Kimley-Horn
and Associates, Inc.

July 15, 2013

Mr. Sunny Tong
Managing Director
Westlake Development Partners, LLC
520 South El Camino Real, 9th Floor
San Mateo, California 94402-1722

Suite 200
11919 Foundation Place
Gold River, California
95670

Re: Traffic Analysis
San Leandro Crossings
San Leandro, California

Dear Mr. Tong:

Kimley-Horn and Associates, Inc. (Kimley-Horn) is pleased to submit this *Traffic Analysis* for the above referenced project. As you are aware, this documentation is an update to our previously prepared traffic analysis[1], and was prepared in accordance with the Scope of Services approved by the City.

INTRODUCTION

This report documents the results of a traffic analysis completed for San Leandro Crossings, a 378,000 square foot (sf) office development located along Alvarado Street, adjacent to the Bay Area Rapid Transit (BART) San Leandro Station in San Leandro, California (the "project" or "proposed project"). The project site is identified as Opportunity Site 24 within Special Planning Area 8 in the *San Leandro Transit Oriented Development Strategy*[2] (the "*TOD Strategy*").

PROJECT DESCRIPTION

The 7.94-acre project site is envisioned to be developed in multiple phases, with the initial phase consisting of a 132,000-sf office building (6, 22,000-sf floors). At build-out, the project is anticipated to total 378,000-sf of office use. Primary access to the site will be provided from Alvarado Street, with additional access from San Leandro Boulevard via Thornton Street and Parrott Street. The project location and study facilities are depicted in **Figure 1**, and the proposed project site plan is shown in **Figure 2**. The following intersections are included in this evaluation:

1. Davis Street @ Alvarado Street
2. Davis Street @ San Leandro Boulevard
3. San Leandro Boulevard @ West Juana Avenue
4. San Leandro Boulevard @ Parrot Street
5. San Leandro Street @ Thornton Street

[1] *San Leandro Crossing – Traffic Impact Analysis Technical Memorandum*, Kimley-Horn and Associates, Inc., February 17, 2009.
[2] *Downtown San Leandro Transit Oriented Development Strategy Draft EIR*, Design, Community & Environment, June 5, 2007.

TEL 916 858 5800
FAX 916 608 0885

ASSESSMENT OF PROPOSED PROJECT

Proposed Project Trip Generation
The number of trips anticipated to be generated by the proposed project were estimated using the same methodology as used in the previous documentation[1,2]. This approach utilizes trip rates that have been adjusted to reflect the multi-modal characteristics of the BART area (e.g., compact, walkable, high density mixed-uses, transit-orientation, etc.) and includes trip reductions for internally captured trips, transit use, and walking/bicycling. Accordingly, the anticipated trip generation for this project is shown in **Table 1**.

Table 1 – Proposed Project Trip Generation

Land Use	Size (ksf)	Daily Trips	AM Peak-Hour					PM Peak-Hour				
			Total Trips	IN		OUT		Total Trips	IN		OUT	
				%	Trips	%	Trips		%	Trips	%	Trips
	Rates:	*9.22*	*1.30*	*88%*		*12%*		*1.25*	*17%*		*83%*	
BART Area Office	378	3,485	491		432		59	473		80		392
Net New External Trips:		***3,485***	***491***		***432***		***59***	***473***		***80***		***392***

Source: *Downtown San Leandro Transit Oriented Development Strategy Draft EIR* , Design, Community & Environment, June 5, 2007.

As shown in **Table 1**, the proposed project is estimated to generate 3,485 total daily trips with 491 trips occurring during the AM peak-hour, and 473 trips occurring during the PM peak-hour.

Proposed Project Trip Distribution
The net project trip generation was assigned to the circulation network based on the patterns assumed in the *TOD Strategy* and are reflected in **Figure 3**. The resulting AM and PM peak-hour traffic volumes attributed to the proposed project are illustrated in **Figure 4**.

TRAFFIC IMPACT ANALYSIS METHODOLOGY

Analysis of transportation facility significant environmental impacts is based on the concept of Level of Service (LOS). The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual, 2000* (HCM) and appropriate traffic analysis software (Traffix®).

According to HCM procedures and City guidance, LOS is defined as a function of average control delay for the intersection as a whole. This methodology is applied to un-signalized (two-way stop controlled (TWSC) and all-way stop controlled (AWSC)) and signalized intersections. **Table 2** presents intersection LOS definitions as defined in the HCM.

Table 2 – Intersection Level of Service Criteria

Level of Service (LOS)	Un-Signalized	Signalized
	Average Control Delay (sec/veh)	Control Delay per Vehicle (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80
Source: Highway Capacity Manual, 2000		

Analysis Scenarios
The peak-hour LOS analysis has been conducted for the weekday AM and PM peak-hours for the following scenarios:

A. Existing (2013) Conditions
B. Existing (2013) plus Proposed Project Conditions
C. Cumulative (2030) Conditions
D. Cumulative (2030) plus Proposed Project Conditions

The following is a discussion of the analyses for these scenarios.

EXISTING (2013) and EXISTING (2013) PLUS PROPOSED PROJECT CONDITIONS
Traffic counts were conducted in April 2013. All counts were conducted between the hours of 7:00 a.m. and 9:00 am, and 3:00 p.m. and 6:00 p.m. As depicted on the project site plan (**Figure 2**), the addition of the proposed project includes the abandonment of West Estudillo Avenue and Martinez Street, together both of which provide connectivity between San Leandro Boulevard and Alvarado Street. Because the traffic currently using these roadways will essentially be displaced by the addition of the proposed project, supplemental traffic counts were conducted to quantify the traffic that will be rerouted through the other study intersections as a result of the roadway abandonment.

In addition, at the time of this study, San Leandro Boulevard was under construction to complete the *BART Downtown Pedestrian Interface* project which alters the lane configuration along San Leandro Boulevard and includes the installation of traffic signal control at the Parrott Street intersection. As such, the evaluation of the conditions resulting from the addition of the proposed project includes two conditions, the on-the-ground conditions at the time of the traffic counts and the conditions resulting from the soon-to-be completed San Leandro Boulevard improvements. Lane configurations for these scenarios are reflected in **Figure 5** and **Figure 6.**

Existing (2013) peak-hour turn movement volumes are presented in **Figure 5**, and the traffic count data sheets are provided in **Attachment A**. Peak-hour traffic associated with the proposed project, including the rerouting of the West Estudillo Avenue and Martinez Street traffic, was added to the Existing (2013) traffic volumes and levels of service were determined at the study intersections to establish "plus project" conditions. **Figure 6** provides the AM and PM peak-hour traffic volumes at the study intersections for the Existing (2013) plus Proposed Project conditions.

As indicated in **Table 3**, the study intersections operate from LOS B to LOS F with the addition of project traffic during the AM and PM peak-hours. The analysis worksheets for these scenarios are provided in **Attachment B**.

Table 3 – Existing (2013) and Existing (2013) plus Proposed Project Intersection Levels of Service

#	Intersection (LOS Threshold[+])	Analysis Scenario[++]	Traffic Control	AM Peak-Hour		PM Peak-Hour	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Davis St @ Alvarado St (LOS D)	Exist.	Signal	19.2	B	21.3	C
		Exist.+PP		19.3	B	21.9	C
2	Davis St @ San Leandro Blvd (LOS E)	Exist.	Signal	34.6	C	40.5	D
		Exist.+PP		38.6	D	55.2	E
		Exist.+PP SLB		33.9	C	40.4	D
3	San Leandro Blvd @ West Juana Ave (LOS E)	Exist.	Signal	13.0	B	13.9	B
		Exist.+PP		13.4	B	13.1	B
		Exist.+PP SLB		13.4	B	13.1	B
4	San Leandro Blvd @ Parrott St (LOS E)	Exist.	TWSC	9.4	A	38.5	D
		Exist.+PP		**OVRFL**	**F[+++]**	**OVRFL**	**F[+++]**
		Exist.+PP SLB	Signal	39.3	D	73.2	E
5	San Leandro Blvd @ Thornton St (LOS E)	Exist.	TWSC	1.3	A	0.9	A
		Exist.+PP		2.1	A	1.7	A
		Exist.+PP SLB		2.1	A	1.7	A

[+] See Impacts and Mitigation section (Page 6) for source information.
[++] Exist. = Existing (2013), Exist.+PP = Existing (2013) plus Proposed Project, Exist.+PP SLB = Existing (2013) plus Proposed Project plus completion of San Leandro Boulevard improvements.
[+++] Substandard LOS F operation would only occur during the brief period between the date of traffic counts and completion of SLB improvements. The proposed project is not responsible for, nor does it result in substandard conditions.
OVRFL represents an intersection that operates with delay exceeding 300 seconds. **Bold = Substandard per City**

CUMULATIVE (2030) and CUMULATIVE (2030) PLUS PROPOSED PROJECT CONDITIONS

Cumulative traffic projections are understood to assume build-out conditions at 2030 per the *TOD Strategy*. Traffic from the *TOD Strategy's* "opportunity sites" was added to existing traffic volumes. Additionally, an annual growth rate of 1.5 percent per year was assumed along San Leandro Boulevard to account for regional traffic growth between existing conditions and year 2030 no-project conditions (growth rate based on methodology established in the *TOD Strategy*).

For the Cumulative (2030) plus Proposed Project Conditions, the *TOD Strategy* trips assigned to the project site were replaced with trips associated with the proposed project's uses (**Table 1**).

Cumulative (2030) peak-hour turn movement volumes are presented in **Figure 7.** Peak-hour traffic associated with the proposed project was added to the Cumulative (2030) traffic volumes and levels of service were determined at the study intersections to establish "plus project" conditions. **Figure 8** provides the AM and PM peak-hour traffic volumes at the study intersections for the Cumulative (2030) conditions.

As indicated in **Table 4**, the study intersections operate from LOS B to LOS F with the addition of project traffic during the AM and PM peak-hours. The analysis worksheets for these scenarios are provided in **Attachment C**.

Table 4 – Cumulative (2030) and Cumulative (2030) plus Proposed Project Intersection Levels of Service

#	Intersection (LOS Threshold[+])	Analysis Scenario[++]	Traffic Control	AM Peak-Hour		PM Peak-Hour	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Davis St @ Alvarado St (LOS D)	Cum	Signal	26.4	C	37.0	D
		Cum+PP		23.2	C	28.2	C
2	Davis St @ San Leandro Blvd (LOS E)	Cum	Signal	39.8	D	65.5	E
		Cum+PP		43.8	D	79.5	E
3	San Leandro Blvd @ West Juana Ave (LOS E)	Cum	Signal	12.8	B	13.3	B
		Cum+PP		13.7	B	13.1	B
4	San Leandro Blvd @ Parrott St (LOS E)	Cum	Signal	30.5	C	56.6	E
		Cum+PP		63.3	E	**169.5**	**F**
5	San Leandro Blvd @ Thornton St (LOS E)	Cum	TWSC	2.5	A	1.1	A
		Cum+PP		24.7	C	2.3	A

[+] See Impacts and Mitigation section (Page 6) for source information.
[++] Cum = Cumulative (2030), Cum+PP = Cumulative (2030) plus Proposed Project
Bold = Substandard per City

IMPACTS AND MITIGATION

Standards of Significance
Project impacts were determined by comparing conditions with the proposed project to those without the project. Impacts for intersections are created when traffic from the proposed project forces the LOS to fall below a specific threshold.

According to the City of San Leandro's *General Plan:*

> *"For planning purpose, the City has established LOS D as the minimum acceptable service level for intersections. LOS D may only exceeded where the following circumstances exist:*
>
> - *Road improvements are not possible because the necessary right-of-way does not exist and cannot be acquired without significant impacts on adjacent buildings and properties.*
> - *The intersection or road segment is in a pedestrian district, such as Downtown, where the priority is on pedestrian, bicycle, and public transit access rather than vehicle traffic."*

Furthermore, LOS E is indicated in the *General Plan* as acceptable for the Davis Street intersection with San Leandro Boulevard.

For the purposes of this study, considering the intensity of pedestrian activity in the vicinity of the BART Station, **LOS E** is considered acceptable for the four (4) San Leandro Boulevard intersections. **LOS D** is considered acceptable for the Davis Street intersection with Alvarado Street.

Significant impacts also could occur if a project causes a substantial decrease in the level of accessibility and mobility within the City, or if it fails to provide for adequate facilities for parking, pedestrian and bicycle movement within the City. Additionally, a significant impact could occur if the generated demand for transit exceeds existing or planned transit services.

It is our understanding that the City also uses the following policy, in addition to the policies of the *General Plan* and the Downtown TOD strategies:

> *Significant traffic impacts at intersections are identified if the proposed project causes:*
>
> - *An increase in the volume-to-capacity (v/c) ratio of 0.05 or more for signalized intersections that operate at a substandard level under No Project conditions; or,*
> - *An increase in average delay of more than 5 seconds for unsignalized intersections that operate at a substandard level under No Project conditions.*

Impacts and Mitigation

Existing (2013) plus Proposed Project Conditions
As previously discussed, considering the intensity of pedestrian activity in the vicinity of the BART Station, LOS E is considered acceptable for the four (4) San Leandro Boulevard intersections. LOS D is considered acceptable for the Davis Street intersection with Alvarado Street. Therefore, as reflected in **Table 3**, the addition of the proposed project does not result in a significant impact as defined by the City and no mitigations are required.

Cumulative (2030) plus Proposed Project Conditions
As reflected in **Table 4**, the addition of the proposed project results in one significant impacts as defined by the City.

Impact:

I1. Intersection #4, San Leandro Boulevard @ Parrott Street
As shown in **Table 4**, this signalized intersection operates at substandard LOS F during the PM peak-hour with the addition of the proposed project. ***This is a significant impact.***

Mitigation:

M1. Intersection #4, San Leandro Boulevard @ Parrott Street
The significant impact at this intersection during the PM peak-hour can be mitigated by restriping the eastbound approach to be two lanes, a shared left-through lane and a shared through-right lane. These improvements would occur within the existing right-of-way. As shown in **Table 5**, this mitigation measure results in the intersection operating at LOS E during the PM peak-hour. Therefore, ***this impact is less than significant***.

Table 5 – Cumulative (2030) plus Proposed Project Mitigated Conditions

#	Intersection	Analysis Scenario+	Traffic Control	AM Peak-Hour		PM Peak-Hour	
				Delay (sec)	LOS	Delay (sec)	LOS
4	San Leandro Blvd @ Parrott St	Cum	Signal	30.5	C	56.6	E
		Cum+PP		63.3	E	**169.5**	**F**
		Cum+PP Mit		42.2	D	65.9	E

+ Cum = Cumulative (2030), Cum+PP = Cumulative (2030) plus Proposed Project, Mit = Mitigated
Bold = Substandard per City

Analysis worksheets for this scenario are provided in **Attachment D**.

ADDITIONAL CONSIDERATIONS

Traffic Signal Needs Assessment
A planning level assessment of the need for traffic signalization was performed for the un-signalized study intersection. This evaluation was performed consistently with the peak-hour warrant methodologies noted in Section 4C of the *California Manual on Uniform Traffic Control Devices (CMUTCD), 2012 Edition*. A summary of the peak-hour warrant results are presented in **Table 6**.

Table 6 – Traffic Signal Warrant Analysis Results

#	Intersection	Analysis Scenario			
		Existing (2013)	Existing (2013) plus PP	Cum (2030)	Cum (2030) plus PP
5	San Leandro Blvd @ Thornton St	No	**Yes**	No	**Yes**
Note: Peak-hour warrant is satisfied if Condition A or B is satisfied for the AM or PM peak-hour.					

As shown in **Table 6**, the addition of the proposed project results in the peak-hour signal warrant being satisfied at the San Leandro Boulevard intersection with Thornton Street. Detailed results of this analysis are presented in **Attachment E**.

Queuing Evaluation
Vehicle queuing for four intersections was evaluated. For the queuing analysis, the anticipated vehicle queues for critical movements at these intersections were evaluated. The calculated vehicle queues were compared to actual or anticipated vehicle storage/segment lengths. Results of the queuing evaluation are presented in **Table 7**. Analysis sheets that include the anticipated vehicle queues are presented in **Attachment F**. As presented in **Table 7**, the addition of the proposed project adds additional queuing to several of the study locations.

Site Plan, Access, and Circulation Evaluation
The site plan for the proposed project (**Figure 2**) was qualitatively reviewed for general access and on-site circulation. According to the site plan, primary access to the site will be provided via three driveways, one from Alvarado Street, one from Parrott Street, and one from Thornton Street. Both the Parrott Street and Thornton Street access points feed directly into the proposed on-site parking structure. The main site entrance, which is served by the Alvarado Street driveway, also provides connectivity to the proposed parking structure. The combination of these access points, as well as the on-site circulation system appears to provide adequate access to/from San Leandro Boulevard and Davis Street, via Alvarado Street.

Table 7 – Intersection Queuing Evaluation Results for Select Locations

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
#1, Davis St @ Alvarado St	**WBL**				
Existing (2013)		115	164	115	169
Existing (2013) plus Proposed Project			209		173
Existing (2013) plus Proposed Project plus SLB*			212		181
Cumulative (2030)			187		306
Cumulative (2030) plus Proposed Project			185		223
#2, Davis St @ San Leandro Blvd	**NBL**				
Existing (2013)+		230	435	230	439
Existing (2013) plus Proposed Project+			569		750
Existing (2013) plus Proposed Project plus SLB*			327		413
Cumulative (2030)			372		466
Cumulative (2030) plus Proposed Project			456		665
#3, San Leandro Blvd @ Parrott St	**NBL**				
Existing (2013)++		70	< 25	70	< 25
Existing (2013) plus Proposed Project++			43		< 25
Existing (2013) plus Proposed Project plus SLB*			451		344
Cumulative (2030)			316		283
Cumulative (2030) plus Proposed Project			603		527
Cumulative (2030) plus Proposed Project (Mitigated)			601		384
#4, San Leandro Blvd @ Thornton St	**NBL**				
Existing (2013)		65	< 25	65	< 25
Existing (2013) plus Proposed Project			< 25		< 25
Existing (2013) plus Proposed Project plus SLB*			< 25		< 25
Cumulative (2030)			< 25		< 25
Cumulative (2030) plus Proposed Project			40		< 25

Source: *Highway Capacity Manual (HCM) 2000* methodology per Traffix© v8.0.
* Exist.+PP SLB = Existing (2013) plus Proposed Project plus completion of San Leandro Boulevard improvements
+ Single left-turn lane. ++ Unsignalized.

If the project is ultimately phased and the parking structure is not constructed until a later time, it will still be critical for the project site to gain access to Parrott Street and/or Thornton Street. One or both of these connections should be provided beginning with the first phase of the project to improve circulation in the project area.

CONCLUSIONS

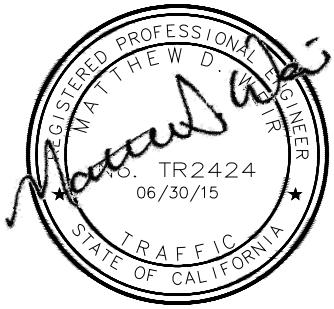
Based upon the analysis documented in this report, the following conclusions are offered:

- The proposed project is estimated to generate 3,485 total daily trips, with 491 trips occurring during the AM peak-hour, and 473 trips occurring during the PM peak-hour.
- As defined by the City, the addition of the proposed project to the Existing (2013) analysis scenario ***does not*** significantly worsen conditions at any of the study intersections.
- As defined by the City, the addition of the proposed project to the Cumulative (2030) analysis scenario ***does*** significantly worsen conditions at one of the study intersections. This impact can be mitigated to be ***less than significant***.

Please contact me at (916) 859-3617 if you have any questions or require additional information.

Very truly yours,

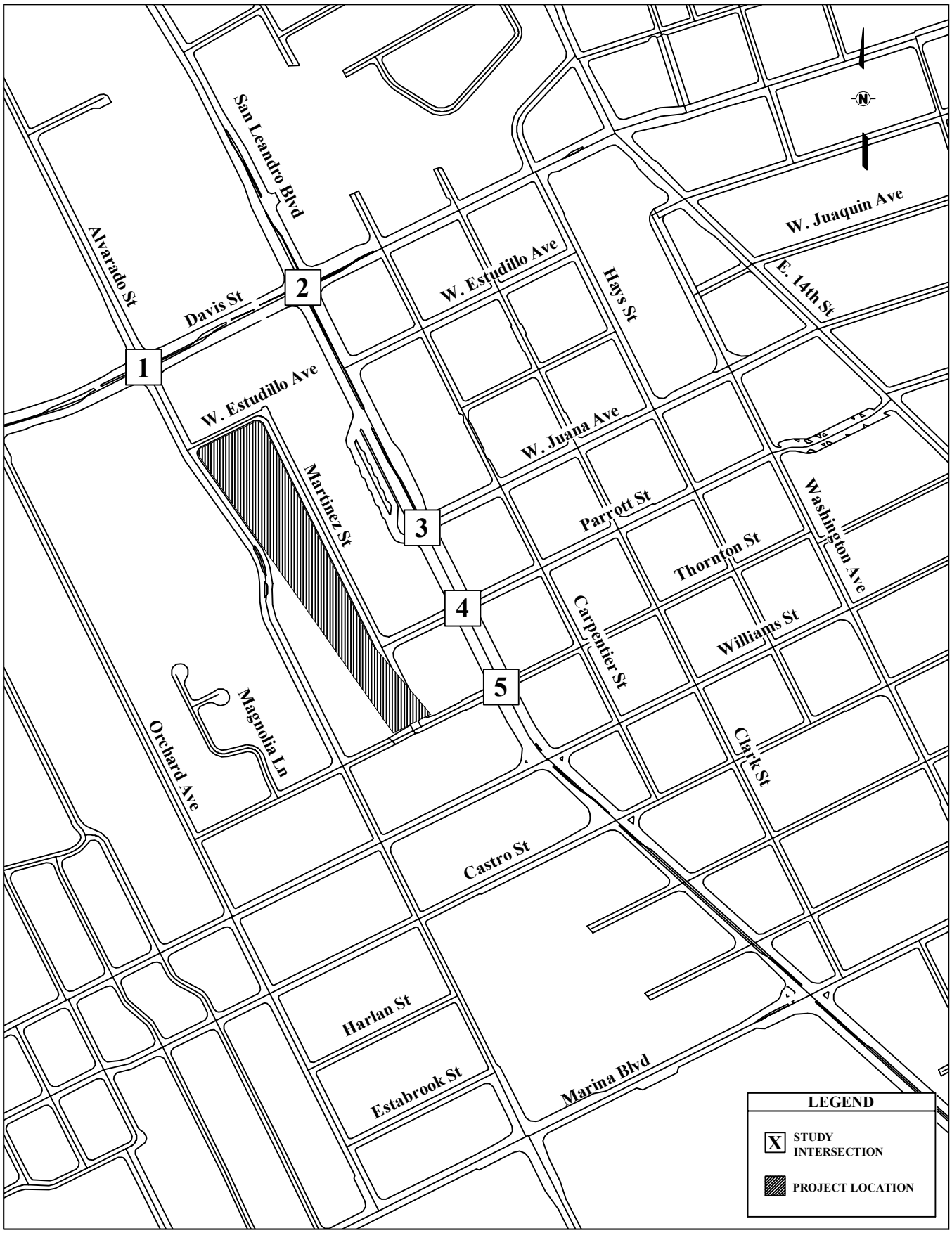
KIMLEY-HORN AND ASSOCIATES, INC.



Matthew D. Weir, PE, TE, PTOE
PE No. C70216 & TR2424

Attachments:

Figure 1 – Project Location and Study Facilities
Figure 2 – Proposed Project Site Plan
Figure 3 – Proposed Project Trip Distribution
Figure 4 – Proposed Project Trip Assignment
Figure 5 – Existing (2013) Peak-Hour Traffic Volumes and Geometry
Figure 6 – Existing (2013) plus Proposed Project Peak-Hour Traffic Volumes
Figure 7 – Cumulative (2030) Peak-Hour Traffic Volumes
Figure 8 – Cumulative (2030) plus Proposed Project Peak-Hour Traffic Volumes
Attachment A – Traffic Count Data Sheets
Attachment B – Analysis Worksheets for Existing (2013) and Existing (2013) plus Proposed Project Conditions
Attachment C – Analysis Worksheets for Cumulative (2030) and Cumulative (2030) plus Proposed Project Conditions
Attachment D – Analysis Worksheets for Cumulative (2030) Mitigated Conditions
Attachment E – Analysis Worksheets for Traffic Signal Warrant Analysis
Attachment F – Summary of Queuing Evaluation Results

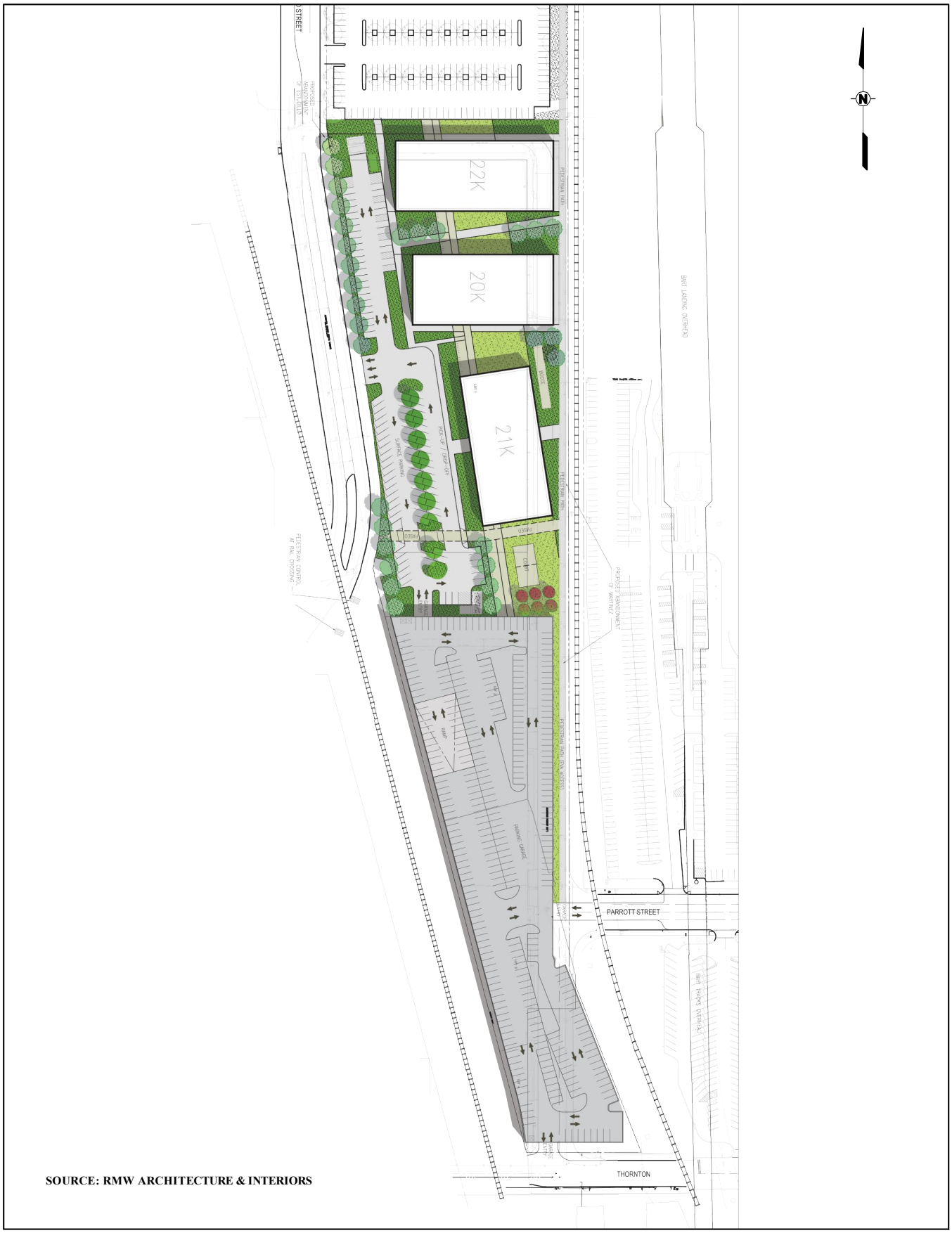


City of San Leandro
San Leandro Crossings

Kimley-Horn and Associates, Inc.

© 2013

Figure 1
Project Location and Study Facilities



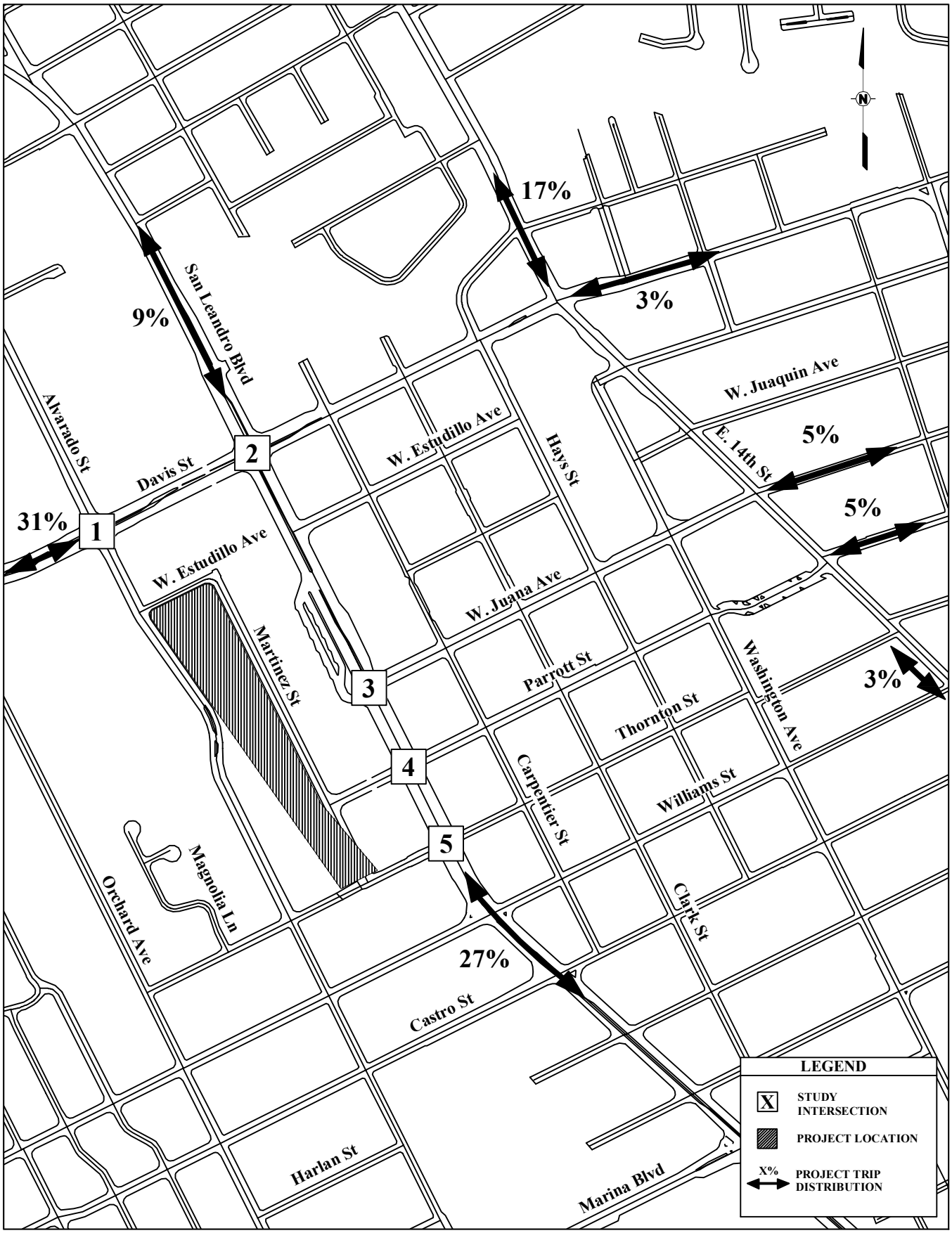
SOURCE: RMW ARCHITECTURE & INTERIORS

City of San Leandro
San Leandro Crossings

Kimley-Horn and Associates, Inc.

© 2013

Figure 2
Proposed Project Site Plan



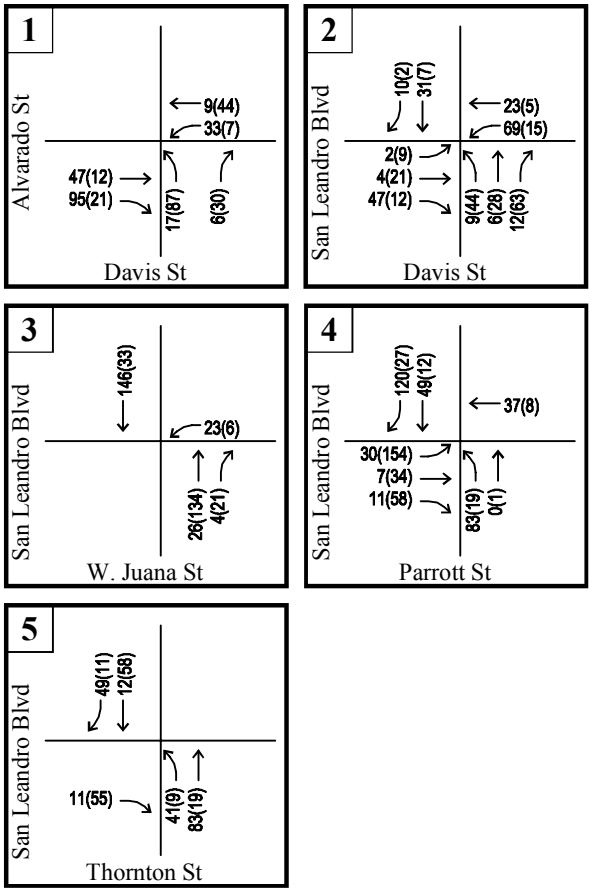
City of San Leandro
San Leandro Crossings

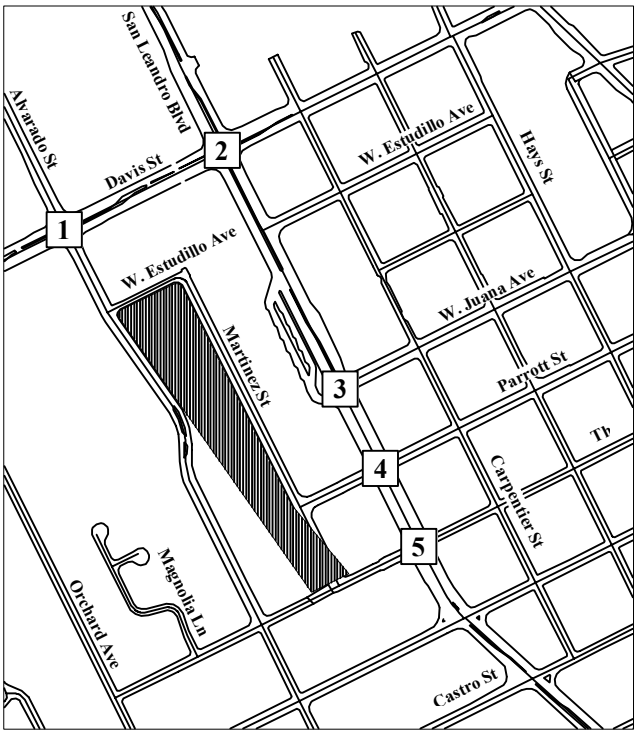
Kimley-Horn and Associates, Inc.

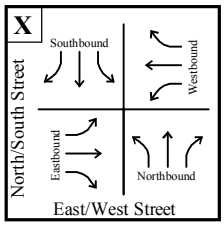
© 2013

Figure 3
Proposed Project Trip Distribution

VOLUMES







LEGEND

X STUDY INTERSECTION

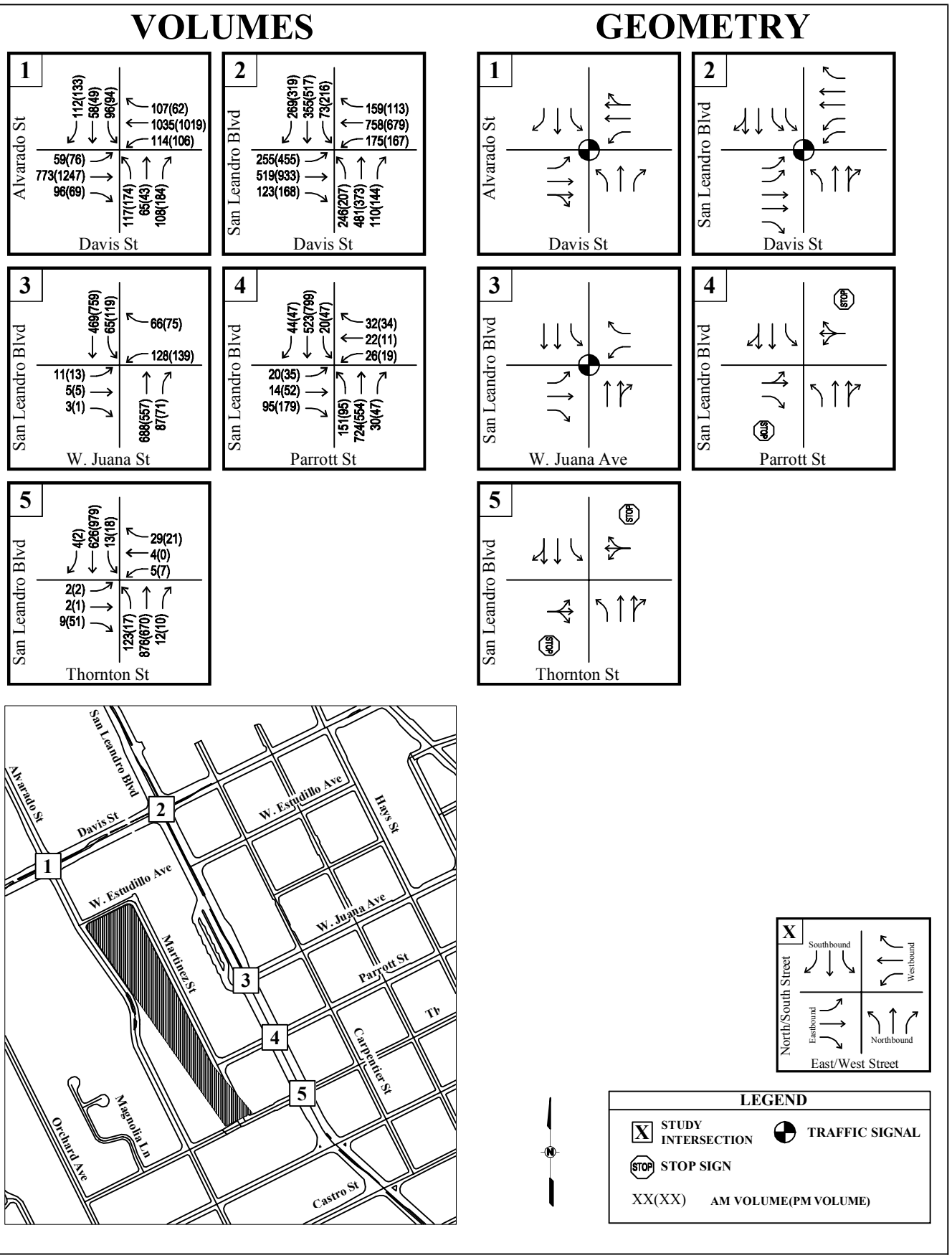
XX(XX) AM VOLUME(PM VOLUME)

City of San Leandro
San Leandro Crossings

Kimley-Horn and Associates, Inc.

© 2013

Figure 4
Proposed Project Trip Assignment

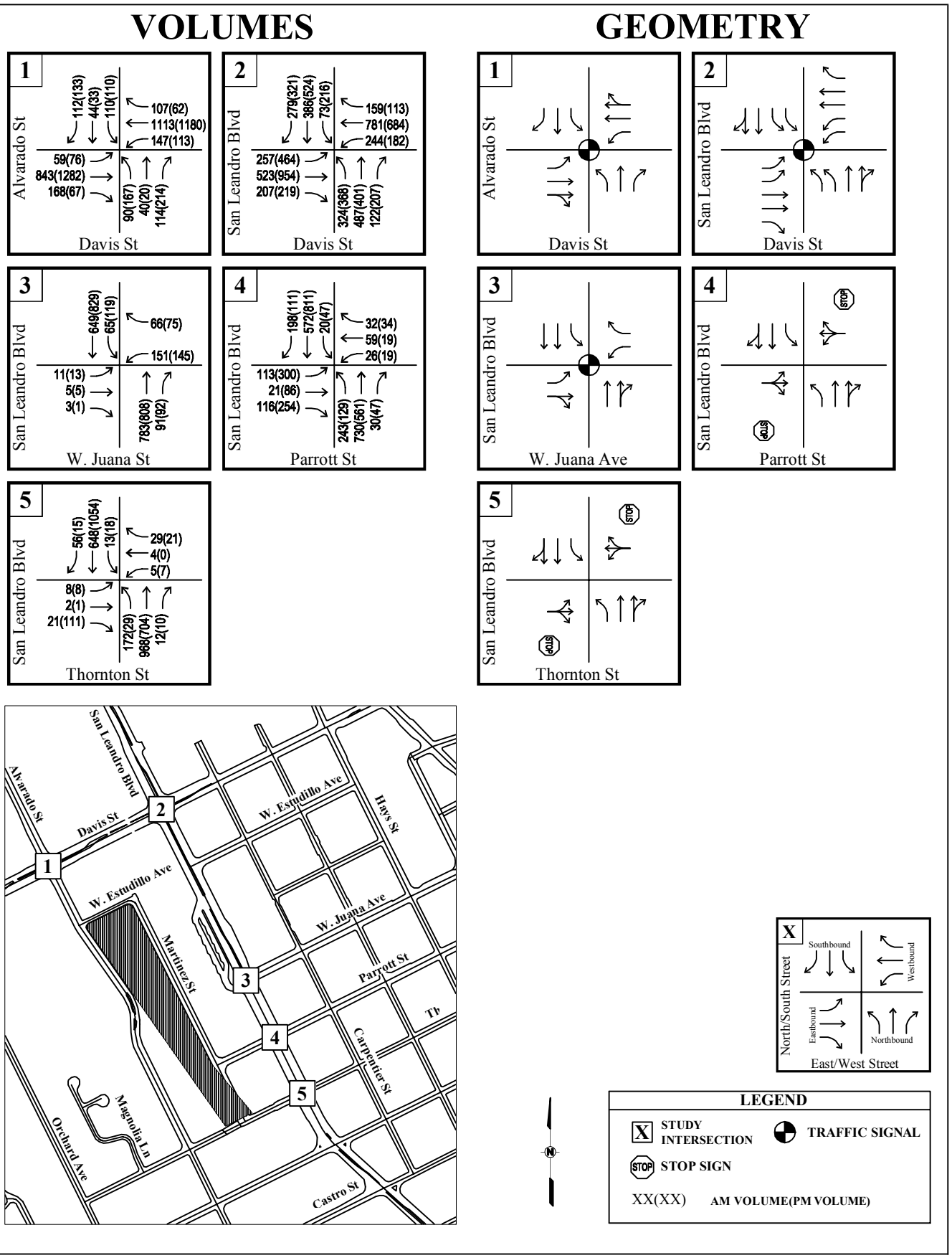


City of San Leandro
San Leandro Crossings

Kimley-Horn and Associates, Inc.

© 2013

Figure 5
Existing (2013) Peak-Hour Traffic Volumes and Geometry



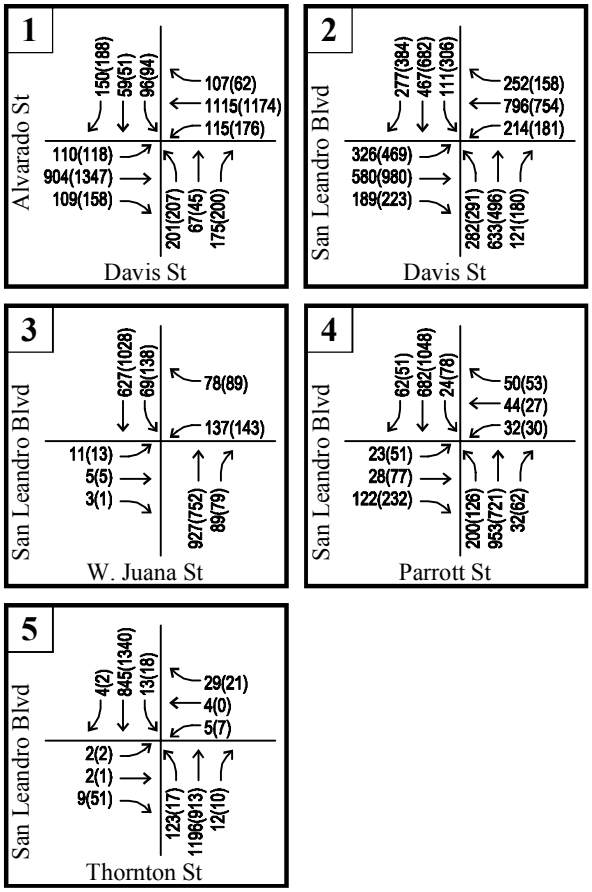
City of San Leandro
San Leandro Crossings

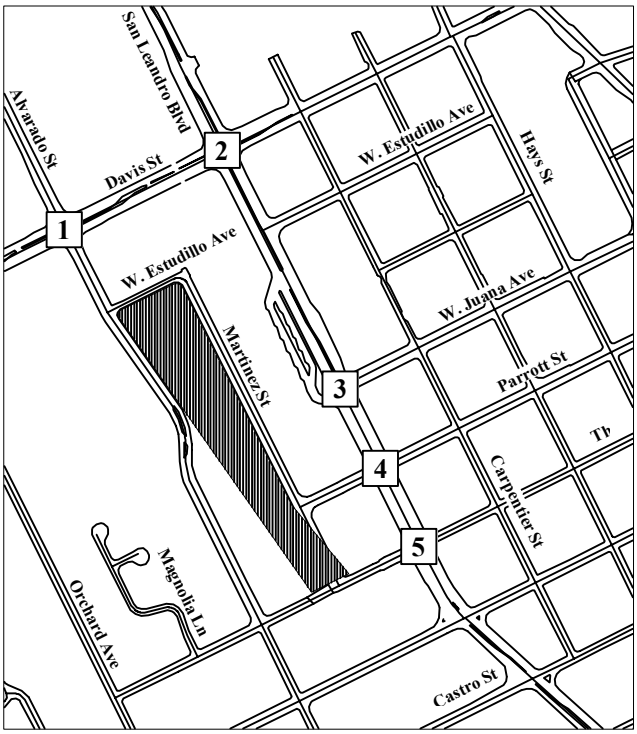
Kimley-Horn and Associates, Inc.

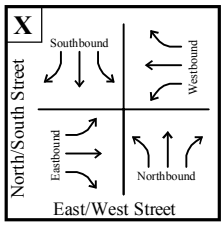
© 2013

Figure 6
Existing (2013) plus Proposed Project Peak-Hour Traffic Volumes and Geometry

VOLUMES







LEGEND

- X — STUDY INTERSECTION
- TRAFFIC SIGNAL
- STOP — STOP SIGN
- XX(XX) — AM VOLUME(PM VOLUME)

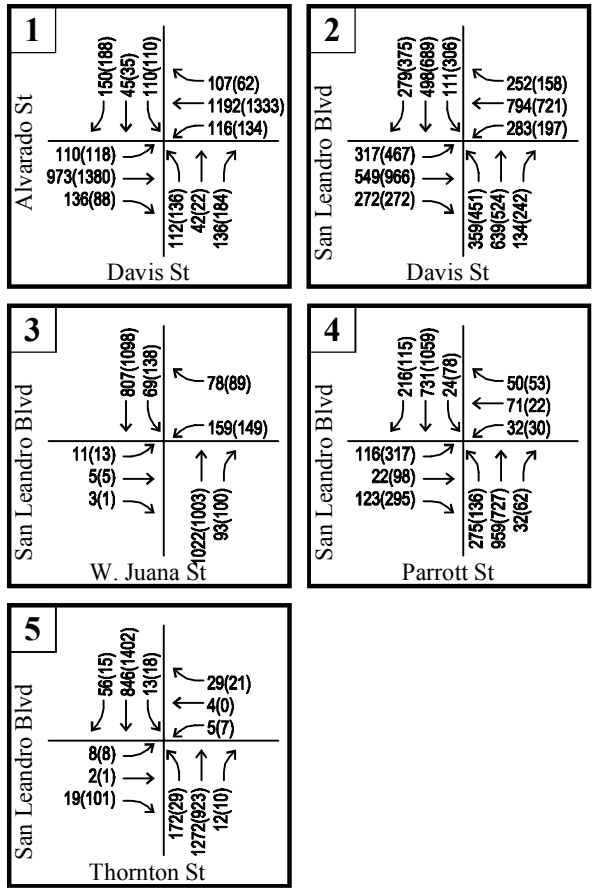
City of San Leandro
San Leandro Crossings

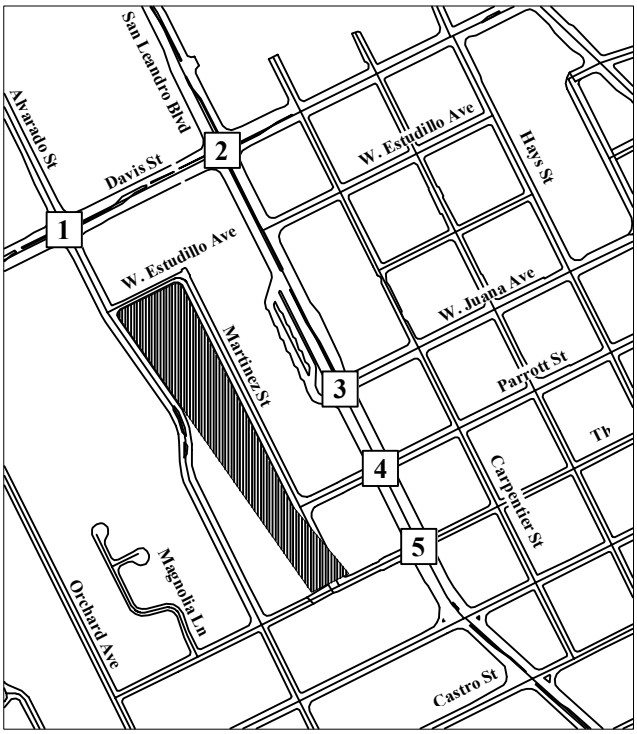
Kimley-Horn and Associates, Inc.

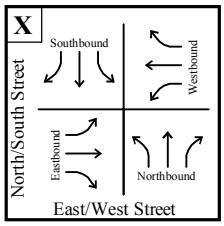
© 2013

Figure 7
Cumulative (2030)
Peak-Hour Traffic Volumes

VOLUMES







LEGEND

- X — STUDY INTERSECTION
- TRAFFIC SIGNAL
- STOP — STOP SIGN
- XX(XX) — AM VOLUME(PM VOLUME)

City of San Leandro
San Leandro Crossings

Kimley-Horn and Associates, Inc.

© 2013

Figure 8
Cumulative (2030) plus Proposed Project Peak-Hour Traffic Volumes