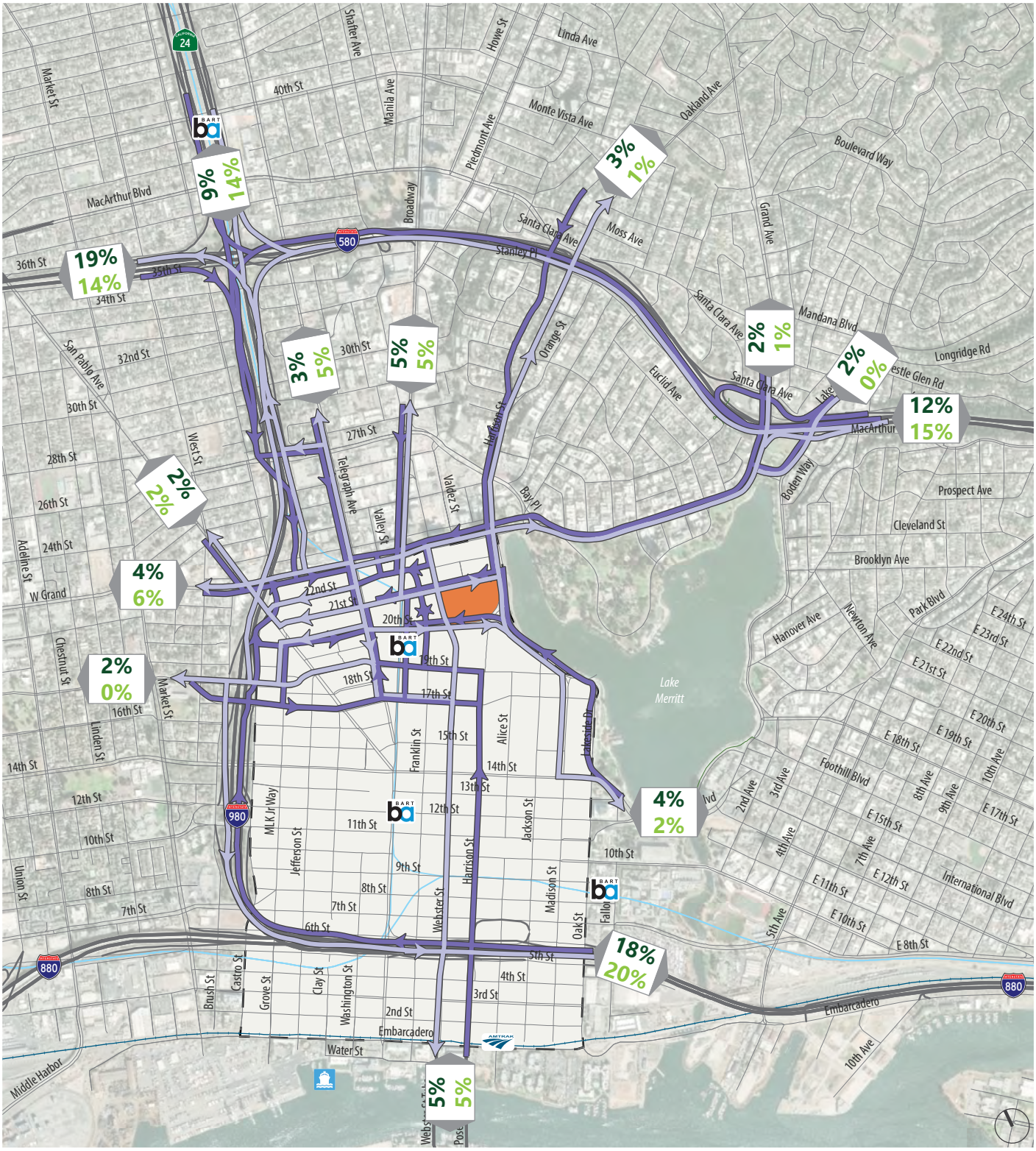


Figure 1

Project Vehicle Trip Distribution

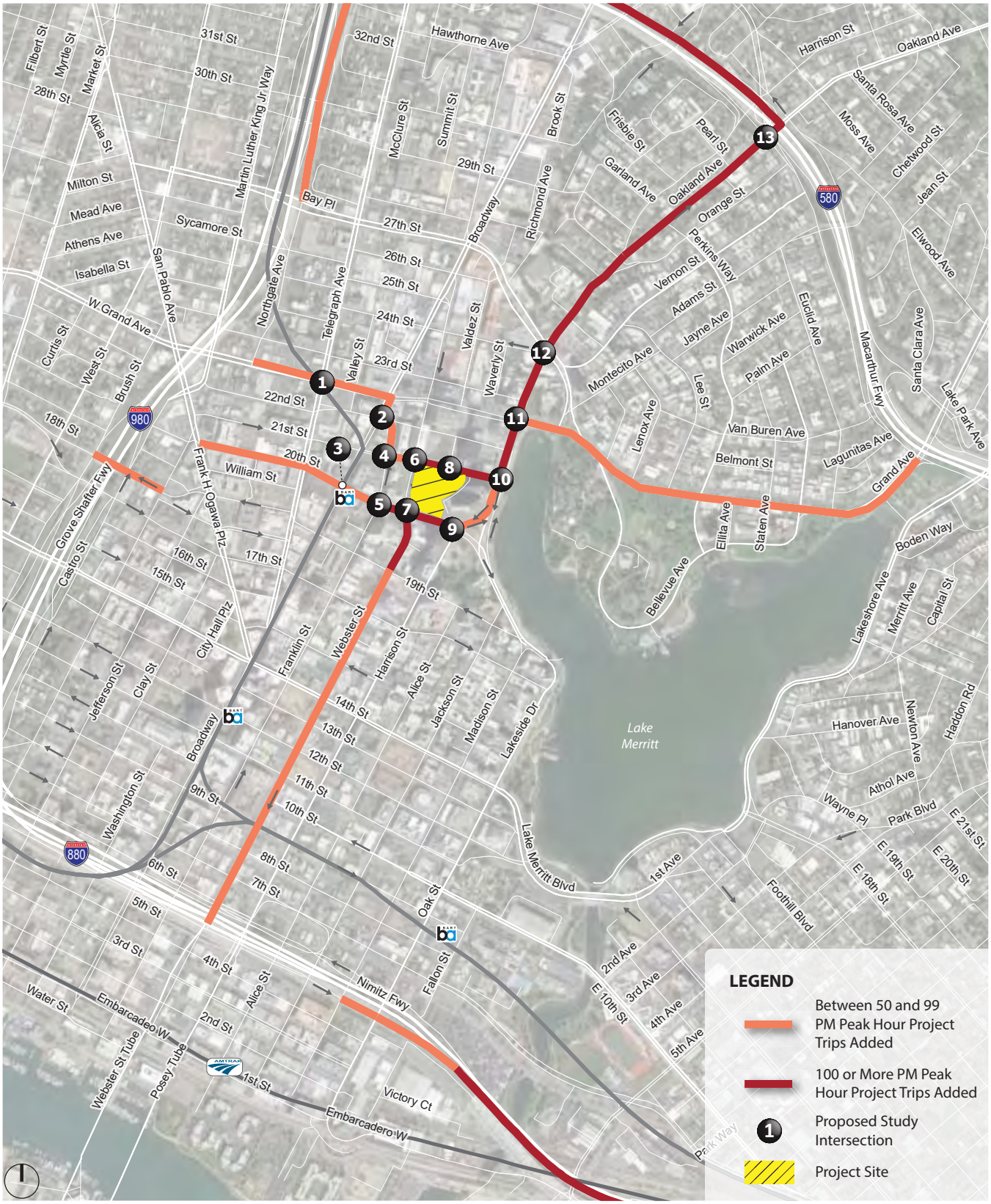


Figure 2

PM Peak Hour Project (Master Plan I Scenario)
Trip Assignment and Study Intersections

Attachment A
Traffic Counts

Prepared by National Data & Surveying Services

Telegraph Ave & Grand Ave

Peak Hour Turning Movement Count

ID: 18-08553-001
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

SOUTHBOUND — Telegraph Ave

AM	56	287	51	0	316	AM
NOON	0	0	0	0	0	NOON
PM	89	262	98	0	430	PM

EASTBOUND — Grand Ave

AM	NOON	PM	
606	0	908	
3	0	18	0
70	0	86	1
581	0	804	3
309	0	147	0

WESTBOUND — Grand Ave

	PM	NOON	AM
0	51	0	29
2	483	0	404
1	52	0	49
0	6	0	5
	992	0	678

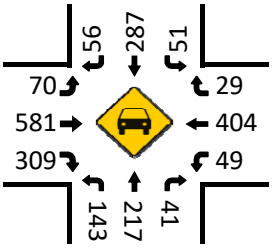
NORTHBOUND — Telegraph Ave

PM	461	0	318	293	84	PM
NOON	0	0	0	0	0	NOON
AM	645	0	143	217	41	AM

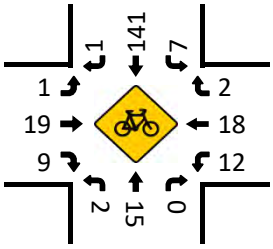
	1	1	1	0
	0	1	1	1

CONTROL			
Signalized			
TEV	2245 AM	0 NOON	2791 PM
PHF	0.96		0.93

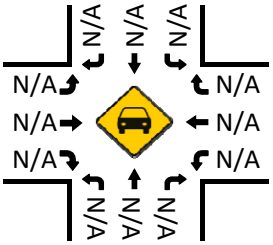
Total Vehicles (AM)



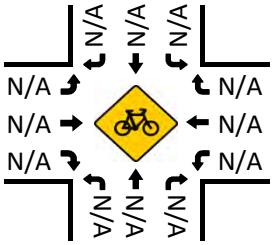
Bikes (AM)



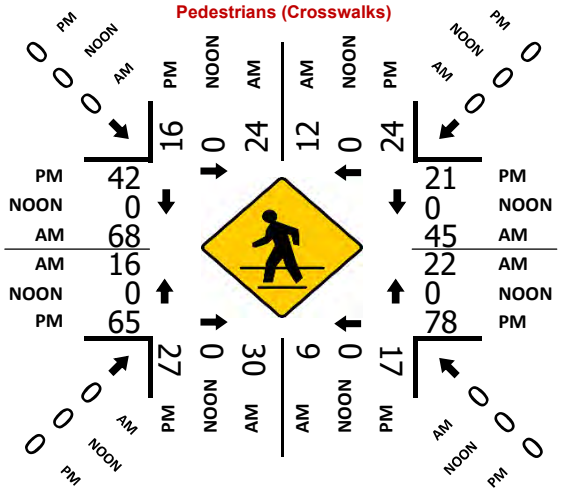
Total Vehicles (Noon)



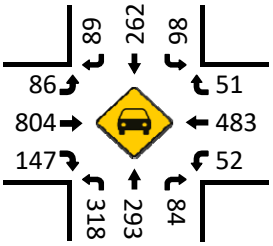
Bikes (NOON)



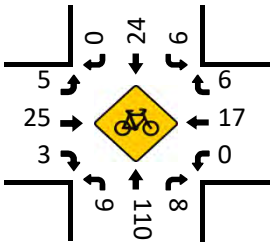
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Broadway & 22nd St

Peak Hour Turning Movement Count

ID: 18-08553-002
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

SOUTHBOUND (Broadway)

AM	15	449	0	1	580	AM
NOON	0	0	0	0	0	NOON
PM	32	495	0	0	945	PM

EASTBOUND (22nd St)

AM	NOON	PM	
62	0	172	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND (22nd St)

PM	NOON	AM	
391	0	238	2
119	0	33	0.5
32	0	12	0.5
0	0	0	0
0	0	0	
PM	NOON	AM	

NORTHBOUND (Broadway)

PM	531	4	21	554	0	PM
NOON	0	0	0	0	0	NOON
AM	465	4	14	341	0	AM

	0	0	2	0

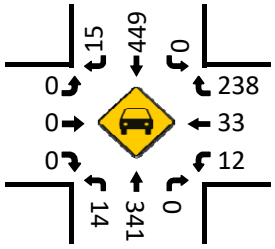
	0	2	0	0

CONTROL

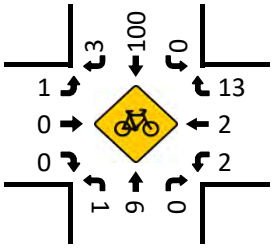
Signalized

TEV	1107 AM	0 NOON	1648 PM
PHF	0.82		0.94

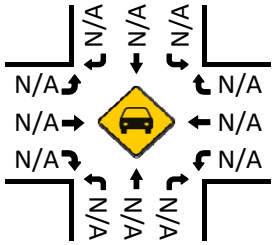
Total Vehicles (AM)



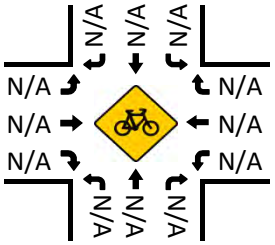
Bikes (AM)



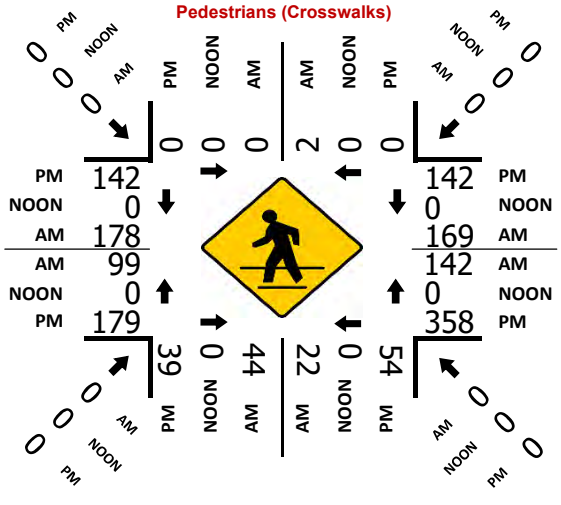
Total Vehicles (Noon)



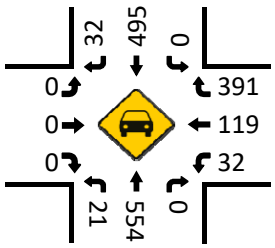
Bikes (NOON)



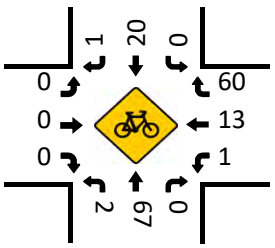
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Broadway & 20th St

Peak Hour Turning Movement Count

ID: 18-08553-003
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS

AM: 08:00 AM - 09:00 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Broadway

SOUTHBOUND

AM	68	334	43	0	333	AM
NOON	0	0	0	0	0	NOON
PM	83	416	47	2	481	PM

EASTBOUND (20th St)

AM	NOON	PM		
208	0	304		
1	0	0	0	
33	0	32	0	
273	0	165	2	
64	0	80	0	
AM	NOON	PM		

WESTBOUND (20th St)

PM	NOON	AM	
50	0	70	0
164	0	97	2
35	0	30	0
0	0	0	0
262	0	352	
PM	NOON	AM	

CONTROL: Signalized

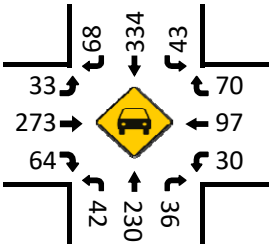
TEV	1321 AM	0 NOON	1586 PM
PHF	0.88		0.95

	0	3	0	0		
				0	0	2	0
PM	539	8	57	397	50	PM
NOON	0	0	0	0	0	NOON
AM	428	0	42	230	36	AM

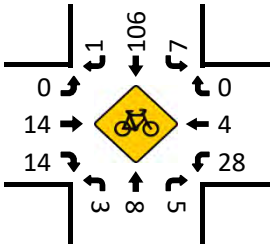
NORTHBOUND

Broadway

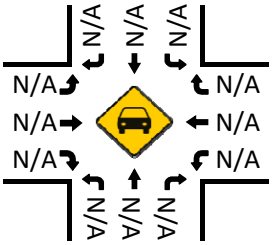
Total Vehicles (AM)



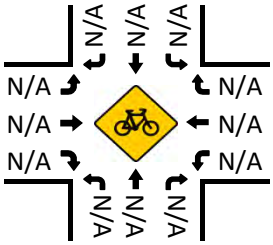
Bikes (AM)



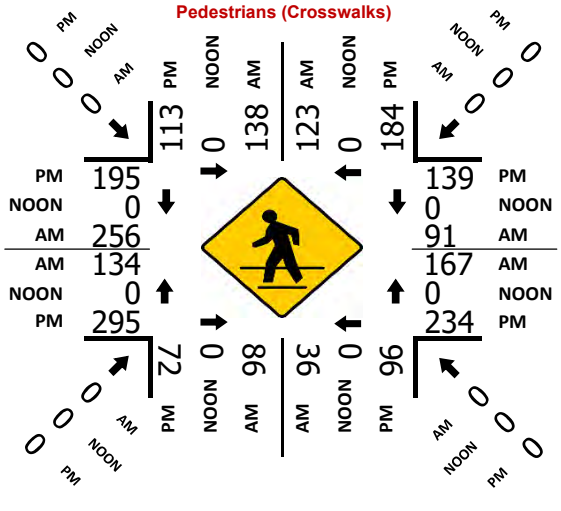
Total Vehicles (Noon)



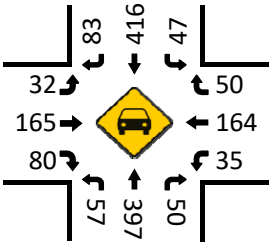
Bikes (NOON)



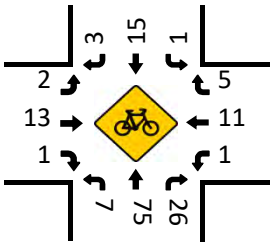
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Franklin St & 21st St

Peak Hour Turning Movement Count

ID: 18-08553-004
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Franklin St — SOUTHBOUND

AM	0	0	0	0	243	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	377	PM

21st St — EASTBOUND

AM	NOON	PM	
87	0	104	⇦
0	0	1	0
19	0	28	0.5
122	0	87	0.5
0	0	0	0
AM	NOON	PM	

CONTROL

Signalized

TEV	518 AM	0 NOON	674 PM
PHF	0.81		0.92

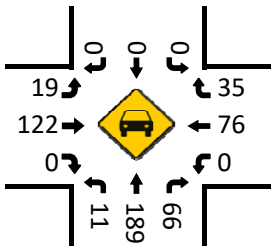
21st St — WESTBOUND

PM	NOON	AM	
105	0	35	0.5
90	0	76	0.5
0	0	0	0
0	0	0	0
193	0	188	⇨
PM	NOON	AM	

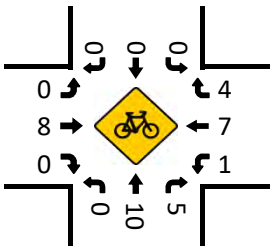
Franklin St — NORTHBOUND

PM	0	0	13	244	106	PM
NOON	0	0	0	0	0	NOON
AM	0	0	11	189	66	AM

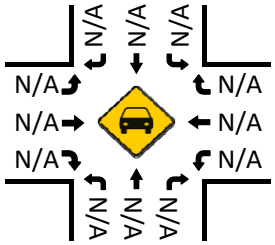
Total Vehicles (AM)



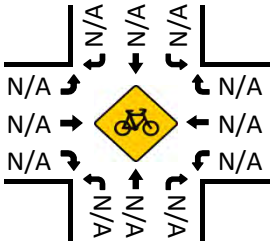
Bikes (AM)



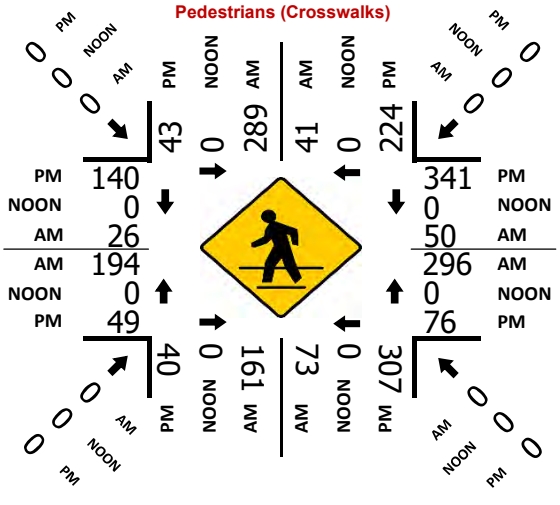
Total Vehicles (Noon)



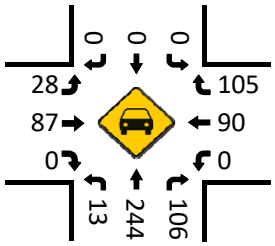
Bikes (NOON)



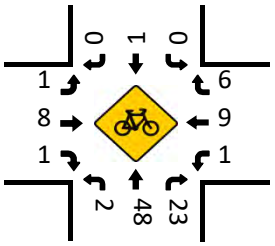
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Franklin St & 20th St

Peak Hour Turning Movement Count

ID: 18-08553-005
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Franklin St — SOUTHBOUND

AM	0	0	0	0	301	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	363	PM

20th St — EASTBOUND

AM	NOON	PM	
212	0	258	⇦
0	0	0	↶ 0
42	0	29	↱ 0
306	0	239	→ 2
0	0	0	↳ 0
AM	NOON	PM	

CONTROL

Signalized

TEV	921 AM	0 NOON	1091 PM
PHF	0.86		0.90

20th St — WESTBOUND

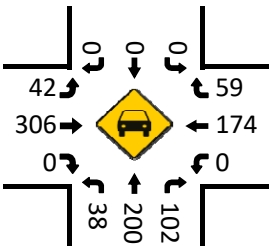
PM	NOON	AM	
65	0	59	↰ 0
195	0	174	← 2
0	0	0	↰ 0
0	0	0	↶ 0
470	0	408	⇨
PM	NOON	AM	

Franklin St — NORTHBOUND

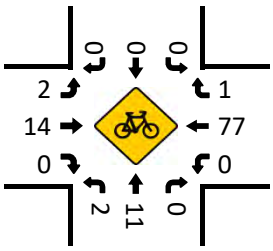
PM	0	0	63	269	231	PM
NOON	0	0	0	0	0	NOON
AM	0	0	38	200	102	AM

0 0 2 1

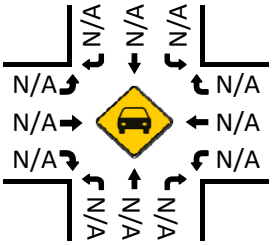
Total Vehicles (AM)



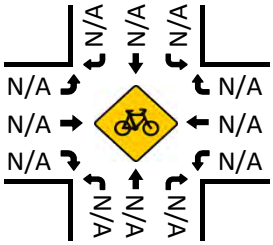
Bikes (AM)



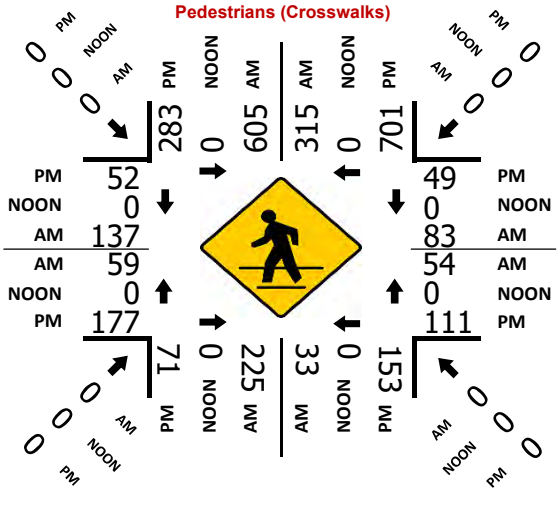
Total Vehicles (Noon)



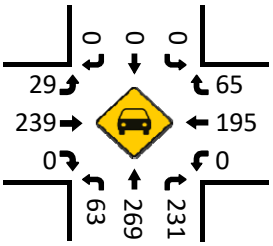
Bikes (NOON)



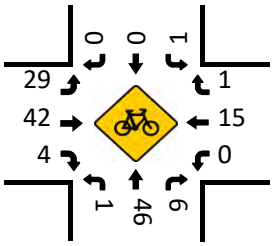
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Webster St & 21st St

Peak Hour Turning Movement Count

ID: 18-08553-006
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Webster St — SOUTHBOUND

AM	55	354	113	0	0	AM
NOON	0	0	0	0	0	NOON
PM	34	374	59	0	0	PM

21st St — EASTBOUND

AM	NOON	PM	
123	0	185	⇦
0	0	1	0
0	0	0	0
132	0	115	1
58	0	65	1
AM	NOON	PM	

21st St — WESTBOUND

PM	NOON	AM	
0	0	0	0
150	0	68	1
70	0	41	0
0	0	0	0
174	0	245	⇨
PM	NOON	AM	

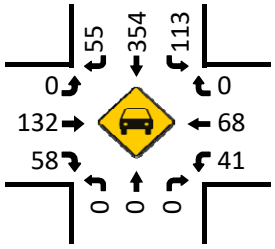
Webster St — NORTHBOUND

PM	509	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	453	0	0	0	0	AM

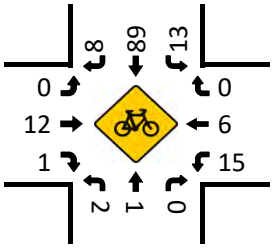
0	2	0	0

CONTROL			
Signalized			
TEV	821 AM	0 NOON	868 PM
PHF	0.86		0.90

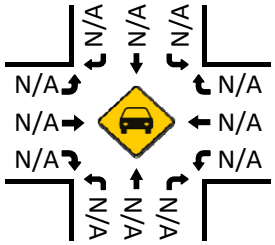
Total Vehicles (AM)



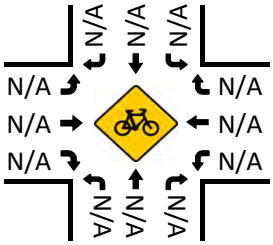
Bikes (AM)



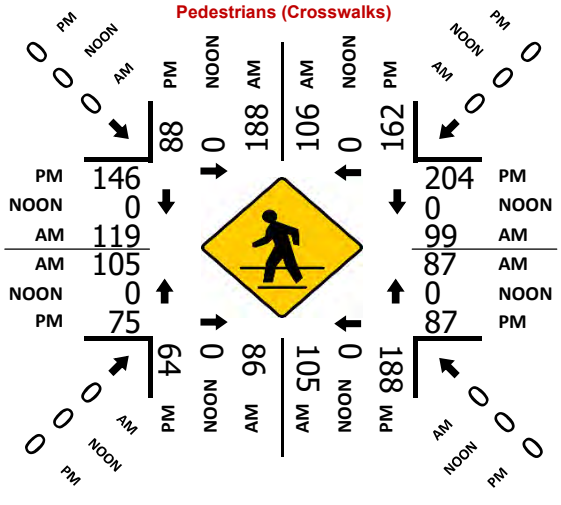
Total Vehicles (Noon)



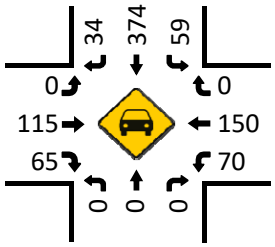
Bikes (NOON)



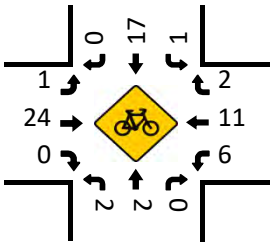
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Webster St & 20th St

Peak Hour Turning Movement Count

ID: 18-08553-007
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Webster St — SOUTHBOUND

AM	87	310	50	0	0	AM
NOON	0	0	0	0	0	NOON
PM	55	404	59	0	0	PM

20th St — EASTBOUND

AM	NOON	PM	
237	0	230	
0	0	1	0
0	0	0	0
241	0	343	3
153	0	154	0
AM	NOON	PM	

20th St — WESTBOUND

PM	NOON	AM	
0	0	0	0
174	0	150	3
96	0	97	1
12	0	7	0
414	0	298	
PM	NOON	AM	

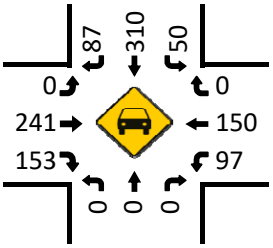
CONTROL: Signalized

TEV	1095 AM	0 NOON	1298 PM
PHF	0.92		0.92

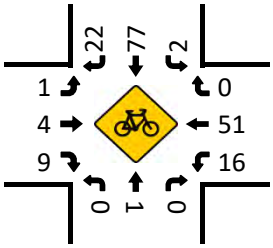
Webster St — NORTHBOUND

PM	654	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	560	0	0	0	0	AM

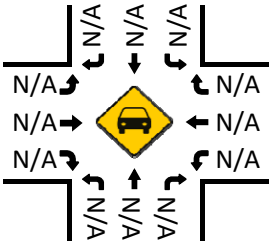
Total Vehicles (AM)



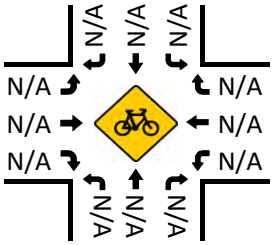
Bikes (AM)



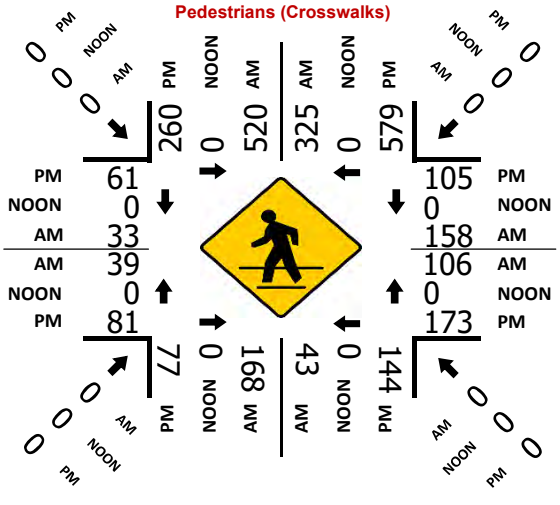
Total Vehicles (Noon)



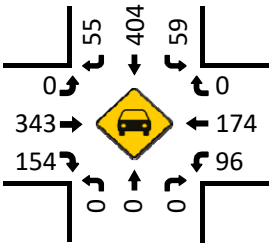
Bikes (NOON)



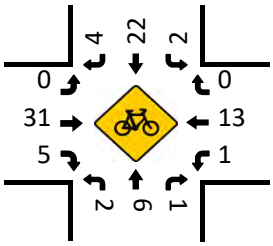
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Kaiser Plaza & 21st St

Peak Hour Turning Movement Count

ID: 18-08553-008
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS

AM	08:00 AM - 09:00 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Kaiser Plaza — SOUTHBOUND

AM	30	0	32	0	152	AM
NOON	0	0	0	0	0	NOON
PM	24	0	70	0	69	PM

21st St — EASTBOUND

AM	NOON	PM		
273	0	133	⇦	
3	0	0	↶	0
56	0	30	↱	0
109	0	257	→	1
0	0	0	↷	0
AM	NOON	PM		

WESTBOUND — 21st St

PM	NOON	AM		
39	0	96	↷	0
109	0	240	←	1
0	0	0	↶	0
1	0	2	↱	0
328	0	143	⇨	
PM	NOON	AM		

CONTROL

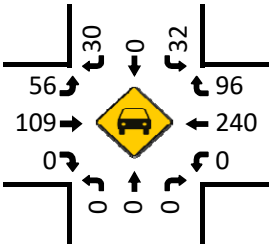
1-Way Stop(SB)

TEV	568 AM	0 NOON	530 PM
PHF	0.82		0.90

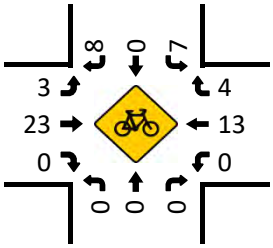
Kaiser Plaza — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

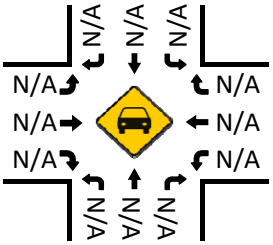
Total Vehicles (AM)



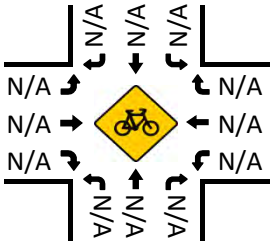
Bikes (AM)



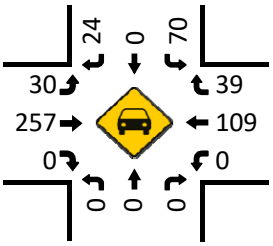
Total Vehicles (Noon)



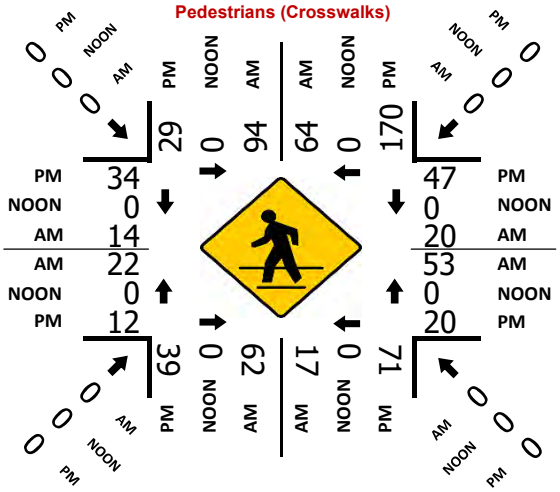
Bikes (NOON)



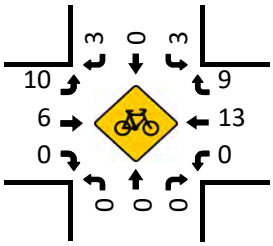
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



Prepared by National Data & Surveying Services

Harrison St & 20th St/Kaiser Center Driveway

Peak Hour Turning Movement Count

ID: 18-08553-009
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS

AM	08:00 AM - 09:00 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Harrison St — SOUTHBOUND

AM	170	457	0	17	483	AM
NOON	0	0	0	0	0	NOON
PM	127	466	0	19	970	PM

EASTBOUND — 20th St/Kaiser Center Driveway

AM	NOON	PM	
240	0	213	
0	0	0	0
125	0	290	1.5
0	0	0	1
146	0	83	0.5

WESTBOUND — 20th St/Kaiser Center Driveway

PM	NOON	AM	
0	0	0	0
0	0	0	2
0	0	0	1
0	0	0	0
0	0	0	

0 1.5 1.5 0

0 0 2 0

CONTROL

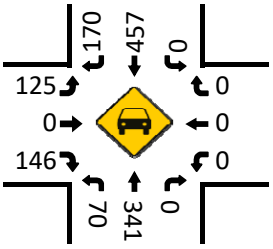
Signalized

TEV	1326 AM	0 NOON	1732 PM
PHF	0.94		0.96

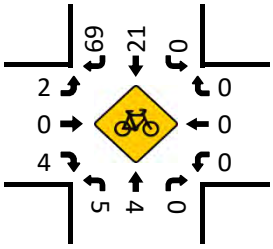
NORTHBOUND — Harrison St

PM	549	0	86	661	0	PM
NOON	0	0	0	0	0	NOON
AM	603	0	70	341	0	AM

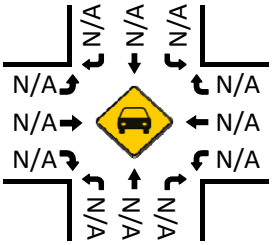
Total Vehicles (AM)



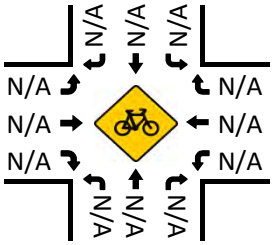
Bikes (AM)



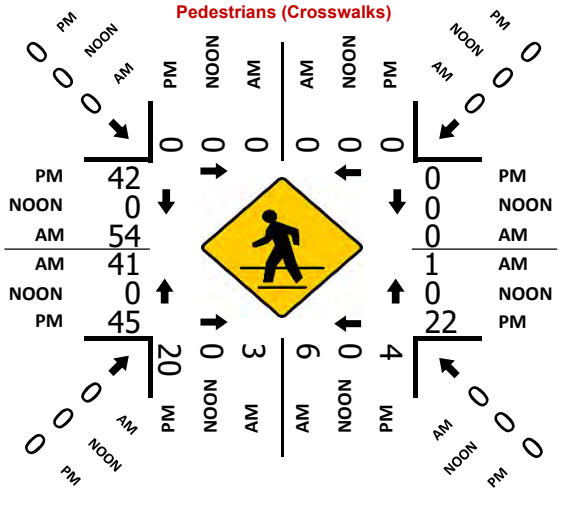
Total Vehicles (Noon)



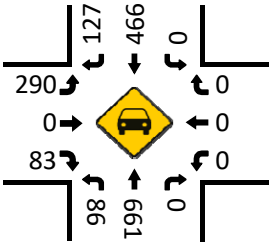
Bikes (NOON)



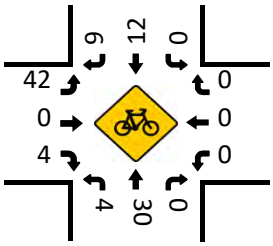
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Harrison St & 21st St

Peak Hour Turning Movement Count

ID: 18-08553-010
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Harrison St — SOUTHBOUND

AM	246	685	0	1	807	AM
NOON	0	0	0	0	0	NOON
PM	93	570	0	0	1477	PM

21st St — EASTBOUND

AM	NOON	PM	
372	0	150	
0	0	0	0
73	0	324	1.5
0	0	0	0
19	0	51	0.5
AM	NOON	PM	

21st St — WESTBOUND

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	
PM	NOON	AM	

	0	3	0	0	
	0	1	2	0	

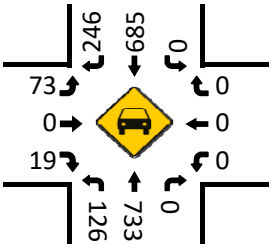
CONTROL: Signalized

TEV	1890 AM	0 NOON	2256 PM
PHF	0.96		0.95

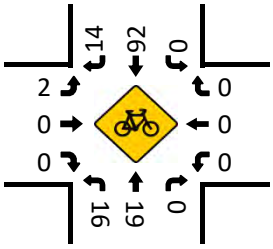
Harrison St — NORTHBOUND

PM	629	8	57	1153	0 PM
NOON	0	0	0	0	0 NOON
AM	711	7	126	733	0 AM

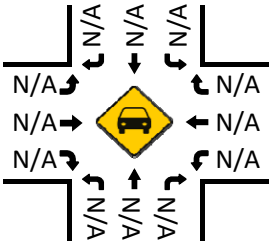
Total Vehicles (AM)



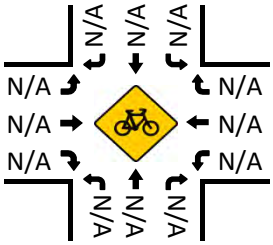
Bikes (AM)



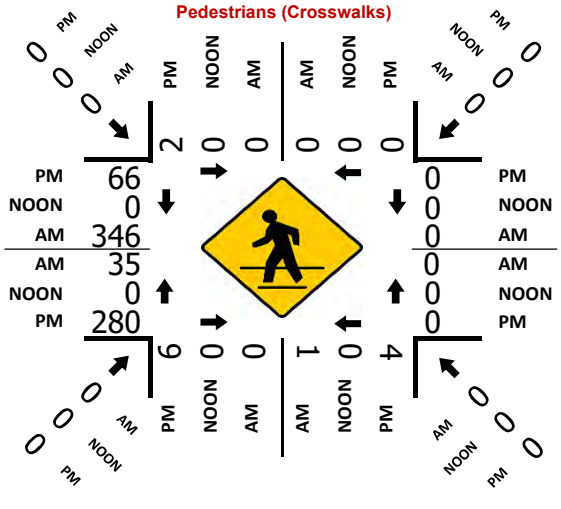
Total Vehicles (Noon)



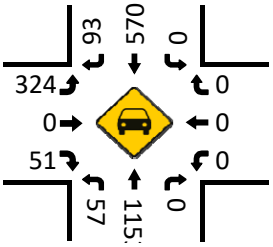
Bikes (NOON)



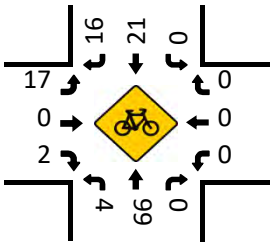
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Harrison St & Grand Ave

Peak Hour Turning Movement Count

ID: 18-08553-011
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Harrison St — SOUTHBOUND

AM	106	562	9	5	642	AM
NOON	0	0	0	0	0	NOON
PM	112	402	2	0	1073	PM

Grand Ave — EASTBOUND

AM	NOON	PM	
682	0	414	
0	0	0	0
52	0	151	2
196	0	754	3
41	0	73	0

CONTROL

Signalized

TEV	2751	0	3470
	AM	NOON	PM
PHF	0.95		0.96

WESTBOUND — Grand Ave

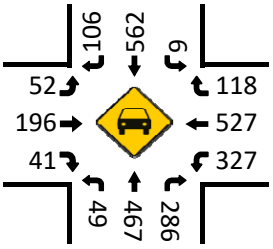
PM	NOON	AM	
31	0	118	0
297	0	527	2
181	0	327	2
1	0	4	0
1326	0	495	

Harrison St — NORTHBOUND

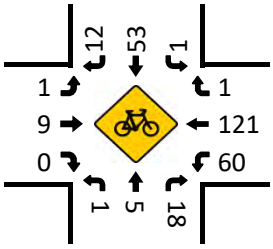
PM	657	1	5	891	569	PM
NOON	0	0	0	0	0	NOON
AM	932	2	49	467	286	AM

0 0 2 1

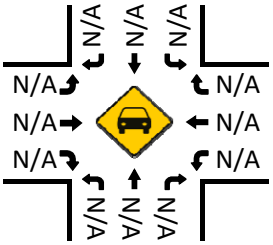
Total Vehicles (AM)



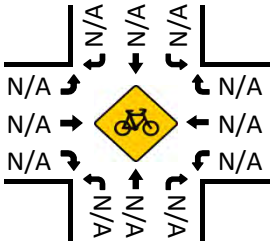
Bikes (AM)



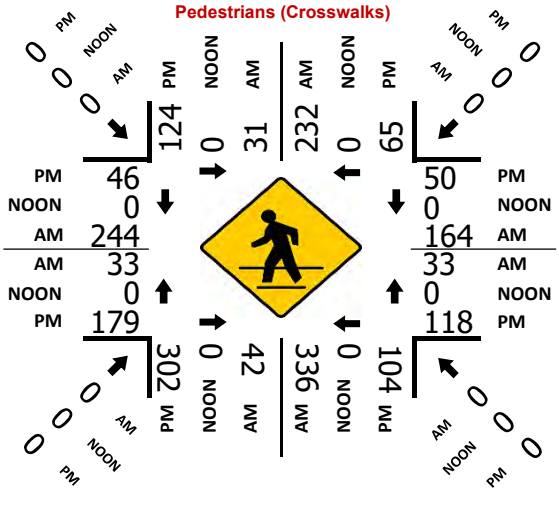
Total Vehicles (Noon)



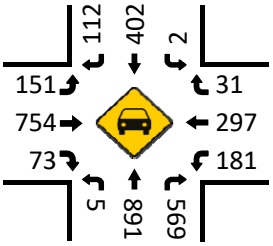
Bikes (NOON)



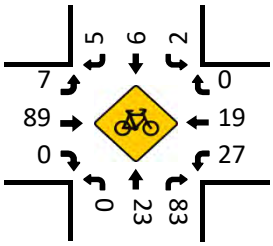
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Harrison St/24th St & 27th St/Bay Pl

Peak Hour Turning Movement Count

ID: 18-08553-012
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Harrison St/24th St — SOUTHBOUND

AM	137	631	114	0	501	AM
NOON	0	0	0	0	0	NOON
PM	69	348	148	0	1117	PM

27th St/Bay Pl — EASTBOUND

AM	NOON	PM		
491	0	340		
24	0	4	0	
43	0	192	1	
106	0	254	2	
47	0	60	1	

CONTROL

Signalized

TEV	1981	0	2441
	AM	NOON	PM
PHF	0.93		0.95

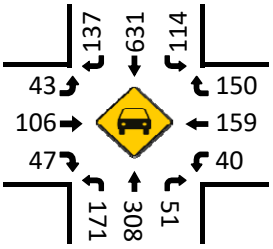
WESTBOUND — 27th St/Bay Pl

PM	NOON	AM		
173	0	150	1	
136	0	159	1	
64	0	40	1	
0	0	0	0	
512	0	271		

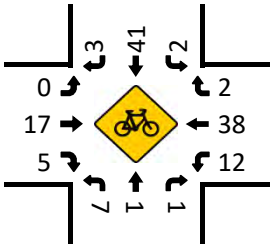
Harrison St/24th St — NORTHBOUND

PM	472	0	131	752	110	PM
NOON	0	0	0	0	0	NOON
AM	718	0	171	308	51	AM

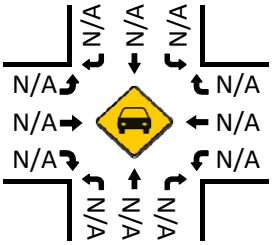
Total Vehicles (AM)



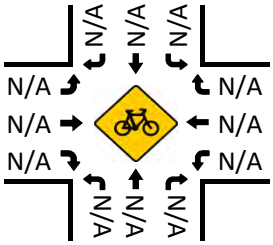
Bikes (AM)



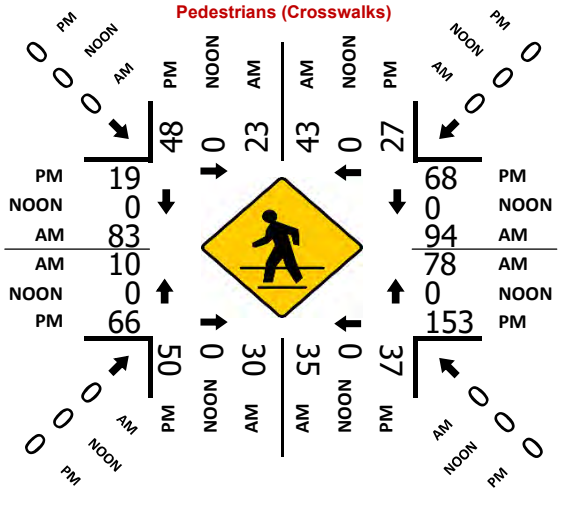
Total Vehicles (Noon)



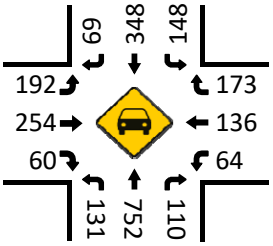
Bikes (NOON)



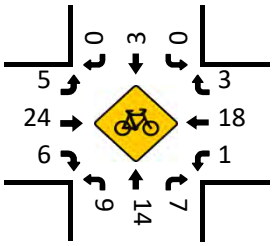
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Oakland Ave/I-580 On-Ramp & Perry Pl/I-580 Off-Ramp

Peak Hour Turning Movement Count

ID: 18-08553-013
City: Oakland

Day: Tuesday
Date: 10/23/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Oakland Ave/I-580 On-Ramp — SOUTHBOUND

AM	0	0	0	0	1135	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	1211	PM

Perry Pl/I-580 Off-Ramp — EASTBOUND

AM	NOON	PM		
0	0	0		
0	0	0	0	
374	0	307	1.5	
179	0	216	0.5	
0	0	0	0	
AM	NOON	PM		

Perry Pl/I-580 Off-Ramp — WESTBOUND

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
288	0	214	
PM	NOON	AM	

CONTROL

Signalized

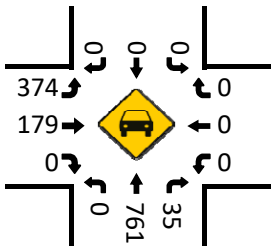
TEV	1349	0	1499
	AM	NOON	PM
PHF	0.93		0.93

Oakland Ave/I-580 On-Ramp — NORTHBOUND

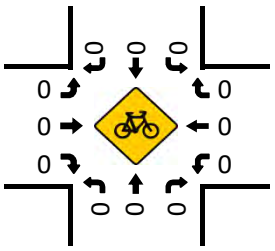
PM	0	0	0	904	72	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	761	35	AM

0 0 0 0 | 0 0 0 0 | 0 0 2 1

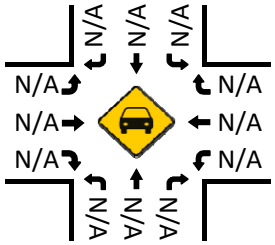
Total Vehicles (AM)



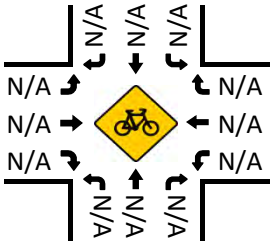
Bikes (AM)



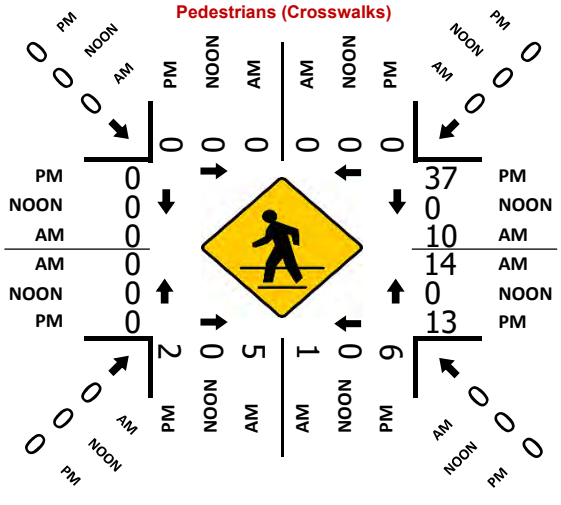
Total Vehicles (Noon)



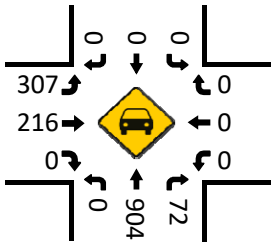
Bikes (NOON)



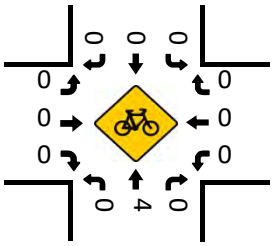
Pedestrians (Crosswalks)



Total Vehicles (PM)

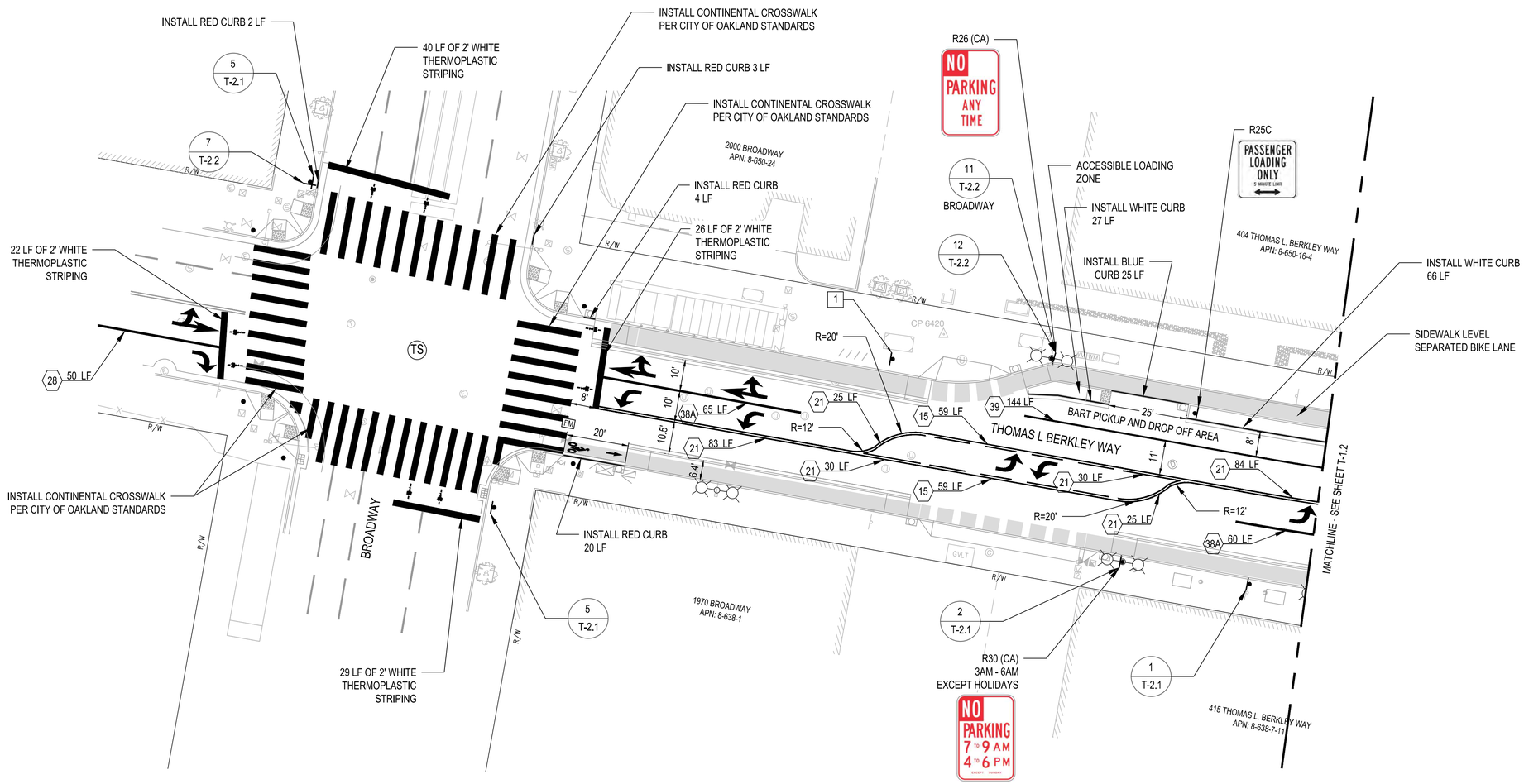


Bikes (PM)



Attachment B
20th Street Complete Streets Project
Design Plans

95% DRAFT

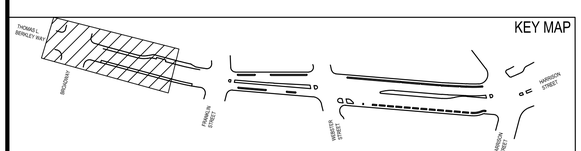


LEGEND

- BIKE LANE PAVEMENT MARKING
- BICYCLE DETECTOR SYMBOL
- FM — FIRE HYDRANT BLUE RETROREFLECTIVE MARKER
- TRAFFIC SIGN AND POST
- ## X LF — CA MUTCD DETAIL NO. AND QUANTITY
- ARROW TYPE I
- ARROW TYPE VII (R)
- ARROW TYPE VII (L)
- ARROW TYPE IV (L)
- TS — TRAFFIC SIGNAL CONTROLLED INTERSECTION

CONSTRUCTION NOTES

1 — REMOVE AND SALVAGE SIGN. REPLACE SIGN.



20' 0' 10' 20' 40'
GRAPHIC SCALE

CITY OF OAKLAND
DEPARTMENT OF TRANSPORTATION
250 FRANK H. OGAWA PLAZA, SUITE 4314 * OAKLAND CA, 94612
(510) 238-3437 * FAX (510) 238-7227

ACTIVE TRANSPORTATION PROGRAM

19TH STREET BART TO LAKE MERRITT URBAN GREENWAY

CONCEPT DESIGN
NOT FOR CONSTRUCTION

SUPERVISING CIVIL ENGINEER

CIVIL ENGINEER
RCE NO.
CHECKED BY — CHECK BY
DESIGNED BY — DESIGN BY
DRAWN BY — DRAWN BY

No.	DATE	BY	REFERENCE

SIGNING AND STRIPING PLAN

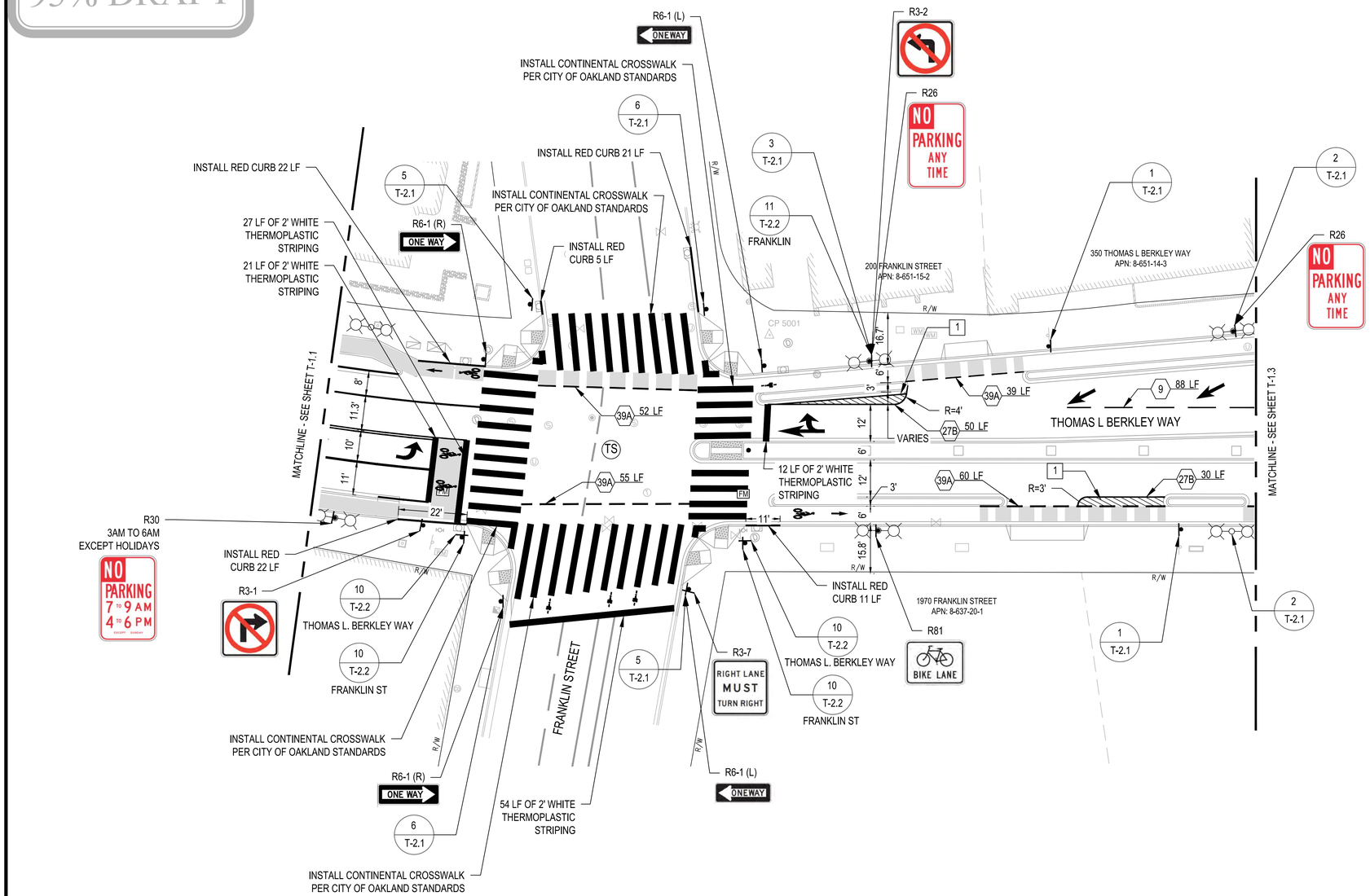
PROJECT NO.
1003211
FEDERAL AID PROJECT NO.
ATPL-5012 (144)

SCALE: 1" = 20'
DATE: DECEMBER 13, 2018

SHEET NO. T-1.1
42 OF 64

DRAWING NAME: P:\Great Streets Delivery\PROJECTS\CSD\1. ACTIVE\1003211 - 19th St BART to Lake Merritt Urban Greenway (ES)\2. DESIGN\3. 95% Design\1. Plans\1. CAD\T-1.1.dwg
PLOT DATE: 01-25-19
PLOTTED BY: Alfajo9D

95% DRAFT



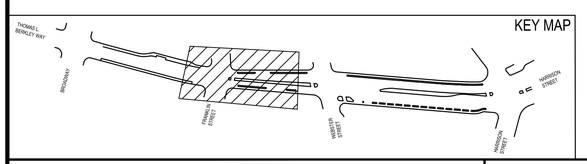
LEGEND

- BIKE LANE PAVEMENT MARKING
- BICYCLE DETECTOR SYMBOL
- FM — FIRE HYDRANT BLUE RETROREFLECTIVE MARKER
- TRAFFIC SIGN AND POST
- ## X LF — CA MUTCD DETAIL NO. AND QUANTITY
- ARROW TYPE I
- ARROW TYPE VII (R)
- ARROW TYPE VII (L)
- ARROW TYPE IV (L)
- TS — TRAFFIC SIGNAL CONTROLLED INTERSECTION

CONSTRUCTION NOTES

1. INSTALL 6 INCH WHITE STRIPING EVERY 4 FEET AT 45 DEGREE ANGLE

KEY MAP



20' 0' 10' 20' 40'
GRAPHIC SCALE

CITY OF OAKLAND
DEPARTMENT OF TRANSPORTATION
250 FRANK H. OGAWA PLAZA, SUITE 4314 * OAKLAND CA, 94612
(510) 238-3437 * FAX (510) 238-7227

ACTIVE TRANSPORTATION PROGRAM

19TH STREET BART TO LAKE MERRITT URBAN GREENWAY

CONCEPT DESIGN
NOT FOR CONSTRUCTION

SUPERVISING CIVIL ENGINEER

CIVIL ENGINEER
RCE NO.
CHECKED BY CHECK BY
DESIGNED BY DESIGN BY
DRAWN BY DRAWN BY

No.	DATE	BY	REFERENCE

SIGNING AND STRIPING PLAN

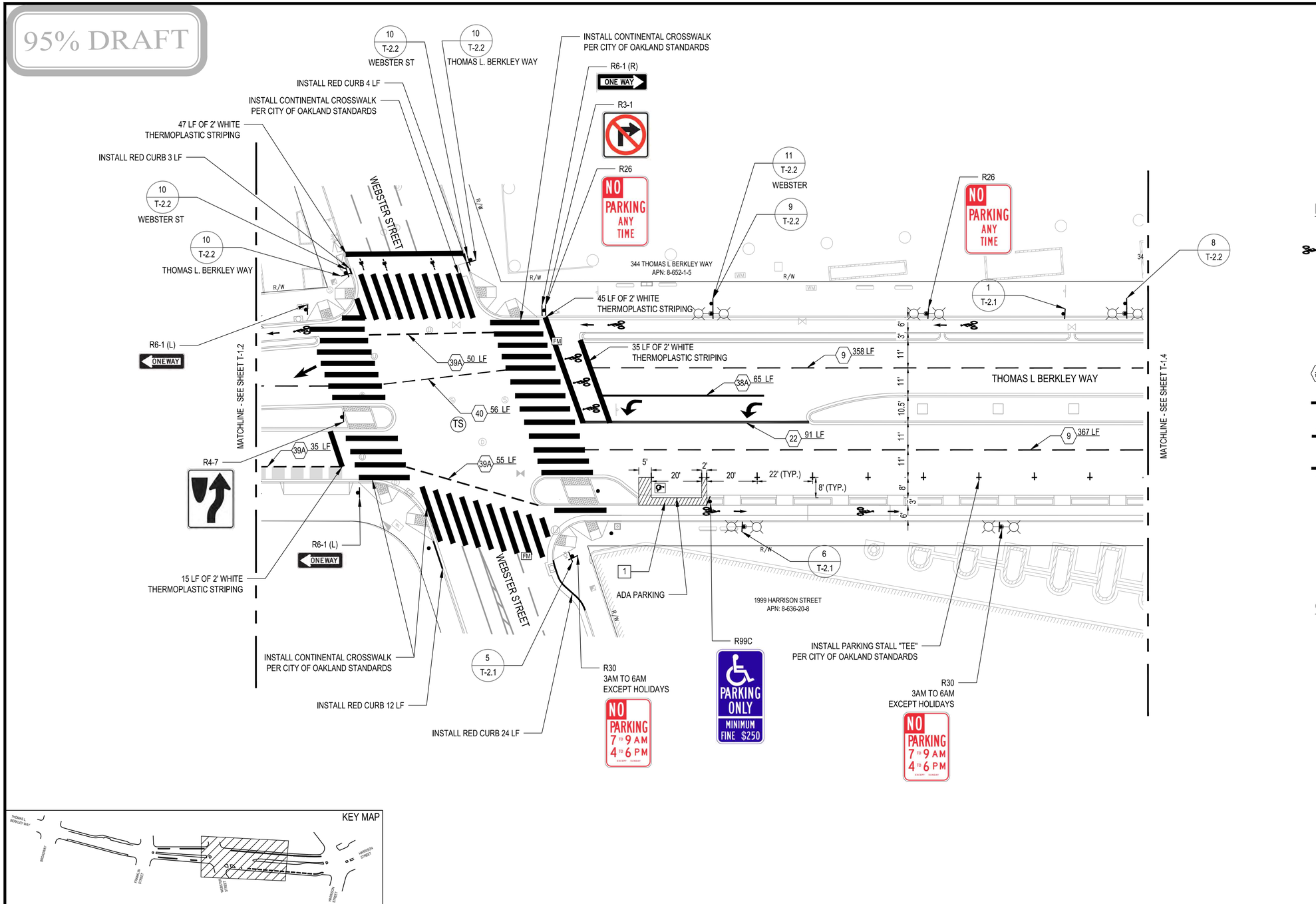
PROJECT NO.
1003211
FEDERAL AID PROJECT NO.
ATPL-5012 (144)

SCALE:
1" = 20'
DATE:
DECEMBER 13, 2018

SHEET NO.
T-1.2
43 OF 64

DRAWING NAME: P:\Great Streets Delivery\PROJECTS\CSD\1. ACTIVE\1003211 - 19th St BART to Lake Merritt Urban Greenway (ES)\2. DESIGN\3. 95% Design\1. Plans\1. CAD\T-1.2.dwg
PLOT DATE: 12/13/18
PLOTTED BY: JMajdD

95% DRAFT



LEGEND

- BIKE LANE PAVEMENT MARKING
- BICYCLE DETECTOR SYMBOL
- FM — FIRE HYDRANT BLUE RETROREFLECTIVE MARKER
- TRAFFIC SIGN AND POST
- ## X LF — CA MUTCD DETAIL NO. AND QUANTITY
- ARROW TYPE I
- ARROW TYPE VII (R)
- ARROW TYPE VII (L)
- ARROW TYPE IV (L)
- TS — TRAFFIC SIGNAL CONTROLLED INTERSECTION
- ISA SYMBOL

CONSTRUCTION NOTES

1. INSTALL 4 INCH WHITE STRIPING AT 45 DEGREE ANGLE AT 3 FEET ON CENTER WITH A 4 INCH BLUE STRIPING BORDER

20' 0' 10' 20' 40'
GRAPHIC SCALE

CITY OF OAKLAND
DEPARTMENT OF TRANSPORTATION
250 FRANK H. OGAWA PLAZA, SUITE 4314 * OAKLAND CA, 94612
(510) 238-3437 * FAX (510) 238-7227

ACTIVE TRANSPORTATION PROGRAM

19TH STREET BART TO LAKE MERRITT URBAN GREENWAY

CONCEPT DESIGN
NOT FOR CONSTRUCTION

SUPERVISING CIVIL ENGINEER

CIVIL ENGINEER	
RCE NO.	
CHECKED BY	CHECK BY
DESIGNED BY	DESIGN BY
DRAWN BY	DRAWN BY

No.	DATE	BY	REFERENCE

SIGNING AND STRIPING PLAN

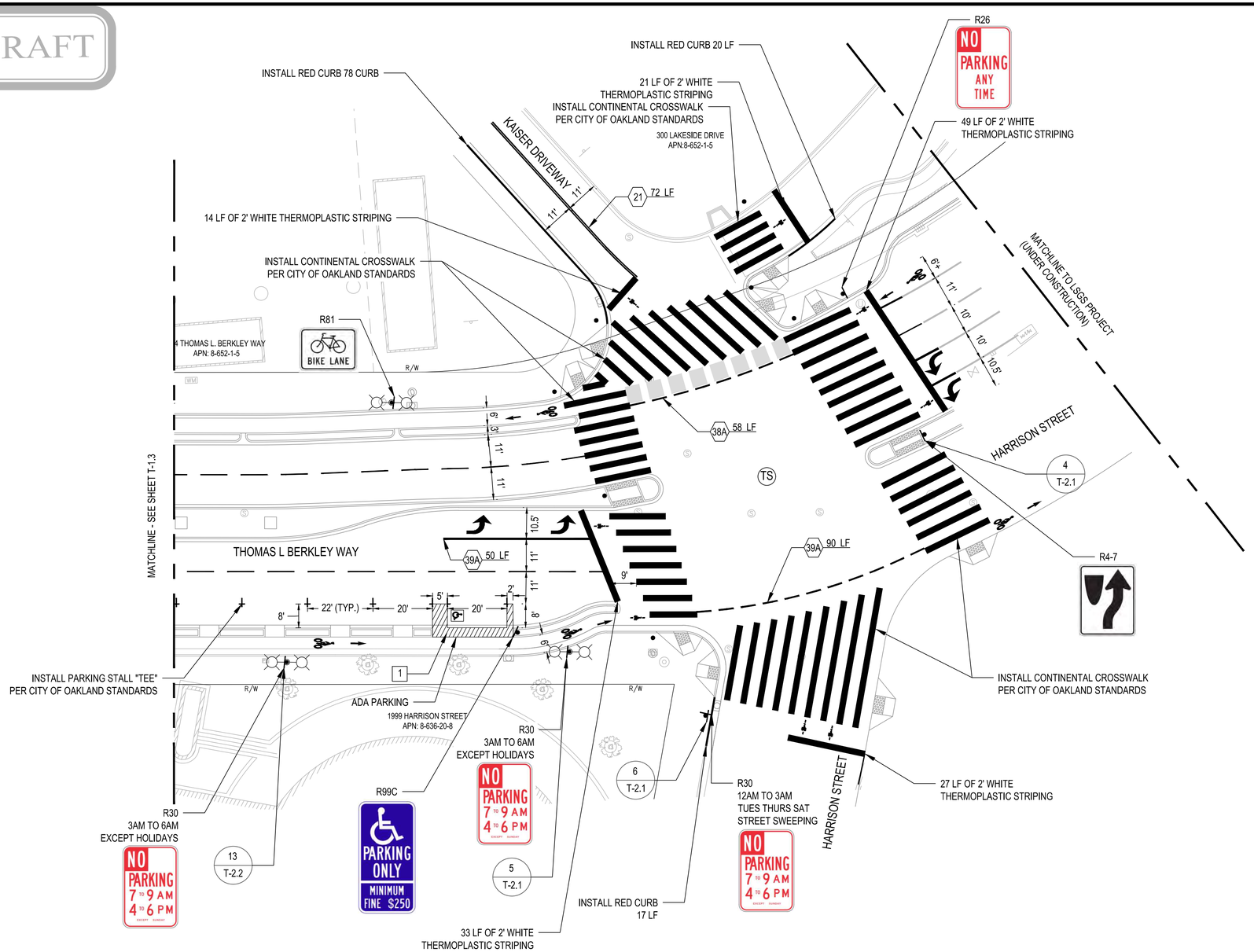
PROJECT NO. 1003211
FEDERAL AID PROJECT NO. ATPL-5012 (144)

SCALE: 1" = 20'
DATE: DECEMBER 13, 2018

SHEET NO. T-1.3
44 OF 64

DRAWING NAME: P:\Great Streets Delivery\PROJECTS\CSD\1. ACTIVE\1003211 - 19th St BART to Lake Merritt Urban Greenway (ES)\2. DESIGN\3. 95% Design\1. Plans\1. CAD\T-1.3.dwg
PLOTTED BY: Alfaj9D

95% DRAFT

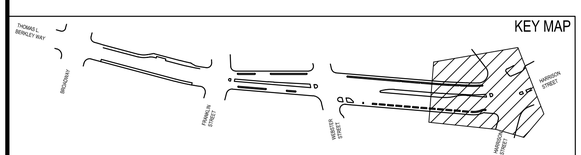


LEGEND

- BIKE LANE PAVEMENT MARKING
- BICYCLE DETECTOR SYMBOL
- FM — FIRE HYDRANT BLUE RETROREFLECTIVE MARKER
- TRAFFIC SIGN AND POST
- ## X LF — CA MUTCD DETAIL NO. AND QUANTITY
- ARROW TYPE I
- ARROW TYPE VII (R)
- ARROW TYPE VII (L)
- ARROW TYPE IV (L)
- TS — TRAFFIC SIGNAL CONTROLLED INTERSECTION
- ISA SYMBOL

CONSTRUCTION NOTES

1. INSTALL 4 INCH WHITE STRIPING AT 45 DEGREE ANGLE AT 3 FEET ON CENTER WITH A 4 INCH BLUE STRIPING BORDER



20' 0' 10' 20' 40'
GRAPHIC SCALE

CITY OF OAKLAND
DEPARTMENT OF TRANSPORTATION
250 FRANK H. OGAWA PLAZA, SUITE 4314 * OAKLAND CA, 94612
(510) 238-3437 * FAX (510) 238-7227

ACTIVE TRANSPORTATION PROGRAM

19TH STREET BART TO LAKE MERRITT URBAN GREENWAY

CONCEPT DESIGN
NOT FOR CONSTRUCTION

SUPERVISING CIVIL ENGINEER

CIVIL ENGINEER
RCE NO.
CHECKED BY CHECK BY
DESIGNED BY DESIGN BY
DRAWN BY DRAWN BY

No.	DATE	BY	REFERENCE

SIGNING AND STRIPING PLAN

PROJECT NO.
1003211
FEDERAL AID PROJECT NO.
ATPL-5012 (144)

SCALE:
1" = 20'
DATE:
DECEMBER 13, 2018

SHEET NO.
T-1.4
45 OF 64

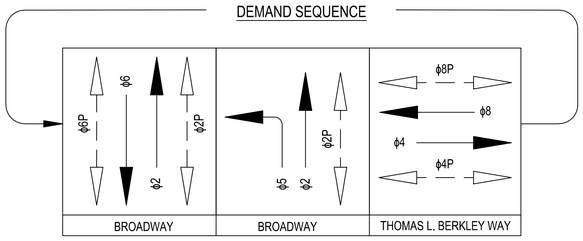
DRAWING NAME: P:\Great Streets Delivery\PROJECTS\CSD1\ ACTIVE\1003211 - 19th St BART to Lake Merritt Urban Greenway (ES)\2. DESIGN\3. 95% Design\1 Plans\1. CAD\T-1.4.dwg
PLOT DATE: 12/13/18
PLOTTED BY: AMayjrd

95% DRAFT

CONSTRUCTION NOTES:

1. INSTALL SIGNAL STANDARD AND FOUNDATION PER POLE AND EQUIPMENT SCHEDULE.
2. INSTALL LED INTERNALLY ILLUMINATED STREET NAME SIGN (IISNS) ON SIGNAL MAST ARM.
3. INSTALL PEDESTRIAN PUSH BUTTON.
4. INSTALL VIDEO DETECTION CAMERA ON SIGNAL MAST ARM. CONTRACTOR SHALL PROGRAM VIDEO DETECTION FOR VIDEO DETECTION ZONES AS SHOWN ON THE PLAN.
5. INSTALL DECORATIVE LUMINAIRE ON SIGNAL STANDARD.
6. INSTALL EVP.

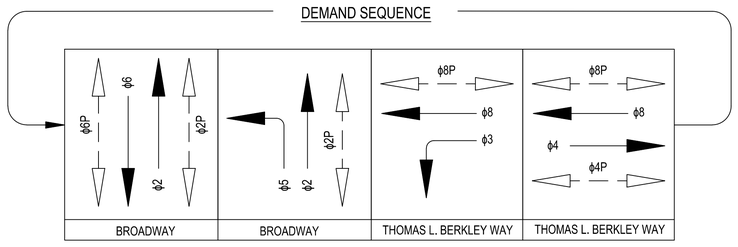
DEMAND SEQUENCE



EXISTING PHASE DIAGRAM

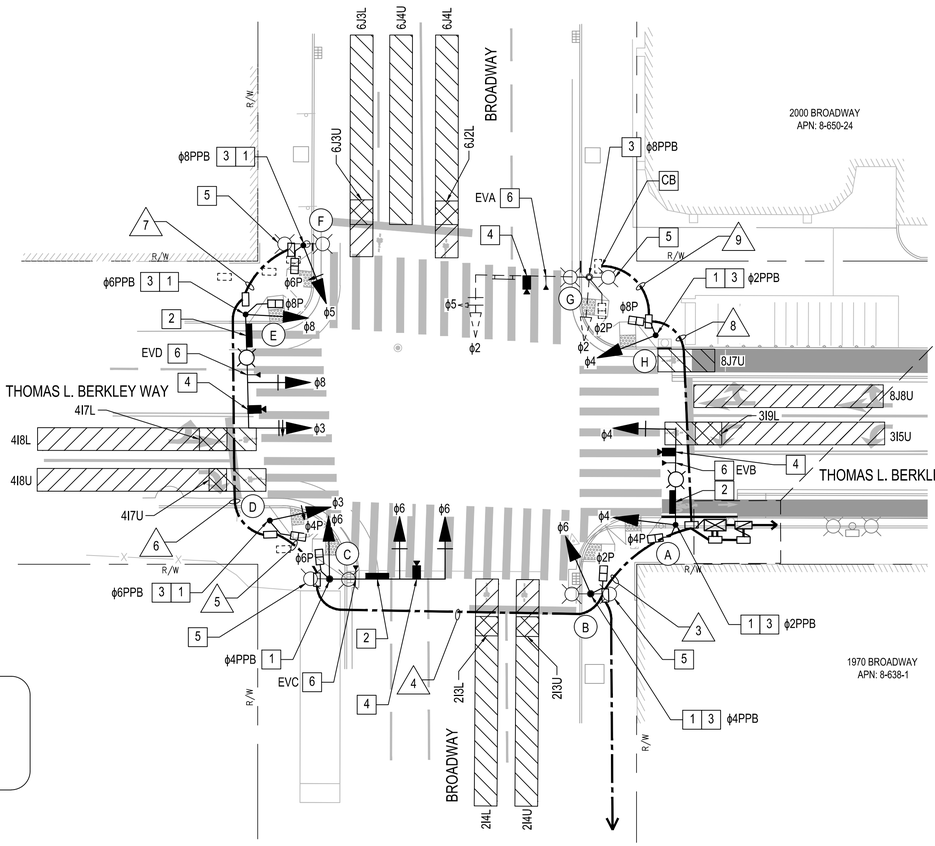
ϕ2/ϕ5/ϕ6 - BROADWAY
ϕ4/ϕ8 - THOMAS L. BERKLEY WAY

DEMAND SEQUENCE

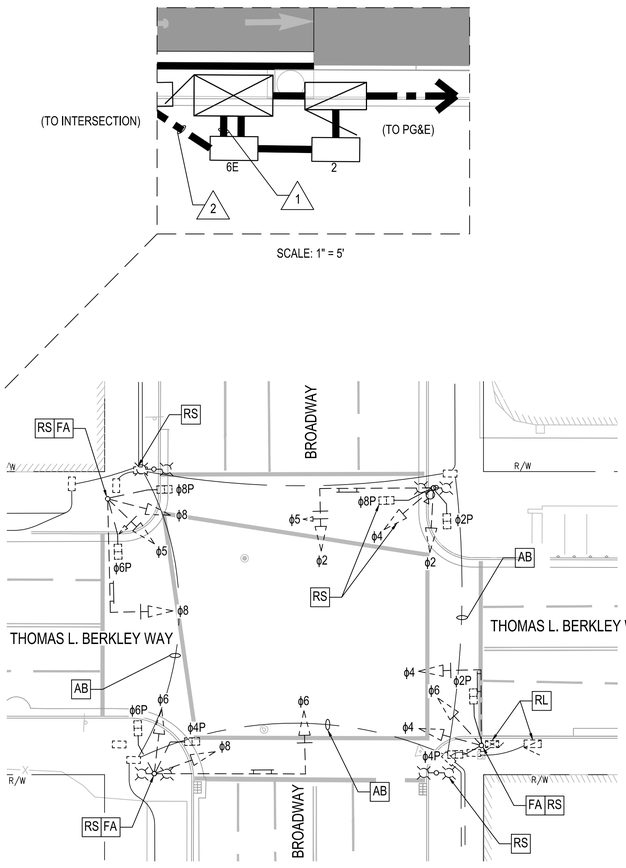


PROPOSED PHASE DIAGRAM

ϕ2/ϕ5/ϕ6 - BROADWAY
ϕ3/ϕ4/ϕ8 - THOMAS L. BERKLEY WAY



PROPOSED CONDITIONS



EXISTING CONDITIONS

20' 0' 10' 20' 40'
GRAPHIC SCALE

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RCE NO.
CHECKED BY CHECK BY
DESIGNED BY DESIGN BY
DRAWN BY DRAWN BY

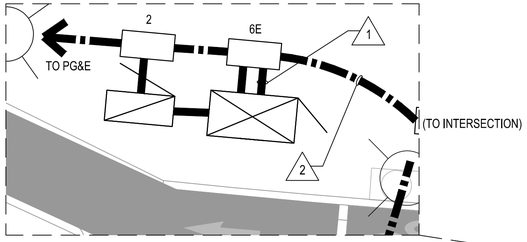
No.	DATE	BY	REFERENCE

TRAFFIC SIGNAL PLAN
THOMAS L. BERKLEY WAY / BROADWAY
SHEET 1 OF 2

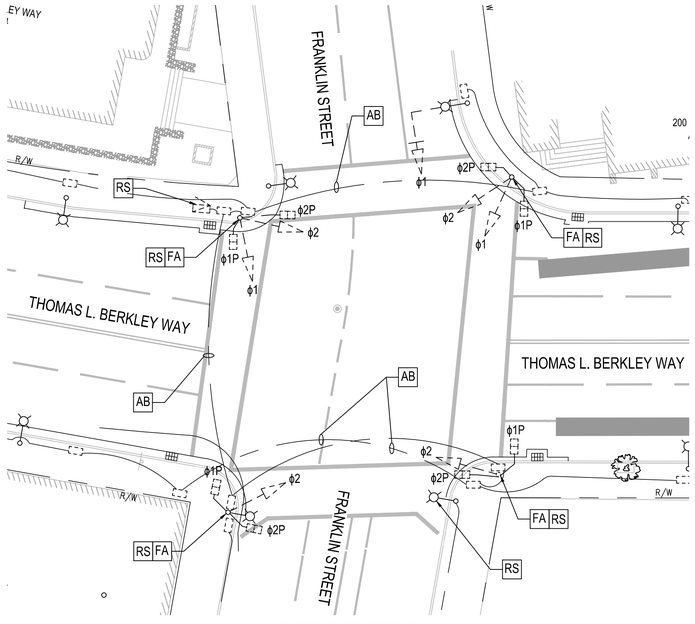
PROJECT NO. 1003211
FEDERAL AID PROJECT NO. ATPL-5012 (144)
SCALE: 1" = 20'
DATE: DECEMBER 13, 2018
SHEET NO. E-1.1
OF 64

DRAWING NAME: P:\Great Streets Delivery\PROJECTS\CSD\1. ACTIVE\1003211 - 19th St BART to Lake Merritt Urban Greenway (ES)\2. DESIGN\3. 95% Design\1. Plans\1. CAD\E-1.1 - E-1.2.dwg
PLOT DATE: 02/25/19
PLOTTED BY: AlliejD

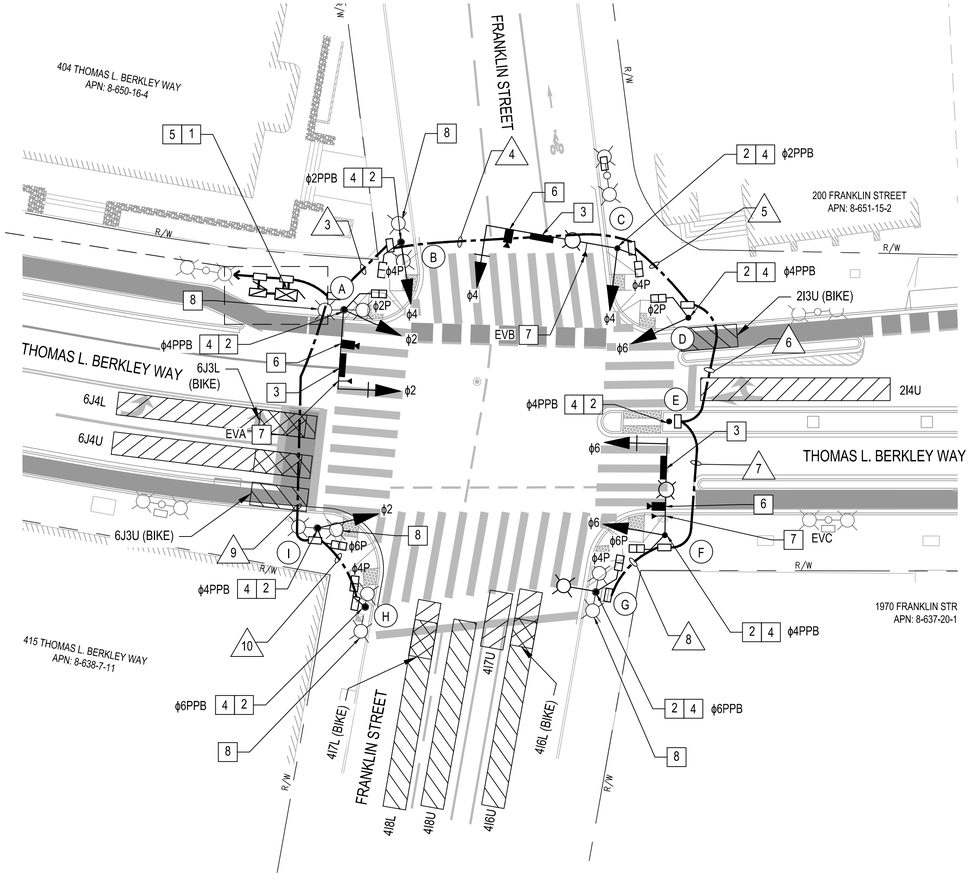
95% DRAFT



SCALE: 1" = 5'



EXISTING CONDITIONS

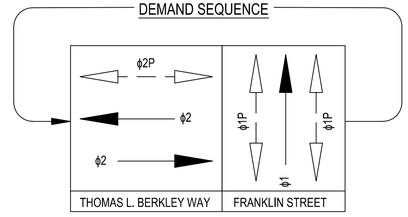


PROPOSED CONDITIONS

CONSTRUCTION NOTES:

1. FURNISH AND INSTALL COMPLETE AND FULLY FUNCTIONAL TYPE 2070E CONTROLLER ASSEMBLY, CALTRANS TYPE 332 CABINET AND FOUNDATION. CONTROLLER AND SOFTWARE SHALL BE THE LATEST NAZTEC APOGEE SOFTWARE. FURNISH AND INSTALL GPS STANDALONE UNIT WITH ALL NECESSARY CABLES AND ANTENNA. CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT MANUFACTURER IF NECESSARY AND PROGRAM THE CONTROLLER TO OPERATE WITH THE ASSIGNED PHASING.
2. INSTALL SIGNAL STANDARD AND FOUNDATION PER POLE AND EQUIPMENT SCHEDULE.
3. INSTALL LED INTERNALLY ILLUMINATED STREET NAME SIGN (IISNS) ON SIGNAL MAST ARM.
4. INSTALL PEDESTRIAN PUSH BUTTON.
5. CONTRACTOR SHALL COORDINATE WITH PG&E FOR SERVICE CONNECTION.
6. INSTALL VIDEO DETECTION CAMERA ON SIGNAL MAST ARM. CONTRACTOR SHALL PROGRAM VIDEO DETECTION FOR VIDEO DETECTION ZONES AS SHOWN ON THE PLAN.
7. INSTALL EVP.
8. INSTALL DECORATIVE LUMINAIRE ON SIGNAL STANDARD.

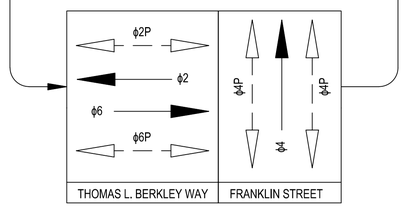
DEMAND SEQUENCE



EXISTING PHASE DIAGRAM

ϕ1 - FRANKLIN STREET
ϕ2 - THOMAS L. BERKLEY WAY

DEMAND SEQUENCE



PROPOSED PHASE DIAGRAM

ϕ4 - FRANKLIN STREET
ϕ2/ϕ6 - THOMAS L. BERKLEY WAY

20' 0' 10' 20' 40'
GRAPHIC SCALE

CITY OF OAKLAND
DEPARTMENT OF TRANSPORTATION
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ACTIVE TRANSPORTATION PROGRAM

19TH STREET BART TO LAKE MERRITT URBAN GREENWAY

CONCEPT DESIGN
NOT FOR CONSTRUCTION

SUPERVISING CIVIL ENGINEER

CIVIL ENGINEER	
RCE NO.	
CHECKED BY	CHECK BY
DESIGNED BY	DESIGN BY
DRAWN BY	DRAWN BY

No.	DATE	BY	REFERENCE

TRAFFIC SIGNAL PLAN

THOMAS L. BERKLEY WAY / FRANKLIN STREET
SHEET 1 OF 2

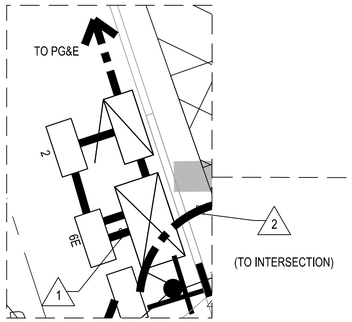
PROJECT NO.
1003211
FEDERAL AID PROJECT NO.
ATPL-5012 (144)

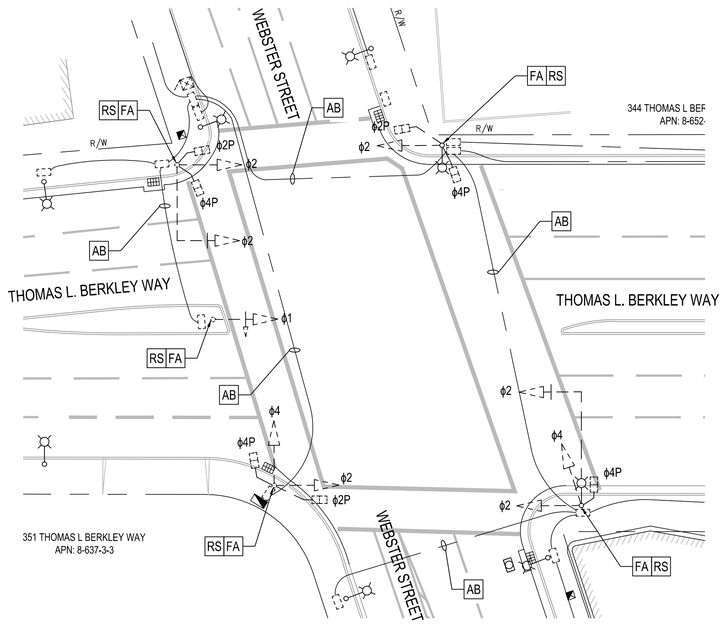
SCALE:
1" = 20'
DATE:
DECEMBER 13, 2018

SHEET NO.
E-1.3
OF 64

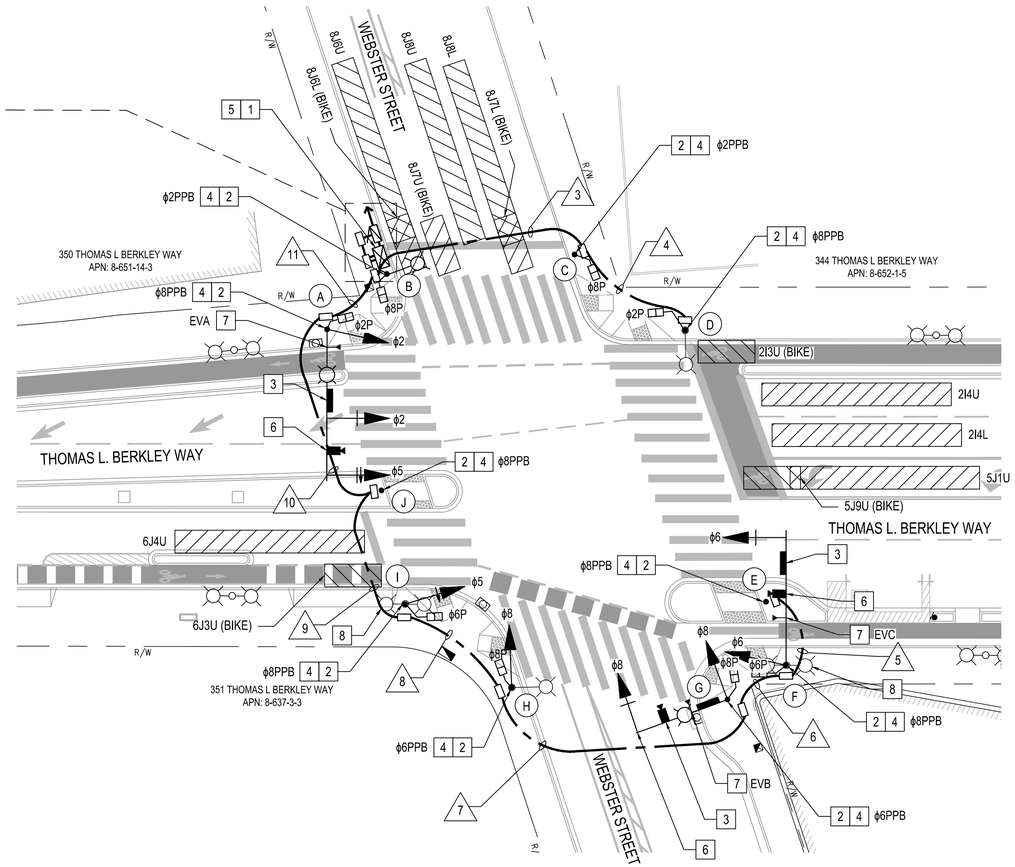
DRAWING NAME: P:\Great Streets Delivery\PROJECTS\CSD\1. ACTIVE\1003211 - 19th St BART to Lake Merritt Urban Greenway (ES)\2. DESIGN\3. 95% Design\1. Plans\1. CAD\E-1.3 - E-1.4.dwg
PLOT DATE: 12/13/2019
PLOTTED BY: AlejoD

95% DRAFT





EXISTING CONDITIONS



PROPOSED CONDITIONS

CONSTRUCTION NOTES:

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4. INSTALL PEDESTRIAN PUSH BUTTON.
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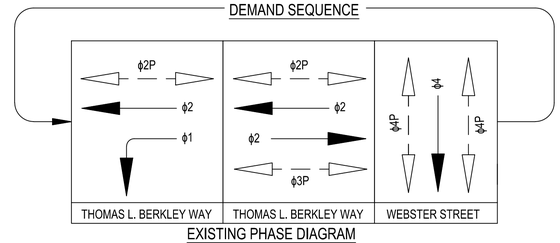
6. INSTALL VIDEO DETECTION CAMERA ON SIGNAL MAST ARM. CONTRACTOR SHALL PROGRAM VIDEO DETECTION FOR VIDEO DETECTION ZONES AS SHOWN ON THE PLAN.
7. INSTALL EVP.
8. INSTALL DECORATIVE LUMINAIRE ON SIGNAL STANDARD.

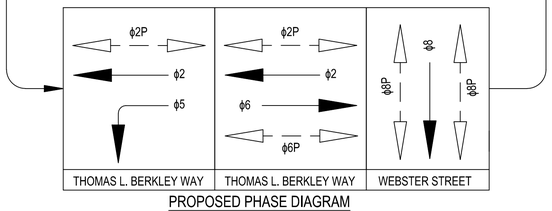
DEMAND SEQUENCE



EXISTING PHASE DIAGRAM

ϕ1/ϕ2/ϕ3 - THOMAS L. BERKLEY WAY
ϕ4 - WEBSTER STREET

DEMAND SEQUENCE



PROPOSED PHASE DIAGRAM

ϕ2/ϕ5/ϕ6 - THOMAS L BERKLEY WAY
ϕ8 - WEBSTER STREET



GRAPHIC SCALE

CITY OF OAKLAND
DEPARTMENT OF TRANSPORTATION
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ACTIVE TRANSPORTATION PROGRAM

19TH STREET BART TO LAKE MERRITT URBAN GREENWAY

CONCEPT DESIGN
NOT FOR CONSTRUCTION

SUPERVISING CIVIL ENGINEER

CIVIL ENGINEER
RCE NO.
CHECKED BY CHECK BY
DESIGNED BY DESIGN BY
DRAWN BY DRAWN BY

No.	DATE	BY	REFERENCE

TRAFFIC SIGNAL PLAN
THOMAS L. BERKLEY WAY / WEBSTER STREET
SHEET 1 OF 2

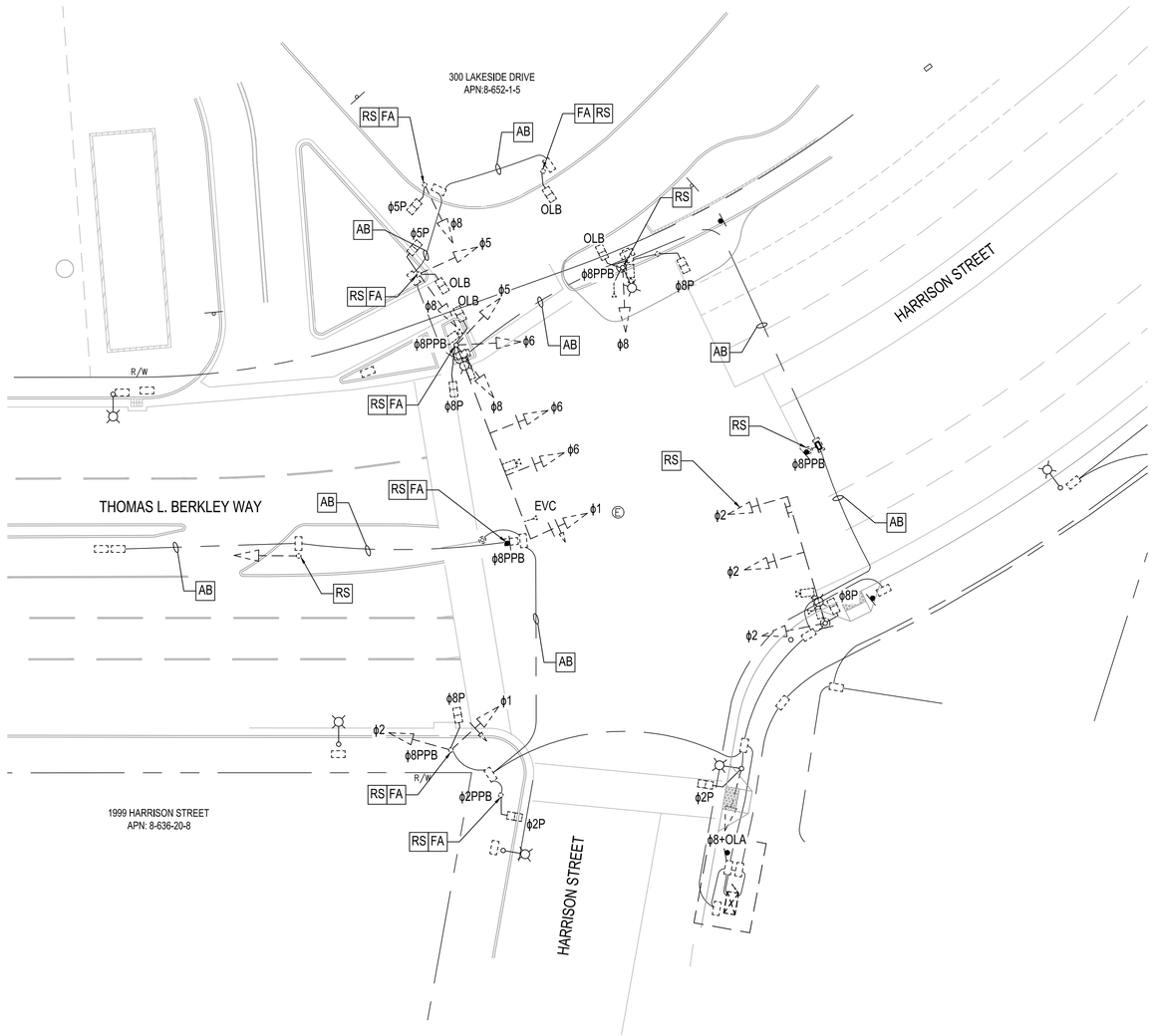
PROJECT NO.
1003211
FEDERAL AID PROJECT NO.
ATPL-5012 (144)

SCALE: 1" = 20'
DATE: DECEMBER 13, 2018

SHEET NO.
E-1.5
OF 64

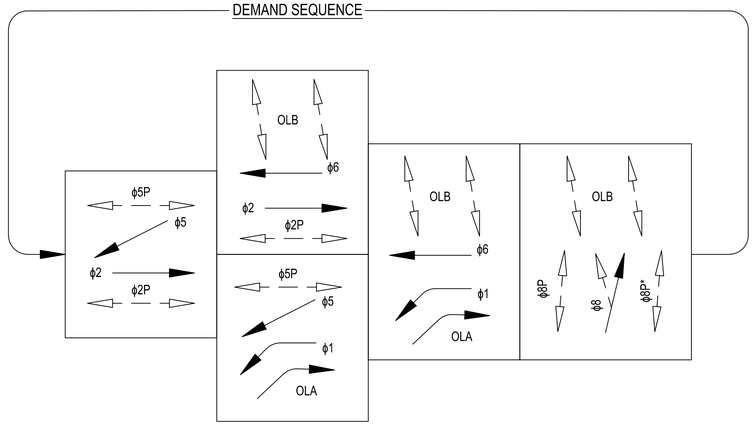
DRAWING NAME: P:\Great Streets Delivery\PROJECTS\CSD\1. ACTIVE\1003211 - 19th St BART to Lake Merritt Urban Greenway (ES)\2. DESIGN\3. 95% Design\1. Plans\1. CAD\E-1.5 - E1.5.dwg
PLOT DATE: 20-Dec-18
PLOTTED BY: AllejoD

95% DRAFT



EXISTING CONDITIONS

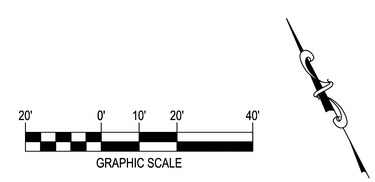
NOTE: EXISTING BASED ON LAKESIDE GREEN STREETS PROPOSED DESIGN (5/25/18)



EXISTING PHASE DIAGRAM

* = LEADING PEDESTRIAN INTERVAL
OLA = ϕ1
OLB = ϕ6 + ϕ8P

EVA = ϕ2
EVC = ϕ6 + ϕ1
EVD = ϕ8



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ACTIVE TRANSPORTATION PROGRAM

19TH STREET BART TO LAKE MERRITT URBAN GREENWAY

CONCEPT DESIGN
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RCE NO.	
CHECKED BY	CHECK BY
DESIGNED BY	DESIGN BY
DRAWN BY	DRAWN BY

No.	DATE	BY	REFERENCE

TRAFFIC SIGNAL PLAN
THOMAS L BERKLEY WAY / HARRISON STREET
SHEET 1 OF 3

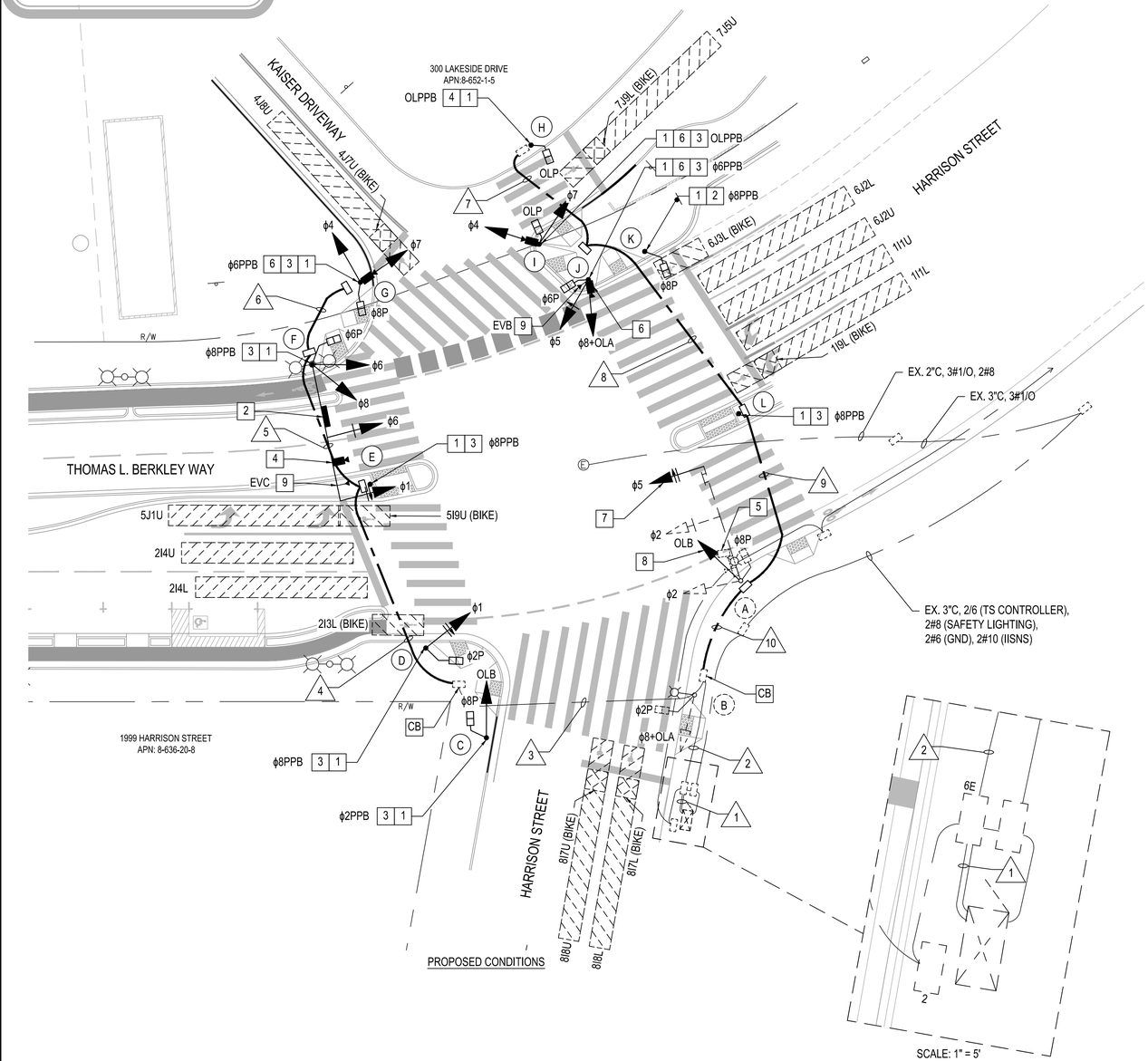
PROJECT NO.
1003211
FEDERAL AID PROJECT NO.
ATPL-5012 (144)

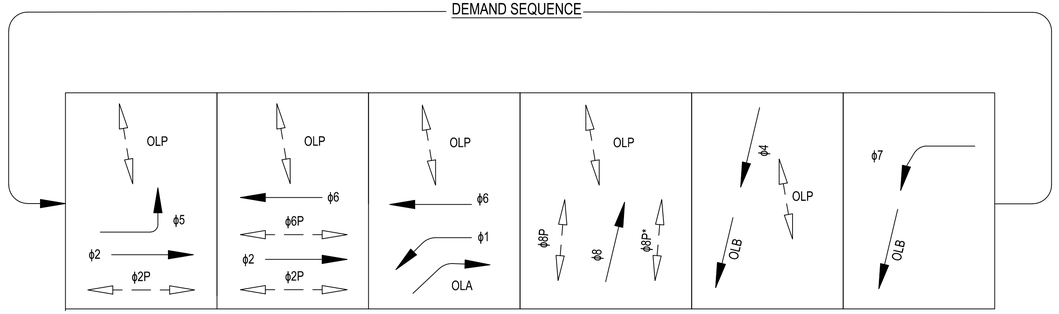
SCALE: 1" = 20'
DATE: DECEMBER 13, 2018

SHEET NO. E-1.7
TS-4
OF 64

DRAWING NAME: P:\Great Streets Delivery\PROJECTS\CSD\1. ACTIVE\1003211 - 19th St BART to Lake Merritt Urban Greenway (ES)\2. DESIGN\3. 95% Design\1. Plans\1. CAD\E-1.7 - E-1.9.dwg
PLOT DATE: 02-28-19
PLOTTED BY: Alfaj9D

95% DRAFT





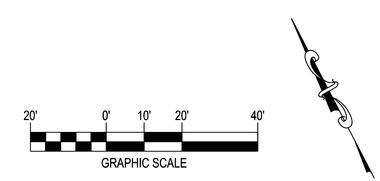
PROPOSED PHASE DIAGRAM

* = LEADING PEDESTRIAN INTERVAL
OLA = ϕ1
OLB = ϕ4 + ϕ7
OLP = ϕ2 + ϕ6 + ϕ8 + ϕ4 - ϕ7

EVA = ϕ2
EVC = ϕ6 + ϕ1
EVD = ϕ8

CONSTRUCTION NOTES:

1. INSTALL SIGNAL STANDARD AND FOUNDATION PER POLE AND EQUIPMENT SCHEDULE.
2. INSTALL LED INTERNALLY ILLUMINATED STREET NAME SIGN (IISNS) ON SIGNAL MAST ARM.
3. INSTALL PEDESTRIAN PUSH BUTTON.
4. INSTALL VIDEO DETECTION CAMERA ON SIGNAL MAST ARM. CONTRACTOR SHALL PROGRAM VIDEO DETECTION FOR VIDEO DETECTION ZONES AS SHOWN ON THE PLAN.
5. EXISTING VIDEO DETECTION CAMERA. CONTRACTOR SHALL REPROGRAM VIDEO DETECTION CAMERA FOR VIDEO DETECTION ZONES AS SHOWN ON THE PLAN.
6. INSTALL VIDEO DETECTION CAMERA ON TOP OF POLE. CONTRACTOR SHALL PROGRAM VIDEO DETECTION FOR VIDEO DETECTION ZONES AS SHOWN ON THE PLAN.
7. INSTALL VEHICLE HEAD ON EXISTING MAST ARM.
8. INSTALL VEHICLE HEAD AND MOUNTING ON EXISTING SIGNAL STANDARD PER POLE & EQUIPMENT SCHEDULE.
9. INSTALL EVP.



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CHECKED BY	CHECK BY
DESIGNED BY	DESIGN BY
DRAWN BY	DRAWN BY

No.	DATE	BY	REFERENCE

TRAFFIC SIGNAL PLAN
THOMAS L BERKLEY WAY / HARRISON STREET
SHEET 2 OF 3

PROJECT NO.
1003211
FEDERAL AID PROJECT NO.
ATPL-5012 (144)

SCALE: 1" = 20'
DATE: DECEMBER 13, 2018

SHEET NO.
E-1.8
OF 64

DRAWING NAME: P:\Great Streets Delivery\PROJECTS\CSD\1. ACTIVE\1003211 - 19th St BART to Lake Merritt Urban Greenway (ES)\2. DESIGN\3. 95% Design\1. Plans\1. CAD\E-1.7 - E-1.9.dwg
PLOT DATE: 02-28-19
PLOTTED BY: Alfaj9D

Attachment C
Predicted Crash Frequency Calculation Sheets

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Telegraph Ave/W Grand Ave
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	19,630
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	11,560
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	3
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	4
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Permissive
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Permissive
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	2
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			2,900
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	6
Number of bus stops within 300 m (1,000 ft) of the intersection		0	8
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	20

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.66	0.99	0.88	0.96	0.91	1.00	0.51

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	5.689	1.000	5.689	0.51	1.00	2.876
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	1.790	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.326	1.855	0.51	1.00	0.938
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	3.698	$(5)_{TOTAL}-(5)_{FI}$ = 0.674	3.833	0.51	1.00	1.938

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.938	1.000	1.938	2.876
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.422	0.483	0.936	1.358
Head-on collision	0.049	0.046	0.030	0.058	0.104
Angle collision	0.347	0.326	0.244	0.473	0.798
Sideswipe	0.099	0.093	0.032	0.062	0.155
Other multiple-vehicle collision	0.055	0.052	0.211	0.409	0.461

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.382	1.000	0.382	0.51	1.00	0.193
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.102	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.270	0.103	0.51	1.00	0.052
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.275	$(5)_{TOTAL}-(5)_{FI}$ = 0.730	0.279	0.51	1.00	0.141

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.052	1.000	0.141	0.193
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.039	0.870	0.123	0.161
Collision with other object	0.072	0.004	0.070	0.010	0.014
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.005
Single-vehicle noncollision	0.141	0.007	0.034	0.005	0.012

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.56	8.74

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.183	8.74	1.00	1.595
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	1.595

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.876	0.193	3.069	0.015	1.00	0.046
Fatal and injury (FI)	--	--	--	--	1.00	0.046

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.422	0.936	1.358
Head-on collisions (from Worksheet 2D)	0.046	0.058	0.104
Angle collisions (from Worksheet 2D)	0.326	0.473	0.798
Sideswipe (from Worksheet 2D)	0.093	0.062	0.155
Other multiple-vehicle collision (from Worksheet 2D)	0.052	0.409	0.461
Subtotal	0.938	1.938	2.876
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.039	0.123	0.161
Collision with other object (from Worksheet 2F)	0.004	0.010	0.014
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.005	0.012
Collision with pedestrian (from Worksheet 2G or 2I)	1.595	0.000	1.595
Collision with bicycle (from Worksheet 2J)	0.046	0.000	0.046
Subtotal	1.693	0.141	1.834
Total	2.631	2.079	4.711

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	4.7
Fatal and injury (FI)	2.6
Property damage only (PDO)	2.1

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Broadway/22nd St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	14,720
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	5,420
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			9,140
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	4
Number of bus stops within 300 m (1,000 ft) of the intersection		0	11
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	20

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	0.96	1.00	0.91	1.00	0.87

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	2.134	1.000	2.134	0.87	1.00	1.866
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	0.719	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.352	0.752	0.87	1.00	0.657
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	1.323	$(5)_{TOTAL}-(5)_{FI}$ = 0.648	1.382	0.87	1.00	1.209

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.657	1.000	1.209	1.866
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.361	0.546	0.660	1.021
Head-on collision	0.038	0.025	0.020	0.024	0.049
Angle collision	0.280	0.184	0.204	0.247	0.431
Sideswipe	0.076	0.050	0.032	0.039	0.089
Other multiple-vehicle collision	0.057	0.037	0.198	0.239	0.277

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.212	1.000	0.212	0.87	1.00	0.186
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.062	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.299	0.064	0.87	1.00	0.056
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.146	$(5)_{TOTAL}-(5)_{FI}$ = 0.701	0.149	0.87	1.00	0.130

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.056	1.000	0.130	0.186
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.000
Collision with fixed object	0.653	0.036	0.895	0.116	0.153
Collision with other object	0.091	0.005	0.069	0.009	0.014
Other single-vehicle collision	0.045	0.003	0.018	0.002	0.005
Single-vehicle noncollision	0.209	0.012	0.014	0.002	0.013

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.56	8.74

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.106	8.74	1.00	0.926
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.926

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	1.866	0.186	2.051	0.011	1.00	0.023
Fatal and injury (FI)	--	--	--	--	1.00	0.023

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.361	0.660	1.021
Head-on collisions (from Worksheet 2D)	0.025	0.024	0.049
Angle collisions (from Worksheet 2D)	0.184	0.247	0.431
Sideswipe (from Worksheet 2D)	0.050	0.039	0.089
Other multiple-vehicle collision (from Worksheet 2D)	0.037	0.239	0.277
Subtotal	0.657	1.209	1.866
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.036	0.116	0.153
Collision with other object (from Worksheet 2F)	0.005	0.009	0.014
Other single-vehicle collision (from Worksheet 2F)	0.003	0.002	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.012	0.002	0.013
Collision with pedestrian (from Worksheet 2G or 2I)	0.926	0.000	0.926
Collision with bicycle (from Worksheet 2J)	0.023	0.000	0.023
Subtotal	1.004	0.130	1.134
Total	1.661	1.339	3.000

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.0
Fatal and injury (FI)	1.7
Property damage only (PDO)	1.3

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Broadway/20th St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	10,510
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	5,810
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	4
Type of left-turn signal phasing for Leg #1		Permissive	Protected / Permissive
Type of left-turn signal phasing for Leg #2		--	Permissive
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Permissive
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			13,280
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	5
Number of bus stops within 300 m (1,000 ft) of the intersection		0	15
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	20

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	0.99	1.00	1.00	0.91	1.00	0.90

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	2.489	1.000	2.489	0.90	1.00	2.244
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	0.736	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.308	0.765	0.90	1.00	0.690
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	1.658	$(5)_{TOTAL}-(5)_{FI}$ = 0.692	1.723	0.90	1.00	1.554

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.690	1.000	1.554	2.244
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.311	0.483	0.750	1.061
Head-on collision	0.049	0.034	0.030	0.047	0.080
Angle collision	0.347	0.239	0.244	0.379	0.619
Sideswipe	0.099	0.068	0.032	0.050	0.118
Other multiple-vehicle collision	0.055	0.038	0.211	0.328	0.366

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.207	1.000	0.207	0.90	1.00	0.187
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.064	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.309	0.064	0.90	1.00	0.058
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.142	$(5)_{TOTAL}-(5)_{FI}$ = 0.691	0.143	0.90	1.00	0.129

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.058	1.000	0.129	0.187
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.043	0.870	0.112	0.155
Collision with other object	0.072	0.004	0.070	0.009	0.013
Other single-vehicle collision	0.040	0.002	0.023	0.003	0.005
Single-vehicle noncollision	0.141	0.008	0.034	0.004	0.013

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.56	8.74

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.264	8.74	1.00	2.307
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	2.307

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.244	0.187	2.431	0.015	1.00	0.036
Fatal and injury (FI)	--	--	--	--	1.00	0.036

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.311	0.750	1.061
Head-on collisions (from Worksheet 2D)	0.034	0.047	0.080
Angle collisions (from Worksheet 2D)	0.239	0.379	0.619
Sideswipe (from Worksheet 2D)	0.068	0.050	0.118
Other multiple-vehicle collision (from Worksheet 2D)	0.038	0.328	0.366
Subtotal	0.690	1.554	2.244
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.043	0.112	0.155
Collision with other object (from Worksheet 2F)	0.004	0.009	0.013
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.008	0.004	0.013
Collision with pedestrian (from Worksheet 2G or 2I)	2.307	0.000	2.307
Collision with bicycle (from Worksheet 2J)	0.036	0.000	0.036
Subtotal	2.402	0.129	2.531
Total	3.092	1.683	4.775

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	4.8
Fatal and injury (FI)	3.1
Property damage only (PDO)	1.7

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Franklin St/21st St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	3,880
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	3,770
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			12,200
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	2
Number of bus stops within 300 m (1,000 ft) of the intersection		0	10
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	20

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	1.00	1.00	0.91	1.00	0.91

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	0.442	1.000	0.442	0.91	1.00	0.403
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	0.174	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.401	0.177	0.91	1.00	0.161
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	0.259	$(5)_{TOTAL}-(5)_{FI}$ = 0.599	0.265	0.91	1.00	0.241

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.161	1.000	0.241	0.403
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.089	0.546	0.132	0.220
Head-on collision	0.038	0.006	0.020	0.005	0.011
Angle collision	0.280	0.045	0.204	0.049	0.094
Sideswipe	0.076	0.012	0.032	0.008	0.020
Other multiple-vehicle collision	0.057	0.009	0.198	0.048	0.057

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.105	1.000	0.105	0.91	1.00	0.095
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.036	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.337	0.035	0.91	1.00	0.032
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.071	$(5)_{TOTAL}-(5)_{FI}$ = 0.663	0.069	0.91	1.00	0.063

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.032	1.000	0.063	0.095
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.000
Collision with fixed object	0.653	0.021	0.895	0.057	0.078
Collision with other object	0.091	0.003	0.069	0.004	0.007
Other single-vehicle collision	0.045	0.001	0.018	0.001	0.003
Single-vehicle noncollision	0.209	0.007	0.014	0.001	0.008

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.56	8.74

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.120	8.74	1.00	1.047
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	1.047

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.403	0.095	0.498	0.011	1.00	0.005
Fatal and injury (FI)	--	--	--	--	1.00	0.005

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.089	0.132	0.220
Head-on collisions (from Worksheet 2D)	0.006	0.005	0.011
Angle collisions (from Worksheet 2D)	0.045	0.049	0.094
Sideswipe (from Worksheet 2D)	0.012	0.008	0.020
Other multiple-vehicle collision (from Worksheet 2D)	0.009	0.048	0.057
Subtotal	0.161	0.241	0.403
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.021	0.057	0.078
Collision with other object (from Worksheet 2F)	0.003	0.004	0.007
Other single-vehicle collision (from Worksheet 2F)	0.001	0.001	0.003
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.001	0.008
Collision with pedestrian (from Worksheet 2G or 2I)	1.047	0.000	1.047
Collision with bicycle (from Worksheet 2J)	0.005	0.000	0.005
Subtotal	1.085	0.063	1.148
Total	1.246	0.304	1.550

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	1.6
Fatal and injury (FI)	1.2
Property damage only (PDO)	0.3

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Franklin St/20th St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	7,300
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	3,630
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			15,970
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	4
Number of bus stops within 300 m (1,000 ft) of the intersection		0	10
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	6

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	0.96	1.00	0.91	1.00	0.87

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	0.883	1.000	0.883	0.87	1.00	0.772
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	0.329	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.384	0.339	0.87	1.00	0.296
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	0.527	$(5)_{TOTAL}-(5)_{FI}$ = 0.616	0.544	0.87	1.00	0.476

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.296	1.000	0.476	0.772
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.163	0.546	0.260	0.422
Head-on collision	0.038	0.011	0.020	0.010	0.021
Angle collision	0.280	0.083	0.204	0.097	0.180
Sideswipe	0.076	0.023	0.032	0.015	0.038
Other multiple-vehicle collision	0.057	0.017	0.198	0.094	0.111

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.135	1.000	0.135	0.87	1.00	0.118
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.042	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.311	0.042	0.87	1.00	0.037
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.093	$(5)_{TOTAL}-(5)_{FI}$ = 0.689	0.093	0.87	1.00	0.081

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.037	1.000	0.081	0.118
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.000
Collision with fixed object	0.653	0.024	0.895	0.073	0.097
Collision with other object	0.091	0.003	0.069	0.006	0.009
Other single-vehicle collision	0.045	0.002	0.018	0.001	0.003
Single-vehicle noncollision	0.209	0.008	0.014	0.001	0.009

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.12	6.27

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.139	6.27	1.00	0.871
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.871

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.772	0.118	0.890	0.011	1.00	0.010
Fatal and injury (FI)	--	--	--	--	1.00	0.010

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.163	0.260	0.422
Head-on collisions (from Worksheet 2D)	0.011	0.010	0.021
Angle collisions (from Worksheet 2D)	0.083	0.097	0.180
Sideswipe (from Worksheet 2D)	0.023	0.015	0.038
Other multiple-vehicle collision (from Worksheet 2D)	0.017	0.094	0.111
Subtotal	0.296	0.476	0.772
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.024	0.073	0.097
Collision with other object (from Worksheet 2F)	0.003	0.006	0.009
Other single-vehicle collision (from Worksheet 2F)	0.002	0.001	0.003
Single-vehicle noncollision (from Worksheet 2F)	0.008	0.001	0.009
Collision with pedestrian (from Worksheet 2G or 2I)	0.871	0.000	0.871
Collision with bicycle (from Worksheet 2J)	0.010	0.000	0.010
Subtotal	0.917	0.081	0.999
Total	1.214	0.557	1.770

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	1.8
Fatal and injury (FI)	1.2
Property damage only (PDO)	0.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Webster St/21st St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
$AADT_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	5,090
$AADT_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	3,940
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	3
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Permissive
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			10,140
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	10
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	20

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	CMF_{COMB}
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	0.96	1.00	0.91	1.00	0.87

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	0.604	1.000	0.604	0.87	1.00	0.528
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	0.231	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.392	0.237	0.87	1.00	0.207
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	0.358	$(5)_{TOTAL}-(5)_{FI}$ = 0.608	0.368	0.87	1.00	0.321

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.207	1.000	0.321	0.528
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.114	0.546	0.176	0.289
Head-on collision	0.038	0.008	0.020	0.006	0.014
Angle collision	0.280	0.058	0.204	0.066	0.124
Sideswipe	0.076	0.016	0.032	0.010	0.026
Other multiple-vehicle collision	0.057	0.012	0.198	0.064	0.075

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.120	1.000	0.120	0.87	1.00	0.105
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.040	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.328	0.039	0.87	1.00	0.034
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.081	$(5)_{TOTAL}-(5)_{FI}$ = 0.672	0.080	0.87	1.00	0.070

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.034	1.000	0.070	0.105
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.000
Collision with fixed object	0.653	0.022	0.895	0.063	0.085
Collision with other object	0.091	0.003	0.069	0.005	0.008
Other single-vehicle collision	0.045	0.002	0.018	0.001	0.003
Single-vehicle noncollision	0.209	0.007	0.014	0.001	0.008

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.56	8.74

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.116	8.74	1.00	1.014
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	1.014

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections						
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.528	0.105	0.633	0.011	1.00	0.007
Fatal and injury (FI)	--	--	--	--	1.00	0.007

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.114	0.176	0.289
Head-on collisions (from Worksheet 2D)	0.008	0.006	0.014
Angle collisions (from Worksheet 2D)	0.058	0.066	0.124
Sideswipe (from Worksheet 2D)	0.016	0.010	0.026
Other multiple-vehicle collision (from Worksheet 2D)	0.012	0.064	0.075
Subtotal	0.207	0.321	0.528
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.022	0.063	0.085
Collision with other object (from Worksheet 2F)	0.003	0.005	0.008
Other single-vehicle collision (from Worksheet 2F)	0.002	0.001	0.003
Single-vehicle noncollision (from Worksheet 2F)	0.007	0.001	0.008
Collision with pedestrian (from Worksheet 2G or 2I)	1.014	0.000	1.014
Collision with bicycle (from Worksheet 2J)	0.007	0.000	0.007
Subtotal	1.055	0.070	1.125
Total	1.262	0.392	1.654

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections	
(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	1.7
Fatal and injury (FI)	1.3
Property damage only (PDO)	0.4

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Webster St/20th St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	7,280
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	6,540
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected
Type of left-turn signal phasing for Leg #2		--	Permissive
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			14,800
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	6
Number of bus stops within 300 m (1,000 ft) of the intersection		0	3
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	6

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.93	0.94	0.96	1.00	0.91	1.00	0.76

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	1.026	1.000	1.026	0.76	1.00	0.784
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	0.362	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.366	0.375	0.76	1.00	0.287
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	0.627	$(5)_{TOTAL}-(5)_{FI}$ = 0.634	0.650	0.76	1.00	0.497

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.287	1.000	0.497	0.784
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.158	0.546	0.271	0.429
Head-on collision	0.038	0.011	0.020	0.010	0.021
Angle collision	0.280	0.080	0.204	0.101	0.182
Sideswipe	0.076	0.022	0.032	0.016	0.038
Other multiple-vehicle collision	0.057	0.016	0.198	0.098	0.115

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.170	1.000	0.170	0.76	1.00	0.130
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.057	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.334	0.057	0.76	1.00	0.043
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.113	$(5)_{TOTAL}-(5)_{FI}$ = 0.666	0.113	0.76	1.00	0.087

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.043	1.000	0.087	0.130
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.000
Collision with fixed object	0.653	0.028	0.895	0.078	0.106
Collision with other object	0.091	0.004	0.069	0.006	0.010
Other single-vehicle collision	0.045	0.002	0.018	0.002	0.004
Single-vehicle noncollision	0.209	0.009	0.014	0.001	0.010

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.12	6.27

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.188	6.27	1.00	1.179
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	1.179

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.784	0.130	0.914	0.011	1.00	0.010
Fatal and injury (FI)	--	--	--	--	1.00	0.010

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.158	0.271	0.429
Head-on collisions (from Worksheet 2D)	0.011	0.010	0.021
Angle collisions (from Worksheet 2D)	0.080	0.101	0.182
Sideswipe (from Worksheet 2D)	0.022	0.016	0.038
Other multiple-vehicle collision (from Worksheet 2D)	0.016	0.098	0.115
Subtotal	0.287	0.497	0.784
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.028	0.078	0.106
Collision with other object (from Worksheet 2F)	0.004	0.006	0.010
Other single-vehicle collision (from Worksheet 2F)	0.002	0.002	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.009	0.001	0.010
Collision with pedestrian (from Worksheet 2G or 2I)	1.179	0.000	1.179
Collision with bicycle (from Worksheet 2J)	0.010	0.000	0.010
Subtotal	1.232	0.087	1.319
Total	1.519	0.584	2.103

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.1
Fatal and injury (FI)	1.5
Property damage only (PDO)	0.6

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Kaiser Plaza/21st St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3ST
$AADT_{major}$ (veh/day)	$AADT_{MAX}$ = 45,700 (veh/day)	--	4,770
$AADT_{minor}$ (veh/day)	$AADT_{MAX}$ = 9,300 (veh/day)	--	1,630
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	0
Type of left-turn signal phasing for Leg #1		Permissive	Not Applicable
Type of left-turn signal phasing for Leg #2		--	Not Applicable
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			0
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	0
Number of bus stops within 300 m (1,000 ft) of the intersection		0	0
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	CMF_{COMB}
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	1.00	1.00	0.91	1.00	0.91

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-13.36	1.11	0.41	0.80	0.396	1.000	0.396	0.91	1.00	0.360
Fatal and Injury (FI)	-14.01	1.16	0.30	0.69	0.140	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.372	0.148	0.91	1.00	0.134
Property Damage Only (PDO)	-15.38	1.20	0.51	0.77	0.236	$(5)_{TOTAL}-(5)_{FI}$ = 0.628	0.249	0.91	1.00	0.226

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N *bimv* (FI) (crashes/year)**	**Proportion of Collision Type$_{(PDO)}$**	**Predicted N *bimv* (PDO) (crashes/year)**	**Predicted N *bimv* (TOTAL) (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.134	1.000	0.226	0.360
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.421	0.057	0.440	0.100	0.156
Head-on collision	0.045	0.006	0.023	0.005	0.011
Angle collision	0.343	0.046	0.262	0.059	0.105
Sideswipe	0.126	0.017	0.040	0.009	0.026
Other multiple-vehicle collision	0.065	0.009	0.235	0.053	0.062

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-6.81	0.16	0.51	1.14	0.186	1.000	0.186	0.91	1.00	0.169
Fatal and Injury (FI)	--	--	--	--	0.058	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.336	0.063	0.91	1.00	0.057
Property Damage Only (PDO)	-8.36	0.25	0.55	1.29	0.114	$(5)_{TOTAL}-(5)_{FI}$ = 0.664	0.123	0.91	1.00	0.112

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.057	1.000	0.112	0.169
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.003	0.000	0.000
Collision with animal	0.003	0.000	0.018	0.002	0.002
Collision with fixed object	0.762	0.043	0.834	0.094	0.137
Collision with other object	0.090	0.005	0.092	0.010	0.015
Other single-vehicle collision	0.039	0.002	0.023	0.003	0.005
Single-vehicle noncollision	0.105	0.006	0.030	0.003	0.009

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	0.360	0.169	0.529	0.021	1.00	0.011
Fatal and injury (FI)	--	--	--	--	1.00	0.011

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections						
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.360	0.169	0.529	0.016	1.00	0.008
Fatal and injury (FI)	--	--	--	--	1.00	0.008

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.057	0.100	0.156
Head-on collisions (from Worksheet 2D)	0.006	0.005	0.011
Angle collisions (from Worksheet 2D)	0.046	0.059	0.105
Sideswipe (from Worksheet 2D)	0.017	0.009	0.026
Other multiple-vehicle collision (from Worksheet 2D)	0.009	0.053	0.062
Subtotal	0.134	0.226	0.360
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.002	0.002
Collision with fixed object (from Worksheet 2F)	0.043	0.094	0.137
Collision with other object (from Worksheet 2F)	0.005	0.010	0.015
Other single-vehicle collision (from Worksheet 2F)	0.002	0.003	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.006	0.003	0.009
Collision with pedestrian (from Worksheet 2G or 2I)	0.011	0.000	0.011
Collision with bicycle (from Worksheet 2J)	0.008	0.000	0.008
Subtotal	0.076	0.112	0.189
Total	0.211	0.338	0.549

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections	
(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	0.5
Fatal and injury (FI)	0.2
Property damage only (PDO)	0.3

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	SZ	Roadway	
Agency or Company	Fehr & Peers	Intersection	Harrison St/20th St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
$AADT_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	15,880
$AADT_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	5,980
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	3
Type of left-turn signal phasing for Leg #1		Permissive	Protected
Type of left-turn signal phasing for Leg #2		--	Permissive
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			3,950
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	5
Number of bus stops within 300 m (1,000 ft) of the intersection		0	3
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	5

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	CMF_{COMB}
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.86	0.94	0.96	1.00	0.91	1.00	0.71

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	2.382	1.000	2.382	0.71	1.00	1.683
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	0.790	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.347	0.827	0.71	1.00	0.584
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	1.486	$(5)_{TOTAL}-(5)_{FI}$ = 0.653	1.555	0.71	1.00	1.099

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N *bimv* (FI) (crashes/year)**	**Proportion of Collision Type$_{(PDO)}$**	**Predicted N *bimv* (PDO) (crashes/year)**	**Predicted N *bimv* (TOTAL) (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.584	1.000	1.099	1.683
		(2)*$(3)_{FI}$		(4)*$(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.321	0.546	0.600	0.921
Head-on collision	0.038	0.022	0.020	0.022	0.044
Angle collision	0.280	0.164	0.204	0.224	0.388
Sideswipe	0.076	0.044	0.032	0.035	0.080
Other multiple-vehicle collision	0.057	0.033	0.198	0.218	0.251

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.228	1.000	0.228	0.71	1.00	0.161
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.067	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.300	0.068	0.71	1.00	0.048
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.156	$(5)_{TOTAL}-(5)_{FI}$ = 0.700	0.159	0.71	1.00	0.113

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.048	1.000	0.113	0.161
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.000
Collision with fixed object	0.653	0.032	0.895	0.101	0.132
Collision with other object	0.091	0.004	0.069	0.008	0.012
Other single-vehicle collision	0.045	0.002	0.018	0.002	0.004
Single-vehicle noncollision	0.209	0.010	0.014	0.002	0.012

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.12	6.27

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.083	6.27	1.00	0.521
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.521

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	1.683	0.161	1.844	0.011	1.00	0.020
Fatal and injury (FI)	--	--	--	--	1.00	0.020

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.321	0.600	0.921
Head-on collisions (from Worksheet 2D)	0.022	0.022	0.044
Angle collisions (from Worksheet 2D)	0.164	0.224	0.388
Sideswipe (from Worksheet 2D)	0.044	0.035	0.080
Other multiple-vehicle collision (from Worksheet 2D)	0.033	0.218	0.251
Subtotal	0.584	1.099	1.683
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.032	0.101	0.132
Collision with other object (from Worksheet 2F)	0.004	0.008	0.012
Other single-vehicle collision (from Worksheet 2F)	0.002	0.002	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.010	0.002	0.012
Collision with pedestrian (from Worksheet 2G or 2I)	0.521	0.000	0.521
Collision with bicycle (from Worksheet 2J)	0.020	0.000	0.020
Subtotal	0.589	0.113	0.702
Total	1.174	1.212	2.385

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.4
Fatal and injury (FI)	1.2
Property damage only (PDO)	1.2

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Harrison St/21st St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	21,400
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	5,250
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected
Type of left-turn signal phasing for Leg #2		--	Protected
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			3,610
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	9
Number of bus stops within 300 m (1,000 ft) of the intersection		0	6
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Not Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	1

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.93	0.88	1.00	1.00	0.91	1.00	0.75

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	3.206	1.000	3.206	0.75	1.00	2.400
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	1.048	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.343	1.100	0.75	1.00	0.823
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	2.008	$(5)_{TOTAL}-(5)_{FI}$ = 0.657	2.107	0.75	1.00	1.577

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N *bimv* (FI) (crashes/year)**	**Proportion of Collision Type$_{(PDO)}$**	**Predicted N *bimv* (PDO) (crashes/year)**	**Predicted N *bimv* (TOTAL) (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.823	1.000	1.577	2.400
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.452	0.546	0.861	1.313
Head-on collision	0.038	0.031	0.020	0.032	0.063
Angle collision	0.280	0.230	0.204	0.322	0.552
Sideswipe	0.076	0.063	0.032	0.050	0.113
Other multiple-vehicle collision	0.057	0.047	0.198	0.312	0.359

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.245	1.000	0.245	0.75	1.00	0.183
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.068	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.284	0.070	0.75	1.00	0.052
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.171	$(5)_{TOTAL}-(5)_{FI}$ = 0.716	0.175	0.75	1.00	0.131

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.052	1.000	0.131	0.183
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.000
Collision with fixed object	0.653	0.034	0.895	0.118	0.152
Collision with other object	0.091	0.005	0.069	0.009	0.014
Other single-vehicle collision	0.045	0.002	0.018	0.002	0.005
Single-vehicle noncollision	0.209	0.011	0.014	0.002	0.013

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.00	1.12	4.65

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.104	4.65	1.00	0.485
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.485

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections						
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	2.400	0.183	2.583	0.011	1.00	0.028
Fatal and injury (FI)	--	--	--	--	1.00	0.028

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.452	0.861	1.313
Head-on collisions (from Worksheet 2D)	0.031	0.032	0.063
Angle collisions (from Worksheet 2D)	0.230	0.322	0.552
Sideswipe (from Worksheet 2D)	0.063	0.050	0.113
Other multiple-vehicle collision (from Worksheet 2D)	0.047	0.312	0.359
Subtotal	0.823	1.577	2.400
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.034	0.118	0.152
Collision with other object (from Worksheet 2F)	0.005	0.009	0.014
Other single-vehicle collision (from Worksheet 2F)	0.002	0.002	0.005
Single-vehicle noncollision (from Worksheet 2F)	0.011	0.002	0.013
Collision with pedestrian (from Worksheet 2G or 2I)	0.485	0.000	0.485
Collision with bicycle (from Worksheet 2J)	0.028	0.000	0.028
Subtotal	0.566	0.131	0.697
Total	1.389	1.708	3.097

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections	
(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	3.1
Fatal and injury (FI)	1.4
Property damage only (PDO)	1.7

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Harrison St/Grand Ave
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	21,230
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	18,360
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	2
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	2
Type of left-turn signal phasing for Leg #1		Permissive	Protected
Type of left-turn signal phasing for Leg #2		--	Protected
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Permissive
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			9,880
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	7
Number of bus stops within 300 m (1,000 ft) of the intersection		0	6
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	12

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.81	0.88	0.85	1.00	0.91	1.00	0.55

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	6.881	1.000	6.881	0.55	1.00	3.809
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	2.174	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.327	2.249	0.55	1.00	1.245
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	4.476	$(5)_{TOTAL}-(5)_{FI}$ = 0.673	4.631	0.55	1.00	2.564

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	1.245	1.000	2.564	3.809
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.560	0.483	1.238	1.799
Head-on collision	0.049	0.061	0.030	0.077	0.138
Angle collision	0.347	0.432	0.244	0.626	1.058
Sideswipe	0.099	0.123	0.032	0.082	0.205
Other multiple-vehicle collision	0.055	0.068	0.211	0.541	0.609

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.456	1.000	0.456	0.55	1.00	0.253
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.120	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.268	0.122	0.55	1.00	0.068
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.328	$(5)_{TOTAL}-(5)_{FI}$ = 0.732	0.334	0.55	1.00	0.185

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.068	1.000	0.185	0.253
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.001
Collision with fixed object	0.744	0.050	0.870	0.161	0.211
Collision with other object	0.072	0.005	0.070	0.013	0.018
Other single-vehicle collision	0.040	0.003	0.023	0.004	0.007
Single-vehicle noncollision	0.141	0.010	0.034	0.006	0.016

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.56	8.74

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.401	8.74	1.00	3.504
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	3.504

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	3.809	0.253	4.062	0.015	1.00	0.061
Fatal and injury (FI)	--	--	--	--	1.00	0.061

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.560	1.238	1.799
Head-on collisions (from Worksheet 2D)	0.061	0.077	0.138
Angle collisions (from Worksheet 2D)	0.432	0.626	1.058
Sideswipe (from Worksheet 2D)	0.123	0.082	0.205
Other multiple-vehicle collision (from Worksheet 2D)	0.068	0.541	0.609
Subtotal	1.245	2.564	3.809
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.001
Collision with fixed object (from Worksheet 2F)	0.050	0.161	0.211
Collision with other object (from Worksheet 2F)	0.005	0.013	0.018
Other single-vehicle collision (from Worksheet 2F)	0.003	0.004	0.007
Single-vehicle noncollision (from Worksheet 2F)	0.010	0.006	0.016
Collision with pedestrian (from Worksheet 2G or 2I)	3.504	0.000	3.504
Collision with bicycle (from Worksheet 2J)	0.061	0.000	0.061
Subtotal	3.633	0.185	3.818
Total	4.878	2.749	7.627

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	7.6
Fatal and injury (FI)	4.9
Property damage only (PDO)	2.7

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Harrison St/27th St/24th St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 67,700 (veh/day)	--	17,330
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 33,400 (veh/day)	--	8,960
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	4
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	4
Type of left-turn signal phasing for Leg #1		Permissive	Protected
Type of left-turn signal phasing for Leg #2		--	Protected
Type of left-turn signal phasing for Leg #3		--	Protected
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Protected
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			5,220
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	8
Number of bus stops within 300 m (1,000 ft) of the intersection		0	5
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	10

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.66	0.78	0.85	1.00	0.91	1.00	0.40

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.99	1.07	0.23	0.39	4.695	1.000	4.695	0.40	1.00	1.871
Fatal and Injury (FI)	-13.14	1.18	0.22	0.33	1.461	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.323	1.516	0.40	1.00	0.604
Property Damage Only (PDO)	-11.02	1.02	0.24	0.44	3.063	$(5)_{TOTAL}-(5)_{FI}$ = 0.677	3.179	0.40	1.00	1.267

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.604	1.000	1.267	1.871
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.450	0.272	0.483	0.612	0.884
Head-on collision	0.049	0.030	0.030	0.038	0.068
Angle collision	0.347	0.210	0.244	0.309	0.519
Sideswipe	0.099	0.060	0.032	0.041	0.100
Other multiple-vehicle collision	0.055	0.033	0.211	0.267	0.301

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-10.21	0.68	0.27	0.36	0.328	1.000	0.328	0.40	1.00	0.131
Fatal and Injury (FI)	-9.25	0.43	0.29	0.09	0.089	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.276	0.091	0.40	1.00	0.036
Property Damage Only (PDO)	-11.34	0.78	0.25	0.44	0.234	$(5)_{TOTAL}-(5)_{FI}$ = 0.724	0.237	0.40	1.00	0.094

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.036	1.000	0.094	0.131
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.002	0.000	0.002	0.000	0.000
Collision with fixed object	0.744	0.027	0.870	0.082	0.109
Collision with other object	0.072	0.003	0.070	0.007	0.009
Other single-vehicle collision	0.040	0.001	0.023	0.002	0.004
Single-vehicle noncollision	0.141	0.005	0.034	0.003	0.008

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.56	8.74

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-9.53	0.40	0.26	0.45	0.04	0.24	0.233	8.74	1.00	2.033
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	2.033

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	1.871	0.131	2.002	0.015	1.00	0.030
Fatal and injury (FI)	--	--	--	--	1.00	0.030

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.272	0.612	0.884
Head-on collisions (from Worksheet 2D)	0.030	0.038	0.068
Angle collisions (from Worksheet 2D)	0.210	0.309	0.519
Sideswipe (from Worksheet 2D)	0.060	0.041	0.100
Other multiple-vehicle collision (from Worksheet 2D)	0.033	0.267	0.301
Subtotal	0.604	1.267	1.871
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.027	0.082	0.109
Collision with other object (from Worksheet 2F)	0.003	0.007	0.009
Other single-vehicle collision (from Worksheet 2F)	0.001	0.002	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.005	0.003	0.008
Collision with pedestrian (from Worksheet 2G or 2I)	2.033	0.000	2.033
Collision with bicycle (from Worksheet 2J)	0.030	0.000	0.030
Subtotal	2.099	0.094	2.193
Total	2.703	1.362	4.065

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	4.1
Fatal and injury (FI)	2.7
Property damage only (PDO)	1.4

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst		Roadway	
Agency or Company	Fehr & Peers	Intersection	Oakland Ave/Perry Place/I-580 Off and On-Ramp
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	14,840
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	5,230
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	1
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	1
Type of left-turn signal phasing for Leg #1		Permissive	Protected
Type of left-turn signal phasing for Leg #2		--	Not Applicable
Type of left-turn signal phasing for Leg #3		--	Not Applicable
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Not Applicable
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	1
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			600
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	3
Number of bus stops within 300 m (1,000 ft) of the intersection		0	6
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	10

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
0.93	0.94	0.96	0.98	0.91	1.00	0.75

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	2.134	1.000	2.134	0.75	1.00	1.598
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	0.721	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.353	0.753	0.75	1.00	0.564
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	1.321	$(5)_{TOTAL}-(5)_{FI}$ = 0.647	1.380	0.75	1.00	1.034

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.564	1.000	1.034	1.598
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.310	0.546	0.564	0.874
Head-on collision	0.038	0.021	0.020	0.021	0.042
Angle collision	0.280	0.158	0.204	0.211	0.369
Sideswipe	0.076	0.043	0.032	0.033	0.076
Other multiple-vehicle collision	0.057	0.032	0.198	0.205	0.237

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.210	1.000	0.210	0.75	1.00	0.157
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.061	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.298	0.063	0.75	1.00	0.047
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.145	$(5)_{TOTAL}-(5)_{FI}$ = 0.702	0.147	0.75	1.00	0.110

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	$(9)_{FI}$ from Worksheet 2E	from Table 12-13	$(9)_{PDO}$ from Worksheet 2E	$(9)_{PDO}$ from Worksheet 2E
Total	1.000	0.047	1.000	0.110	0.157
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.000
Collision with fixed object	0.653	0.031	0.895	0.099	0.129
Collision with other object	0.091	0.004	0.069	0.008	0.012
Other single-vehicle collision	0.045	0.002	0.018	0.002	0.004
Single-vehicle noncollision	0.209	0.010	0.014	0.002	0.011

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.56	8.74

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.031	8.74	1.00	0.274
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.274

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	1.598	0.157	1.755	0.011	1.00	0.019
Fatal and injury (FI)	--	--	--	--	1.00	0.019

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.310	0.564	0.874
Head-on collisions (from Worksheet 2D)	0.021	0.021	0.042
Angle collisions (from Worksheet 2D)	0.158	0.211	0.369
Sideswipe (from Worksheet 2D)	0.043	0.033	0.076
Other multiple-vehicle collision (from Worksheet 2D)	0.032	0.205	0.237
Subtotal	0.564	1.034	1.598
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 2F)	0.031	0.099	0.129
Collision with other object (from Worksheet 2F)	0.004	0.008	0.012
Other single-vehicle collision (from Worksheet 2F)	0.002	0.002	0.004
Single-vehicle noncollision (from Worksheet 2F)	0.010	0.002	0.011
Collision with pedestrian (from Worksheet 2G or 2I)	0.274	0.000	0.274
Collision with bicycle (from Worksheet 2J)	0.019	0.000	0.019
Subtotal	0.340	0.110	0.451
Total	0.904	1.144	2.049

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	2.0
Fatal and injury (FI)	0.9
Property damage only (PDO)	1.1

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst		Roadway	Webster St
Agency or Company	Fehr & Peers	Roadway Section	20th St to 21st St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	4D
Length of segment, L (mi)		--	0.1
AADT (veh/day)	$AADT_{MAX}$ = 66,000 (veh/day)	--	10,360
Type of on-street parking (none/parallel/angle)		None	Parallel (Comm/Ind)
Proportion of curb length with on-street parking		--	1
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	0
Minor commercial driveways (number)		--	2
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	3
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed 30 mph or Lower
Roadside fixed object density (fixed objects / mi)		0	50
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	19
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.71	1.07	1.00	0.91	1.00	1.67

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.34	1.36	1.32	0.126	1.000	0.126	1.67	1.00	0.211
Fatal and Injury (FI)	-12.76	1.28	1.31	0.040	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.294	0.037	1.67	1.00	0.062
Property Damage Only (PDO)	-12.81	1.38	1.34	0.095	$(5)_{TOTAL}-(5)_{FI}$ = 0.706	0.089	1.67	1.00	0.149

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.062	1.000	0.149	0.211
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.832	0.052	0.662	0.099	0.150
Head-on collision	0.020	0.001	0.007	0.001	0.002
Angle collision	0.040	0.002	0.036	0.005	0.008
Sideswipe, same direction	0.050	0.003	0.223	0.033	0.036
Sideswipe, opposite direction	0.010	0.001	0.001	0.000	0.001
Other multiple-vehicle collision	0.048	0.003	0.071	0.011	0.014

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.05	0.47	0.86	0.049	1.000	0.049	1.67	1.00	0.083
Fatal and Injury (FI)	-8.71	0.66	0.28	0.007	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.151	0.007	1.67	1.00	0.012
Property Damage Only (PDO)	-5.04	0.45	1.06	0.042	$(5)_{TOTAL}-(5)_{FI}$ = 0.849	0.042	1.67	1.00	0.070

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.012	1.000	0.070	0.083
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.063	0.004	0.004
Collision with fixed object	0.500	0.006	0.813	0.057	0.063
Collision with other object	0.028	0.000	0.016	0.001	0.001
Other single-vehicle collision	0.471	0.006	0.108	0.008	0.013

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	0	0.033	1.106	0.000	
Minor commercial	2	0.011	1.106	0.015	
Major industrial/institutional	0	0.036	1.106	0.000	
Minor industrial/institutional	3	0.005	1.106	0.010	--
Major residential	0	0.018	1.106	0.000	
Minor residential	0	0.003	1.106	0.000	
Other	0	0.005	1.106	0.000	
Total	--	--	--	0.025	1.39

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.025	1.000	0.025	1.67	1.00	0.041
Fatal and injury (FI)	--	0.284	0.007	1.67	1.00	0.012
Property damage only (PDO)	--	0.716	0.018	1.67	1.00	0.029

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.211	0.083	0.041	0.335	0.067	1.00	0.022
Fatal and injury (FI)	--	--	--	--	--	1.00	0.022

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.211	0.083	0.041	0.335	0.013	1.00	0.004
Fatal and injury (FI)	--	--	--	--	--	1.00	0.004

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.052	0.099	0.150
Head-on collisions (from Worksheet 1D)	0.001	0.001	0.002
Angle collisions (from Worksheet 1D)	0.002	0.005	0.008
Sideswipe, same direction (from Worksheet 1D)	0.003	0.033	0.036
Sideswipe, opposite direction (from Worksheet 1D)	0.001	0.000	0.001
Driveway-related collisions (from Worksheet 1H)	0.012	0.029	0.041
Other multiple-vehicle collision (from Worksheet 1D)	0.003	0.011	0.014
Subtotal	0.074	0.178	0.252
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.004	0.004
Collision with fixed object (from Worksheet 1F)	0.006	0.057	0.063
Collision with other object (from Worksheet 1F)	0.000	0.001	0.001
Other single-vehicle collision (from Worksheet 1F)	0.006	0.008	0.013
Collision with pedestrian (from Worksheet 1I)	0.022	0.000	0.022
Collision with bicycle (from Worksheet 1J)	0.004	0.000	0.004
Subtotal	0.039	0.070	0.109
Total	0.113	0.248	0.361

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.4	0.10	3.6
Fatal and injury (FI)	0.1	0.10	1.1
Property damage only (PDO)	0.2	0.10	2.5

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst		Roadway	Harrison St
Agency or Company	Fehr & Peers	Roadway Section	20th St to 21st St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	4D
Length of segment, L (mi)		--	0.13
AADT (veh/day)	$AADT_{MAX}$ = 66,000 (veh/day)	--	18,470
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	10
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	1
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed 30 mph or Lower
Roadside fixed object density (fixed objects / mi)		0	46.15
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	2
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.35	1.01	0.91	1.00	1.25

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.34	1.36	1.32	0.361	1.000	0.361	1.25	1.00	0.450
Fatal and Injury (FI)	-12.76	1.28	1.31	0.108	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.282	0.102	1.25	1.00	0.127
Property Damage Only (PDO)	-12.81	1.38	1.34	0.274	$(5)_{TOTAL}-(5)_{FI}$ = 0.718	0.259	1.25	1.00	0.323

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.127	1.000	0.323	0.450
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.832	0.106	0.662	0.214	0.319
Head-on collision	0.020	0.003	0.007	0.002	0.005
Angle collision	0.040	0.005	0.036	0.012	0.017
Sideswipe, same direction	0.050	0.006	0.223	0.072	0.078
Sideswipe, opposite direction	0.010	0.001	0.001	0.000	0.002
Other multiple-vehicle collision	0.048	0.006	0.071	0.023	0.029

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.05	0.47	0.86	0.084	1.000	0.084	1.25	1.00	0.105
Fatal and Injury (FI)	-8.71	0.66	0.28	0.014	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.167	0.014	1.25	1.00	0.018
Property Damage Only (PDO)	-5.04	0.45	1.06	0.070	$(5)_{TOTAL}-(5)_{FI}$ = 0.833	0.070	1.25	1.00	0.088

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.018	1.000	0.088	0.105
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.063	0.006	0.006
Collision with fixed object	0.500	0.009	0.813	0.071	0.080
Collision with other object	0.028	0.000	0.016	0.001	0.002
Other single-vehicle collision	0.471	0.008	0.108	0.009	0.018

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	1	0.033	1.106	0.042	--
Minor commercial	0	0.011	1.106	0.000	
Major industrial/institutional	0	0.036	1.106	0.000	
Minor industrial/institutional	0	0.005	1.106	0.000	
Major residential	0	0.018	1.106	0.000	
Minor residential	0	0.003	1.106	0.000	
Other	0	0.005	1.106	0.000	
Total	--	--	--	0.042	1.39

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.042	1.000	0.042	1.25	1.00	0.052
Fatal and injury (FI)	--	0.284	0.012	1.25	1.00	0.015
Property damage only (PDO)	--	0.716	0.030	1.25	1.00	0.037

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.450	0.105	0.052	0.607	0.067	1.00	0.041
Fatal and injury (FI)	--	--	--	--	--	1.00	0.041

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.450	0.105	0.052	0.607	0.013	1.00	0.008
Fatal and injury (FI)	--	--	--	--	--	1.00	0.008

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.106	0.214	0.319
Head-on collisions (from Worksheet 1D)	0.003	0.002	0.005
Angle collisions (from Worksheet 1D)	0.005	0.012	0.017
Sideswipe, same direction (from Worksheet 1D)	0.006	0.072	0.078
Sideswipe, opposite direction (from Worksheet 1D)	0.001	0.000	0.002
Driveway-related collisions (from Worksheet 1H)	0.015	0.037	0.052
Other multiple-vehicle collision (from Worksheet 1D)	0.006	0.023	0.029
Subtotal	0.142	0.360	0.502
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.006	0.006
Collision with fixed object (from Worksheet 1F)	0.009	0.071	0.080
Collision with other object (from Worksheet 1F)	0.000	0.001	0.002
Other single-vehicle collision (from Worksheet 1F)	0.008	0.009	0.018
Collision with pedestrian (from Worksheet 1I)	0.041	0.000	0.041
Collision with bicycle (from Worksheet 1J)	0.008	0.000	0.008
Subtotal	0.066	0.088	0.154
Total	0.208	0.447	0.655

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.7	0.13	5.0
Fatal and injury (FI)	0.2	0.13	1.6
Property damage only (PDO)	0.4	0.13	3.4

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst		Roadway	21st St West
Agency or Company	Fehr & Peers	Roadway Section	Webster St to Kaiser Plaza
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	2U
Length of segment, L (mi)		--	0.07
AADT (veh/day)	$AADT_{MAX}$ = 32,600 (veh/day)	--	4,200
Type of on-street parking (none/parallel/angle)		None	Parallel (Comm/Ind)
Proportion of curb length with on-street parking		--	1
Median width (ft) - for divided only		15	10
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	2
Minor commercial driveways (number)		--	1
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed 30 mph or Lower
Roadside fixed object density (fixed objects / mi)		0	142.8571429
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	13
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
2.07	1.56	1.00	0.93	1.00	3.02

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-15.22	1.68	0.84	0.021	1.000	0.021	3.02	1.00	0.063
Fatal and Injury (FI)	-16.22	1.66	0.65	0.007	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.299	0.006	3.02	1.00	0.019
Property Damage Only (PDO)	-15.62	1.69	0.87	0.015	$(5)_{TOTAL}-(5)_{FI}$ = 0.701	0.015	3.02	1.00	0.044

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.019	1.000	0.044	0.063
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.730	0.014	0.778	0.035	0.048
Head-on collision	0.068	0.001	0.004	0.000	0.001
Angle collision	0.085	0.002	0.079	0.004	0.005
Sideswipe, same direction	0.015	0.000	0.031	0.001	0.002
Sideswipe, opposite direction	0.073	0.001	0.055	0.002	0.004
Other multiple-vehicle collision	0.029	0.001	0.053	0.002	0.003

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.47	0.56	0.81	0.032	1.000	0.032	3.02	1.00	0.095
Fatal and Injury (FI)	-3.96	0.23	0.50	0.009	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.295	0.009	3.02	1.00	0.028
Property Damage Only (PDO)	-6.51	0.64	0.87	0.022	$(5)_{TOTAL}-(5)_{FI}$ = 0.705	0.022	3.02	1.00	0.067

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.028	1.000	0.067	0.095
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.026	0.001	0.066	0.004	0.005
Collision with fixed object	0.723	0.020	0.759	0.051	0.071
Collision with other object	0.010	0.000	0.013	0.001	0.001
Other single-vehicle collision	0.241	0.007	0.162	0.011	0.018

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15{,}000)^t$	from Table 12-7
Major commercial	2	0.158	1.000	0.088	--
Minor commercial	1	0.050	1.000	0.014	
Major industrial/institutional	0	0.172	1.000	0.000	
Minor industrial/institutional	0	0.023	1.000	0.000	
Major residential	0	0.083	1.000	0.000	
Minor residential	0	0.016	1.000	0.000	
Other	0	0.025	1.000	0.000	
Total	--	--	--	0.102	0.81

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.102	1.000	0.102	3.02	1.00	0.310
Fatal and injury (FI)	--	0.323	0.033	3.02	1.00	0.100
Property damage only (PDO)	--	0.677	0.069	3.02	1.00	0.210

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.063	0.095	0.310	0.468	0.036	1.00	0.017
Fatal and injury (FI)	--	--	--	--	--	1.00	0.017

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.063	0.095	0.310	0.468	0.018	1.00	0.008
Fatal and injury (FI)	--	--	--	--	--	1.00	0.008

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.014	0.035	0.048
Head-on collisions (from Worksheet 1D)	0.001	0.000	0.001
Angle collisions (from Worksheet 1D)	0.002	0.004	0.005
Sideswipe, same direction (from Worksheet 1D)	0.000	0.001	0.002
Sideswipe, opposite direction (from Worksheet 1D)	0.001	0.002	0.004
Driveway-related collisions (from Worksheet 1H)	0.100	0.210	0.310
Other multiple-vehicle collision (from Worksheet 1D)	0.001	0.002	0.003
Subtotal	0.119	0.254	0.373
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.001	0.004	0.005
Collision with fixed object (from Worksheet 1F)	0.020	0.051	0.071
Collision with other object (from Worksheet 1F)	0.000	0.001	0.001
Other single-vehicle collision (from Worksheet 1F)	0.007	0.011	0.018
Collision with pedestrian (from Worksheet 1I)	0.017	0.000	0.017
Collision with bicycle (from Worksheet 1J)	0.008	0.000	0.008
Subtotal	0.053	0.067	0.120
Total	0.172	0.321	0.493

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.5	0.07	7.0
Fatal and injury (FI)	0.2	0.07	2.5
Property damage only (PDO)	0.3	0.07	4.6

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst		Roadway	21st St
Agency or Company	Fehr & Peers	Roadway Section	Kaiser Plaza to Harrison St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	2U
Length of segment, L (mi)		--	0.1
AADT (veh/day)	$AADT_{MAX}$ = 32,600 (veh/day)	--	5,250
Type of on-street parking (none/parallel/angle)		None	Parallel (Comm/Ind)
Proportion of curb length with on-street parking		--	1
Median width (ft) - for divided only		15	10
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	2
Minor commercial driveways (number)		--	1
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed 30 mph or Lower
Roadside fixed object density (fixed objects / mi)		0	100
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	13
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
2.07	1.38	1.00	0.93	1.00	2.66

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-15.22	1.68	0.84	0.044	1.000	0.044	2.66	1.00	0.116
Fatal and Injury (FI)	-16.22	1.66	0.65	0.014	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.298	0.013	2.66	1.00	0.035
Property Damage Only (PDO)	-15.62	1.69	0.87	0.032	$(5)_{TOTAL}-(5)_{FI}$ = 0.702	0.031	2.66	1.00	0.081

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.035	1.000	0.081	0.116
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.730	0.025	0.778	0.063	0.089
Head-on collision	0.068	0.002	0.004	0.000	0.003
Angle collision	0.085	0.003	0.079	0.006	0.009
Sideswipe, same direction	0.015	0.001	0.031	0.003	0.003
Sideswipe, opposite direction	0.073	0.003	0.055	0.004	0.007
Other multiple-vehicle collision	0.029	0.001	0.053	0.004	0.005

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.47	0.56	0.81	0.051	1.000	0.051	2.66	1.00	0.136
Fatal and Injury (FI)	-3.96	0.23	0.50	0.014	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.276	0.014	2.66	1.00	0.038
Property Damage Only (PDO)	-6.51	0.64	0.87	0.036	$(5)_{TOTAL}-(5)_{FI}$ = 0.724	0.037	2.66	1.00	0.098

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.038	1.000	0.098	0.136
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.026	0.001	0.066	0.006	0.007
Collision with fixed object	0.723	0.027	0.759	0.075	0.102
Collision with other object	0.010	0.000	0.013	0.001	0.002
Other single-vehicle collision	0.241	0.009	0.162	0.016	0.025

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	2	0.158	1.000	0.111	
Minor commercial	1	0.050	1.000	0.018	
Major industrial/institutional	0	0.172	1.000	0.000	
Minor industrial/institutional	0	0.023	1.000	0.000	--
Major residential	0	0.083	1.000	0.000	
Minor residential	0	0.016	1.000	0.000	
Other	0	0.025	1.000	0.000	
Total	--	--	--	0.128	0.81

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.128	1.000	0.128	2.66	1.00	0.341
Fatal and injury (FI)	--	0.323	0.041	2.66	1.00	0.110
Property damage only (PDO)	--	0.677	0.087	2.66	1.00	0.231

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.116	0.136	0.341	0.592	0.036	1.00	0.021
Fatal and injury (FI)	--	--	--	--	--	1.00	0.021

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.116	0.136	0.341	0.592	0.018	1.00	0.011
Fatal and injury (FI)	--	--	--	--	--	1.00	0.011

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)** (3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	**Property damage only (PDO)** (5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	**Total** (6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.025	0.063	0.089
Head-on collisions (from Worksheet 1D)	0.002	0.000	0.003
Angle collisions (from Worksheet 1D)	0.003	0.006	0.009
Sideswipe, same direction (from Worksheet 1D)	0.001	0.003	0.003
Sideswipe, opposite direction (from Worksheet 1D)	0.003	0.004	0.007
Driveway-related collisions (from Worksheet 1H)	0.110	0.231	0.341
Other multiple-vehicle collision (from Worksheet 1D)	0.001	0.004	0.005
Subtotal	0.145	0.312	0.457
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.001	0.006	0.007
Collision with fixed object (from Worksheet 1F)	0.027	0.075	0.102
Collision with other object (from Worksheet 1F)	0.000	0.001	0.002
Other single-vehicle collision (from Worksheet 1F)	0.009	0.016	0.025
Collision with pedestrian (from Worksheet 1I)	0.021	0.000	0.021
Collision with bicycle (from Worksheet 1J)	0.011	0.000	0.011
Subtotal	0.070	0.098	0.168
Total	0.214	0.410	0.624

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)** (Total) from Worksheet 1K	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)** (2) / (3)
Total	0.6	0.10	6.2
Fatal and injury (FI)	0.2	0.10	2.1
Property damage only (PDO)	0.4	0.10	4.1

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst		Roadway	20th St
Agency or Company	Fehr & Peers	Roadway Section	Harrison St To Webster St
Date Performed	11/09/18	Jurisdiction	Oakland, CA
		Analysis Year	2018

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	4D
Length of segment, L (mi)		--	0.1
AADT (veh/day)	$AADT_{MAX}$ = 66,000 (veh/day)	--	6,960
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0.4
Median width (ft) - for divided only		15	10
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	1
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed 30 mph or Lower
Roadside fixed object density (fixed objects / mi)		0	110.00
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	2
Calibration Factor, Cr		1.00	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.89	1.01	0.91	1.00	1.74

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.34	1.36	1.32	0.074	1.000	0.074	1.74	1.00	0.128
Fatal and Injury (FI)	-12.76	1.28	1.31	0.024	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.303	0.022	1.74	1.00	0.039
Property Damage Only (PDO)	-12.81	1.38	1.34	0.055	$(5)_{TOTAL}-(5)_{FI}$ = 0.697	0.051	1.74	1.00	0.089

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.039	1.000	0.089	0.128
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.832	0.032	0.662	0.059	0.091
Head-on collision	0.020	0.001	0.007	0.001	0.001
Angle collision	0.040	0.002	0.036	0.003	0.005
Sideswipe, same direction	0.050	0.002	0.223	0.020	0.022
Sideswipe, opposite direction	0.010	0.000	0.001	0.000	0.000
Other multiple-vehicle collision	0.048	0.002	0.071	0.006	0.008

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.05	0.47	0.86	0.041	1.000	0.041	1.74	1.00	0.071
Fatal and Injury (FI)	-8.71	0.66	0.28	0.006	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.140	0.006	1.74	1.00	0.010
Property Damage Only (PDO)	-5.04	0.45	1.06	0.035	$(5)_{TOTAL}-(5)_{FI}$ = 0.860	0.035	1.74	1.00	0.061

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.010	1.000	0.061	0.071
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.063	0.004	0.004
Collision with fixed object	0.500	0.005	0.813	0.050	0.055
Collision with other object	0.028	0.000	0.016	0.001	0.001
Other single-vehicle collision	0.471	0.005	0.108	0.007	0.011

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	1	0.033	1.106	0.014	--
Minor commercial	0	0.011	1.106	0.000	
Major industrial/institutional	0	0.036	1.106	0.000	
Minor industrial/institutional	0	0.005	1.106	0.000	
Major residential	0	0.018	1.106	0.000	
Minor residential	0	0.003	1.106	0.000	
Other	0	0.005	1.106	0.000	
Total	--	--	--	0.014	1.39

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.014	1.000	0.014	1.74	1.00	0.025
Fatal and injury (FI)	--	0.284	0.004	1.74	1.00	0.007
Property damage only (PDO)	--	0.716	0.010	1.74	1.00	0.018

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.128	0.071	0.025	0.224	0.067	1.00	0.015
Fatal and injury (FI)	--	--	--	--	--	1.00	0.015

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.128	0.071	0.025	0.224	0.013	1.00	0.003
Fatal and injury (FI)	--	--	--	--	--	1.00	0.003

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.032	0.059	0.091
Head-on collisions (from Worksheet 1D)	0.001	0.001	0.001
Angle collisions (from Worksheet 1D)	0.002	0.003	0.005
Sideswipe, same direction (from Worksheet 1D)	0.002	0.020	0.022
Sideswipe, opposite direction (from Worksheet 1D)	0.000	0.000	0.000
Driveway-related collisions (from Worksheet 1H)	0.007	0.018	0.025
Other multiple-vehicle collision (from Worksheet 1D)	0.002	0.006	0.008
Subtotal	0.046	0.107	0.153
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.004	0.004
Collision with fixed object (from Worksheet 1F)	0.005	0.050	0.055
Collision with other object (from Worksheet 1F)	0.000	0.001	0.001
Other single-vehicle collision (from Worksheet 1F)	0.005	0.007	0.011
Collision with pedestrian (from Worksheet 1I)	0.015	0.000	0.015
Collision with bicycle (from Worksheet 1J)	0.003	0.000	0.003
Subtotal	0.028	0.061	0.089
Total	0.074	0.168	0.242

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	0.2	0.10	2.4
Fatal and injury (FI)	0.1	0.10	0.7
Property damage only (PDO)	0.2	0.10	1.7