# CITY OF OAKLAND



DALZIEL BUILDING . 250 FRANK H. OGAWA PLAZA . SUITE 4344 . OAKLAND . CALIFORNIA . 94612 Public Works Agency Transportation Planning & Funding Division FAX: (510) 238-7415

Bicycle and Pedestrian Advisory Committee, Monthly Meeting Thursday, August 15, 2013; 5:30-7:30 pm Oakland City Hall, Sgt Daniel Sakai Hearing Room (aka Hearing Room 4), Second Floor

#### **AGENDA**

Time	Item #	Торіс	Topic Type *			
5:30	I	Introductions, appointment of note taker (5 minutes)	Ad			
5:35	2	Approval of meeting minutes (5 minutes)—Seek motion to adopt the July meeting minutes.				
5:40	3	Children's Hospital EIR scoping Attachment & Link (30 minutes)—Heather Klein, Planner, City Planning & Zoning Division, will describe the proposed expansion of Children's Hospital in North Oakland, and take comments from the committee on what information and analysis to include in the EIR relating to traffic, bicycle and pedestrian issues.				
6:10	4	Oakland draft bike boulevard policy and pilot project Attachment (20 minutes)—Jason Patton will share the draft policy and the outcome of data collection along the Webster/Shafter and Genoa St bikeways, and take comments from the committee.				
6:30	California Bicycle Coalition November 2013 Summit in Oakl minutes)—Chris Kidd (BPAC Vice-Chair and California Bicycle Coalit secretary) will describe CBC's planned bike summit scheduled for No in Oakland and invite the BPAC to participate. City staff will also seek the City's role.		Α			
6:50	6	Fourteen vs fifteen vs sixteen; to buffer or not to buffer Attachment (20 minutes)—Jennifer Stanley will lead a discussion on how space should be allocated for bike lanes/parallel parking when there is 14', 15', and 16' from the face of curb, using West St as an example.	A			
7:20	7	Announcements, suggestions for next meeting topics (10 minutes)	Ad			

## \* Topic Types:

I=informational; A=action item; Ad=administrative

Agenda online at: www2.oaklandnet.com/n/OAK039263

Location:	Children's Hospital and Research Center Oakland (CHRCO) & Children's Hospital
Location:	Oakland Research Institute (CHORI)
	<b>CHRCO campus</b> is located at 747 52 <sup>nd</sup> Street and is generally bounded by 53 <sup>rd</sup> Street to the north,
	State Route 24 (SR-24) to the east, and Martin Luther King Jr. Way and the elevated BART
	tracks to the south and west. APNs: Multiple
	<b>CHORI campus</b> is located at 5700 Martin Luther King Jr. Way and is generally bounded by 58th
	Street to the north, Dover Street Park to the east, Aileen Street to the south, and Martin Luther
	King Jr. Way to the west. APN: 015-1281-028-00
Proposal:	Conduct a Scoping Session for an Environmental Impact Report (EIR) to receive comments
-	regarding potential traffic, bicycle and pedestrian impacts related to the redevelopment of the
	CHRCO campus and renovation of the gymnasium on the CHORI campus. The Project would
	occur in two phases.
	<b>Phase I</b> would (a) demolish four single-family residences; (b) construct a 92,700 sq. ft., 6-story
	Out Patient Center (OPC2) with a new heli-stop and a 4,450 sq. ft. Central Plant Building; (c)
	construct a new entrance to the existing parking garage; and (d) renovate 86,403 sq. ft.
	<b>Phase II</b> would (a) demolish six residential structures, the B/C Wing, the existing heli-stop, the
	Bruce Lyon Memorial Building and several trailers; (b) construct a 3-story 14,500 sq. ft. Family
	Residence Building with 12 to 16 residential units, a 5-story 31,300 sq. ft. Administration
	Building, a 3-story 19,020 sq. ft. Link Building, a 5-story 125,403 sq. ft. Acute Care Patient
	Pavilion with a new heli-stop, a 3,780 sq. ft. Central Plant Building, and a 4-story 114,901 sq.
	ft. parking structure with 334 stalls; (c) realign Dover Street and perform roadway improvements
	to 52 <sup>nd</sup> Street; and (d) renovate 62,342 sq. ft. including the CHORI gymnasium. The
	redevelopment would result in approximately 210 beds (increase of 20) and 2,291 patients,
	visitors and staff (increase of 205).
Applicant:	Children's Hospital and Research Center Oakland, Doug Nelson
Phone Number:	(510) 428-3066
Owner:	Children's Hospital and Research Center Oakland
Case File	ER12-0013
Number:	
Planning Permits	General Plan Amendment, Rezoning, Conditional Use Permit to change from Residential uses to
Required:	Health Care Civic uses, Tentative Parcel Map, and possible other discretionary planning permits.
General Plan:	Institutional, Mixed Housing Type, Neighborhood Center
Zoning:	S-1, Medical Center Zone; RM-2, Mixed Housing Type Residential Zone-2; CN-3, Neighborhood
	Commercial Zone – 3
Environmental	An Environmental Impact Report (EIR) is being prepared under the California Environmental
Determination:	Quality Act (CEQA).
-	
Service Delivery	II – North Oakland/North Hills
District:	
City Council	1 – Kalb
District:	
Status:	A Notice of Preparation for an EIR was published and distributed on July 26, 2013, with written
A 40 4 3	public comments due no later than August 28, 2013.
Action to be	Receive public and Bicycle and Pedestrian Advisory Committee comments on what information and
Taken:	analysis to include in the EIR relating to traffic, bicycle and pedestrian issues.
For Further	Contact project planner <b>Heather Klein</b> at (510) 238-3659 or <a href="mailto:hklein@oaklandnet.com">hklein@oaklandnet.com</a>
Information:	

## Bicycle Boulevards Scope of Work (JWP, 18-Dec-2012)

- (1) Street Classification: Compare the Bicycle Master Plan bike boulevard/arterial bike route designations with the FHWA designations for local/collector/arterial streets. Identify locations with bike boulevards proposed for collector/arterial streets and arterial bike routes proposed for local streets. Propose changes as desirable and practicable for greater consistency. Lead: Oakland.
  - a. Examples: Webster/Shafter/Forest/Colby (collector  $\rightarrow$  local); 38<sup>th</sup> Ave (collector  $\rightarrow$  local); 55<sup>th</sup> Ave (local functioning as collector  $\rightarrow$  local + bike blvd)
- (2) Network Connectivity: Oakland's discontinuous street grid provides few opportunities for the implementation of bike boulevards on local streets that extend through multiple neighborhoods. Lead: Oakland.
  - a. Develop design guidelines for bike boulevards that would create mini-networks by including buffered bike lanes on collector streets ( $\geq$  16' for parking lane, bike lane, buffer).
  - b. Consider a rebranding of bike boulevards with the goal of establishing and communicating low-stress routes for a wider range of ages and abilities.
  - c. This approach would also require renaming the short bike boulevard "connectors" that would remain (32<sup>nd</sup> St, 8<sup>th</sup> St, 4<sup>th</sup> Ave, E 7<sup>th</sup> St, Sunnymere, 75<sup>th</sup> Ave, Jones/Cairo, Trestle Glen, Excelsior).
- (3) *Corridor Identification*: As a pilot project, apply this overall approach to the corridors below. Develop plans for each that show existing conditions, including striping, traffic calming elements, and stop control. Lead: Oakland.
  - a. Webster/Shafter/Forest/Colby (MacArthur Blvd to Alcatraz Ave)
  - b. Genoa St/52<sup>nd</sup> St (Adeline St to West St)
- (4) Data Collection: Complete 7-day hose counts (motor vehicle volumes and speeds, bicyclist volumes) on the following segments. Lead: Fehr & Peers.
  - a. Webster St (MacArthur Blvd to 42<sup>nd</sup> St):
    - i. Between 38<sup>th</sup> St and 40<sup>th</sup> St
    - ii. Between 41<sup>st</sup> St and 42<sup>nd</sup> St
  - b. Webster St (42<sup>nd</sup> St to 48<sup>th</sup> St)
    - i. Immediately south of 44<sup>th</sup> St
  - c. Shafter Ave (48<sup>th</sup> St to Forest St)
    - i. Immediately south of 50<sup>th</sup> St
    - ii. Between Hudson St and Clifton St
  - d. Forest St (Shafter Ave to Claremont Ave)
    - i. Immediately east of Oak Grove Ave
  - e. Colby St (Claremont Ave to Alcatraz Ave)
    - i. Immediately south of McAuley St

- ii. Between 62<sup>nd</sup> st and 63<sup>rd</sup> St
- f. Genoa St/52<sup>nd</sup> St (Adeline St to West St)
  - i. On 52<sup>nd</sup> St between Genoa St and West St
  - ii. On Genoa St immediately north of 58<sup>th</sup> St
- (5) *Policy Development*: Based on the examples of the pilot corridors, draft policy language for the following issues. Lead: Fehr & Peers.
  - Target thresholds for peak hour volume and average daily traffic; NACTO: <1,500 ADT recommended; <3,000 ADT maximum (on limited stretches or with lower speeds);
  - b. Target threshold for motor vehicle speeds; NACTO: 85<sup>th</sup> percentile ≤20 mph recommended; ≤25 mph maximum;
  - c. Reducing the number of stops on the bike boulevard and the number of locations where cross traffic does not stop;
  - d. Use of the "cross traffic does not stop" supplemental sign (W4-4p).
- (6) Application of Draft Policy: Apply the policies developed above to the pilot corridors. Genoa St appears to have low motor vehicle volumes and will primarily be a test of the stop-control policies. Consider volume issues on multiple segments on the Webster/Shafter corridor between W MacArthur Blvd and Alcatraz Ave. Lead: Fehr & Peers.
- (7) *Proposed Modifications*: Based on the policy outcomes, identify locations for traffic calming (i.e., traffic circles, speed humps), stop-control changes, and the supplemental W4-4p sign. Lead: Fehr & Peers.
- (8) *Community Process*: Develop a proactive process for City-initiated traffic calming (i.e., traffic circles, speed humps) on bike boulevards. Lead: Oakland.
  - a. Define the project over a large enough area so that multiple improvements are possible in multiple locations.
  - b. Send a project mailer to all addresses within 400 feet of the segment targeted for improvements. Identify the specific locations proposed for horizontal and vertical deflection (i.e., traffic circles, speed humps).
  - c. Schedule an agenda item with the BPAC and announce the meeting in the mailer.
  - d. For locations with objections, contact the residents individually to confirm the concern and discuss possible solutions. If no resolution, encourage them to attend the meeting.
  - e. Based on the mailer responses and the meeting discussion, proceed with the locations that do not have significant opposition (no more than 1/4 of fronting properties opposed to a particular location).

## Bicycle Boulevard Implementation Plan – DRAFT (JWP, 20-Jun-2013)

The City's *Bicycle Master Plan* (2007) proposes 32 miles of bicycle boulevards and provides the following definition for this bikeway type:

Bicycle boulevards are bicycle routes on residential streets that prioritize through trips for bicyclists. The route should appeal to cyclists of varied skill levels by providing direct connections on streets with low traffic volumes. The route should reduce delay to bicyclists by assigning right-of-way to travel on the route. Traffic calming should be introduced as needed to discourage drivers from using the boulevard as a through route. (p. 66)

The Plan includes the following design guidance on the implementation of bicycle boulevards:

- Intersection Control: Where feasible, modify stop signs and traffic signals to prioritize bicycle travel and improve bicycle safety along the bicycle boulevard. In particular, minimize the number of intersections where cross traffic does not stop. Such modifications to intersection control shall be contingent on an engineering analysis of operations and safety. (p. 83)
- Traffic Calming: Consider bicycle-friendly speed humps, traffic circles, and partial street closures
  on bicycle boulevards with speeds and/or volumes of motor vehicle traffic that are incompatible
  with the bicycle route and the character of the residential street. (p. 84)

The following draft Implementation Plan provides detailed guidance on moving forward with the recommendations of the Bicycle Master Plan. Implementation is composed of four steps: Route Establishment, Traffic Management, Intersections with Collectors and Arterials, and Traffic Restrictions. The four steps are structured to address the most common situations first while progressing to increasingly site-specific issues.

#### (1) Route Establishment

- a. Bicyclist Guide Signs: Install bicycle wayfinding signs per current City standards.
- b. Bicycle Pavement Markings: Install sharrows per current City standards.
- c. Other Markings: Minimize the amount of striping on bicycle boulevards. Typical striping will include bicycle pavement markings, speed hump markings, stop stencils (as needed), and centerlines (50 LF) approaching controlled intersections. Avoid the use of edge line stripes and continuous center lines.

## (2) Traffic Management

- a. Traffic Calming: Discourage cut-through traffic and, if needed, reduce motor vehicle volumes and speeds through the implementation of speed humps, traffic circles, and traffic islands.
  - i. Bicycle boulevards on streets with greater than 3,000 ADT should include traffic calming.
  - ii. Bicycle boulevards on streets with 1,500 3,000 ADT may include traffic calming.

- iii. Bicycle boulevards on streets with 85<sup>th</sup> percentile speeds greater than 25mph should include traffic calming.
- b. *Stop Control at Local Streets*: To the extent feasible, minimize the number of stops on bicycle boulevards.
  - i. Intersections of bicycle boulevards and local streets should be either (1) stop-controlled on the local approaches only (preferred); or (2) all-way stop-controlled.
  - ii. Where stops remain on the bicycle boulevard, install the supplemental "all way" stop sign placard or "cross traffic does not stop" placard, as applicable.
  - iii. When stops are eliminated on a bicycle boulevard, conduct before/after monitoring of traffic volumes and speeds to determine if changes in stop control should be accompanied by traffic calming.

## (3) Intersections with Collectors and Arterials

- a. *Uncontrolled Crossings*: Develop a hierarchy of treatments to support bicyclists at uncontrolled crossings of collectors and arterials. Possible treatments include bicycle warning signs, "bike xing ahead" pavement legends, ladder crosswalks, bikeway markings through the intersection, stop control, rapid flash beacons, median islands, and traffic signals. Develop triggers for these treatments based on traffic speed, traffic volume, and crossing distance.<sup>1</sup>
- b. Offset Intersections: Bicycle boulevards that are offset at collectors and arterials should accommodate a broad range of users. Avoid shared-lane situations on the major street wherever possible. Offset intersection treatments should reflect local context, but may include bike lanes, bicycle turn pockets, two-way cycle tracks, and intersection signalization.

## (4) Traffic Restrictions

a. Access restrictions will be considered on a case-by-case basis in specific locations where cutthrough traffic is incompatible with a street's designation as a bicycle boulevard. Access restrictions should be designed to reduce or eliminate cut-through traffic while allowing local access (e.g., right-in/right-out only at collectors and arterials).

 $<sup>^1</sup>$  22-May-2013: Jamie to take a first cut at developing this hierarchy of treatments and triggers.

#### **Future Steps & Outstanding Issues**

*Mid-term Work Plan*: See the companion document titled "bike-blvd-tasks" that lays out a mid-term work plan for developing bicycle boulevards and planning a more extensive low-stress network.

Pavement Markings: Explore opportunities for replacing sharrows with another pavement marking in order to differentiate bicycle boulevards from shared lanes on collector and arterial streets. Investigate possible markings that would be consistent with those in Berkeley and Emeryville while also being consistent with a low-stress network in Oakland that would include bikeways on collectors and arterials. Consider pavement markings with directional arrows that would reinforce the wayfinding function of guide signs. Coordinate any changes to the standard pavement marking with the identification and implementation of a "low stress" bikeway network that would combine bicycle boulevards and buffered bike lanes.

*Vertical Deflection*: Have a public discussion and/or a pilot project to determine the most bike friendly form of vertical deflection. The humps we did on Colby St are better than most, but they still aren't great. On eastbound 45<sup>th</sup> St between West St and MLK Jr Wy, there is a trench patch that goes through a couple of speed humps and provides for a very smooth ride. This is what the sinusoidal speed hump should be. How do we specify its construction?



## **MEMORANDUM**

Date: June 17, 2013

To: Jason Patton, City of Oakland

From: Nikki Foletta and Meghan Weir, Fehr & Peers

Subject: Bicycle Boulevard Data Collection

SF11-0552.01

The purpose of this memorandum is to summarize the findings of auto and bicycle data collection conducted on two potential bicycle boulevard routes in the City of Oakland. Data were collected at ten locations, summarized in **Table 1**. Eight count locations (A-H) are located along the Shafter Avenue bicycle route (following Colby Street, Shafter Avenue and Webster Street). The other two count locations (I-J) are located along the Genoa Street/52<sup>nd</sup> Street bicycle route (following Genoa Street, 52<sup>nd</sup> Street and West Street). The locations were selected to cover key segments of the two proposed bicycle boulevard routes. Particular attention was paid to conducting counts at locations expected to have the highest traffic volumes. This memorandum describes the data collection equipment used, summarizes the data findings, and describes data validation efforts.

## **Data Collection Equipment**

Two types of tube counters were used for automated 24 hour data collection over seven days at each location. Auto tube counters were used to collect vehicle volume and traffic speed data. Ecocounter tube counters that are specially calibrated to count bicycle volumes were used at the same locations to collect bicycle volumes.

While use of auto tube counters to collect auto volume data is quite common, these tube counters are typically not accurate at distinguishing between autos and bicycles. Bicycle volume counts are traditionally collected using video, which is much more expensive to process than tube counter data, and is typically only collected for a few sample periods rather than over the course of a full day. However, Eco-counter now makes a tube counter specially calibrated to count bicycle volumes. These tube counters were used for bicycle volume data collection in order to reduce data processing costs and therefore enable bicycle volume data to be collected 24 hours per day over seven days rather than being collected over just a few hours, as is typical when using video data collection techniques. Video counts were also conducted at two locations to validate the tube counters and the results are summarized in the Data Validation section.

The City of Oakland may wish to use the bicycle volume counts to estimate annual average daily bicyclists (AADB) for the two routes. According to research by Nordback, et al<sup>1</sup>, conducting counts during seven consecutive 24 hour periods and then applying factors to estimate AADB provides much more accurate estimates than collecting data on three weekdays (Tuesday, Wednesday and Thursday in particular) or on one weekday and then factoring up to AADB. It should be noted that since bicycle volumes may vary by season, the National Bicycle and Pedestrian Documentation Project suggests conducting counts in September. Since these counts were not conducted in September, potential seasonality effects should be taken into consideration when factoring the volumes to produce AADB estimates.

Due to the incremental cost of renting Eco-counter tube counters for the bicycle volume data collection, a total of five counters were used, and data collection was initially planned to be split between two weeks. However, during data collection, street sweepers cut through the Eco-counter tubes at locations E and F, disabling the counters. Therefore, data collection for these locations was shifted; data collection for location F began one day later than scheduled, and data collection for location E began the following month in order to avoid collecting unusual volume data associated with holidays, spring break and bike to work day. Data collection dates for each location are listed in **Table 1**.

	TABLE 1: DATA COLLECTION DATES						
	Location	Survey Dates					
A.	Colby St between 62 <sup>nd</sup> St and 63 <sup>rd</sup> St	April 18 – April 24, 2013					
В.	Colby St south of McAuley St	April 8 – April 14, 2013					
C.	Forest St east of Oak Grove Ave	April 18 – April 24, 2013					
D.	Shafter Ave between Hudson St and Clifton St	April 8 – April 14, 2013					
E.	Shafter Ave south of 50 <sup>th</sup> St	May 14 – May 20, 2013					
F.	Webster St between 44 <sup>th</sup> St and 43 <sup>rd</sup> St	April 9 – April 15, 2013					
G.	Webster St between Rich St and 41 <sup>st</sup> St	April 18 – April 24, 2013					
H.	Webster St between 40 <sup>th</sup> St and 38 <sup>th</sup> St	April 8 – April 14, 2013					
I.	Genoa St between 59 <sup>th</sup> St and 58 <sup>th</sup> St	April 18 – April 24, 2013					
J.	52 <sup>nd</sup> St between Genoa St and West St	April 8 – April 14, 2013					

\_

<sup>&</sup>lt;sup>1</sup> Nordback, Krista, Marshall, Wesley, Janson, Bruce, and Stolz, Elizabeth. "Estimating Annual Average Daily Bicyclists: Error and Accuracy" TRB 2013 Annual Meeting Compendium of Papers.

Jason Patton June 17, 2013 Page 3 of 6



## **Summary of Data**

**Table 2** and **Figure 1** summarize the data collection findings. For each location data were collected on five weekdays and two weekend days. As expected, both traffic and bicycle volumes are higher on weekdays than on weekends. Charts summarizing weekday auto and bicycle volumes by time of day can be seen in **APPENDIX A**.

#### Traffic Volumes

Vehicle traffic volumes along the Shafter Avenue bicycle route are consistently higher than those on the Genoa Street bicycle route, on both weekdays and weekends. Shafter Avenue bicycle route vehicle volumes are highest north of 48<sup>th</sup> Street, along Colby Street, Forest Street and Shafter Avenue, near the Rockridge BART station. The volumes on Forest Street are particularly high; this segment connects the Colby Street and Shafter Avenue bicycle routes, and provides vehicle access to Rockridge BART station parking lots and drop-off areas. Vehicle volumes on Shafter Avenue are higher south of 50<sup>th</sup> Street than north of 50<sup>th</sup> Street. Vehicle volumes are slightly lower on the Webster Street segments of this bicycle route, and are higher on Webster Street south of 40<sup>th</sup> Street than on Webster north of 40<sup>th</sup> Street. Some of the differences in vehicle and bicycle volumes through this corridor may also be due to the different data collection dates, as data were collected over three different weeks for these eight locations (see dates listed in **Table 1**).

Vehicle traffic volumes along the Genoa Street/52<sup>nd</sup> Street bicycle route are very different at the two data collection locations. Genoa St between 59<sup>th</sup> Street and 58<sup>th</sup> Street is a quiet residential street parallel to and one block west of Martin Luther King Jr. Way, a busy multi-lane divided arterial, and one block east of Adeline Street, a multi-lane diagonal arterial. Most vehicle trips through this segment are likely local traffic, as Martin Luther King Jr. Way and Adeline Street are more efficient for vehicle travel. In contrast 52<sup>nd</sup> Street between Genoa Street and West Street provides a direct connection between Martin Luther King Jr. Way and Market Street, and likely includes a significant volume of non-local traffic.

#### Bicycle Volumes

Bicycle volumes along the Shafter Avenue bicycle route are generally higher south of 50<sup>th</sup> Street than north of 50<sup>th</sup> Street. Similar to traffic volumes, bicycle volumes are also higher on Forest Street than on Colby Street or Shafter Avenue. Bicycle volumes are highest on Shafter Avenue, immediately south of 50<sup>th</sup> Street (location E). Again, some variation in volumes may be due to the fact that data were collected during different weeks.

Along the Genoa Street/52<sup>nd</sup> Street bicycle route, bicycle volumes are approximately ten times higher at the Genoa Street location than at the 52<sup>nd</sup> Street location for both weekdays and weekends. Low vehicle volumes on Genoa Street provide an inviting environment for bicycles, and higher vehicle volumes on 52<sup>nd</sup> Street or unclear connections to the continuing bicycle route on West Street may discourage bicycle use.

Mph = miles per hour

TABLE 2: TRAFFIC VOLUMES, TRAFFIC SPEEDS AND BICYCLE VOLUMES										
	Location	Weekday ADT	Weekend ADT	85 <sup>th</sup> Percentile Speed (mph)	Mean Speed (mph)	Average Daily Weekday Bike Volume	Average Daily Weekend Bicycle Volume			
A.	Colby St between 62 <sup>nd</sup> St and 63 <sup>rd</sup> St	3079	2473	23	17	457	308			
B.	Colby St south of McAuley St	3161	2471	23	17	405	270			
C.	Forest St east of Oak Grove Ave	5381	4530	23	17	600	407			
D.	Shafter Ave between Hudson St and Clifton St	2109	1813	26	19	424	314			
E.	Shafter Ave south of 50 <sup>th</sup> St	3211	2250	26	18	758	632			
F.	Webster St between 44 <sup>th</sup> St and 43 <sup>rd</sup> St	1369	918	24	19	530	348			
G.	Webster St between Rich St and 41 <sup>st</sup> St	1643	1197	27	20	731	553			
H.	Webster St between 40 <sup>th</sup> St and 38 <sup>th</sup> St	2334	1589	31	24	621	488			
I.	Genoa St between 59 <sup>th</sup> St and 58 <sup>th</sup> St	366	344	22	14	656	441			
J.	52 <sup>nd</sup> St between Genoa St and West St	2041	1522	28	21	66	36			







Jason Patton June 17, 2013 Page 6 of 6



## Traffic Speeds

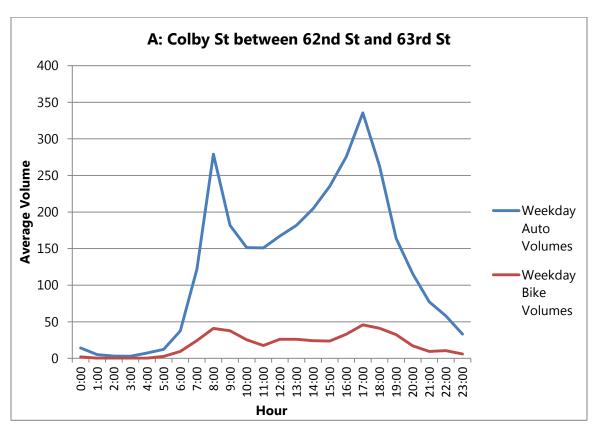
Traffic speeds are fairly constant throughout the Shafter Avenue bicycle route corridor. Average traffic speeds on Colby Street, Forest Street, and Shafter Avenue range from 17mph to 19mph. Traffic speeds on Webster Street are slightly higher, ranging from 19mph north of 40<sup>th</sup> Street to 24mph south of 40<sup>th</sup> Street. 85<sup>th</sup> percentile traffic speeds range from 23mph to 27mph north of 40<sup>th</sup> Street, and are higher at 31mph on Webster Street south of 40<sup>th</sup> Street.

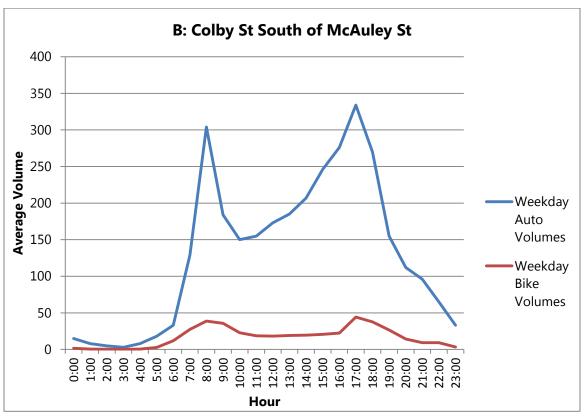
Traffic speeds vary greatly between the two data collection locations on the Genoa Street/52<sup>nd</sup> Street bicycle route. Average traffic speeds at location I on Genoa Street are 14mph with an 85<sup>th</sup> percentile speed of 22mph. Average traffic speeds at location J on 52<sup>nd</sup> Street are 21mph with an 85<sup>th</sup> percentile speed of 28mph.

#### **Data Validation**

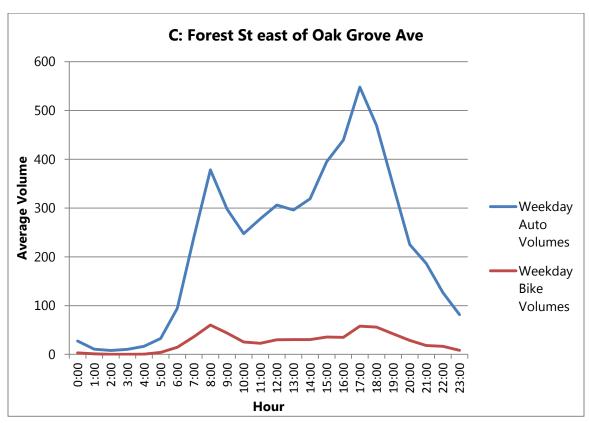
In order to validate the bicycle tube counter data, video counts were conducted at two locations during the AM peak period (7AM-9AM), the mid-day peak period (12PM-2PM) and during the afternoon peak period (4PM–6PM). These validation counts were conducted at location D (Shafter Avenue between Hudson Street and Clifton Street) on Tuesday and Thursday, April 9<sup>th</sup> and 11<sup>th</sup>, 2013, and at location A (Colby Street between 62<sup>nd</sup> Street and 63<sup>rd</sup> Street) on Thursday and Tuesday, April 18<sup>th</sup> and 23<sup>rd</sup>, 2013. These volumes were compared to the Eco-counter counts for validation purposes. The volumes matched exactly for both locations.

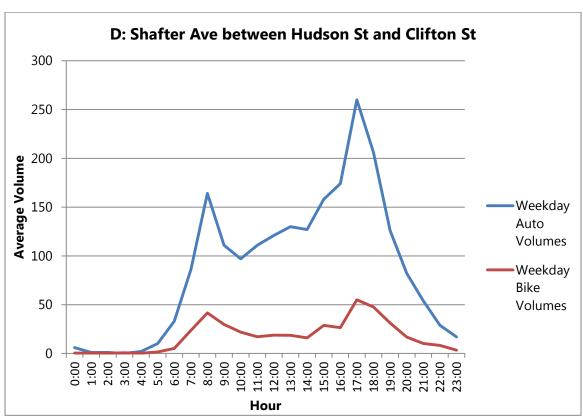




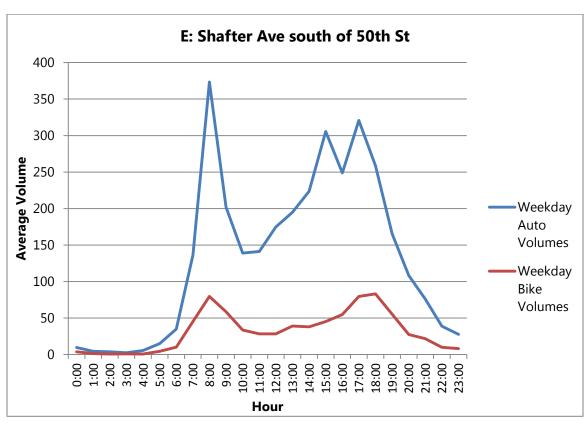


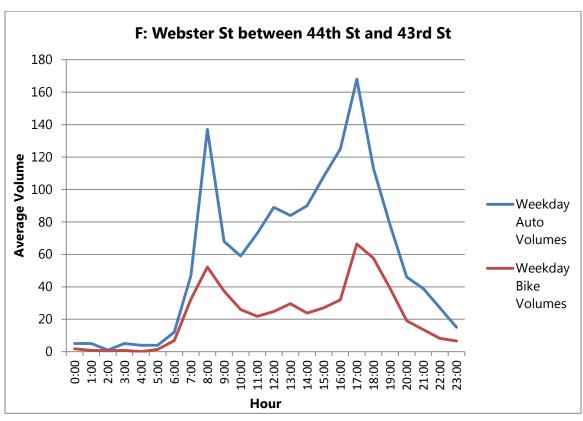




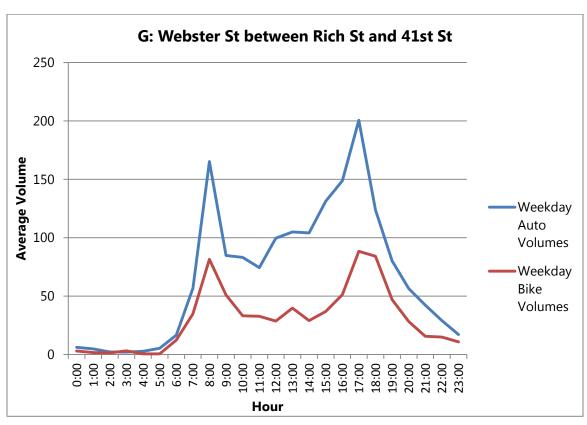


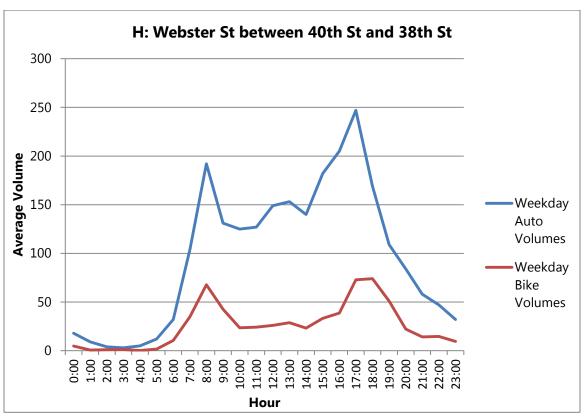




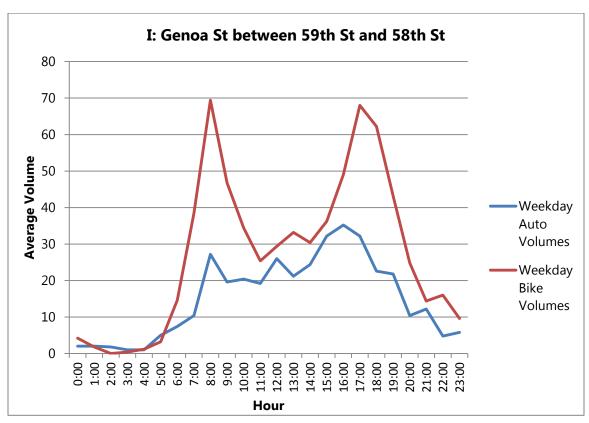


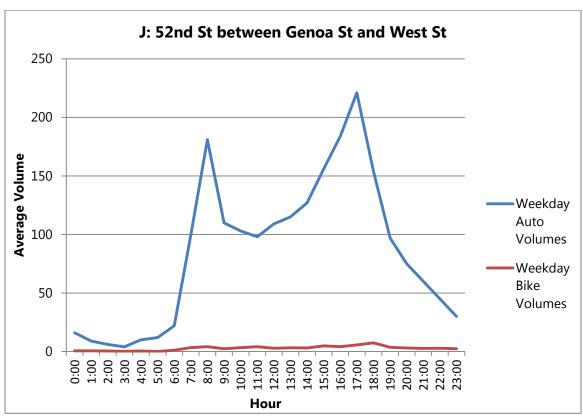


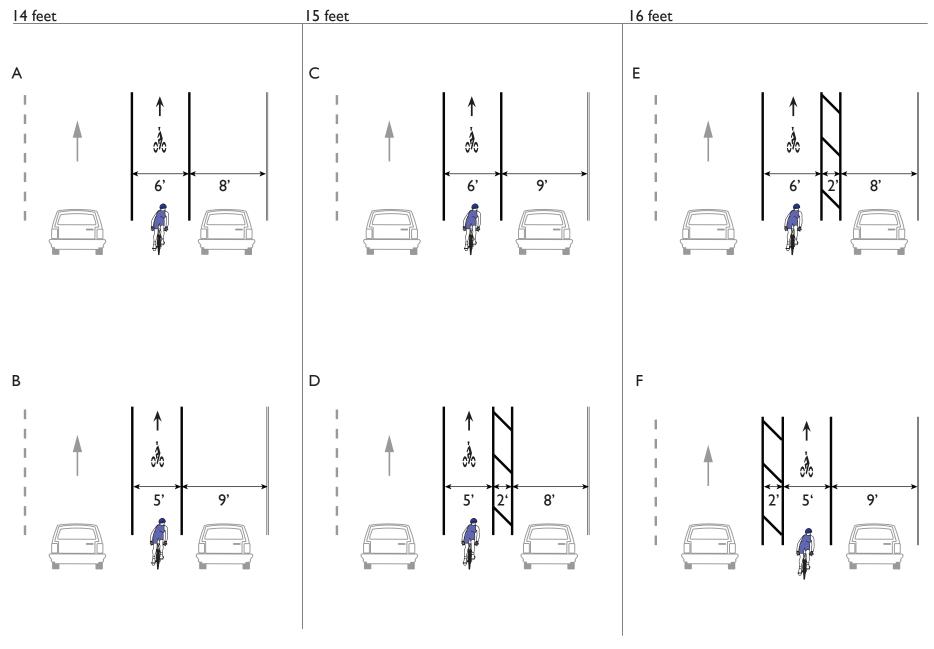












Bike lane/parking lane configuration comparisons City of Oakland Bicycle & Pedestrian Advisory Committee August 15, 2013