

# **FINAL REPORT**

## **265 Sobrante Way Traffic Impact Analysis**

**Prepared for:**



**City of Sunnyvale**

**Prepared by:**

**AECOM**

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**1.0 AUTO TRIP REDUCTION STATEMENT****AUTO TRIP REDUCTION STATEMENT**

UPDATED: October 2014



<b>PROJECT INFORMATION</b>		<b>Relevant TIA Section:</b>	
<b>Project Name:</b> 265 Sobrante Way TIA			
<b>Location:</b> 265-285 Sobrante Way, Sunnyvale, California			
<b>Description:</b> This proposed project will construct 121,715 square feet of research and development (R&D) office building and parking. This site is currently occupied by an existing 45,470 square feet of light industrial building.			
<b>Size (net new):</b>	D.U. Residential	76,245	Sq. Ft. Comm. Acres (Gr.)
<b>Density:</b>	D.U. / Acre	Floor Area Ratio (FAR)	
Located within 2000 feet walking distance of an LRT, BRT, BART or Caltrain station or major bus stop? No			
<b>PROJECT AUTO TRIP GENERATION</b>		<b>Relevant TIA Section:</b> Section 5.1	
<b>Auto Trips Generated:</b>	65 AM Pk Hr	58 PM Pk Hr	438 Total Weekday
<b>Methodology (check one)</b>	<input checked="" type="checkbox"/> ITE	<input type="checkbox"/> Other (Please describe below)	
<b>AUTO TRIP REDUCTION APPROACH</b>		<b>Relevant TIA Section:</b> Section 5.1	
<input type="checkbox"/> Standard Complete Table A below	<input type="checkbox"/> Peer/Study-Based Complete Table B below	<input checked="" type="checkbox"/> Target-Based Complete Table C below	<input type="checkbox"/> None Taken
<b>TRIP REDUCTION REQUIREMENTS</b>		<b>Relevant TIA Section:</b> Section 2.1	
Is the project required to meet any trip reduction requirements or targets? Yes If so, specify percent: 25%			
Reference code or requirement: Peery Park Specific Plan			
<b>TRIP REDUCTION APPROACHES</b>			
<b>A. STANDARD APPROACH</b>		<b>Relevant TIA Section:</b>	
<b>Type of Reduction</b> Specify reduction. See Table 2 in TIA Guidelines	<b>% Reduction from ITE Rates</b>	<b>Total Trips Reduced (AM/PM/Daily)</b>	<b>TOTAL REDUCTION CLAIMED</b>
Transit			% Trips
Mixed-Use			
Financial Incentives			
Shuttle			
<b>B. PEER/STUDY-BASED APPROACH</b>		<b>Relevant TIA Section:</b>	
<b>Basis of Reduction</b>		<b>TOTAL REDUCTION CLAIMED</b>	
		%	Trips

Last updated 11/4/2014

C. TARGET-BASED APPROACH			Relevant TIA Section:		Section 5.1	
Type of Reduction (check all that apply)					TOTAL REDUCTION CLAIMED	
<input checked="" type="checkbox"/> % Trip Reduction	<input type="checkbox"/> % SOV mode share	<input type="checkbox"/> Trip Cap	%	Trips		
25%			25%			
Description	As the project is located within the Peery Park Specific Plan boundary, it has to meet the targeted auto trip reduction stipulated in the Plan.					
Time period for reduction	Peak Hour	Peak Period	Full Day			
	<input checked="" type="checkbox"/> AM/PM	<input type="checkbox"/> AM/PM	<input type="checkbox"/>			

OTHER TDM/REDUCTION MEASURES			
Bicycle/Pedestrian	Yes/No	Relevant TIA Section:	
Parking Management	Yes/No	Relevant TIA Section:	
Transit	Yes/No	Relevant TIA Section:	
Site Planning and Design	Yes/No	Relevant TIA Section:	
TDM Program	Yes/No	Relevant TIA Section:	

IMPLEMENTATION		Relevant TIA Section:
Have the project sponsor and Lead Agency agreed to any of the following measures?		
<input checked="" type="checkbox"/> Monitoring	The City of Sunnyvale will conduct annual driveway counts paid for by the property owners/tenants within the Peery Park Specific Plan Area.	
<input type="checkbox"/> Enforcement		
<input type="checkbox"/> Data Sharing		

Last updated 11/4/2014

## **2.0 EXECUTIVE SUMMARY**

This report presents the results of a Traffic Impact Analysis (TIA) conducted for the proposed construction of an office building and parking structure located at 265-285 Sobrante Way in the City of Sunnyvale, California.

The project involves the construction of a four-story office building, with both underground and surface parking. The site currently contains two one-story light industrial buildings with surface parking stalls on an area of 152,765 square feet. The proposed building will contain a four-story 121,715 square feet of office and R&D space together with one level of below grade parking (98 standard spaces). The project will have 253 standard surface stalls and 8 ADA required parking spaces, making a total of 359 parking spaces.

The impacts of the proposed project were evaluated following the guidelines of the City of Sunnyvale and the Santa Clara Valley Transportation Authority (VTA) which is the Congestion Management Agency for Santa Clara County. Roadway system operations were evaluated under the following study scenarios:

- Existing Conditions
- Existing plus Project Conditions
- Background Conditions
- Background plus Project Conditions

Pedestrian, bicycle and transit facilities were also evaluated.

### **2.1 Project Trip Generation**

Project generated trips were estimated using vehicle trip rates published by the Institute of Transportation Engineers (ITE). The proposed project is estimated to generate 65 net new AM peak hour trips (55 inbound trips and 10 outbound trips) and 58 net new PM peak hour trips (9 inbound trips and 49 outbound trips).

### **2.2 Project Impacts**

This analysis identifies potentially significant adverse impacts of the proposed project if any, on the surrounding transportation system and recommends measures to mitigate significant impacts. The project is not expected to create a significant impact.

#### **2.2.1 Existing Plus Project Conditions**

##### **Intersection Analysis**

Under this scenario, all the study intersections are expected to operate at acceptable LOS during both peak hours with the exception of Intersection #20 – N Mathilda Ave/ SR 237 WB Ramps that operate at an unacceptable LOS F during the PM peak hour. However, the change in critical delay and change in volume-to-capacity (V/C) ratio is within the significance standards. Therefore, the proposed development is not expected to create a significant impact and no mitigation measures are recommended at the study intersections.

### **Queuing Analysis**

The left-turn queue at several intersections already exceeds the provided storage lane without project. The queue at the study intersections is expected to increase by not more than one vehicle at all the locations as a result of the project with the exception of the N Mathilda Ave/W California Ave intersection. The eastbound left-turn queue is expected to increase by approximately three cars due to the project. The City is proposing to implement a fully coordinated and interconnected traffic management system along Mathilda Avenue to improve signal operations and vehicle progression which could alleviate the queuing issue. The proposed project will contribute towards the City's Transportation Impact Fee.

### **Freeway Segments Analysis**

All the study segments are expected to increase by less than one percent of the segment's capacity. Therefore, the proposed development is not expected to create a significant impact on the studied freeway segments.

### **Freeway Ramp Analysis**

All freeway ramps in the project vicinity have V/C ratio less than one and the addition of project trips does not increase the V/C ratio to more than one (1.0). Therefore, the proposed development is not expected to create a significant impact on the studied freeway ramps.

## **2.2.2 Background Plus Project Conditions**

### **Intersection Analysis**

Under this scenario, all the study intersections are expected to operate at acceptable LOS during both peak hours with the exception of one intersection (Intersection #20 – N Mathilda Ave/ SR 237 WB Ramps) that would operate at an unacceptable LOS F during the PM peak hour. However, the change in critical delay and change in volume-to-capacity (V/C) ratio is within the significance standards. Therefore, the proposed development is not expected to create a significant impact and no mitigation measures are recommended at the study intersections.

### **Queuing Analysis**

The left-turn queue at several intersections already exceeds the provided storage lane under the Background without project condition. With project, the queue is expected to increase by not more than one vehicle at all the locations with the exception of the N Mathilda Ave/W California Ave intersection. The eastbound left-turn queue is expected to increase by approximately three cars due to the project. The City is proposing to implement a fully coordinated and interconnected traffic management system along Mathilda Avenue to improve signal operations and vehicle progression which could alleviate the queuing issue. The proposed project will contribute towards the City's Transportation Impact Fee.

### **Freeway Segments Analysis**

Under this scenario, all the study segments are expected to increase by less than one percent of the segment's capacity. Therefore, the proposed development is not expected to create a significant impact.

### **Freeway Ramp Analysis**

Under this scenario, all freeway ramps in the project vicinity have V/C ratio less than one and the addition of project trips does not increase the freeway ramp's V/C ratio to more than one (1.0). Therefore, the proposed development is not expected to create a significant impact.

#### **2.2.3 Cumulative Conditions**

The Cumulative 2035 analysis for the Peery Park Specific Plan is used for the cumulative analysis for this project as this project site is located within the Peery Park Specific Plan area. This project is required to pay their fair share towards cumulative impacts identified in the cumulative analysis of the Peery Park Specific Plan.

The Final EIR for the Peery Park Specific Plan identified intersections and freeway segments that would be operating at less than desirable levels (LOS E or F) in the future year of 2035. This project is therefore required to pay towards the City's Transportation Impact Fee.

#### **2.2.4 Pedestrian, Bicycle and Transit Impacts**

The proposed project does not conflict with existing and planned pedestrian facilities. In addition, the existing pedestrian facilities in the project vicinity are expected to have the capacity to accommodate future use based on observation of the current usage. However, the addition of marked crosswalks is recommended at the intersection of California Avenue and Pajaro Avenue to enhance safety.

The proposed project does not conflict with existing and planned bicycle facilities and does not appear to impact the safety of the cyclists or have any hazardous design features impeding the use of bicycles. Therefore, the project is expected to have a less-than-significant impact on cyclists.

The proposed project is not expected to conflict with planned transit facilities and the existing or planned pedestrians and bicycle access to transit routes and stops are expected to accommodate the project usage. Although the added project trips could increase the transit vehicle delay at the intersection of E Middlefield and SR 237 EB Off-Ramp, the overall impact is still less than significant.

Therefore, the project is not expected to adversely impact the pedestrian, bicycle and transit facilities adjacent to the project site. However, due to the increase in vehicular traffic on California Avenue, it is recommended that pedestrian improvements be made at the intersection of California Avenue and Pajaro Avenue to address sight visibility issues.

#### **2.2.5 Site Access and On-site Circulation**

There will be two access points for the project site; one on Sobrante Way and one on N Pastoria Avenue. These driveways allow for all movements turning in and out of the site as both roadways are undivided. The proposed access widths of 24 and 25 feet are adequate for safe and comfortable turning and satisfy the City's requirement. In addition, the proposed landscaping adjacent to the accesses is not expected to obstruct the sight distance of turning vehicles. The project will provide a short segments of new sidewalk



along Pastoria Avenue and Sobrante Way adjacent to the project accesses. The project site is conveniently accessible as it has direct access to Central Expressway via Sobrante Way. In addition, the site is about one mile from US 101 via the interchange at N Mathilda Avenue. It is also conveniently located near SR 237 which is about 1.5 miles away.

#### **2.2.6 Parking**

Based on the proposed Peery Park Specific Plan (PPSP) parking requirement, PPSP office development requires a minimum provision of 3.3 spaces per 1000 square feet that translates into a minimum of 402 spaces for this project. As such, the 359 spaces proposed by the project do not meet the minimum requirement. Parking along the streets in the project vicinity is not recommended; the development should provide the minimum number of parking spaces on-site required by the City.

On the other hand, the proposed number of ADA accessible parking spaces satisfies the requirement.

The City of Sunnyvale's bicycle parking standard requires that the project provide at least 20 bicycle parking spaces with at least 15 'secured' parking (Class I) spaces. The project is proposing to meet this requirement.

### **3.0 INTRODUCTION**

This report presents the results of a Traffic Impact Analysis (TIA) conducted for the proposed construction of 121,715 square feet of an office and R&D building with underground and surface parking located at 265-285 Sobrante Way in the City of Sunnyvale, California.

The purpose of this Traffic Impact Analysis is to evaluate the potential traffic impacts, identify short-term and long-term roadway circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process. The scope of work was prepared in consultation with the City of Sunnyvale staff.

#### **3.1 Project Description**

##### Existing Site

The site is located at 265-285 Sobrante Way near Central Expressway. Two existing R&D buildings (45,470 square feet total) with 141 surface parking stalls currently occupy the site. Access to the parking lot is via two complete access driveways, one each on Sobrante Way and N Pastoria Avenue.

##### Proposed Site

The proposed development includes a new four-story office R&D building of 121,715 square feet with one level of underground parking and some surface parking. The number of parking stalls is proposed at a 3.0/1000 square feet ratio; number of standard stalls below grade at the new building is 98, and the number of standard surface parking stall is 253. The standard parking stalls include 11 electric vehicle charging station and 18 carpool/vanpool spaces. In addition, the project will also provide 8 ADA required spaces, making the total number of parking spaces provided to be 359. Two full movement driveways, one each on Sobrante Way and N Pastoria Avenue will be provided. **Figure 3-1** shows the Project site plan.

#### **3.2 Study Area**

The study area is bounded by Central Expressway to the north, W California Avenue to the south, N Pastoria Avenue to the west and Sobrante Way to the east. Central Expressway, together with N Mathilda Avenue (east of project site), provides local access to the project site. Freeways US 101 and SR 237 provide regional access to the project site. SR 237 can be accessed via the ramps at E Middlefield Road, W Maude Avenue, and N Mathilda Avenue. U.S. 101 can be accessed via the ramps at N Mathilda Avenue and via the interchange at SR 237.

The roadway impacts of the proposed Project were evaluated by measuring the effect project traffic would have on intersection operations, freeway segments and freeway ramps. A total of 20 intersections, as shown on **Figure 3-2**, were selected as study locations in consultation with the City of Sunnyvale staff and based on VTA's Transportation Impact Analysis Guidelines. The list of study intersections is listed below. Two of the study intersections are being monitored under the VTA Congestion Management Program (CMP) and they have a standard Level of Service (LOS) at level E.

- |   |   |
|---|---|
| 1. N Mathilda Ave/Almanor Ave-W Ahwanee Ave | 11. E Middlefield Rd/SR 237 EB Off Ramp |
| 2. N Mathilda Ave/San Aleso Ave             | 12. E Middlefield Rd /SR 237 WB On Ramp |
| 3. N Mathilda Ave/W Maude Ave (CMP)         | 13. N Mary Ave/W Maude Ave              |
| 4. N Mathilda Ave/W California Ave          | 14. W Maude Ave/SR 237 Ramps            |
| 5. Sobrante Way/W California Ave*           | 15. N Mathilda Ave/Indio Way            |
| 6. N Pastoria Ave/W California Ave*         | 16. Sobrante Way/Project Driveway1 *    |
| 7. Pajaro Ave/W California Ave*             | 17. N Pastoria Ave/Project Driveway2*   |
| 8. N Mary Ave/W California Ave              | 18. N Mathilda Ave/Ross Dr              |
| 9. Pajaro Ave/Shirley Ave*                  | 19. N Mathilda Ave/SR 237 EB Ramps      |
| 10. N Mary Ave/Central Expwy (CMP)          | 20. N Mathilda Ave/ SR 237 WB Ramps     |
- \*unsignalized intersection

CMP – Congestion Management Program

The freeway segments include:

Northbound and Southbound US 101

- between SR 237 and N. Mathilda Avenue and
- between N Mathilda Avenue and Fair Oaks Avenue

Eastbound and Westbound SR 237

- between Central Expressway and Maude Avenue
- between Maude Avenue and US 101 and
- between US 101 and N Mathilda Avenue
- between N Mathilda Avenue and Fair Oaks Avenue / Java Dr

The freeway ramps include:

- US 101 NB and SB on and off ramps at N Mathilda Avenue Interchange
- SR 237 EB and WB on and off ramps at E Middlefield Road / W Maude Avenue Interchange

### 3.3 Study Scope and Approach

The following four scenarios were evaluated to identify the potential transportation impacts of the project on the study intersections:

1. Existing Conditions - Existing intersection volumes based on traffic counts collected by AECOM in May 2017, and traffic counts provided by the City from December 2015.
2. Existing plus Project Conditions – Existing volumes plus the trips from this proposed project.
3. Background Conditions – Existing volumes plus trips from approved but not completed projects. This is defined as the Background without project conditions.
4. Background plus Project Conditions – Background volumes from *Scenario 3* plus the trips from this proposed project.





Figure 3-2 Project Vicinity and Intersections

In addition to the above four scenarios, for the Cumulative Conditions, exclusive fair share analysis was conducted at the study intersections that operated at an unacceptable LOS for the Cumulative Year 2035, based on the Peery Park Specific Plan TIA<sup>1</sup>.

Intersection LOS was analyzed for the weekday AM peak hour and PM peak hour. Freeway ramps and segments were analyzed following the VTA Guidelines under the Existing and Existing plus Project Scenarios.

### 3.4 Analysis Methodology

The level of service method approved by Santa Clara County Valley Transportation Authority (VTA) and adopted by the City of Sunnyvale for signalized intersections is the method described in Chapter 16 of the 2000 Highway Capacity Manual (HCM) (Special Report 209, Transportation Research Board) with adjusted saturation flow rates to reflect conditions in Santa Clara County. This method bases signalized intersection operations on the average control vehicular delay.

Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay. The average control delay for signalized intersections is calculated using TRAFFIX analysis software and is correlated to a LOS designation as shown in **Table 3-1**. It should be noted that the three study intersections along Mathilda Avenue (#18 Mathilda Ave and Ross Dr, #19 Mathilda Ave and 237 EB Ramps, #20 Mathilda Ave and 237 WB Ramps) are analyzed using SYNCHRO to determine the LOS as these intersections are part of the adaptive traffic signal control system. The TRAFFIX analysis software program does not accurately capture the operations of the Mathilda corridor since it does not evaluate the intersections of closely spaced and coordinated intersections. The SYNCHRO software can provide a more accurate assessment of the Mathilda Avenue corridor operational issues.

Levels of service at an intersection range from A, free flow or excellent conditions with insignificant delays, to F, congested or over-saturated conditions with unacceptable delays. **Table 3-1** shows the level of service thresholds for signalized intersections.

**Table 3-1 Level of Service Thresholds for Signalized Intersections**

Level of Service	Average Control Delay (seconds/vehicle)
A	delay ≤ 10.0
B+	10.0 < delay ≤ 12.0
B	12.0 < delay ≤ 18.0
B-	18.0 < delay ≤ 20.0
C+	20.0 < delay ≤ 23.0
C	23.0 < delay ≤ 32.0
C-	32.0 < delay ≤ 35.0
D+	35.0 < delay ≤ 39.0
D	39.0 < delay ≤ 51.0
D-	51.0 < delay ≤ 55.0
E+	55.0 < delay ≤ 60.0
E	60.0 < delay ≤ 75.0
E-	75.0 < delay ≤ 80.0
F	delay > 80.0

Source: Traffic Level of Service Analysis Guidelines, VTA, June 2003 and HCM 2000.

<sup>1</sup> Peery Park Specific Plan Traffic Impact Analysis, Hexagon Transportation Consultants, Inc., February 2016

LOS rating for unsignalized intersection is based on the weighted average control delay expressed in seconds per vehicle for all approaches. Control delay includes initial deceleration delay, queue move-up time, stopped delay and final acceleration. For single lane approaches, the control delay is computed as the average of all movements in that lane. At two-way or side-street controlled intersections, the average control delay is calculated for each stopped movement and not for the intersection as a whole.

There is no specific methodology for analyzing unsignalized intersections in the CMP. For this report purpose, the 2000 Highway Capacity Manual (HCM) methodology for unsignalized intersection (supported by TRAFFIX software) was used for the unsignalized intersection LOS calculations. **Table 3-2** shows the thresholds for the different LOS conditions at unsignalized intersections. In addition, the City of Sunnyvale uses the 2014 California Manual on Uniform Traffic Control Devices (MUTCD) peak hour volume signal warrant to evaluate operations at unsignalized intersections.

**Table 3-2 Unsignalized Intersection Level of Service Definitions**

Level of Service	Description	Average Control Delay (seconds/vehicle)
A	Little or no delay	delay $\leq 10.0$
B	Short traffic delays	$10.0 < \text{delay} \leq 15.0$
C	Average traffic delays	$15.0 < \text{delay} \leq 25.0$
D	Long traffic delays	$25.0 < \text{delay} \leq 35.0$
E	Very long traffic delays	$35.0 < \text{delay} \leq 50.0$
F	Extreme traffic delays with intersection capacity exceeded	delay $> 50.0$

Source: HCM 2000.

The adopted measure for freeway LOS evaluation in Santa Clara County is density, expressed as passenger cars per mile per lane (pcpmpl). The analysis procedures are outlined in HCM 2000 but LOS D/E and E/F density thresholds are modified to reflect Santa Clara County conditions. The LOS thresholds for freeway segments are presented in **Table 3-3**.

**Table 3-3 Level of Service Thresholds for Freeway Segments**

Level of Service	Density (passenger cars/miles/lane)	Speed (miles/hour)
A	density $\leq 11.0$	$67.0 \leq \text{speed}$
B	$11.0 < \text{density} \leq 18.0$	$66.5 \leq \text{speed} < 67.0$
C	$18.0 < \text{density} \leq 26.0$	$66.0 \leq \text{speed} < 66.5$
D	$26.0 < \text{density} \leq 46.0$	$46.0 \leq \text{speed} < 66.0$
E	$46.0 < \text{density} \leq 58.0$	$35.0 \leq \text{speed} < 46.0$
F	$58.0 < \text{density}$	speed $< 35.0$

Source: Traffic Level of Service Analysis Guidelines, VTA, June 2003.

### 3.5 Significance Criteria

The LOS standard for City of Sunnyvale intersections is LOS D or better except for intersections along regionally significant roadways (i.e. Mathilda Avenue) which allows for a standard level of service E. The LOS standard for CMP intersections is LOS E.

As such, for this report, a traffic impact would be considered significant if the project results will:

- cause a local (City of Sunnyvale) intersection to deteriorate below Level of Service (LOS) D; or

- cause a regionally significant intersection to deteriorate from LOS E or better to LOS F; or
- cause a CMP intersection to deteriorate from LOS E or better to LOS F; or
- cause a local intersection already operating at LOS E or F to deteriorate in the average control delay for the critical movements by four seconds or more, and the critical V/C ratio value to increase by 0.01 or more; or
- cause a CMP or regionally significant intersection already operating at LOS F to deteriorate in the average control delay for the critical movements by four seconds or more, and the critical V/C ratio value to increase by 0.01 or more.

The City of Sunnyvale does not have an officially adopted significant criterion for unsignalized intersections. Based on previously approved studies, significant impacts are defined to occur when the addition of project traffic causes the average delay for all-way stop controlled intersections or the worst movement for two-way stop controlled intersections to degrade to LOS E or LOS F (on regionally significant roadways) and the intersection satisfies the peak hour traffic signal warrant from the CA MUTCD. However, for the purpose of this study, a peak hour signal warrant analysis was conducted at all the unsignalized intersections.

According to the CMP guidelines, if the project traffic causes the LOS of the freeway segment to fall from LOS E or better to LOS F under project conditions, then the project is said to have an impact on the facility. For a freeway segment already operating at LOS F, the project has an impact if it adds more than 1% of a freeway segment capacity. Traffic impacts on freeway ramps in Santa Clara County are determined to occur when the addition of project traffic increases traffic demand on the freeway ramp to a V/C ratio exceeding one (1.0).



## **4.0 EXISTING AND BACKGROUND CONDITIONS**

This section describes the existing conditions in the vicinity of the project in terms of the existing roadways, traffic operations, transit, pedestrian and bicycle facilities.

### **4.1 Major Roadways in Study Area**

Regional access to the Project site is provided by State Route 237 (SR 237) and US 101. These highways are described below.

*US 101* is an eight-lane freeway extending from San Francisco to San Jose with a posted speed limit of 65 mph. In the vicinity of the Project site, this freeway runs in the east-west direction. It has carpool lanes in both directions with hours of operation during 5am-9am and 3pm-7pm. US 101 is under the jurisdiction of Caltrans. Access to the freeway is provided via ramps at Mathilda Avenue and at the freeway interchanges with SR 237.

*SR 237* is a four-lane freeway with a posted speed limit of 55 mph in the project vicinity. It begins at the intersection of El Camino Real and Grant Road, southwest of the proposed project site and extends to Milpitas in the northeast. Along SR 237, high-occupancy toll (HOT) lanes exist in both directions between North First Street in San Jose and I-880 in Milpitas. SR 237 is under the jurisdiction of Caltrans. Access to Project site from SR 237 is provided via E Middlefield Road and W. Maude Avenue

Local access to the Project site is provided by Central Expressway, N Mathilda Avenue, Mary Avenue and W California Avenue. Direct access to the project site is from Sobrante Way and N Pastoria Avenue. These roadways are described below.

*Central Expressway* is a four-lane divided east-west county expressway with a posted speed of 50 mph in the project vicinity. Central Expressway which begins in the City of Palo Alto as Alma Street is under the jurisdiction of Santa Clara County east of San Antonio Road. It extends eastward and transitions to Central Expressway in the City of Mountain View. Central Expressway ends at the intersection with De La Cruz Boulevard in the City of Santa Clara. Bicycles are allowed on Central Expressway.

*N Mathilda Avenue* is a six-lane north-south arterial in the project vicinity with a speed limit of 45 mph. It is classified as a Class I Arterial in the City. Sidewalks are provided on both sides of the street with driveways that provide direct access to businesses and residential developments on both sides of the road. There are also bus stops along N Mathilda Avenue on both sides between Central Expressway and W California Avenue. N Mathilda Avenue is designated as a regionally significant roadway for the City of Sunnyvale.

*Mary Avenue* (north of Evelyn Avenue) is a six-lane north-south roadway with a speed limit of 40 mph in the immediate project vicinity. It is classified as a Commercial Industrial Collector. Sidewalks are provided along both sides of the street. Turn pockets are provided at unsignalized intersections and exclusive left-turn lanes are provided at signalized intersections. Bikes are allowed on Mary Avenue in the immediate project vicinity although no designated bike lanes are provided.

*W California Avenue* is a 25 mph undivided two-lane residential collector in the east-west direction. It provides direct access to residential and commercial developments on both sides of the street. Sidewalks are provided along both sides of W California Avenue between Sobrante Way and Mary Avenue but only along the south side between Sobrante Way and N Mathilda Avenue.

*N Pastoria Avenue and Sobrante Way* are roadways where the two proposed project driveways are located (one on each street). Both roadways are two-lane undivided in the north-south direction. *N Pastoria Avenue* connects to *W California Avenue* on the south end and ends with a cul-de-sac before *Central Expressway*. Similarly, *Sobrante Way* connects to *W California Avenue* at the southern end but intersects with *Central Expressway* in a 'right-in-right-out' configuration.

## 4.2 Field Observations

Traffic conditions in the field were observed in May 2017 to validate the existing intersection level of service. There are no heavy queues or congestion observed at many of the study intersections during both peak hours. However, during the AM peak period, westbound *Central Expressway* was congested at the *Mary Avenue* intersections. In addition, the queues were observed along the northbound left-turn lane at the intersection of *N Mathilda Avenue / SR 237 WB* on several occasions; this is the traffic going to the westbound on-ramp of *SR 237*. The queue was seen to back up all the way to the upstream intersection of *N Mathilda Avenue / SR 237 EB*. Moderate queues were seen at the intersection of *N Mathilda Avenue / W Maude Avenue* along northbound *N Mathilda Avenue*.

During the PM peak period, congestion was observed on *Central Expressway*, at the intersection with *Mary Avenue*; eastbound queues were more severe. The intersection of *N Mathilda Avenue / W Maude Avenue* was also congested during the PM peak. Queues were observed on both approaches of *N Mathilda Avenue* as well as westbound *Maude Avenue*. Long queue was observed along the right lane of southbound *N Mathilda Avenue* approaching the intersection of *N Mathilda Avenue / SR 237 WB*, leading to the on-ramp to westbound *SR 237*. Similar to the AM peak period observation, the left-turn traffic onto westbound *SR 237* along northbound *N Mathilda Avenue* was observed to back up to the intersection of *N Mathilda Avenue / SR 237 EB*.

At the unsignalized intersection of *W California Ave* and *Pajaro Ave*, it was observed that sight distance for westbound drivers (on *W California Ave*) can sometimes be impeded by bigger vehicles parked near the intersection. As a result, drivers only became aware of crossing pedestrians when they were quite near to the intersection. Similarly, eastbound drivers on *W California Ave* only noticed the intersection and crossing pedestrians after the bend east of *Belmont Terrace*. It was also observed that pedestrians crossed both *W California Ave* and *Pajaro Avenue* at any locations, not just at the intersection. This intersection is surrounded by residential developments and a neighborhood park (*Cannery Park*) at the southwest corner. It is a 2-way stop controlled on *Pajaro Avenue* with no marked crosswalk. This park was observed to be well used by residents nearby. On-street parking is allowed along both streets except at the street corners. Due to the high number of residential units along the 2 streets, the streets were well parked in the evenings as well as on weekends.

It was noticed during field observation that some vehicles from the nearby businesses parked along *Sobrante Way*, just south of the *Central Expressway* ramps, as well as along the residential streets in the project vicinity. The parking along *Sobrante Way* can pose a safety concern for motorists coming off of *Central Expressway* at relatively high speed and not expecting impedances. In addition, residents and the City are exploring the possibility of incorporating a Residential Permit Parking Program for the area that would prohibit all-day parking on adjacent neighborhood streets by non-residents.

### 4.3 Existing Intersection Operations

Existing traffic counts for intersections along N Mathilda Avenue were provided by the City staff while the traffic counts for other intersections were conducted during the weekday morning (7:00-9:00 AM) and evening (4:00-6:00 AM) peak periods in May 2017. Detailed Traffic counts are provided in **Appendix A**. **Figure 4-1** and **Figure 4-2** show the intersection geometry and existing traffic volumes respectively. The performance of each intersection is presented in **Table 4-1**. The results of the LOS calculations indicate that the majority of the study intersections operate at acceptable levels of service according to their LOS standard. Only one study intersections does not operate at acceptable LOS during the PM peak hour.

- Intersection #20 – N Mathilda Ave/ SR 237 WB Ramps

In addition, a peak hour signal warrant analysis was performed for the unsignalized intersections. Based on the results, all the three unsignalized intersections do not warrant a traffic signal during both the peak hours. Details of the intersection analysis are presented in **Appendix B**.

**Table 4-1 Intersection Performance – Existing Conditions**

	Intersection	Peak Hour	LOS Standard	LOS	Average Delay (sec)	Critical V/C
1	N Mathilda Ave / Almanor Ave - W Ahwanee Ave	AM	E	C	25.5	0.575
		PM		C	23.4	0.506
2	N Mathilda Ave/San Aleso Ave	AM	E	A	7.4	0.603
		PM		B+	11.3	0.444
3	N Mathilda Ave/W Maude Ave (CMP)	AM	E	C-	33.3	0.782
		PM		D	44.8	0.776
4	N Mathilda Ave/W California Ave	AM	E	C	28.4	0.604
		PM		C-	33.2	0.866
5	Sobrante Way/W California Ave*	AM	D	A	9.2	0.357
		PM		B	12.7	0.536
6	N Pastoria Ave / W California Ave*	AM	D	B	11.0	0.020
		PM		C	16.7	0.020
7	Pajaro Ave/W California Ave*	AM	D	B	14.0	0.120
		PM		B	14.1	0.050
8	N Mary Ave/W California Ave	AM	D	C	24.4	0.448
		PM		C	25.9	0.448
9	Pajaro Ave/Shirley Ave*	AM	D	A	8.9	0.020
		PM		A	8.9	0.010
10	N Mary Ave/Central Expwy (CMP)	AM	E	D	51	0.367
		PM		E-	75	0.869
11	E Middlefield Rd/SR 237 EB Ramps	AM	D	C+	23	0.381
		PM		C+	21.7	0.488
12	E Middlefield Rd/SR 237 WB Ramps	AM	D	C+	21.9	0.571
		PM		C+	22	0.493
13	N Mary Ave/W Maude Ave	AM	D	C	28.6	0.396
		PM		D+	38.5	0.615
14	W Maude Ave/SR 237 Ramps	AM	D	C	25.2	0.382
		PM		C	30.3	0.568

15	N Mathilda Ave/Indio Way	AM	E	D	42.7	0.818
		PM		C	31.1	0.838
16	Sobrante Way/Project Driveway1*	AM	D	A	9.3	0.010
		PM		B	12.4	0.010
17	N Pastoria Ave/Project Driveway2*	AM	D	A	6.1	0.016
		PM		A	6.3	0.019
18	N Mathilda Ave/Ross Dr	AM	E	B	16.1	0.770
		PM		D+	35.3	0.910
19	N Mathilda Ave/SR 237 EB Ramps	AM	E	D	49.8	0.740
		PM		C	25.0	0.870
20	N Mathilda Ave/SR 237 WB Ramps	AM	E	B-	19.7	0.900
		PM		<b>F</b>	<b>&gt;80</b>	<b>0.900</b>

\*LOS and delay reported for worst movement for unsignalized intersections  
Deficient operations are indicated in **bold**.  
Source: AECOM 2017

#### 4.4 Existing Transit Facilities

The proposed project is approximately one-fifth of a mile walking distance from the nearest transit stop which is a Valley Transportation Authority (VTA) bus stop along W California Avenue. Another transit stop is about one-third mile from the project site on N Mathilda Avenue. Service 32 that runs along W California Avenue operates between San Antonio Transit Center in Mountain View and Santa Clara Transit Center six days a week. The eastbound service has a stop on W California and the westbound service has a stop on N Mathilda. Service 54 that runs along N Mathilda Avenue operates between the Lockheed Martin Transit Center and De Anza College in Cupertino seven days a week. Bus stops are located on both sides of N Mathilda Avenue. The following table describes the span of services and frequency of service during the average weekday.

Route	From	To	Weekdays		Weekends	
			Operating Hours	Peak Headway (Minutes)	Operating Hours	Peak Headway (Minutes)
32	San Antonio Transit Center	Santa Clara Transit Center	5:45 AM – 8:36 PM	30	8:45 AM – 5:59 PM	60
54	De Anza College	Lockheed Martin Station	5:59 AM – 9:28 PM	30	7:58 AM – 7:52 PM	60

In the vicinity of the larger project area, VTA Express Route 120 operates between Mountain View and Fremont BART Station. This service runs along US 101 and a section of Mathilda Avenue. In addition, LRT Service 902 that operates between downtown Mountain View and Winchester has several stations within the larger project area. VTA Routes 26, 55, 55X and 304 (Limited Stop Bus Route) also operate near the project location.

Caltrain is a commuter rail service between San Francisco and Gilroy. The nearest station to the project is approximately three-quarter mile away at the Sunnyvale Caltrain Station, located along Evelyn Avenue, southeast of the project site. VTA Service 54 connects the project site to Sunnyvale Caltrain Station directly. **Figure 4-3** presents the transit facilities in the vicinity of the project site.

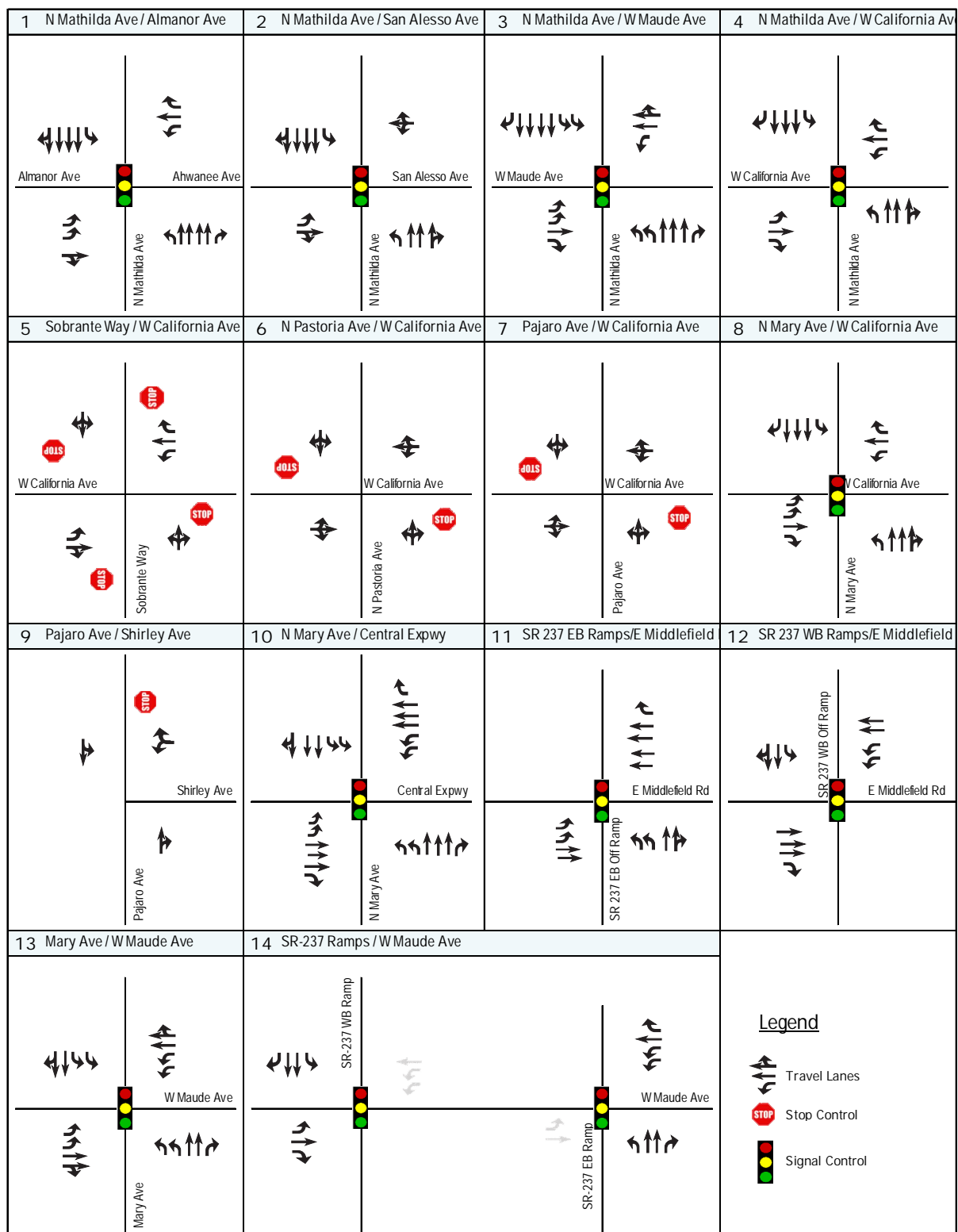


Figure 4-1 Intersection Geometry

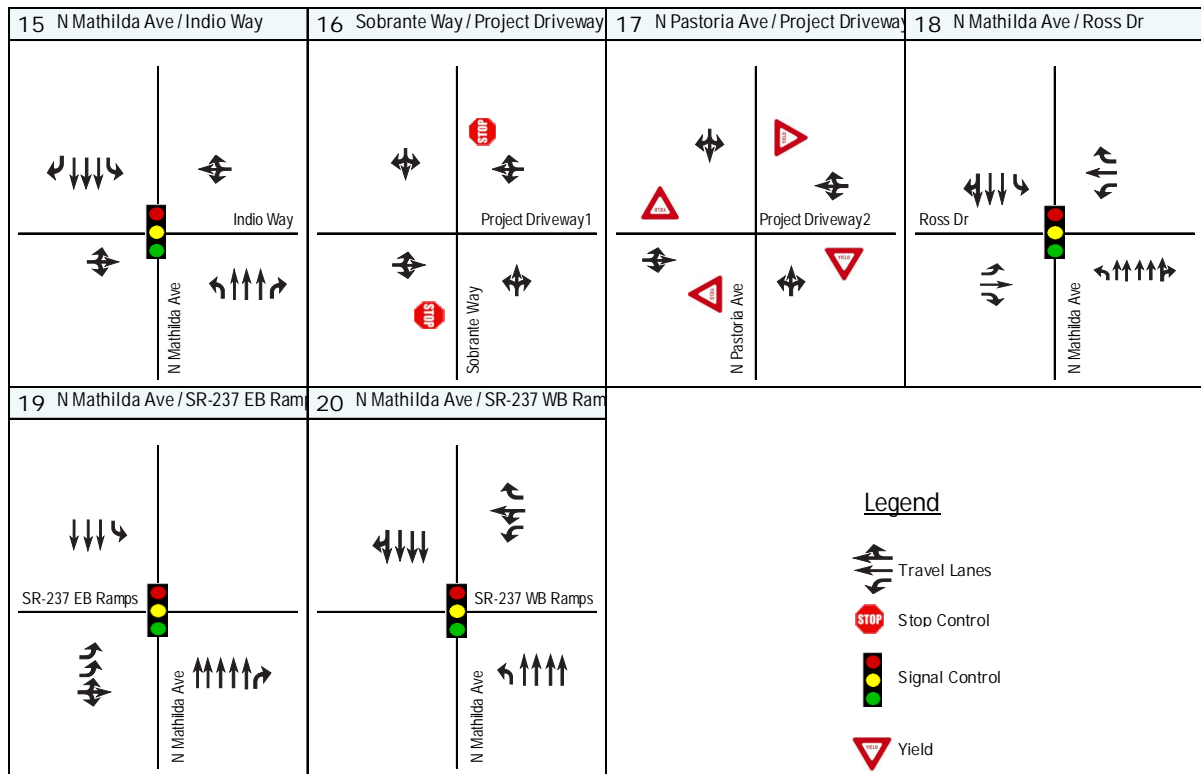


Figure 4-1 Intersection Geometry (cont'd)

Figure 4-2 Existing Traffic Volumes

<div>15 N Mathilda Ave / Indio Way</div> <table><tr><td><div>↑ 84 (77) ↓ 882 (2582) ↵ 20 (52)</div></td><td><div>↑ 399 (85) ↑ 12 (0) ↵ 156 (77)</div><div>Indio Way</div></td></tr><tr><td><div>10 (45) ↗ 1 (0) ↘ 197 (405) ↘</div></td><td><div>N Mathilda Ave ↗ 96 (27) ↑ 1967 (1008) ↑ 103 (111) ↗</div></td></tr></table>	<div>↑ 84 (77) ↓ 882 (2582) ↵ 20 (52)</div>	<div>↑ 399 (85) ↑ 12 (0) ↵ 156 (77)</div> <div>Indio Way</div>	<div>10 (45) ↗ 1 (0) ↘ 197 (405) ↘</div>	<div>N Mathilda Ave ↗ 96 (27) ↑ 1967 (1008) ↑ 103 (111) ↗</div>	<div>16 Sobrante Way / Project Driveway1</div> <table><tr><td><div>↑ 7 (1) ↓ 77 (90) ↵ 2 (0)</div></td><td><div>↑ 0 (3) ↵ 0 (1)</div><div>Project Driveway1</div></td></tr><tr><td><div>3 (6) ↗ 0 (2) ↘ 5 (8) ↘</div></td><td><div>Sobrante Way ↗ 17 (5) ↑ 69 (488) ↑ 2 (1) ↗</div></td></tr></table>	<div>↑ 7 (1) ↓ 77 (90) ↵ 2 (0)</div>	<div>↑ 0 (3) ↵ 0 (1)</div> <div>Project Driveway1</div>	<div>3 (6) ↗ 0 (2) ↘ 5 (8) ↘</div>	<div>Sobrante Way ↗ 17 (5) ↑ 69 (488) ↑ 2 (1) ↗</div>	<div>17 N Pastoria Ave / Project Driveway2</div> <table><tr><td><div>↑ 0 (1) ↓ 3 (2)</div></td><td><div>↑ 0 (1) ↵ 0 (3)</div><div>Project Driveway2</div></td></tr><tr><td><div>0 (1) ↗ 1 (1) ↘ 9 (9) ↘</div></td><td><div>N Pastoria Ave ↗ 10 (11) ↑ 1 (0) ↑ 4 (3) ↗</div></td></tr></table>	<div>↑ 0 (1) ↓ 3 (2)</div>	<div>↑ 0 (1) ↵ 0 (3)</div> <div>Project Driveway2</div>	<div>0 (1) ↗ 1 (1) ↘ 9 (9) ↘</div>	<div>N Pastoria Ave ↗ 10 (11) ↑ 1 (0) ↑ 4 (3) ↗</div>	<div>18 N Mathilda Ave / Ross Dr</div> <table><tr><td><div>↑ 95 (54) ↓ 736 (1922) ↵ 27 (190)</div></td><td><div>↑ 175 (71) ↑ 29 (4) ↵ 185 (125)</div><div>Ross Dr</div></td></tr><tr><td><div>26 (70) ↗ 3 (39) ↘ 39 (129) ↘</div></td><td><div>N Mathilda Ave ↗ 115 (59) ↑ 2117 (930) ↑ 79 (323) ↗</div></td></tr></table>	<div>↑ 95 (54) ↓ 736 (1922) ↵ 27 (190)</div>	<div>↑ 175 (71) ↑ 29 (4) ↵ 185 (125)</div> <div>Ross Dr</div>	<div>26 (70) ↗ 3 (39) ↘ 39 (129) ↘</div>	<div>N Mathilda Ave ↗ 115 (59) ↑ 2117 (930) ↑ 79 (323) ↗</div>
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<div>26 (70) ↗ 3 (39) ↘ 39 (129) ↘</div>	<div>N Mathilda Ave ↗ 115 (59) ↑ 2117 (930) ↑ 79 (323) ↗</div>																		
<div>19 N Mathilda Ave / SR-237 EB Ramps</div> <table><tr><td><div>↓ 797 (2064) ↵ 49 (347)</div><div>SR-237 EB Ramps</div></td><td></td></tr><tr><td><div>811 (130) ↗ 72 (132) ↘</div></td><td><div>N Mathilda Ave ↑ 1596 (480) 732 (641) ↗</div></td></tr></table>	<div>↓ 797 (2064) ↵ 49 (347)</div> <div>SR-237 EB Ramps</div>		<div>811 (130) ↗ 72 (132) ↘</div>	<div>N Mathilda Ave ↑ 1596 (480) 732 (641) ↗</div>	<div>20 N Mathilda Ave / SR-237 WB Ramps</div> <table><tr><td><div>↑ 99 (558) ↓ 277 (1939)</div></td><td><div>↑ 273 (39) ↑ 36 (31) ↵ 531 (541)</div><div>SR-237 WB Ramps</div></td></tr><tr><td></td><td><div>N Mathilda Ave ↗ 134 (86) ↑ 2340 (539) ↑</div></td></tr></table>	<div>↑ 99 (558) ↓ 277 (1939)</div>	<div>↑ 273 (39) ↑ 36 (31) ↵ 531 (541)</div> <div>SR-237 WB Ramps</div>		<div>N Mathilda Ave ↗ 134 (86) ↑ 2340 (539) ↑</div>	<div>XX(YY) - AM(PM) Peak Hour Volumes</div>									
<div>↓ 797 (2064) ↵ 49 (347)</div> <div>SR-237 EB Ramps</div>																			
<div>811 (130) ↗ 72 (132) ↘</div>	<div>N Mathilda Ave ↑ 1596 (480) 732 (641) ↗</div>																		
<div>↑ 99 (558) ↓ 277 (1939)</div>	<div>↑ 273 (39) ↑ 36 (31) ↵ 531 (541)</div> <div>SR-237 WB Ramps</div>																		
	<div>N Mathilda Ave ↗ 134 (86) ↑ 2340 (539) ↑</div>																		

Figure 4-2 Existing Traffic Volumes (cont'd)



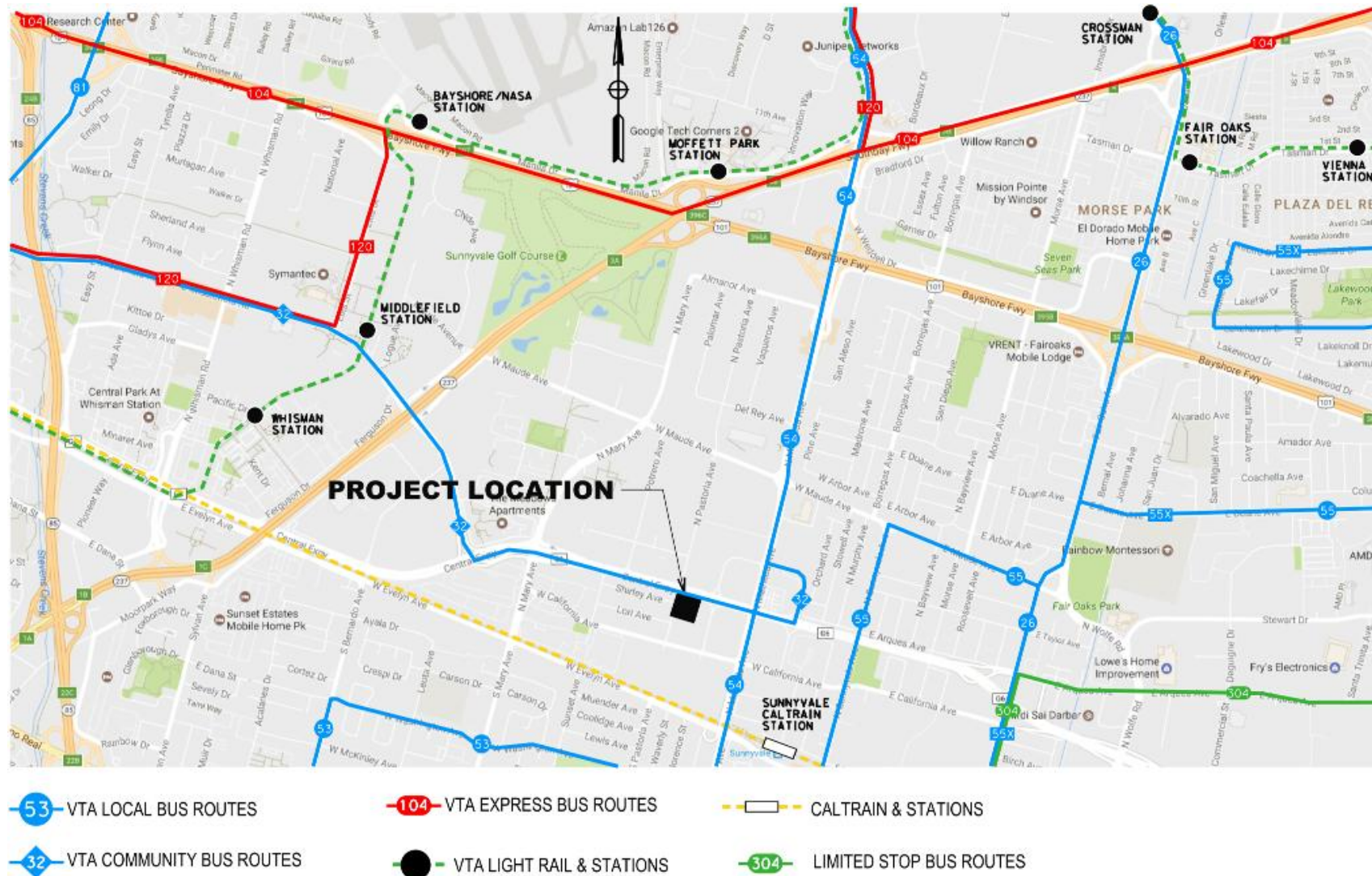


Figure 4-3 Existing Transit Facilities

#### 4.5 Existing Pedestrian and Bicycle Facilities

Sidewalks are provided along one side of N. Pastoria Avenue and both sides of W California Avenue. Signalized crosswalks are also provided on all four sides of the W California Avenue / N Mathilda Avenue intersection allowing safe and convenient access to the nearby bus stops.

The existing bicycle network consists of three classifications of facilities:

- Class I (bike path) provides an exclusive right-of-way for bicyclists and pedestrians, with cross flows of motorists minimized.
- Class II (bike lane) provides a restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross flows by pedestrians and motorists permitted.
- Class III (bike route) provides a right-of-way designated by signs or permanent markings indicating the roadway is shared by pedestrians and motorists.

Bike Boulevard is also provided in the larger vicinity of the project, on Gladys Avenue and Alice Avenue, to encourage cycling. Bike Boulevards are streets prioritized for bicycle use through advisory warning to motorists, traffic calming measures and guidance to encourage bicycle use over less attractive routes.

Bicycles are allowed on all streets in the City of Sunnyvale except freeways. Around the project site, the nearest Class I bike path is provided along John W Christian Greenbelt northeast of the project site. Class II bike lanes are provided along Evelyn Avenue, Middlefield Road and N Mathilda Avenue. Class III bike lanes are provided along Mary Avenue from Maude Avenue in the north to Fremont Avenue in the south. New bike lanes on both sides of Mary Avenue, south of Evelyn Avenue, have recently been installed and there is plan to extend them all the way to Maude Avenue. In addition, bicycles are allowed on Central Expressway. Existing bicycle facilities in the vicinity of the project site are illustrated in **Figure 4-4**.

#### 4.6 Existing Freeway Segments and Ramp Operations

**Table 4-2** presents the existing performance of four freeway segments in the project vicinity based on the Santa Clara County CMP Monitoring and Conformance Report. VTA uses aerial photography to measure the density of vehicles to determine the freeway LOS.

**Table 4-2 Freeway Segments – Existing Conditions**

Freeway	Segment	Direction	Lanes (Mixed)	Peak Hour	Density (pc/mi/ln)	LOS
US 101	Between N Fair Oaks Avenue and N Mathilda Avenue	NB	3	AM	<b>59</b>	<b>F</b>
				PM	28	D
		SB	3	AM	34	D
				PM	43	D
	Between N Mathilda Avenue and SR-237	NB	3	AM	40	D
				PM	26	C
		SB	3	AM	23	C
				PM	31	D
SR 237	Between Central Expressway and Maude Avenue	EB	2	AM	45	D
				PM	23	C
		WB	2	AM	30	D
				PM	<b>77</b>	<b>F</b>

	Between Maude Ave and US 101	EB	2	AM	29	D
				PM	38	D
		WB	2	AM	31	D
				PM	56	E
	Between US 101 and N Mathilda Avenue	EB	2	AM	38	D
				PM	<b>96</b>	<b>F</b>
		WB	2	AM	45	D
				PM	33	D
	Between N Mathilda Avenue and Fair Oaks Avenue / Java Dr	EB	2	AM	43	D
				PM	<b>98</b>	<b>F</b>
		WB	3	AM	56	E
				PM	<b>83</b>	<b>F</b>

Deficient operations are indicated in **bold**.

Source: Santa Clara County Annual Monitoring and conformance Report, 2014

For the mixed lanes on US 101, all the segments in both directions operate at LOS D or better during both the peak hours with the exception of the segments between N Fair Oaks Avenue and N Mathilda Avenue, which operates at an unacceptable LOS F during the AM peak hour in the northbound direction. Although there is an existing HOV lane along US 101, this study assumes that all the project trips will use only the mixed-use lanes in order to analyze the worst-case scenario.

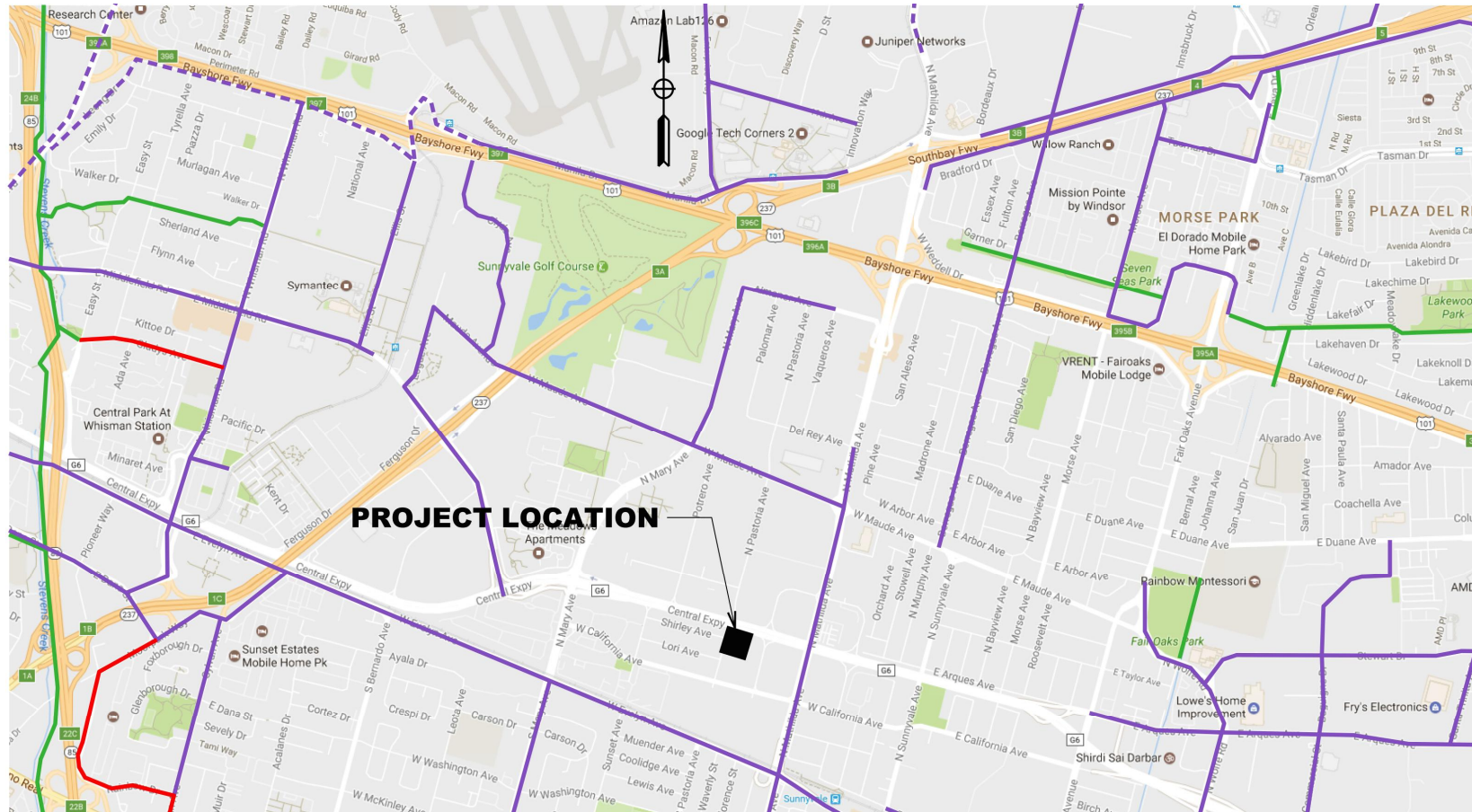
For SR 237, all the segments operate at LOS E or better in both the directions during the AM peak hour. In the PM peak hour, the following segments operate at LOS F:

- Westbound between Central Expressway and Maude Avenue
- Eastbound between US 101 and N Mathilda Avenue
- Eastbound between N Mathilda Avenue and Fair Oaks Avenue / Java Drive
- Westbound between N Mathilda Avenue and Fair Oaks Avenue / Java Drive

All other segments of SR 237 operate at LOS E or better during the PM peak hour. There is no HOV lane along SR 237 within the project vicinity except along the eastbound segment of N Mathilda Avenue and Fair Oaks Avenue / Java Drive. However, to be more conservative, it is assumed that all the project trips will use only the mixed-use lanes.

**Table 4-3** presents the existing performance of the six study ramps for the US 101 / N Mathilda Avenue Interchange and the four study ramps for the SR 237 / E Middlefield Road and W Maude Avenue. The ramp capacities were obtained from HCM 2000, which is based on both the free-flow speed and the number of lanes on the study ramps. There are meters for the on-ramps and they are turned on during the AM and PM peak periods for the northbound and southbound directions respectively. Capacity for these metered ramps is obtained from the *Ramp Management and Control Handbook* published by the Federal Highway Administration. The maximum ramp meter rate of 900 vph is assumed for a single lane on-ramp and for HOV lanes regardless of the ramp meters. The peak hour ramp volumes were obtained from Caltrans for the Year 2013.

The results below show that all study ramps have sufficient capacity to serve the existing traffic volumes. All ten study ramps have V/C ratio below 1.0 which means that the existing demand is lower than the available capacity.



- CLASS I - BIKE PATHS OFF-STREET
- CLASS II - BIKE LANES ON-STREET
- - - CLASS III - BIKE ROUTES ON-STREET
- BIKE BOULEVARD

Figure 4-4 Existing Bicycle Facilities

**Table 4-3 Ramp Performance – Existing Conditions**

Ramp	Lanes	Ramp Meter	Capacity (vph)	Type	Volumes (vph)		V/C	
					AM	PM	AM	PM
US 101 SB on ramp from NB Mathilda Ave	1 HOV, 1 Mixed	METER ON	1,800	Diamond	480	442	0.27	0.25
US 101 NB on ramp from NB Mathilda Ave	1 HOV, 1 Mixed	METER ON	1,800	Loop	286	294	0.16	0.16
US 101 NB off ramp to NB Mathilda Ave	1	-	2,000	Diamond	487	105	0.24	0.05
US 101 NB off ramp to SB Mathilda Ave	1	-	1,800	Loop	730	719	0.41	0.40
US 101 SB on ramp from SB Mathilda Ave	1 HOV, 1 Mixed	METER ON	1,800	Loop	122	548	0.07	0.30
US 101 SB off ramp to SB Mathilda Ave	1	-	2,000	Diamond	340	488	0.17	0.24
SR 237 WB on ramp from Middlefield Rd / Maude Ave	1	-	2000	Diamond	253	710	0.13	0.36
SR 237 EB off ramp to Middlefield Rd / Maude Ave	1	-	2000	Diamond	764	358	0.38	0.18
SR 237 WB off ramp to Maude Ave / Middlefield Rd	1	-	2000	Diamond	888	615	0.44	0.31
SR 237 EB on ramp from Maude Ave / Middlefield Rd	1	-	2000	Diamond	334	761	0.17	0.38

Source: Caltrans 2013

#### 4.7 Approved Projects

The list of approved projects (as obtained from the City of Sunnyvale) in the one-mile vicinity of the proposed Project having more than 20 residential units or greater than 10,000 square feet office / commercial is as follows:

Location	Use
767 N Mathilda Ave	Hotel
520 Almanor Ave	Office R&D, Retail
615 N Mathilda Ave	Office R&D including Amenities
845 W Maude Ave	Retail, Apartments
2502 Town Center Ln*	Retail, Office, Apartments, Hotel
803 W El Camino Real	Multi-family, Single-family, Commercial, Hotel
388-394 E Evelyn Ave*	Apartments

\*Trips obtained from Downtown Improvement Program Update DEIR, City of Sunnyvale, March 2003

Background condition traffic volumes were developed by adding the trips generated by the above projects to the existing traffic volumes. **Appendix C** presents the approved project trips. Background condition traffic volumes for the AM and PM peak hours are presented in **Figure 4-5**.

#### 4.8 Background Conditions

Based on the existing traffic volumes and approved project trips presented earlier, intersection analysis was performed at all the study intersections for the Background conditions. Lane geometries for this



scenario are same as that of the existing condition. **Table 4-4** presents the results and the analysis details are presented in **Appendix D**. All the intersections operated within acceptable levels under the Background conditions except for following intersection will operate at LOS F in the PM peak hour:

- Intersection #20 – N Mathilda Ave/ SR 237 WB Ramps

In addition, a peak hour signal warrant analysis was performed for the unsignalized intersections. The results showed that the peak hour signal warrant was not met and therefore, signalization was not needed.

**Table 4-4 Intersection Performance – Background Conditions**

	Intersection	Peak Hour	LOS Standard	LOS	Average Delay (sec)	Critical V/C
1	N Mathilda Ave / Almanor Ave - W Ahwanee Ave	AM	E	C	27.1	0.658
		PM		C	27.9	0.596
2	N Mathilda Ave/San Aleso Ave	AM	E	A	8.6	0.65
		PM		B	13.1	0.47
3	N Mathilda Ave/W Maude Ave (CMP)	AM	E	C-	34.1	0.831
		PM		D	44.9	0.746
4	N Mathilda Ave/W California Ave	AM	E	C	31	0.636
		PM		C-	34.1	0.885
5	Sobrante Way/W California Ave*	AM	D	A	9.2	0.359
		PM		B	13.2	0.557
6	N Pastoria Ave / W California Ave*	AM	D	B	2.4	0.034
		PM		C	4.2	0.161
7	Pajaro Ave/W California Ave*	AM	D	B	3.9	0.119
		PM		B	3.1	0.062
8	N Mary Ave/W California Ave	AM	D	C	24.4	0.448
		PM		C	25.9	0.448
9	Pajaro Ave/Shirley Ave*	AM	D	A	2.5	0.018
		PM		A	1.8	0.013
10	N Mary Ave/Central Expwy (CMP)	AM	E	D-	51.6	0.398
		PM		E-	76.7	0.761
11	E Middlefield Rd/SR 237 EB Off-Ramps	AM	D	C	23	0.388
		PM		C+	21.7	0.489
12	E Middlefield Rd/SR 237 WB On-Ramps	AM	D	C+	21.9	0.571
		PM		C+	22.2	0.499
13	N Mary Ave/W Maude Ave	AM	D	C	28.5	0.397
		PM		D	39	0.632
14	W Maude Ave/SR 237 Ramps	AM	D	C	25	0.396
		PM		C	30.5	0.568
15	N Mathilda Ave/Indio Way	AM	E	D	47.6	0.894
		PM		C	31.8	0.871
16	Sobrante Way/Project Driveway1*	AM	D	A	1.3	0.016
		PM		B	0.6	0.023
17	N Pastoria Ave/Project Driveway2*	AM	D	A	6.1	0.016
		PM		A	6.3	0.019

Intersection		Peak Hour	LOS Standard	LOS	Average Delay (sec)	Critical V/C
18	N Mathilda Ave/Ross Dr	AM	D	B	16.3	0.770
		PM		D+	37.3	0.920
19	N Mathilda Ave/SR 237 EB Ramps	AM	D	D-	52.0	0.750
		PM		C	28.6	0.910
20	N Mathilda Ave/SR 237 WB Ramps	AM	E	C	24.5	0.930
		PM		<b>F</b>	<b>&gt;80</b>	<b>1.160</b>

\* LOS and delay reported for worst movement for unsignalized intersections  
Deficient operations are indicated in **bold**  
Source: AECOM 2017













































































































































<p>1 N Mathilda Ave / Almanor Ave</p> <p>  604 (95)   1618 (2413)   93 (168) </p> <p>Almanor Ave</p> <p>  287 (103)   70 (11)   55 (34) </p> <p>Ahwanee Ave</p> <p>  115 (513)   10 (100)   32 (97) </p> <p>N Mathilda Ave</p> <p>  198 (59)   2546 (1408)   25 (76) </p>	<p>2 N Mathilda Ave / San Alesso Ave</p> <p>  48 (15)   1407 (2551)   107 (167) </p> <p>San Alesso Ave</p> <p>  23 (60)   2 (2)   50 (49) </p> <p>N Mathilda Ave</p> <p>  33 (24)   2672 (1426)   59 (115) </p>	<p>3 N Mathilda Ave / W Maude Ave</p> <p>  475 (180)   755 (2408)   179 (335) </p> <p>W Maude Ave</p> <p>  324 (126)   373 (186)   160 (129) </p> <p>N Mathilda Ave</p> <p>  476 (117)   2643 (1042)   55 (139) </p>	<p>4 N Mathilda Ave / W California Ave</p> <p>  278 (439)   940 (3326)   71 (212) </p> <p>W California Ave</p> <p>  190 (107)   190 (55)   117 (65) </p> <p>N Mathilda Ave</p> <p>  149 (71)   2190 (935)   88 (288) </p>
<p>5 Sobrante Way / W California Ave</p> <p>  11 (11)   15 (3)   85 (103) </p> <p>W California Ave</p> <p>  98 (370)   257 (205)   57 (32) </p> <p>Sobrante Way</p> <p>  17 (127)   109 (302)   6 (8) </p> <p>  6 (34)   3 (72)   7 (63) </p>	<p>6 N Pastoria Ave / W California Ave</p> <p>  14 (9)   3 (8)   11 (47) </p> <p>W California Ave</p> <p>  31 (22)   192 (246)   51 (29) </p> <p>N Pastoria Ave</p> <p>  13 (25)   3 (3)   23 (132) </p>	<p>7 Pajaro Ave / W California Ave</p> <p>  39 (42)   1 (1)   13 (20) </p> <p>W California Ave</p> <p>  12 (7)   211 (292)   21 (35) </p> <p>Pajaro Ave</p> <p>  46 (53)   147 (179)   5 (32) </p> <p>  51 (17)   18 (13)   18 (21) </p>	<p>8 N Mary Ave / W California Ave</p> <p>  12 (62)   420 (1568)   42 (291) </p> <p>W California Ave</p> <p>  220 (66)   8 (22)   114 (120) </p> <p>N Mary Ave</p> <p>  76 (38)   7 (17)   13 (13) </p> <p>  2 (4)   1400 (823)   55 (103) </p>
<p>9 Pajaro Ave / Shirley Ave</p> <p>  25 (28)   7 (8) </p> <p>Shirley Ave</p> <p>  12 (13)   16 (7) </p> <p>Pajaro Ave</p> <p>  58 (72)   1 (4) </p>	<p>10 N Mary Ave / Central Expwy</p> <p>  130 (252)   114 (914)   62 (431) </p> <p>Central Expwy</p> <p>  314 (23)   2275 (1476)   219 (789) </p> <p>N Mary Ave</p> <p>  175 (47)   996 (1712)   173 (648) </p> <p>  631 (244)   614 (148)   594 (679) </p>	<p>11 SR-237 EB Ramps/E Middlefield Rd</p> <p>  122 (251)   873 (299) </p> <p>E Middlefield Rd</p> <p>  272 (494)   358 (918) </p> <p>SR 237 EB Off Ramp</p> <p>  338 (105)   323 (353)   230 (183) </p>	<p>12 SR-237 WB Ramps/E Middlefield Rd</p> <p>  437 (296)   148 (388)   166 (240) </p> <p>SR 237 WB Off Ramp</p> <p>  1015 (251)   144 (155) </p> <p>E Middlefield Rd</p> <p>  408 (1253)   71 (271) </p>
<p>13 Mary Ave / W Maude Ave</p> <p>  35 (73)   62 (443)   37 (149) </p> <p>W Maude Ave</p> <p>  235 (65)   462 (336)   158 (406) </p> <p>Mary Ave</p> <p>  54 (36)   315 (563)   115 (454) </p> <p>  378 (98)   356 (45)   309 (210) </p>	<p>14 SR-237 Ramps / W Maude Ave</p> <p>  315 (73)   545 (350)   202 (156) </p> <p>SR-237 WB Ramp</p> <p>  14 (214)   41 (347)   14 (128) </p> <p>W Maude Ave</p> <p>  120 (284)   229 (79)   256 (411) </p> <p>SR-237 EB Ramp</p> <p>  72 (11)   238 (360)   325 (400) </p>	<p>XX(YY) - AM(PM) Peak Hour Volumes</p>	

Figure 4-5 Background Intersection Traffic Volumes



<div>15 N Mathilda Ave / Indio Way</div> <table><tr><td><div>↑ 99 (92) ↓ 1026 (3050) ↵ 24 (58)</div></td><td><div>↑ 569 (115) ↑ 14 (0) ↵ 186 (99)</div><div>Indio Way</div></td></tr><tr><td><div>15 (47) ↑ 2 (0) → 298 (426) ↓</div><div>N Mathilda Ave</div></td><td><div>↵ 104 (29) ↑ 2243 (1080) ↑ 112 (118) ↵</div><div>N Mathilda Ave</div></td></tr></table>	<div>↑ 99 (92) ↓ 1026 (3050) ↵ 24 (58)</div>	<div>↑ 569 (115) ↑ 14 (0) ↵ 186 (99)</div> <div>Indio Way</div>	<div>15 (47) ↑ 2 (0) → 298 (426) ↓</div> <div>N Mathilda Ave</div>	<div>↵ 104 (29) ↑ 2243 (1080) ↑ 112 (118) ↵</div> <div>N Mathilda Ave</div>	<div>16 Sobrante Way / Project Driveway1</div> <table><tr><td><div>↑ 10 (1) ↓ 107 (111) ↵ 3 (0)</div></td><td><div>↑ (6) ↵ (2)</div><div>Project Driveway1</div></td></tr><tr><td><div>6 (9) ↵ (3) → 10 (11) ↓</div><div>Sobrante Way</div></td><td><div>↵ 23 (5) ↑ 95 (525) ↑ 3 (1) ↵</div><div>Sobrante Way</div></td></tr></table>	<div>↑ 10 (1) ↓ 107 (111) ↵ 3 (0)</div>	<div>↑ (6) ↵ (2)</div> <div>Project Driveway1</div>	<div>6 (9) ↵ (3) → 10 (11) ↓</div> <div>Sobrante Way</div>	<div>↵ 23 (5) ↑ 95 (525) ↑ 3 (1) ↵</div> <div>Sobrante Way</div>	<div>17 N Pastoria Ave / Project Driveway2</div> <table><tr><td><div>↑ (4) ↓ 4 (8)</div></td><td><div>↑ 0 ↵ 0</div><div>Project Driveway2</div></td></tr><tr><td><div>(1) ↵ 1 (1) → 11 (13) ↓</div><div>N Pastoria Ave</div></td><td><div>↵ 16 (19) ↑ 2 (0) ↵ 6 (5) ↵</div><div>N Pastoria Ave</div></td></tr></table>	<div>↑ (4) ↓ 4 (8)</div>	<div>↑ 0 ↵ 0</div> <div>Project Driveway2</div>	<div>(1) ↵ 1 (1) → 11 (13) ↓</div> <div>N Pastoria Ave</div>	<div>↵ 16 (19) ↑ 2 (0) ↵ 6 (5) ↵</div> <div>N Pastoria Ave</div>	<div>18 N Mathilda Ave / Ross Dr</div> <table><tr><td><div>↑ 100 (55) ↓ 775 (1961) ↵ 28 (194)</div></td><td><div>↑ 192 (80) ↑ 32 (4) ↵ 203 (140)</div><div>Ross Dr</div></td></tr><tr><td><div>35 (83) ↵ 4 (46) → 53 (154) ↓</div><div>N Mathilda Ave</div></td><td><div>↵ 124 (61) ↑ 2276 (959) ↑ 85 (333) ↵</div><div>N Mathilda Ave</div></td></tr></table>	<div>↑ 100 (55) ↓ 775 (1961) ↵ 28 (194)</div>	<div>↑ 192 (80) ↑ 32 (4) ↵ 203 (140)</div> <div>Ross Dr</div>	<div>35 (83) ↵ 4 (46) → 53 (154) ↓</div> <div>N Mathilda Ave</div>	<div>↵ 124 (61) ↑ 2276 (959) ↑ 85 (333) ↵</div> <div>N Mathilda Ave</div>
<div>↑ 99 (92) ↓ 1026 (3050) ↵ 24 (58)</div>	<div>↑ 569 (115) ↑ 14 (0) ↵ 186 (99)</div> <div>Indio Way</div>																		
<div>15 (47) ↑ 2 (0) → 298 (426) ↓</div> <div>N Mathilda Ave</div>	<div>↵ 104 (29) ↑ 2243 (1080) ↑ 112 (118) ↵</div> <div>N Mathilda Ave</div>																		
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<div>↑ (4) ↓ 4 (8)</div>	<div>↑ 0 ↵ 0</div> <div>Project Driveway2</div>																		
<div>(1) ↵ 1 (1) → 11 (13) ↓</div> <div>N Pastoria Ave</div>	<div>↵ 16 (19) ↑ 2 (0) ↵ 6 (5) ↵</div> <div>N Pastoria Ave</div>																		
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<div>35 (83) ↵ 4 (46) → 53 (154) ↓</div> <div>N Mathilda Ave</div>	<div>↵ 124 (61) ↑ 2276 (959) ↑ 85 (333) ↵</div> <div>N Mathilda Ave</div>																		
<div>19 N Mathilda Ave / SR-237 EB Ramps</div> <table><tr><td><div>↓ 857 (2173) ↵ 53 (365)</div><div>SR-237 EB Ramps</div></td><td></td></tr><tr><td><div>922 (144) ↑ 82 (147) ↓</div><div>N Mathilda Ave</div></td><td><div>↑ 1663 (558) ↵ 763 (745) ↵</div><div>N Mathilda Ave</div></td></tr></table>	<div>↓ 857 (2173) ↵ 53 (365)</div> <div>SR-237 EB Ramps</div>		<div>922 (144) ↑ 82 (147) ↓</div> <div>N Mathilda Ave</div>	<div>↑ 1663 (558) ↵ 763 (745) ↵</div> <div>N Mathilda Ave</div>	<div>20 N Mathilda Ave / SR-237 WB Ramps</div> <table><tr><td><div>↑ 118 (620) ↓ 330 (2154)</div></td><td><div>↑ 294 (41) ↑ 39 (33) ↵ 571 (569)</div><div>SR-237 WB Ramps</div></td></tr><tr><td></td><td><div>N Mathilda Ave</div><div>↑ 140 (91) ↑ 2438 (567) ↑</div></td></tr></table>	<div>↑ 118 (620) ↓ 330 (2154)</div>	<div>↑ 294 (41) ↑ 39 (33) ↵ 571 (569)</div> <div>SR-237 WB Ramps</div>		<div>N Mathilda Ave</div> <div>↑ 140 (91) ↑ 2438 (567) ↑</div>	<div>XX(YY) - AM(PM) Peak Hour Volumes</div>									
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	<div>N Mathilda Ave</div> <div>↑ 140 (91) ↑ 2438 (567) ↑</div>																		

Figure 4-5 Background Intersection Traffic Volumes (cont'd)

## 5.0 PLUS PROJECT CONDITIONS

This chapter looks at the future transportation conditions in the study area as a result of the proposed project. Trips generated by the proposed development are added to the ‘no project’ scenarios discussed in the earlier chapter to determine the effects of this project. Any mitigation measures necessary to alleviate potential impacts will also be discussed.

### 5.1 Trip Generation, Trip Distribution and Project-Only Trip Assignment

This section presents the number of trips generated by the proposed development. Trip generation rates from the Institute of Transportation Engineers’ (ITE) *Trip Generation Manual* (9<sup>th</sup> Edition, 2012) were used for determining the number of trips of the future land use. Trip generation rates and estimates are summarized in **Table 5-1**. The proposed project is estimated to generate 65 net new AM peak hour vehicle trips (55 inbound trips and 10 outbound trips) and 58 net new PM peak hour vehicle trips (9 inbound trips and 49 outbound trips). Since this project is located within the Peery Park Specific Plan area, tenants of the building would participate in the TDM programs defined in the Peery Park Final EIR. Although the details of the program to be implemented by this project is not known at the time of the report, the project is required and expected to meet the TDM goals set out in the Peery Park Plan of 25% reduction on auto trips; this reduction is accounted for in the net new trips generated by the project. Property owner/tenants will have to pay into an annual driveway count monitoring program conducted by the City to demonstrate the effectiveness of the proposed TDM program. There will also be penalties if the goals are not met.

As this project replaces the existing office area, the net additional trips will be considered ‘project trips’.

**Table 5-1 Trip Generation for Proposed Project**

Land Use	Size	Unit	Daily Rate	AM Peak Hour						PM Peak Hour					
				Rate	In%	In	Out%	Out	Total	Rate	In%	In	Out%	Out	Total
Existing															
Office <sup>1</sup>	22,735	s.f.	11.03	1.56	88%	31	12%	4	35	1.49	17%	6	83%	28	34
Research & Development <sup>2</sup>	22,735	s.f.	8.11	1.22	83%	24	17%	5	28	1.07	15%	4	85%	21	25
Total Existing Trips						55			9	64			10	49	59
Proposed															
5.1Office <sup>1</sup>	60,858	s.f.	11.03	1.56	88%	84	12%	12	95	1.49	17%	15	83%	76	91
Research & Development <sup>2</sup>	60,858	s.f.	8.11	1.22	83%	62	17%	13	74	1.07	15%	10	85%	55	65
Total Project Trips						146			25	169			25	131	156
Adjusted Project Trips (25% reduction due to TDM Program)						110			19	129			19	98	117
Net New Trips						55			10	65			9	49	58

Notes:

All rates are from Institute of Transportation Engineers, Trip Generation, 9th Edition

1. Land Use Code 710: General Office Building (average rates, expressed in trips per 1,000 s.f.)

2. Land Use Code 760: Research & Development Center (average rates, expressed in trips per 1,000 s.f.)

It is assumed that the proposed project is half office and half R&D uses and this project is not eligible for trip reductions based on VTA TIA Guidelines.

Trip distribution is defined as the direction of approach and departure that vehicles would use to arrive at and depart from the site. The trip distribution pattern of the traffic generated by the project onto the roadway system was based on recent TIA's completed in the area, prevailing traffic patterns and the site access locations. The project trips were distributed and assigned to the study intersections for traffic impact determination based on the trip distribution percentages shown in **Figure 5-1**. The resulting project only volumes at each of the study intersections are presented in **Figure 5-2**.

## 5.2 Existing plus Project Traffic Conditions – Intersection Operations

A Project impact is determined by comparing the operating conditions of 'plus project' and the 'no project' scenarios. The comparison table is shown in **Table 5-2**. The total 'plus project' traffic volumes for all the study intersections under the Existing Conditions are presented in **Figure 5-3**.

All the intersections operated within acceptable LOS with and without project except for the following intersection that operate at LOS F in the PM peak hour:

- Intersection #20 – N Mathilda Ave/ SR 237 WB Ramps

However, the 'plus project' scenario did not bring about significant changes in both delay and critical V/C ratio to be considered an impact. As such, the proposed project would not adversely affect the existing condition. In addition, a peak hour signal warrant analysis was performed for the unsignalized intersections. The results showed that the warrants are not met and signalization is not needed. Details of this analysis are presented in **Appendix D**.

## 5.3 Existing plus Project Traffic Conditions - Freeway Segments and Ramp Operations

The expected project volumes along the study freeway segments are tabulated in **Table 5-3**. The percentage of project volumes with respect to the segment capacity is also presented. Segment capacity of 2,300 vehicles per hour per lane was used for six-lane facilities and 2,200 vehicles per hour per lane was used for four-lane facilities. The proposed development is expected to contribute trips that are less than one percent of the segment capacity. Therefore, this project is not expected to significantly impact the study freeway segments. Thus, no mitigation measures are recommended.

**Table 5-4** summarizes the freeway ramp volumes and V/C ratio under the existing conditions and under the existing plus project conditions. As the proposed development is expected to generate few trips, the addition of project traffic does not increase the V/C ratio over 1.0. Therefore, the proposed project is expected to cause less-than-significant impacts and no mitigation measures are required at the freeway ramps.

## 5.4 Existing plus Project Traffic Conditions - Transit Facilities Impacts

The existing transit facilities in the project vicinity are expected to support the project usage under the 'plus project' conditions. Based on current observation, the bus service would continue to serve the project vicinity and the proposed project is not expected to adversely affect public transit services. The delay brought about by this project, during both peak hours, along N Mathilda Avenue (in both



1 N Mathilda Ave / Almanor Ave	2 N Mathilda Ave / San Alesso Ave	3 N Mathilda Ave / W Maude Ave	4 N Mathilda Ave / W California Ave
<div> <div>22 (4) ↓</div> <div>Almanor Ave</div> <div>Ahwanee Ave</div> <div> <div>N Mathilda Ave</div> <div>4 (20) ↑</div> </div> </div>	<div> <div>22 (4) ↓</div> <div>San Alesso Ave</div> <div> <div>N Mathilda Ave</div> <div>4 (20) ↑</div> </div> </div>	<div> <div>23 (4) ↓</div> <div>W Maude Ave</div> <div> <div>N Mathilda Ave</div> <div>4 (20) ↑</div> <div>3 (0) ↓</div> </div> </div>	<div> <div>31 (5) ↑</div> <div>W California Ave</div> <div> <div>5 (23) ↑</div> <div>0 (1) ↓</div> <div>2 (8) ↓</div> <div>N Mathilda Ave</div> <div>9 (1) ↑</div> </div> </div>
5 Sobrante Way / W California Ave	6 N Pastoria Ave / W California Ave	7 Pajaro Ave / W California Ave	8 N Mary Ave / W California Ave
<div> <div>0 (2) ↑</div> <div>W California Ave</div> <div> <div>37 (6) ↑</div> <div>2 (0) ↑</div> </div> </div>	<div> <div>1 (6) ↑</div> <div>W California Ave</div> <div> <div>2 (0) ↑</div> <div>0 (2) ↑</div> </div> </div>	<div> <div>1 (6) ↑</div> <div>W California Ave</div> <div> <div>2 (8) ↑</div> </div> </div>	<div> <div>6 (1) ↑</div> <div>W California Ave</div> <div> <div>2 (11) ↑</div> <div>1 (2) ↑</div> </div> </div>
9 Pajaro Ave / Shirley Ave	10 N Mary Ave / Central Expwy	11 SR-237 EB Ramps/E Middlefield Rd	12 SR-237 WB Ramps/E Middlefield Rd
<div> <div>6 (1) ↑</div> <div>Shirley Ave</div> <div> <div>Pajaro Ave</div> <div>2 (0) ↑</div> </div> </div>	<div> <div>1 (0) ↑</div> <div>Central Expwy</div> <div> <div>N Mary Ave</div> <div>6 (1) ↑</div> <div>4 (1) ↑</div> </div> </div>	<div> <div>1 (2) ↑</div> <div>E Middlefield Rd</div> <div> <div>SR-237 EB Off Ramp</div> <div>1 (0) ↑</div> </div> </div>	<div> <div>SR-237 WB Off Ramp</div> <div>0 (1) ↑</div> <div>1 (2) ↑</div> <div>E Middlefield Rd</div> </div>
13 Mary Ave / W Maude Ave	14 SR-237 Ramps / W Maude Ave	XX(YY) - AM(PM) Peak Hour Volumes	
<div> <div>3 (0) ↑</div> <div>Mary Ave</div> <div> <div>W Maude Ave</div> <div>1 (2) ↑</div> </div> </div>	<div> <div>SR-237 WB Ramp</div> <div>1 (2) ↑</div> <div>SR-237 EB Ramp</div> </div>		

Figure 5-2 Project Only Traffic Volumes

15 N Mathilda Ave / Indio Way	16 Sobrante Way / Project Driveway	17 N Pastoria Ave / Project Driveway2	18 N Mathilda Ave / Ross Dr
<div> <div>↓ 25 (4)</div> <div>↘ 6 (1)</div> <div>Indio Way</div> </div> <div> <div>N Mathilda Ave</div> <div>↑ 5 (23)</div> </div>	<div> <div>↖ 2 (0)</div> <div>Project Driveway1</div> </div> <div> <div>1 (3) ↗</div> <div>↘ 6 (32)</div> <div>Sobrante Way</div> <div>↗ 38 (6)</div> </div>	<div> <div>↖ 1 (6)</div> <div>↘ 2 (8)</div> <div>Project Driveway2</div> </div> <div> <div>8 (1) →</div> <div>N Pastoria Ave</div> <div>↗ 6 (1)</div> </div>	<div> <div>↓ 6 (1)</div> <div>Ross Dr</div> </div> <div> <div>N Mathilda Ave</div> <div>↑ 1 (5)</div> </div>
19 N Mathilda Ave / SR-237 EB Ramps	20 N Mathilda Ave / SR-237 WB Ramps	XX(YY) - AM(PM) Peak Hour Volumes	
<div> <div>↓ 6 (1)</div> <div>SR-237 EB Ramps</div> </div> <div> <div>N Mathilda Ave</div> <div>↗ 1 (5)</div> </div>	<div> <div>↘ 6 (1)</div> <div>SR-237 WB Ramps</div> </div> <div> <div>N Mathilda Ave</div> </div>		

Figure 5-2 Project Only Traffic Volumes (cont'd)

Figure 5-3 Existing + Project Traffic Volumes

<div>15</div> <div>N Mathilda Ave / Indio Way</div> <table><tr><td><div>↑ 84 (77)</div><div>↓ 907 (2586)</div><div>↵ 20 (52)</div></td><td><div>↑ 399 (85)</div><div>↑ 12 (0)</div><div>↵ 162 (78)</div><div>Indio Way</div></td></tr><tr><td><div>10 (45) ↑</div><div>1 (0) ↓</div><div>197 (405) ↵</div><div>N Mathilda Ave</div></td><td><div>↵ 96 (27)</div><div>↑ 1972 (1031)</div><div>↵ 103 (111)</div></td></tr></table>	<div>↑ 84 (77)</div> <div>↓ 907 (2586)</div> <div>↵ 20 (52)</div>	<div>↑ 399 (85)</div> <div>↑ 12 (0)</div> <div>↵ 162 (78)</div> <div>Indio Way</div>	<div>10 (45) ↑</div> <div>1 (0) ↓</div> <div>197 (405) ↵</div> <div>N Mathilda Ave</div>	<div>↵ 96 (27)</div> <div>↑ 1972 (1031)</div> <div>↵ 103 (111)</div>	<div>16</div> <div>Sobrante Way / Project Driveway</div> <table><tr><td><div>↑ 9 (1)</div><div>↓ 77 (90)</div><div>↵ 2 (0)</div></td><td><div>↑ 0 (3)</div><div>↵ 0 (1)</div><div>Project Driveway1</div></td></tr><tr><td><div>4 (9) ↑</div><div>0 (2) ↓</div><div>11 (40) ↵</div><div>Sobrante Way</div></td><td><div>↵ 55 (11)</div><div>↑ 69 (488)</div><div>↵ 2 (1)</div></td></tr></table>	<div>↑ 9 (1)</div> <div>↓ 77 (90)</div> <div>↵ 2 (0)</div>	<div>↑ 0 (3)</div> <div>↵ 0 (1)</div> <div>Project Driveway1</div>	<div>4 (9) ↑</div> <div>0 (2) ↓</div> <div>11 (40) ↵</div> <div>Sobrante Way</div>	<div>↵ 55 (11)</div> <div>↑ 69 (488)</div> <div>↵ 2 (1)</div>	<div>17</div> <div>N Pastoria Ave / Project Driveway</div> <table><tr><td><div>↑ 0 (1)</div><div>↓ 3 (2)</div></td><td><div>↑ 1 (7)</div><div>↵ 2 (11)</div><div>Project Driveway2</div></td></tr><tr><td><div>0 (1) ↑</div><div>9 (2) ↓</div><div>9 (9) ↵</div><div>N Pastoria Ave</div></td><td><div>↵ 10 (11)</div><div>↑ 1 (0)</div><div>↵ 10 (4)</div></td></tr></table>	<div>↑ 0 (1)</div> <div>↓ 3 (2)</div>	<div>↑ 1 (7)</div> <div>↵ 2 (11)</div> <div>Project Driveway2</div>	<div>0 (1) ↑</div> <div>9 (2) ↓</div> <div>9 (9) ↵</div> <div>N Pastoria Ave</div>	<div>↵ 10 (11)</div> <div>↑ 1 (0)</div> <div>↵ 10 (4)</div>	<div>18</div> <div>N Mathilda Ave / Ross Dr</div> <table><tr><td><div>↑ 95 (54)</div><div>↓ 742 (1923)</div><div>↵ 27 (190)</div></td><td><div>↑ 175 (71)</div><div>↑ 29 (4)</div><div>↵ 185 (125)</div><div>Ross Dr</div></td></tr><tr><td><div>26 (70) ↑</div><div>3 (39) ↓</div><div>39 (129) ↵</div><div>N Mathilda Ave</div></td><td><div>↵ 115 (59)</div><div>↑ 2118 (935)</div><div>↵ 79 (323)</div></td></tr></table>	<div>↑ 95 (54)</div> <div>↓ 742 (1923)</div> <div>↵ 27 (190)</div>	<div>↑ 175 (71)</div> <div>↑ 29 (4)</div> <div>↵ 185 (125)</div> <div>Ross Dr</div>	<div>26 (70) ↑</div> <div>3 (39) ↓</div> <div>39 (129) ↵</div> <div>N Mathilda Ave</div>	<div>↵ 115 (59)</div> <div>↑ 2118 (935)</div> <div>↵ 79 (323)</div>
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<div>0 (1) ↑</div> <div>9 (2) ↓</div> <div>9 (9) ↵</div> <div>N Pastoria Ave</div>	<div>↵ 10 (11)</div> <div>↑ 1 (0)</div> <div>↵ 10 (4)</div>																		
<div>↑ 95 (54)</div> <div>↓ 742 (1923)</div> <div>↵ 27 (190)</div>	<div>↑ 175 (71)</div> <div>↑ 29 (4)</div> <div>↵ 185 (125)</div> <div>Ross Dr</div>																		
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<div>19</div> <div>N Mathilda Ave / SR-237 EB Ramps</div> <table><tr><td><div>↓ 803 (2065)</div><div>↵ 49 (347)</div><div>SR-237 EB Ramps</div></td><td></td></tr><tr><td><div>811 (130) ↑</div><div>72 (132) ↵</div><div>N Mathilda Ave</div></td><td><div>↑ 1596 (480)</div><div>↵ 733 (646)</div></td></tr></table>	<div>↓ 803 (2065)</div> <div>↵ 49 (347)</div> <div>SR-237 EB Ramps</div>		<div>811 (130) ↑</div> <div>72 (132) ↵</div> <div>N Mathilda Ave</div>	<div>↑ 1596 (480)</div> <div>↵ 733 (646)</div>	<div>20</div> <div>N Mathilda Ave / SR-237 WB Ramps</div> <table><tr><td><div>↑ 99 (558)</div><div>↓ 277 (1939)</div></td><td><div>↑ 273 (39)</div><div>↑ 36 (31)</div><div>↵ 537 (542)</div><div>SR-237 WB Ramps</div></td></tr><tr><td></td><td><div>N Mathilda Ave</div><div>↵ 134 (86)</div><div>↑ 2340 (539)</div></td></tr></table>	<div>↑ 99 (558)</div> <div>↓ 277 (1939)</div>	<div>↑ 273 (39)</div> <div>↑ 36 (31)</div> <div>↵ 537 (542)</div> <div>SR-237 WB Ramps</div>		<div>N Mathilda Ave</div> <div>↵ 134 (86)</div> <div>↑ 2340 (539)</div>	<div>XX(YY) - AM(PM) Peak Hour Volumes</div>									
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	<div>N Mathilda Ave</div> <div>↵ 134 (86)</div> <div>↑ 2340 (539)</div>																		

Figure 5-3 Existing + Project Traffic Volumes (cont'd)



**Table 5-2 Comparison of Study Intersections LOS – Existing plus Project Conditions**

Intersection		Peak Hour	Existing Conditions				Existing + Project Conditions				Δ Delay	Δ Crit V/C	Δ Avg Crit delay	Impact ?
			LOS	Delay (sec)	Critical V/C	Avg Crit Delay (sec)	LOS	Delay (sec)	Critical V/C	Avg Crit Delay (sec)				
1	N Mathilda Ave / Almanor Ave - W Ahwanee Ave	AM	C	25.5	0.575	26.5	C	25.5	0.575	26.5	0.0	0.000	0.0	N
		PM	C	23.4	0.506	20	C	23.4	0.506	19.9	0.0	0.000	-0.1	N
2	N Mathilda Ave/San Aleso Ave	AM	A	7.4	0.603	7.6	A	7.5	0.604	7.7	0.1	0.001	0.1	N
		PM	B+	11.3	0.444	8.1	B+	11.3	0.445	8.1	0.0	0.001	0.0	N
3	N Mathilda Ave/W Maude Ave (CMP)	AM	C-	33.3	0.782	32.9	C-	33.3	0.783	32.9	0.0	0.001	0.0	N
		PM	D	44.8	0.776	44.6	D	44.8	0.776	44.6	0.0	0.000	0.0	N
4	N Mathilda Ave/W California Ave	AM	C	28.4	0.604	22.3	C	29.1	0.608	22.8	0.7	0.004	0.5	N
		PM	C-	33.2	0.866	34.1	C-	33.9	0.872	34.9	0.7	0.006	0.8	N
5	Sobrante Way/W California Ave*	AM	A	9.2	0.357	9.2	A	9.2	0.362	9.2	0.0	0.005	0.0	N
		PM	B	12.7	0.536	12.7	B	13.3	0.555	13.3	0.6	0.019	0.6	N
6	N Pastoria Ave / W California Ave*	AM	B	11.0	0.020	2.4	B	2.4	0.034	2.4	-8.6	0.014	0.0	N
		PM	C	16.7	0.020	4.2	C	4.4	0.161	4.4	-12.3	0.141	0.2	N
7	Pajaro Ave/W California Ave*	AM	B	14.0	0.120	3.9	B	4	0.122	4	-10	0.002	0.1	N
		PM	B	14.1	0.050	3.1	B	3.2	0.069	3.2	-10.9	0.019	0.1	N
8	N Mary Ave/W California Ave	AM	C	24.4	0.448	21.3	C	24.8	0.45	21.9	0.4	0.002	0.6	N
		PM	C	25.9	0.448	37.4	C	26.1	0.45	37.6	0.2	0.002	0.2	N
9	Pajaro Ave/Shirley Ave*	AM	A	8.9	0.020	2.5	A	9.0	0.02	2.9	0.1	0	0.4	N
		PM	A	8.9	0.010	1.8	A	9.0	0.021	2.4	0.1	0.011	0.6	N
10	N Mary Ave/Central Expwy (CMP)	AM	D	51	0.367	45.4	D-	51	0.369	45.4	0.0	0.002	0.0	N
		PM	E-	75	0.869	91.2	E-	75.1	0.872	91.3	0.1	0.003	0.1	N
11	E Middlefield Rd/SR 237 EB Off-Ramps	AM	C+	23	0.381	25.7	C	25.7	0.393	26.2	2.7	0.012	0.5	N
		PM	C+	21.7	0.488	28.8	C+	21.7	0.488	28.8	0.0	0.000	0.0	N
12	E Middlefield Rd/SR 237 WB On-Ramps	AM	C+	21.9	0.571	19.5	C+	21.9	0.571	19.5	0.0	0.000	0.0	N
		PM	C+	22	0.493	23.5	C+	22	0.494	23.6	0.0	0.001	0.1	N
13	N Mary Ave/W Maude Ave	AM	C	28.6	0.396	26.9	C	28.6	0.397	27	0.0	0.001	0.1	N
		PM	D+	38.5	0.615	40	D+	38.5	0.615	40.1	0.0	0.000	0.1	N

Intersection		Peak Hour	Existing Conditions				Existing + Project Conditions				Δ Delay	Δ Crit V/C	Δ Avg Crit delay	Impact ?
			LOS	Delay (sec)	Critical V/C	Avg Crit Delay (sec)	LOS	Delay (sec)	Critical V/C	Avg Crit Delay (sec)				
14	W Maude Ave/SR 237 Ramps	AM	C	25.2	0.382	25.2	C	25.2	0.384	25.2	0.0	0.002	0.0	N
		PM	C	30.3	0.568	31.3	C	30.3	0.568	31.3	0.0	0.000	0.0	N
15	N Mathilda Ave/Indio Way	AM	D	42.7	0.818	43.9	D	43	0.823	44.3	0.3	0.005	0.4	N
		PM	C	31.1	0.838	33.5	C	31	0.838	33.6	-0.1	0.000	0.1	N
16	Sobrante Way/Project Driveway1*	AM	A	9.3	0.010	1.3	A	2.7	0.051	2.7	-6.6	0.041	1.4	N
		PM	B	12.4	0.010	0.6	B	1.3	0.06	1.3	-11.1	0.05	0.7	N
17	N Pastoria Ave/Project Driveway2*	AM	A	6.1	0.016	6.1	A	5.5	0.016	5.5	-0.6	0.000	-0.6	N
		PM	A	6.3	0.019	6.3	A	5.8	0.02	5.8	-0.5	0.001	-0.5	N
18	N Mathilda Ave/Ross Dr	AM	B	16.1	0.770	14.4	B	16.1	0.770	17.0	0.0	0.000	2.6	N
		PM	D+	35.3	0.910	29.7	D+	35.3	0.910	29.8	0.0	0.000	0.1	N
19	N Mathilda Ave/SR 237 EB Ramps	AM	D	49.8	0.740	38.7	D	49.8	0.740	38.6	0.0	0.000	-0.1	N
		PM	C	25.0	0.870	22.6	C	25.2	0.870	22.6	0.2	0.000	0.0	N
20	N Mathilda Ave/SR 237 WB Ramps	AM	B-	19.7	0.900	16.1	B-	19.8	0.900	16.3	0.1	0.000	0.2	N
		PM	<b>F</b>	<b>&gt;80</b>	<b>0.900</b>	<b>116.5</b>	<b>F</b>	<b>&gt;80</b>	<b>1.14</b>	<b>116.5</b>	0.0	0.24	0.0	N

\* LOS and delay reported for worst movement for unsignalized intersections  
Deficient operations are indicated in **bold**  
Source: AECOM, 2017

**Table 5-3 Project Volumes on Freeway Segments**

Freeway	Segment	Direction	Lanes (Mixed)	Capacity (vph)	Peak Hour	LOS	Density (pc/mi/ln)	Project Trips	Impact Percent
US 101	Between N Fair Oaks Avenue and N Mathilda Avenue	NB	3	6,900	AM	<b>F</b>	<b>59</b>	<b>8</b>	0.12
					PM	D	28	1	
		SB	3	6,900	AM	D	34	2	
					PM	D	43	7	
	Between N Mathilda Avenue and SR-237	NB	3	6,900	AM	D	40	2	
					PM	C	26	1	
		SB	3	6,900	AM	C	23	8	
					PM	D	31	1	
SR 237	Between Central Expressway and Maude Avenue	EB	2	4,400	AM	D	45	0	
					PM	C	23	0	
		WB	2	4,400	AM	D	30	0	
					PM	<b>F</b>	<b>77</b>	<b>2</b>	0.05
	Between Maude Ave and US 101	EB	2	4,400	AM	D	29	1	
					PM	D	38	0	
		WB	2	4,400	AM	D	31	3	
					PM	E	56	2	
	Between US 101 and N Mathilda Avenue	EB	2	4,400	AM	D	38	1	
					PM	<b>F</b>	<b>96</b>	<b>0</b>	0.00
		WB	2	4,400	AM	D	45	3	
					PM	D	33	2	
	Between N Mathilda Avenue and Fair Oaks Avenue / Java Dr	EB	2	4,400	AM	D	43	1	
					PM	<b>F</b>	<b>98</b>	<b>5</b>	0.11
		WB	3	6,900	AM	E	56	6	
					PM	<b>F</b>	<b>83</b>	<b>1</b>	0.01

Deficient operations are indicated in **bold**

Source: Santa Clara County Annual Monitoring and conformance Report, 2014  
AECOM, 2017

**Table 5-4 Project Volumes on Freeway Ramps**

Ramp	Capacity (vph)	Existing Volumes		Existing V/C		Existing plus Project Volumes		Existing plus Project V/C		Δ in V/C	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
US 101 SB on ramp from NB Mathilda Ave	1,800	480	442	0.27	0.25	482	449	0.27	0.25	0.00	0.00
US 101 NB on ramp from NB Mathilda Ave	1,800	286	294	0.16	0.16	288	301	0.16	0.16	0.00	0.00
US 101 NB off ramp to NB Mathilda Ave	2,000	487	105	0.24	0.05	487	105	0.24	0.05	0.00	0.00
US 101 NB off ramp to SB Mathilda Ave	1,800	730	719	0.41	0.40	730	720	0.41	0.40	0.00	0.00
US 101 SB on ramp from SB Mathilda Ave	1,800	122	548	0.07	0.30	122	548	0.07	0.30	0.00	0.00
US 101 SB off ramp to SB Mathilda Ave	2000	340	488	0.17	0.24	348	489	0.17	0.24	0.00	0.00

SR 237 WB on ramp from Middlefield Rd / Maude Ave	2000	253	710	0.13	0.36	254	712	0.13	0.36	0.00	0.00
SR 237 EB off ramp to Middlefield Rd / Maude Ave	2000	764	358	0.38	0.18	767	358	0.38	0.18	0.00	0.00
SR 237 WB off ramp to Maude Ave / Middlefield Rd	2000	888	615	0.44	0.31	888	615	0.44	0.31	0.00	0.00
SR 237 EB on ramp from Maude Ave / Middlefield Rd	2000	334	761	0.17	0.38	335	763	0.17	0.38	0.00	0.00

Source: AECOM, 2017

directions) on which VTA Service 54 runs, is no more than 1.5 seconds at each intersection. VTA Service 32, which runs along Middlefield Road and parts of N Mathilda Avenue is expected to experience not more than 1.5 seconds of delay due to the project trips except at the intersection of Middlefield Road and SR 237 EB Off-Ramp (intersection 311). At this intersection, the eastbound delay in the morning is expected to increase by about 19 seconds. However, this is still considered negligible compared to the entire journey of the bus service. As such, the project is not expected to adversely impact the transit services as well. **Table 5-5** summarizes the movement delays through the intersections along the routes of lines 54 and 32 within the study area. In addition, the project is not expected to conflict with the planned transit facilities and is expected to provide adequate facilities for pedestrians and bicyclists to access transit routes and stops.

**Table 5-5 Transit Impact Analysis - Existing plus Project Conditions**

Line	Intersection		Direction/ Movement	Existing Delay (sec)		Existing plus Project Delay (sec)		$\Delta$ Delay (sec)	
				AM	PM	AM	PM	AM	PM
54	20	N Mathilda Ave / SR 237 WB Ramps	NB/THRU	11.3	0.7	11.4	0.7	0.1	0.0
			SB/THRU	14.2	120.9	14.3	120.9	0.1	0.0
	19	N Mathilda Ave / SR 237 EB Ramps	NB/THRU	11.3	9.5	11.3	9.5	0.0	0.0
			SB/THRU	13.5	4.5	13.5	4.5	0.0	0.0
54	18	N Mathilda Ave / Ross Dr	NB/THRU	16.8	13.1	16.9	13.1	0.1	0
			SB/THRU	3.0	39.5	3.1	39.7	0.1	0.2
	1	N Mathilda Ave / W Ahwanee Ave–Almanor Ave	NB/THRU	20.5	24.7	20.5	24.5	0.0	-0.2
			SB/THRU	20.3	15.9	20.3	15.9	0.0	0.0
	2	N Mathilda Ave / San Aleso Ave	NB/THRU	5.1	12.1	5.1	12.0	0.0	-0.1
			SB/THRU	6.0	5.8	5.9	5.8	-0.1	0.0
	3	W Maude Ave / N Mathilda Ave	NB/THRU	24.4	47.1	24.4	47.0	0.0	-0.1
			SB/THRU	30.1	42.1	30.2	42.0	0.1	-0.1
	15	N Mathilda Ave / Indio Way	NB/THRU	42.6	21.9	43.1	21.8	0.5	-0.1
			SB/THRU	42.7	28.2	42.8	28.2	0.1	0.0
	4	N Mathilda Ave / W California Ave	NB/THRU	15.4	25.7	15.8	26.0	0.4	0.3
			SB/THRU	29.0	24.8	30.4	25.5	1.4	0.7
32	11	E Middlefield Rd / SR 237 EB Off-Ramp	EB/THRU	11.7	9.9	30.6	9.9	18.9	0.0
			WB/THRU	26.3	26.0	25.8	26.0	-0.5	0.0

Line	Intersection		Direction/ Movement	Existing Delay (sec)		Existing plus Project Delay (sec)		$\Delta$ Delay (sec)	
				AM	PM	AM	PM	AM	PM
32	12	E Middlefield Rd / SR 237 WB On-Ramp	EB/THRU	31.1	20.2	31.1	20.2	0.0	0.0
			WB/THRU	18.8	10.9	18.8	10.9	0.0	0.0
	10	N Mary Ave / Central Expwy (CMP)	EB/THRU	32.2	52.4	32.3	52.4	0.1	0.0
			WB/THRU	42.9	30.3	42.9	30.3	0.0	0.0
	15	N Mathilda Ave / Indio Way	EB/RIGHT	29.6	61.6	29.4	61.7	-0.2	0.1
	4	N Mathilda Ave / W California Ave	EB/LEFT	85.7	70.5	84.7	71.9	-1.0	1.4

Source: AECOM, 2017

### 5.5 Existing plus Project Traffic Conditions - Pedestrian and Bicycle Facilities Impacts

The project will not be improving existing sidewalks on the west side of N Pastoria Avenue but will provide short sections of new sidewalk east of N Pastoria Avenue and west of Sobrante Way, adjacent to the project accesses. Based on observation of the current usage, the existing sidewalks and crosswalks in the project vicinity are expected to accommodate the usage under the 'plus project' conditions.

Similarly, based on the observations of current usage, the existing bicycle facilities in the project vicinity presented earlier would be sufficient to meet the expected demand of the proposed project. The proposed project does not appear to impact the safety of the cyclists or have any hazardous design features impeding the use of bicycles. Therefore, the project is expected to have a less-than-significant impact on pedestrians and bicyclists.

While the project is not expected to add significant amount of pedestrian or bicycle traffic at the intersection of W California Avenue and Pajaro Avenue, it is still recommended that the provision of new marked crosswalks be considered to enhance safety in the project vicinity as a result of the field observation. It is recommended that new marked crosswalks be provided along both legs of Pajaro Avenue to encourage and channelize pedestrians to cross at the intersection where vehicles are required to stop due to the stop control. In addition, it is recommended that a Rectangle Rapid Flashing Beacon (RRFB) and a marked crosswalk along W California Ave be installed on the west side of the intersection to facilitate park users crossing W California Avenue. Apart from channelizing pedestrians to cross at the intersection, the RRFB will also make the intersection more pronounced for drivers along both approaches of W California Ave. The graphical representation of the proposal is presented in **Appendix E**.

### 5.6 Existing plus Project Traffic Conditions - Queuing Impacts

Left-turn queuing analysis was conducted for study intersections that have turning pockets for project trips using the Traffix software, which is based on the HCM 2000 Methodology. The 95<sup>th</sup> percentile queue length under the Existing plus Project Traffic conditions was compared with the existing left-turn storage lengths to identify if there is any queue that spills back out of the turn pockets. A typical vehicle length of 25 feet was used for the queuing analysis. An operational deficiency is assumed to occur if the queue increases by one or more vehicles and if the queue exceeds the turn pocket length. Summary of the queuing results is provided in the **Appendix F**.

**Table 5-6** summarizes the queues under the existing plus project conditions. Existing left-turn queue at several intersections already exceeds the storage lane provide during one or both peak hours. With project, the queue is expected to increase by less than one vehicle at all the locations with the exception of the N Mathilda Avenue / W California Avenue intersection. At this intersection, the EBL queue, which already exceeds the storage lane without project, is expected to increase by 65 feet during the PM peak hour which is the length of approximately three cars. However, it should be noted that the queue spill back is a pre-existing deficiency at this intersection. To accommodate the projected queue length, it would require extension of the EB left-turn storage pocket or installation of the Mathilda Avenue Signal Interconnect project. It is possible to extend the EB left-turn pocket along California Avenue by approximately 125 feet to accommodate more vehicles (see Appendix G). However, this would also require shortening the WB right-turn pocket at the intersection of California Avenue and Sobrante Way. In addition, the proposed modification will still not be sufficient to meet the 95<sup>th</sup> percentile queuing demand of the PM peak hour. On the other hand, the City is proposing to implement a fully coordinated and interconnected managed system along Mathilda Avenue to improve signal operations and vehicle progression. This improvement would alleviate the queuing issue for the eastbound left-turn movement at this intersection, and the proposed project should contribute towards the City's TIF.

**Table 5-6 Queuing Analysis – Existing plus Project Conditions**

Intersection		Storage Length (ft)	Movement	Existing*		Existing plus Project*	
				AM Peak Hour (ft)	PM Peak Hour (ft)	AM Peak Hour (ft)	PM Peak Hour (ft)
3	W Maude Ave/N Mathilda Ave	271	WBL	336	308	342	371
4	N Mathilda Ave/W California Ave	358	NBL	328	347	346	352
		187	EBL	<b>235</b>	<b>361</b>	<b>251</b>	<b>426</b>
5	Sobrante Way/W California Ave*	245	EBL	0.7	7.3	0.7	7.5
8	N Mary Ave/W California Ave	195	SBL	95	<b>453</b>	109	<b>455</b>
		76	WBL	<b>266</b>	<b>267</b>	<b>269</b>	<b>271</b>
10	N Mary Ave/Central Expwy (CMP)	275	NBL	<b>971</b>	<b>401</b>	<b>976</b>	<b>421</b>
		223	SBL	95	<b>747</b>	97	<b>747</b>
11	N Mathilda Ave/SR 237 Ramps	126	SBL	<b>157</b>	<b>276</b>	<b>157</b>	<b>276</b>
13	N Mary Ave/W Maude Ave	215	NBL	<b>282</b>	116	<b>283</b>	119
14	W Maude Ave/SR 237 Ramps	170	EBL	29	<b>263</b>	29	<b>264</b>
20	N Mathilda Ave/SR 237 WB Ramps	341	WBL	289	275	292	275

\*Average Queue.

Queue exceeding storage lane is **bold**

Addition of more than one project vehicle to queue is highlighted

Source: AECOM, 2017

## 5.7 Parking, Site Access and Circulation Analysis

**Table 5-7** presents the parking evaluation for the proposed project. Based on the proposed Peery Park Specific Plan (PPSP) parking requirement, PPSP office development requires a minimum provision of 3.3 spaces per 1000 square feet that translates into a minimum of 402 spaces for this project. As such, the 359 spaces proposed by the project do not meet the minimum requirement. Parking along the streets in the project vicinity will not be available after implementation of PPSP street improvements. Therefore, the development would need to provide the minimum number of parking spaces on-site required by the City. However, the PPSP allows consideration of reduced parking requirements based on shared parking, a parking demand analysis, mixed-use, or a TDM plan (PPSP Parking Regulations).

**Table 5-7 Parking Provision**

Land Use	Size	Project Supply	PPSP Requirement			
			Min		Max	
Office	60,858 sf	359	3.3 / 1000 sf	201	4 / 1000 sf	244
R&D	60,858 sf		3.3 / 1000 sf	201	4 / 1000 sf	244
Total				402		488

The project will provide 18 carpool/vanpool parking space. This number is two spaces short of the required number based on the required total parking spaces of 402 (5% of 402 = 20 spaces). Similarly, the provision of electric vehicle charging space at 11 spaces is 1 space short of the required 12 spaces (3% of 402 spaces). While the PPSP stipulates that the project must provide TDM measures to reduce the number of trips generated which translates to potentially lower parking needs, the details of the TDM program are not known at this point and the level of parking reduction cannot be ascertained. As such, the project should still provide the minimum number of parking spaces required to ensure that there is no spill over to the adjacent streets. In addition, with the potential of limiting parking in the residential areas near the project site, the project would need to provide parking for its users by meeting at least the minimum City's requirement.

Based on the City of Sunnyvale's bicycle parking requirements, the project should provide at least 20 (five percent of the required parking spaces) bicycle parking spaces with at least 15 'secured' parking (Class I) spaces. The project is planning to provide the required 20 bicycle parking spaces made up of 15 Class I spaces and 5 Class II spaces. As such, the bicycle parking requirement is met.

There will be two access points for the project site; one each on Sobrante Way and N Pastoria Avenue. These driveways allow for all movements turning in and out of the site as both roadways are undivided. The driveway on N Pastoria Avenue will lead directly to the parking garage and driveway on Sobrante Way will provide easy access to the main building and surface parking. The proposed driveway widths of 24 feet and 25 feet meet the City requirements and are sufficient for access by emergency vehicles as well. The proposed landscaping adjacent to the accesses is not expected to obstruct the sight distance of turning vehicles. It is recommended that on-street parking adjacent to the driveway along N Pastoria Avenue be prohibited to ensure that the sight distance is not compromised. Similarly, parking along Sobrante Way should be prohibited to enhance safety for motorists coming off of Central Expressway as well as to ensure that sight distance for the project access is not compromised. It should also be noted that the PPSP does not include on-street parking on both Sobrante Way and Pastoria Avenue adjacent to the project. (PPSP page 132-133)

The project site is conveniently located with easy access to freeway and major roadways in the city. Access to/ from US 101 is via the On-Ramps and Off-Ramps at N Mathilda Avenue, which is about one mile from the proposed development. Access to/from US 101 can also be via SR 237. SR 237 is about 1.5 miles from the project site with the nearest ramps at Middlefield Road (EB off ramp and WB on ramp) and Maude Avenue (EB on ramp and WB off ramp). Central Expressway acts as an alternative to US 101 for vehicles to/from the project site going west towards the City of Palo Alto or going east towards the City of Santa Clara. In addition, both N Mathilda Avenue and N Mary Avenue will carry project traffic to W Evelyn Avenue and El Camino Real. Sobrante Way connects the project site directly to Central Expressway, thereby making the site conveniently accessible.

## 5.8 Background plus Project Traffic Conditions – Intersection Operations

**Table 5-8** compares the intersection performance under the Background Conditions while **Figure 5-4** presents the volumes. It can be seen that all intersections would either operate within acceptable LOS or those already operating at LOS F without the Project, would operate without significant change in delay and V/C ratio. The project therefore has no significant impact on all the study intersections under this scenario. In addition, the peak hour signal warrant analysis showed that signalization is not warranted for the unsignalized intersections under the ‘plus project’ scenario. The details are presented in **Appendix G**.

## 5.9 Background plus Project Traffic Conditions – Queuing Analysis

Left-turn queuing analysis was conducted for the study intersections under the Existing plus Background plus Project Traffic conditions using the Traffix software, which is based on the HCM 2000 Methodology. The 95<sup>th</sup> percentile queue length was compared with the existing left-turn storage lengths to identify if there is any queue that spills back out of the turn pockets. A typical vehicle length of 25 feet was used for the queuing analysis. An operational deficiency is assumed to occur if the queue increases by one or more vehicles and if the queue exceeds the turn pocket length. Summary of the queueing results is provided in the **Appendix G**.

**Table 5-9** summarizes the queues under the Existing plus Background plus Project conditions. Under the Background without project scenario, the left-turn queue at several intersections already exceeds the storage lane provided during at least one peak hour. With project, the queue is expected to increase by less than one vehicle at all the locations with the exception of the N Mathilda Avenue / W California Avenue intersection. At this intersection, the EBL queue, which already exceeds the storage lane without project, is expected to increase by 64 feet during the PM peak hour which is the length of approximately three cars. However, it should be noted that the queue spill back is a pre-existing deficiency at this intersection. To accommodate the projected queue length, it would require extension of the EB left-turn storage pockets or installation of the Mathilda Avenue Signal Interconnect project. While it is possible to extend the left turn pocket by approximately 125 feet (see **Appendix H**) which results in the shortening of the WBR turn pocket at the adjacent intersection, it will still be insufficient to meet the 95<sup>th</sup> percentile queuing demand. The City, on the other hand, is proposing to implement a fully coordinated and interconnected managed system along Mathilda Avenue to improve signal operations and vehicle progression. This improvement would alleviate the queuing issue for the eastbound left-turn movement at this intersection and the proposed project should contribute towards the City’s TIF.



**Table 5-8 Comparison of Study Intersections LOS – Background plus Project Conditions**

Intersection		Peak Hour	Background Conditions				Background + Project Conditions				Δ Delay	Δ Crit V/C	Δ Avg Crit delay	Impact ?
			LOS	Delay (sec)	Critical V/C	Avg Crit Delay (sec)	LOS	Delay (sec)	Critical V/C	Avg Crit Delay (sec)				
1	N Mathilda Ave / Almanor Ave - W Ahwanee Ave	AM	C	27.1	0.658	33.6	C	27.1	0.658	33.5	0.0	0.000	-0.1	N
		PM	C	27.9	0.596	25.7	C	27.9	0.597	25.7	0.0	0.001	0.0	N
2	N Mathilda Ave/San Aleso Ave	AM	A	8.6	0.65	9.6	A	8.6	0.652	9.6	0.0	0.002	0.0	N
		PM	B	13.1	0.47	19.1	B	13	0.474	19.0	-0.1	0.004	-0.1	N
3	N Mathilda Ave/W Maude Ave (CMP)	AM	C-	34.1	0.831	34.7	C-	34.1	0.832	34.8	0.0	0.001	0.1	N
		PM	D	44.9	0.746	44.6	D	44.9	0.747	44.6	0.0	0.001	0.0	N
4	N Mathilda Ave/W California Ave	AM	C	31	0.636	26.8	C	31.6	0.64	27.3	0.6	0.004	0.5	N
		PM	C-	34.1	0.885	34.4	C-	34.8	0.891	35.3	0.7	0.006	0.9	N
5	Sobrante Way/W California Ave*	AM	A	9.2	0.359	9.2	A	9.3	0.364	9.3	0.1	0.005	0.1	N
		PM	B	13.2	0.557	13.2	B	13.8	0.584	13.8	0.6	0.027	0.6	N
6	N Pastoria Ave / W California Ave*	AM	B	2.4	0.034	2.4	B	2.4	0.034	2.4	0.0	0.000	0.0	N
		PM	C	4.2	0.161	4.2	C	4.4	0.161	4.4	0.2	0.000	0.2	N
7	Pajaro Ave/W California Ave*	AM	B	3.9	0.119	3.9	B	4	0.122	4.0	0.1	0.003	0.1	N
		PM	B	3.1	0.062	3.1	B	3.2	0.069	3.2	0.1	0.007	0.1	N
8	N Mary Ave/W California Ave	AM	C	24.4	0.448	21.3	C	24.8	0.45	21.9	0.4	0.002	0.6	N
		PM	C	25.9	0.448	37.4	C	26.1	0.45	37.6	0.2	0.002	0.2	N
9	Pajaro Ave/Shirley Ave*	AM	A	8.9	0.018	2.5	A	9.0	0.020	2.9	0.1	0.002	0.4	N
		PM	A	8.9	0.013	1.8	A	9.0	0.021	2.4	0.1	0.008	0.6	N
10	N Mary Ave/Central Expwy (CMP)	AM	D-	51.6	0.398	46.1	D-	51.7	0.400	46.1	0.1	0.002	0.0	N
		PM	E-	76.7	0.761	107	E-	76.8	0.761	106.9	0.1	0.000	-0.1	N
11	E Middlefield Rd/SR 237 EB Off- Ramps	AM	C	23	0.388	25.7	C	25.7	0.400	26.2	2.7	0.012	0.5	N
		PM	C+	21.7	0.489	28.8	C+	21.7	0.489	28.8	0.0	0.000	0.0	N
12	E Middlefield Rd/SR 237 WB On-Ramps	AM	C+	21.9	0.571	19.5	C+	21.9	0.571	19.5	0.0	0.000	0.0	N
		PM	C+	22.2	0.499	23.7	C+	22.2	0.500	23.7	0.0	0.001	0.0	N
13	N Mary Ave/W Maude Ave	AM	C	28.5	0.397	27	C	28.5	0.398	27.1	0.0	0.001	0.1	N
		PM	D	39	0.632	41	D	39	0.633	41.0	0.0	0.001	0.0	N

Intersection		Peak Hour	Background Conditions				Background + Project Conditions				Δ Delay	Δ Crit V/C	Δ Avg Crit delay	Impact ?
			LOS	Delay (sec)	Critical V/C	Avg Crit Delay (sec)	LOS	Delay (sec)	Critical V/C	Avg Crit Delay (sec)				
14	W Maude Ave/SR 237 Ramps	AM	C	25	0.396	25.3	C	25	0.398	25.4	0.0	0.002	0.1	N
		PM	C	30.5	0.568	31.2	C	30.4	0.568	31.2	-0.1	0.000	0.0	N
15	N Mathilda Ave/Indio Way	AM	D	47.6	0.894	50.7	D	48	0.899	51.4	0.4	0.005	0.7	N
		PM	C	31.8	0.871	34.7	C	31.8	0.872	34.8	0	0.001	0.1	N
16	Sobrante Way/Project Driveway1*	AM	A	1.3	0.016	1.3	A	2.7	0.051	2.7	1.4	0.035	1.4	N
		PM	B	0.6	0.023	0.6	B	1.3	0.060	1.3	0.7	0.037	0.7	N
17	N Pastoria Ave/Project Driveway2*	AM	A	6.1	0.016	6.1	A	5.5	0.016	5.5	-0.6	0.000	-0.6	N
		PM	A	6.3	0.019	6.3	A	5.8	0.020	5.8	-0.5	0.001	-0.5	N
18	N Mathilda Ave/Ross Dr	AM	B	16.3	0.770	14.7	B	16.3	0.770	14.8	0.0	0.000	0.1	N
		PM	D+	37.3	0.920	32.2	D	37.3	0.92	32.3	0.0	0.000	0.1	N
19	N Mathilda Ave/SR 237 EB Ramps	AM	D-	52.0	0.750	41.4	D	52.0	0.75	41.4	0.0	0.000	0.0	N
		PM	C	28.6	0.910	83.0	C	29.1	0.92	84.1	0.5	0.010	1.1	N
20	N Mathilda Ave/SR 237 WB Ramps	AM	C	24.5	0.930	19.7	C	25.0	0.93	20.0	0.5	0.000	0.3	N
		PM	<b>F</b>	<b>&gt;80</b>	<b>1.160</b>	<b>119.6</b>	<b>F</b>	<b>&gt;80</b>	<b>1.16</b>	<b>119.6</b>	0.0	0.000	0.0	N

\* LOS and delay reported for worst movement for unsignalized intersections

Deficient operations are indicated in **bold**

Source: AECOM, 2017

1 N Mathilda Ave / Almanor Ave		2 N Mathilda Ave / San Alesso Ave		3 N Mathilda Ave / W Maude Ave		4 N Mathilda Ave / W California Ave	
<div><div><div>↑ 604 (95)</div><div>↓ 1640 (2417)</div><div>↔ 93 (168)</div></div><div>Almanor Ave</div></div>		<div><div><div>↑ 287 (103)</div><div>↑ 70 (11)</div><div>↔ 55 (34)</div></div><div>Ahwanee Ave</div></div>		<div><div><div>↑ 48 (15)</div><div>↓ 1429 (2555)</div><div>↔ 107 (167)</div></div><div>San Alesso Ave</div></div>		<div><div><div>↑ 309 (444)</div><div>↓ 940 (3326)</div><div>↔ 71 (212)</div></div><div>W California Ave</div></div>	
<div><div><div>↑ 115 (513)</div><div>→ 10 (100)</div><div>↓ 32 (97)</div></div><div>N Mathilda Ave</div></div>		<div><div><div>↑ 9 (51)</div><div>→ 0 (9)</div><div>↓ 7 (28)</div></div><div>N Mathilda Ave</div></div>		<div><div><div>↑ 122 (383)</div><div>→ 102 (492)</div><div>↓ 67 (610)</div></div><div>N Mathilda Ave</div></div>		<div><div><div>↑ 82 (161)</div><div>→ 5 (180)</div><div>↓ 140 (355)</div></div><div>N Mathilda Ave</div></div>	
5 Sobrante Way / W California Ave		6 N Pastoria Ave / W California Ave		7 Pajaro Ave / W California Ave		8 N Mary Ave / W California Ave	
<div><div><div>↑ 11 (13)</div><div>↓ 15 (3)</div><div>↔ 91 (133)</div></div><div>W California Ave</div></div>		<div><div><div>↑ 15 (15)</div><div>↓ 3 (8)</div><div>↔ 11 (49)</div></div><div>W California Ave</div></div>		<div><div><div>↑ 40 (48)</div><div>↓ 0 (1)</div><div>↔ 13 (20)</div></div><div>W California Ave</div></div>		<div><div><div>↑ 12 (62)</div><div>↓ 420 (1568)</div><div>↔ 48 (292)</div></div><div>W California Ave</div></div>	
<div><div><div>↑ 18 (127)</div><div>→ 109 (304)</div><div>↓ 6 (8)</div></div><div>Sobrante Way</div></div>		<div><div><div>↑ 7 (7)</div><div>→ 106 (219)</div><div>↓ 7 (11)</div></div><div>N Pastoria Ave</div></div>		<div><div><div>↑ 48 (53)</div><div>→ 152 (180)</div><div>↓ 5 (32)</div></div><div>Pajaro Ave</div></div>		<div><div><div>↑ 76 (38)</div><div>→ 7 (17)</div><div>↓ 13 (13)</div></div><div>N Mary Ave</div></div>	
9 Pajaro Ave / Shirley Ave		10 N Mary Ave / Central Expwy		11 SR-237 EB Ramps/E Middlefield Rd		12 SR-237 WB Ramps/E Middlefield Rd	
<div><div><div>↑ 25 (28)</div><div>↓ 13 (9)</div></div><div>Shirley Ave</div></div>		<div><div><div>↑ 130 (252)</div><div>↓ 115 (914)</div><div>↔ 63 (431)</div></div><div>Central Expwy</div></div>		<div><div><div>↑ 122 (251)</div><div>↑ 874 (301)</div></div><div>E Middlefield Rd</div></div>		<div><div><div>↑ 437 (296)</div><div>↓ 148 (388)</div><div>↔ 166 (240)</div></div><div>SR 237 WB Off Ramp</div></div>	
<div><div><div>↑ 12 (13)</div><div>↔ 17 (13)</div></div><div>Pajaro Ave</div></div>		<div><div><div>↑ 314 (23)</div><div>↑ 2275 (1476)</div><div>↔ 219 (789)</div></div><div>N Mary Ave</div></div>		<div><div><div>↑ 272 (494)</div><div>→ 359 (918)</div></div><div>SR 237 EB Off Ramp</div></div>		<div><div><div>↑ 1015 (252)</div><div>↔ 145 (157)</div></div><div>E Middlefield Rd</div></div>	
13 Mary Ave / W Maude Ave		14 SR-237 Ramps / W Maude Ave					
<div><div><div>↑ 35 (73)</div><div>↓ 62 (443)</div><div>↔ 37 (149)</div></div><div>W Maude Ave</div></div>		<div><div><div>↑ 315 (73)</div><div>↓ 545 (350)</div><div>↔ 205 (156)</div></div><div>SR-237 WB Ramp</div></div>					
<div><div><div>↑ 235 (65)</div><div>↑ 462 (336)</div><div>↔ 158 (406)</div></div><div>Mary Ave</div></div>		<div><div><div>↑ 121 (286)</div><div>↑ 229 (79)</div><div>↔ 256 (411)</div></div><div>W Maude Ave</div></div>					
<div><div><div>↑ 54 (36)</div><div>→ 315 (563)</div><div>↓ 118 (454)</div></div><div>Mary Ave</div></div>		<div><div><div>↑ 14 (214)</div><div>→ 41 (347)</div><div>↓ 14 (128)</div></div><div>SR-237 EB Ramp</div></div>					
		<div><div><div>↑ 72 (11)</div><div>↑ 238 (360)</div><div>↓ 325 (400)</div></div><div>SR-237 WB Off Ramp</div></div>					
XX(YY) - AM(PM) Peak Hour Volumes							

Figure 5-4 Background plus Project Traffic Volumes

<div>15 N Mathilda Ave / Indio Way</div> <table><tr><td><div>↑ 99 (92) ↓ 1051 (3054) ↱ 24 (58)</div></td><td><div>↑ 569 (115) ↑ 14 (0) ↱ 192 (100)</div><div>Indio Way</div></td></tr><tr><td><div>15 (47) ↱ 2 (0) → 298 (426) ↱</div></td><td><div>N Mathilda Ave 104 (29) ↱ 2248 (1103) ↑ 112 (118) ↱</div></td></tr></table>	<div>↑ 99 (92) ↓ 1051 (3054) ↱ 24 (58)</div>	<div>↑ 569 (115) ↑ 14 (0) ↱ 192 (100)</div> <div>Indio Way</div>	<div>15 (47) ↱ 2 (0) → 298 (426) ↱</div>	<div>N Mathilda Ave 104 (29) ↱ 2248 (1103) ↑ 112 (118) ↱</div>	<div>16 Sobrante Way / Project Driveway1</div> <table><tr><td><div>↑ 12 (1) ↓ 107 (111) ↱ 3 (0)</div></td><td><div>↑ 0 (6) ↱ 0 (2)</div><div>Project Driveway1</div></td></tr><tr><td><div>7 (12) ↱ 0 (3) → 16 (43) ↱</div></td><td><div>Sobrante Way 61 (11) ↱ 95 (525) ↑ 3 (1) ↱</div></td></tr></table>	<div>↑ 12 (1) ↓ 107 (111) ↱ 3 (0)</div>	<div>↑ 0 (6) ↱ 0 (2)</div> <div>Project Driveway1</div>	<div>7 (12) ↱ 0 (3) → 16 (43) ↱</div>	<div>Sobrante Way 61 (11) ↱ 95 (525) ↑ 3 (1) ↱</div>	<div>17 N Pastoria Ave / Project Driveway2</div> <table><tr><td><div>↑ 0 (4) ↓ 4 (8)</div></td><td><div>↑ 1 (6) ↱ 2 (8)</div><div>Project Driveway2</div></td></tr><tr><td><div>0 (1) ↱ 9 (2) → 11 (13) ↱</div></td><td><div>N Pastoria Ave 16 (19) ↱ 2 (0) ↑ 12 (6) ↱</div></td></tr></table>	<div>↑ 0 (4) ↓ 4 (8)</div>	<div>↑ 1 (6) ↱ 2 (8)</div> <div>Project Driveway2</div>	<div>0 (1) ↱ 9 (2) → 11 (13) ↱</div>	<div>N Pastoria Ave 16 (19) ↱ 2 (0) ↑ 12 (6) ↱</div>	<div>18 N Mathilda Ave / Ross Dr</div> <table><tr><td><div>↑ 100 (55) ↓ 781 (1962) ↱ 28 (194)</div></td><td><div>↑ 192 (80) ↑ 32 (4) ↱ 203 (140)</div><div>Ross Dr</div></td></tr><tr><td><div>35 (83) ↱ 4 (46) → 53 (154) ↱</div></td><td><div>N Mathilda Ave 124 (61) ↱ 2277 (964) ↑ 85 (333) ↱</div></td></tr></table>	<div>↑ 100 (55) ↓ 781 (1962) ↱ 28 (194)</div>	<div>↑ 192 (80) ↑ 32 (4) ↱ 203 (140)</div> <div>Ross Dr</div>	<div>35 (83) ↱ 4 (46) → 53 (154) ↱</div>	<div>N Mathilda Ave 124 (61) ↱ 2277 (964) ↑ 85 (333) ↱</div>
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<div>19 N Mathilda Ave / SR-237 EB Ramps</div> <table><tr><td><div>↓ 863 (2174) ↱ 53 (365)</div><div>SR-237 EB Ramps</div></td><td></td></tr><tr><td><div>922 (144) ↱ 82 (147) ↱</div></td><td><div>N Mathilda Ave 1663 (558) ↑ 764 (750) ↱</div></td></tr></table>	<div>↓ 863 (2174) ↱ 53 (365)</div> <div>SR-237 EB Ramps</div>		<div>922 (144) ↱ 82 (147) ↱</div>	<div>N Mathilda Ave 1663 (558) ↑ 764 (750) ↱</div>	<div>20 N Mathilda Ave / SR-237 WB Ramps</div> <table><tr><td><div>↑ 118 (620) ↓ 330 (2154)</div></td><td><div>↑ 294 (41) ↑ 39 (33) ↱ 577 (570)</div><div>SR-237 WB Ramps</div></td></tr><tr><td></td><td><div>N Mathilda Ave 140 (91) ↱ 2438 (567) ↑</div></td></tr></table>	<div>↑ 118 (620) ↓ 330 (2154)</div>	<div>↑ 294 (41) ↑ 39 (33) ↱ 577 (570)</div> <div>SR-237 WB Ramps</div>		<div>N Mathilda Ave 140 (91) ↱ 2438 (567) ↑</div>	<div>XX(YY) - AM(PM) Peak Hour Volumes</div>									
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	<div>N Mathilda Ave 140 (91) ↱ 2438 (567) ↑</div>																		

Figure 5-4 Background plus Project Traffic Volumes (cont'd)

Table 5-9 Queuing Analysis – Background plus Project Conditions

Intersection		Storage Length (ft)	Movement	Background*		Background plus Project*	
				AM Peak Hour (ft)	PM Peak Hour (ft)	AM Peak Hour (ft)	PM Peak Hour (ft)
3	W Maude Ave/N Mathilda Ave	271	WBL	343	380	350	380
4	N Mathilda Ave/W California Ave	358	NBL	330	288	347	293
		187	EBL	<b>257</b>	<b>358</b>	<b>272</b>	<b>422</b>
5	Sobrante Way/W California Ave*	245	EBL	0.7	7.4	0.7	7.6
8	N Mary Ave/W California Ave	195	SBL	95	<b>453</b>	109	<b>453</b>
		76	WBL	<b>266</b>	<b>267</b>	<b>269</b>	<b>271</b>
10	N Mary Ave/Central Expwy (CMP)	275	NBL	<b>968</b>	<b>395</b>	<b>973</b>	<b>414</b>
		223	SBL	97	<b>783</b>	99	<b>783</b>
11	N Mathilda Ave/SR 237 Ramps	126	SBL	<b>157</b>	<b>273</b>	<b>157</b>	<b>273</b>
13	N Mary Ave/W Maude Ave	215	NBL	<b>281</b>	116	<b>282</b>	119
14	W Maude Ave/SR 237 Ramps	170	EBL	29	<b>261</b>	29	<b>262</b>
20	N Mathilda Ave/SR 237 WB Ramps	341	WBL	334	283	336	283

\*Average Queue

Queue exceeding storage lane is **bold**

Addition of more than one project vehicle to queue is highlighted

Source: AECOM, 2017

## **6.0 CUMULATIVE CONDITIONS**

The project site is located within the Peery Park Specific Plan area as defined by the City of Sunnyvale. The Cumulative 2035 analysis for the Peery Park Specific Plan is used for the cumulative analysis for this project. The Cumulative analysis for the Peery Park Specific Plan assumes the proposed 2035 General Plan, which consists of the Lawrence Station Area Plan, the Peery Park Specific Plan, the Land Use and Transportation Element of the proposed General Plan, and Regional Growth. This project is required to pay their fair share towards the effort to alleviate cumulative impacts identified in the cumulative analysis of the Peery Park Specific Plan.

The Draft EIR for the Peery Park Specific Plan, currently under public comment period, identified intersections and freeway segments that would be operating at less than desirable levels (LOS E or F) in the future year of 2035.

As documented in the Peery Park Specific Plan DEIR, Peery Park would generate significant impacts at the following intersections listed below:

- Mary Avenue & Central Expressway – PM Peak Hour
- Lawrence Expressway & Cabrillo Avenue – AM & PM Peak Hours
- Lawrence Expressway & Benton Street– AM & PM Peak Hours
- Lawrence Expressway & Homestead Road – AM & PM Peak Hours
- Lawrence Expressway & Pruneridge Avenue – AM Peak Hour

Peery Park would also generate significant impacts at the following freeway segments listed below:

- US 101, northbound from 1-280 to Mathilda Avenue (AM Peak Hour)
- US 101, northbound from Shoreline Boulevard to Embarcadero Road (PM Peak Hour)
- US 101, southbound from Moffett Boulevard to Ellis Street, and from Mathilda Avenue to Oakland Road (PM Peak Hour)
- SR 237, eastbound from US 101 to Zanker Road, and from McCarthy Boulevard to 1-880 (PM Peak Hour)
- SR 237, westbound from 1-880 to First Street (AM Peak Hour)
- SR 237, westbound from First Street to Great America Parkway (AM & PM Peak Hours)
- SR 237, westbound from Fair Oaks Avenue to Mathilda Avenue and from Maude Avenue to SR 85 (PM Peak Hour)
- SR 85, northbound from De Anza Boulevard to El Camino Real (AM Peak Hour)
- SR 85, southbound from El Camino Real to Fremont Avenue, and from 1-280 to De Anza Boulevard (PM Peak Hour)
- SR 87, southbound from Skyport Drive to Taylor Street (PM Peak Hour)

Thus, this project is required to towards the City's TIF to facilitate implementing mitigation measures for the cumulative impacts listed above.

## **7.0 CONCLUSIONS**

This project is located at 265 Sobrante Way in the City of Sunnyvale, California. The proposal is to develop a new office and R&D building on an existing light industrial area. Having evaluated the current and future traffic conditions at the local intersections, freeway segments and ramps in the vicinity of the project, the study concludes that this proposed project would not lead to any significant traffic impacts although the project is expected to add approximately three cars to the deficient eastbound left queue at the N Mathilda Avenue / W California Avenue intersection. While it is possible to increase the EBL storage lane at this intersection, it will result in the shortening of the WBR turn storage at the California Avenue / Sobrante Way intersection. The project should, therefore, contribute towards the City's TIF to facilitate the implementation of the proposed signal interconnect project along Mathilda Avenue, which would alleviate the queuing issue for the eastbound left-turn movement at the Mathilda Avenue / W California Ave intersection. The project will also have to contribute towards the City's TIF for the efforts identified in the Peery Park Specific Plan EIR that will alleviate cumulative impacts.

In addition, the project is not expected to negatively impact any bicycle and pedestrian facilities in the vicinity. However, new crosswalks are recommended at the W California Avenue / Pajaro Avenue intersection to enhance safety in the area. The project is proposing new segments of sidewalk adjacent to the site access along N Pastoria Avenue and Sobrante Way. It is also not expected to cause any significant impacts on the transit services in the project area although the added project trips could increase the delay of VTA Service 32 at the intersection of E Middlefield Road and SR 237 by 19 seconds in the eastbound direction during the AM peak hour.

It is noted that while the proposed development will provide the required number of bicycle parking to meet City's standard, the proposed number of automobile parking is inadequate and does not meet the City's standard. The City of Sunnyvale requires the project applicant to provide the City's minimum required parking spaces to ensure that there is no spill-over to the adjacent streets in the project vicinity. In addition, it is further recommended that parking be prohibited along N Pastoria Avenue and Sobrante Way to ensure that sight distance of the project accesses are not compromised and to enhance safety for motorists coming off of Central Expressway (for Sobrante Way), as well as to comply with the roadway configuration of the PPSP.