APPENDIX H:
TRANSPORTATION ASSESSMENT

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MEMORANDUM

From: Frederik Venter, P.E. and Anthony Nuti, Kimley-Horn and Associates

To: **Mark Tersini, KT Urban**

Date: November 27, 2018

Re: **Westport Cupertino – Transportation Analysis**

The purpose of this memorandum is to present traffic analysis findings for the proposed redevelopment of the Oaks Shopping Center, referred to as the "Westport Cupertino" Project. Trip generation, Distribution, and Assignment for the project are presented below as well as a level of service analysis for the intersection of Mary Avenue and Stevens Creek Boulevard.

1. Introduction

The existing site is 71,254 square feet of shopping center use (The Oaks), which includes specialty restaurants, retailers, and other commercial space.

The proposed project would demolish the existing buildings and construct a mixed-use urban village with 203 multifamily residential units (88 low-rise and 115 mid-rise), 39 senior residential units, and 20,000 square feet of general retail. The proposed site provides a total of 525 parking spaces (293 at-grade spaces and 232 below-grade parking spaces) and 40 spaces for bike parking. **Figure 1** shows the project vicinity and the surrounding street network. **Figure 2** shows the proposed site plan.

The proposed project land uses are consistent with the City of Cupertino General Plan Buildout.

2. Analysis Methodology

The Santa Clara Valley Transportation Authority (VTA) Traffic Impact Analysis Guidelines, dated October 2014, and the City of Cupertino guidelines and criteria were utilized in this analysis to determine project requirements and potential impacts. Intersection delay and level of service (LOS) calculations were performed using Highway Capacity Manual (HCM) 2000 methodology in Synchro Version 9, which is consistent with TRAFFIX software. Synchro was used instead of TRAFFIX because it provides improved signal timing evaluation at the intersection of Mary Avenue and Stevens Creek Boulevard. Vehicle miles traveled (VMT) was calculated using CalEEMod. The City of Cupertino 2040 General Plan Amendment Draft EIR states that at signalized intersections, a LOS D is acceptable for both the AM and PM peak hour.

3. Existing Conditions

The existing site is 71,254 square feet of shopping center use (The Oaks), which includes specialty restaurants, retailers, and other commercial space. Existing trips distribute to the east and west on Stevens Creek Boulevard, and onto SR-85. A few trips also distribute into the adjacent neighborhoods.

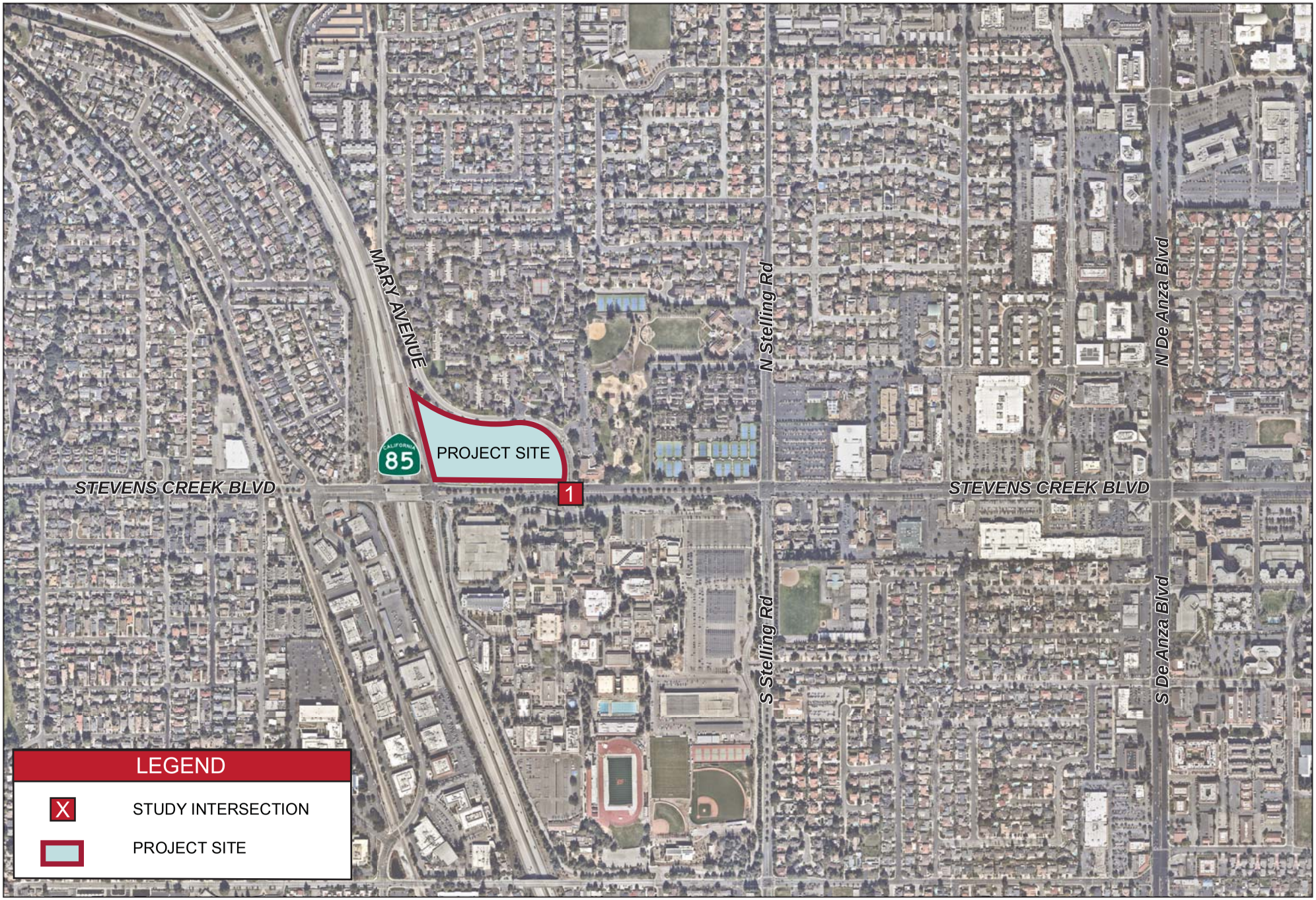

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Figure 1
Project Vicinity Map

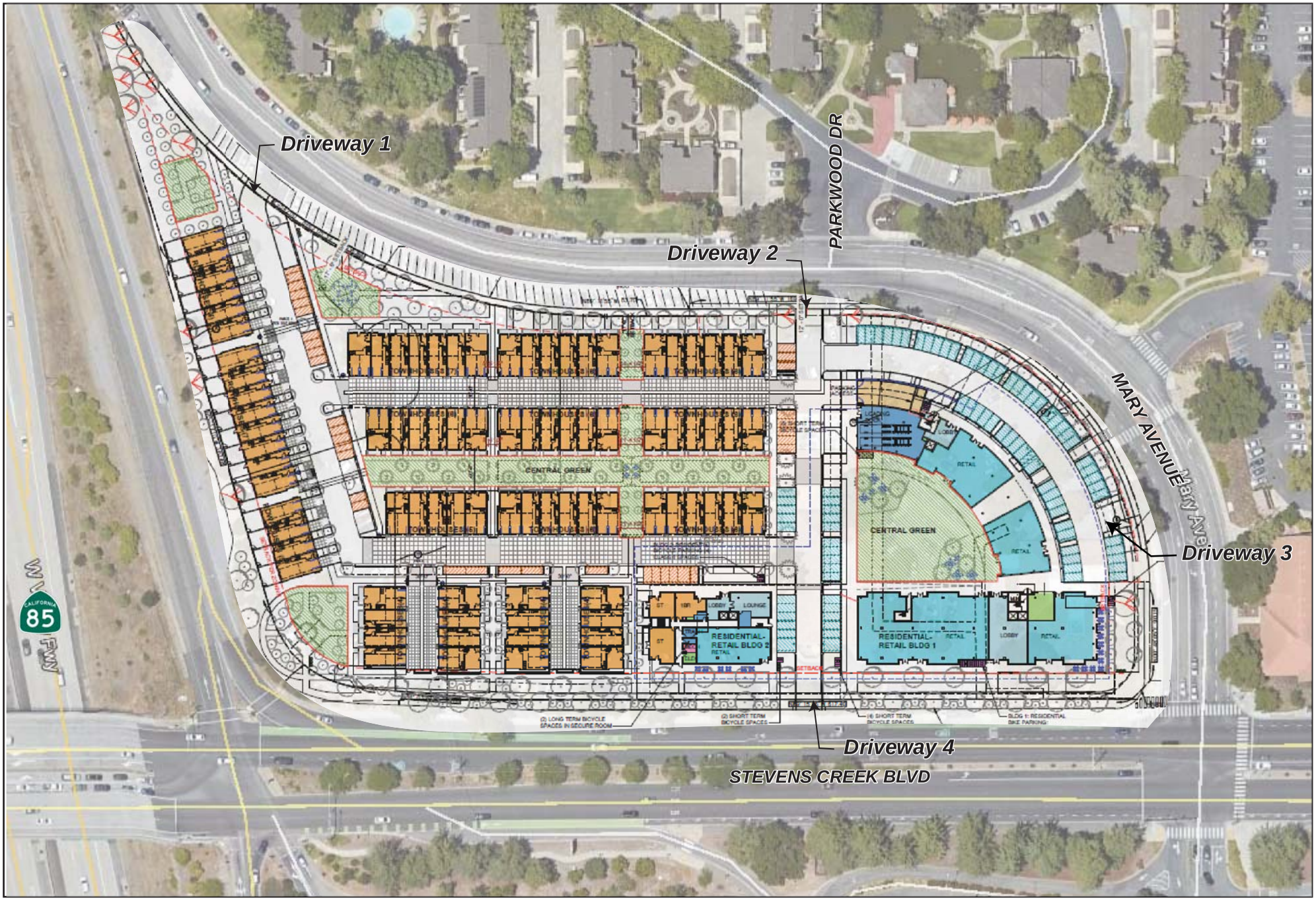

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Figure 2
PROPOSED PROJECT SITE

Surrounding the site is Mary Avenue to the north and east, Stevens Creek Boulevard to the south, and SR-85 to the west. Along Mary Avenue and Stevens Creek Boulevard there are Class II bike lanes. West of Driveway 4, the westbound Class II bike lane transitions across the outside lane that becomes a right turn only lane onto northbound SR-85.

VTA bus stops are located near the project site, within one-half mile, at the following locations:

- East of the intersection of Mary Avenue and Stevens Creek Boulevard (approximately 550 feet from the project site)
- North Stelling Rd and Stevens Creek Boulevard (approximately 1,500 feet from the project site)
- De Anza College, a major transit station (approximately 1,100 feet from the project site)
- N. Stelling Road (approximately 1,760 feet from the project site)
- South Stelling Road (approximately 1,950 feet from the project site)

The presence of several bus lines within proximity to the site, render the site a transit-rich location. Major land uses near the site are De Anza College to the south, Garden Gate Elementary School to the north, and Cupertino Memorial Park to the east. The site is otherwise surrounded by residential uses.

To the north of the project site along Mary Avenue, an informal Park-and-Ride facility exists for private shuttles. Vehicles park on both sides of the street during the day and shuttles transport passengers to major employment centers all over the Bay Area.

Based on the existing count data, the heaviest movement at the intersection of Mary Avenue and Stevens Creek Boulevard occurs in the eastbound direction in the PM peak hour. The eastbound AM peak hour volume is only 69% of the PM peak hour volume, and thus, the PM peak hour volume is most critical.

In the westbound direction, the AM and PM peak hour volumes are approximately the same (the AM is 94% of the PM peak hour volume). The westbound PM peak hour volume is only 59% of the eastbound PM peak hour volume. The total entering PM peak hour volumes are higher than the AM volumes at the intersection by 25%. Thus, the PM peak hour is critical for analysis.

4. Trip Generation

To determine the change in the number of daily, AM peak hour, and PM peak hour trips with construction of the proposed Project, trip generation for both existing (trip credits) and proposed conditions was calculated. The *Institute of Transportation Engineers (ITE) Trip Generation Manual*, 10th Edition, was used to develop trip generation estimates.

The existing shopping center has been approximately 85% occupied over the last 2 years. At 85% occupancy, the existing shopping center generates approximately 2,287 daily trips, 57 AM peak hour trips (36 IN / 21 OUT), and 230 PM peak hour trips (110 IN / 120 OUT). It should be noted that if full occupancy was assumed for the existing shopping center, the trips credited would have been even higher. This is a conservative estimate since ITE is based on gross lease area, which typically includes unoccupied units between 5% and 15%.

The proposed project is anticipated to generate approximately 2,174 gross daily trips, 108 gross AM peak hour trips (35 IN / 73 OUT), and 186 gross PM peak hour trips (104 IN / 82 OUT).

Trip Credits

Internal trip capture was then applied using the *National Cooperative Highway Research Program Report 684* (NCHRP 684), dated 2011. This methodology estimates the number of trips that have both the origin and destination within the proposed development. These internal trips are then subtracted from the total gross trips. After applying internal capture to the proposed project, reductions of 9% daily trips, 2% AM (3% IN / 1 % OUT), and 15% PM (13% IN / 17% OUT) were applied to gross trips.

VTA defines a major bus stop as a stop where six or more buses per hour stop during the peak period and is also referred to as a high-quality transit area. A major bus stop is located at De Anza College approximately 1900 feet from the project site. The residents of the proposed project are expected to use the crosswalk at Mary Avenue and Stevens Creek Boulevard to access this major stop. According to VTA TIA Guidelines, a 2% trip reduction can be used for housing within 2000 feet (0.38 miles) of a major bus stop. Applying the 2% trip reduction results in a reduction of -28 daily trips, -2 AM peak hour trips (-1 IN / -1 OUT), and -2 PM peak hour trips (-1 IN / -1 OUT). This trip reduction was only taken for residential trips.

Table 1 shows the current bus routes located in the study area.

Table 1 - Bus Routes Near Westport[1]

Route	From	To	Weekdays			Weekends		Distance from Oaks Site (mi)	High Quality Transit Area		High Quality Area (Y/N)
			Operating Hours[2]	Headway[3] (minutes) Peak	Headway[3] (minutes) Mid-day	Operating Hours[2,3]	Head-way[3] (minutes)		High Quality Line	High Quality Stop	
Local Bus											
23	De Anza College	Alum Rock Transit Center	530 AM - 1:00 AM	10	10	5:30 AM - 1:00 AM	20	0.25	Y	Y	Y
25	De Anza College	Alum Rock Transit Center	5:00 AM - 11:30 PM	10	10	7:40 AM - 12:00 AM	30	0.4	Y	Y	Y
53	De Anza College	Sunnyvale Transit Center	6:50 AM - 7:10 PM	60	60	-	-	0.4	N	Y	Y
54	De Anza College	Lockheed Martin Transit Center	6:00 AM - 9:30 PM	30	30	8:30 AM - 7:30 PM	60	0.4	N	Y	Y
55	De Anza College	Great America	5:30 AM - 11:00 PM	30	30	8:20 AM - 8:30 PM	60	0.4	N	Y	Y
81	Moffett Field Ames Center	San Jose State University	6:00 AM -9:00 PM	30	30	9:30 AM - 6:20 PM	60	0.25	N	Y	Y
Limited Bus Stop Routes											
323	Downtown San Jose	De Anza College	7:00 AM - 10:30 PM	20	20	8:00 AM -10:30 PM	15	0.4	N	Y	Y

Notes:

[1] Bus data taken from VTA Bus and Rail Map F dated Janurary 2016

[2] Operating Hours rounded to the nearest 5 minutes for weekdays and weekends.

[3] Headways are defined as the time between transit vehicles on the same route.

[4] Operating hours for Sundays may have different schedule or flexible schedule compared to Saturdays.

[5] Private Busses (ie. Apple, LinkedIN, etc) pickup/drop off north of the site

Pass-by trip credits for the shopping center were applied only to the PM peak hour based on average rates from Appendix E of the *ITE Trip Generation Handbook*, 3rd Edition. A pass-by trip is a trip that already exists on the network that will now visit the project site. Since the project is not producing these trips, pass-by trips are removed from the gross trip generation. This reduction was calculated to be -26 PM Peak hour trips (-12 IN / -14 OUT).

Therefore, the net new project trips are anticipated to be -275 daily trips, +47 AM peak hour trips (-3 IN / +50 OUT), and -22 PM peak hour trips (+4 IN / -26 OUT) after applying existing shopping center trip credits, as well as internal capture, VTA reductions, and pass-by reductions.

Per VTA TIA Guidelines, as adopted by the City of Cupertino, a complete TIA for Congestion Management Plan (CMP) purposes is required for any project in Santa Clara County that is expected to generate 100 or more net new weekday trips during any peak hour. The proposed Project is anticipated to generate fewer trips than the 100 peak hour trips required by VTA (36 AM peak and -109 PM peak), therefore a comprehensive TIA is not required, based on VTA guidelines.

Table 2 below summarizes the trip generation calculations.

Table 2 - Project Trip Generation

Land Uses	ITE Land Use Code	Project Size		WEEKDAY	AM PEAK HOUR				PM PEAK HOUR			
				Daily Trips	Total Peak Hour	IN	/	OUT	Total Peak Hour	IN	/	OUT
Multifamily Housing (Low Rise)	220	-	Dwelling Unit(s)	7.32	0.46	23%	/	77%	0.56	63%	/	37%
Multifamily Housing (Mid-Rise)	221	-	Dwelling Unit(s)	5.44	0.36	26%	/	74%	0.44	61%	/	39%
Senior Adult Housing-Attached	252	-	Dwelling Unit(s)	3.70	0.20	35%	/	65%	0.26	55%	/	45%
Shopping Center	820	-	1,000 Sq Ft GLA	37.75	0.94	62%	/	38%	3.81	48%	/	52%
Existing Conditions												
Shopping Center (100% Occupancy)	820	71.254	1,000 Sq Ft GLA	2690	67	42	/	25	271	130	/	141
Shopping Center (85% Occupancy)[1]	820	60.566	1,000 Sq Ft GLA	2287	57	36	/	21	230	110	/	120
Pass-By Trips for Shopping Center (PM = 34%)[3,4]				(78)	0	0	/	0	(78)	(37)	/	(41)
TOAL EXISTING TRIP CREDIT				2209	57	36	/	21	152	73	/	79
Proposed Conditions												
Multifamily Housing (Low-Rise)	220	88	Dwelling Unit(s)	646	40	9	/	31	49	31	/	18
Multifamily Housing (Mid-Rise)	221	115	Dwelling Unit(s)	626	41	11	/	30	51	31	/	20
Senior Adult Housing-Attached	252	39	Dwelling Unit(s)	146	8	3	/	5	10	6	/	4
Shopping Center	820	20.000	1,000 Sq Ft GLA	756	19	12	/	7	76	36	/	40
Gross Trips Generated before Internal Capture				2,174	108	35	/	73	186	104	/	82
Internal Capture Trips												
Multifamily Housing (Low-Rise)	220	88	Dwelling Unit(s)	(44)	(1)	0	/	(1)	(6)	(4)	/	(2)
Multifamily Housing (Mid-Rise)	221	115	Dwelling Unit(s)	(42)	0	0	/	0	(7)	(5)	/	(2)
Senior Adult Housing-Attached	252	39	Dwelling Unit(s)	(10)	0	0	/	0	(1)	(1)	/	0
Shopping Center	820	20.000	1,000 Sq Ft GLA	(90)	(1)	(1)	/	0	(14)	(4)	/	(10)
Internal Capture Reduction				(186)	(2)	(1)	/	(1)	(28)	(14)	/	(14)
Trip Reductions due to Internal Capture[6]				9%	2%	3%	/	1%	15%	13%	/	17%
Additional Project Trip Reductions												
VTA Major Bus Stop (Daily, AM, PM = 2%) [2]				(28)	(2)	(1)	/	(1)	(2)	(1)	/	(1)
Pass-By Trips for Shopping Center (PM = 34%)[3,4]				(26)	0	0		0	(26)	(12)	/	(14)
Project Trips				1,934	104	33	/	71	130	77	/	53
Existing Trip Credit				(2209)	(57)	(36)	/	(21)	(152)	(73)	/	(79)
Total Project Trips				1934	104	33	/	71	130	77	/	53
Net New Project Trips				(275)	47	(3)	/	50	(22)	4	/	(26)

Notes:
1. Assume current retail is 85% occupied
2. Per VTA Transportation Impact Analysis guidelines, a 2% vehicle trip reduction for housing trips can be applied for a nearby major bus stop
3. Pass-By trip reduction applied to shopping center PM peak hour trips and based on average rates from Appendix E ITE Trip Generation Handbook 3rd Edition
4. Daily pass-by trips only represent PM peak hour pass-by trips because no daily pass-by trip is resented in the ITE Trip Generation Handbook.
5. Trips reductions due to internal capture was calculated using NCHRP 684 methodology
6. Trip generation land uses based on average rates from ITE Trip Generation 10th Edition

5. Trip Distribution and Assignment

Due to the nature of the proposed redevelopment of the project site into a mixed-use urban village, trip assignment was split into two groups: retail and residential trips. Separate trip distribution and assignments were calculated for the retail and residential land use types. Distribution assumptions for residential and retail trips are discussed below. The volumes indicated at the driveways represent the actual driveway volume that would be observed and include the gross volumes minus the internal capture and minus the VTA bus stop trip credits. The driveway volumes do not include the existing land use credits or pass-by trip reductions, which are incorporated in the analysis for the Mary Avenue and Stevens Creek Boulevard intersection only.

Residential Trips

Residential project trips were distributed among project Driveways 1, 2, and 4. Residential trips are not anticipated to use the project Driveway 3, which will be used by retail only. Trips were distributed throughout the roadway network with approximately 8% (AM and PM Peak) of trips to/from the north on Mary Avenue and approximately 68% (AM and PM Peak) of trips to/from the west on Stevens Creek Boulevard and approximately 24% (AM and PM Peak) of trips to/from the east on Stevens Creek Boulevard.

The distribution for residential trips are illustrated in **Figure 3. Figure 4** shows the project trip assignment for AM and PM peak hour periods at the project driveways for residential trips. The volumes shown account for internal capture and VTA reductions only.

Retail Trips

Retail project trips were distributed among project Driveways 2, 3, and 4. Retail trips are not expected to use project Driveway 1, because there is no retail in this section of proposed site. Trips were distributed throughout the roadway network with approximately 35% (AM and PM Peak) of trips to/from the north on Mary Avenue and approximately 30% (AM and PM Peak) of trips to/from the west on Stevens Creek Boulevard and approximately 30% (AM and PM Peak) of trips to/from the east on Stevens Creek Boulevard. Approximately 5% (AM and PM Peak) of the trips are anticipated to use Parkwood Drive (just north of the site). No trips were distributed at the driveway entrance to the senior center and park since retail visitors are expected to walk to the stores using the crosswalk with a flashing beacon on Mary Avenue.

The trips distributed along Mary Avenue are expected to already be on the roadway and are not new trips for the Project, since the existing site is used for retail purposes.

The distribution estimates for retail trips are illustrated in **Figure 5**. **Figure 6** shows the project trip assignment for AM and PM peak hour periods at the project driveway for retail trips. The volumes shown account for internal capture only.

The trip distribution is based on existing travel patterns at the intersection of Mary Avenue and Stevens Creek Boulevard.

Project driveway volumes for both residential and retail land uses, as well as through volumes on Mary Avenue, are relatively low. Therefore, LOS analyses at the Project driveways are not warranted.

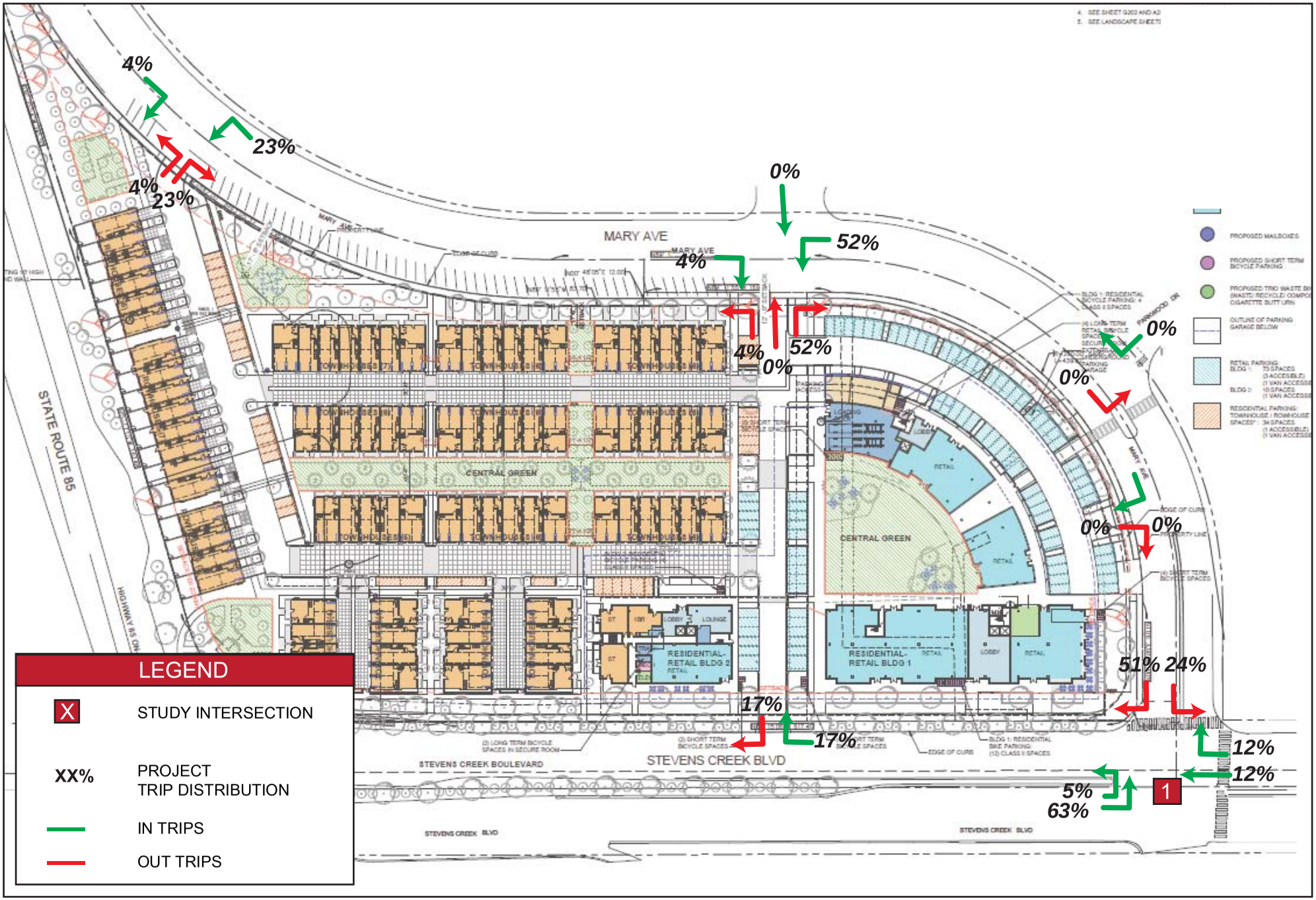

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Figure 3

Proposed Residential Trip Distribution

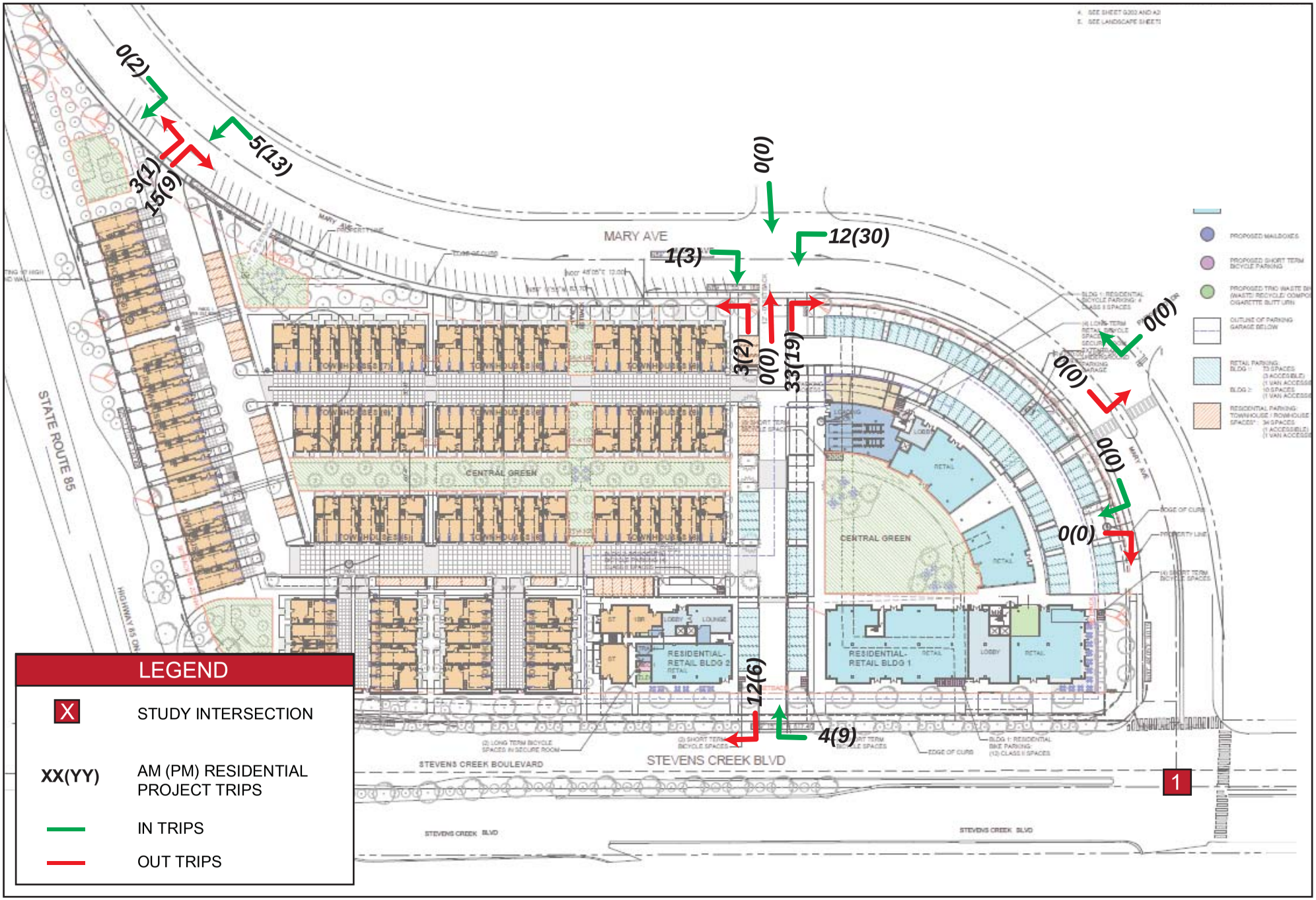

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Figure 4

Proposed Residential Trip Assignment

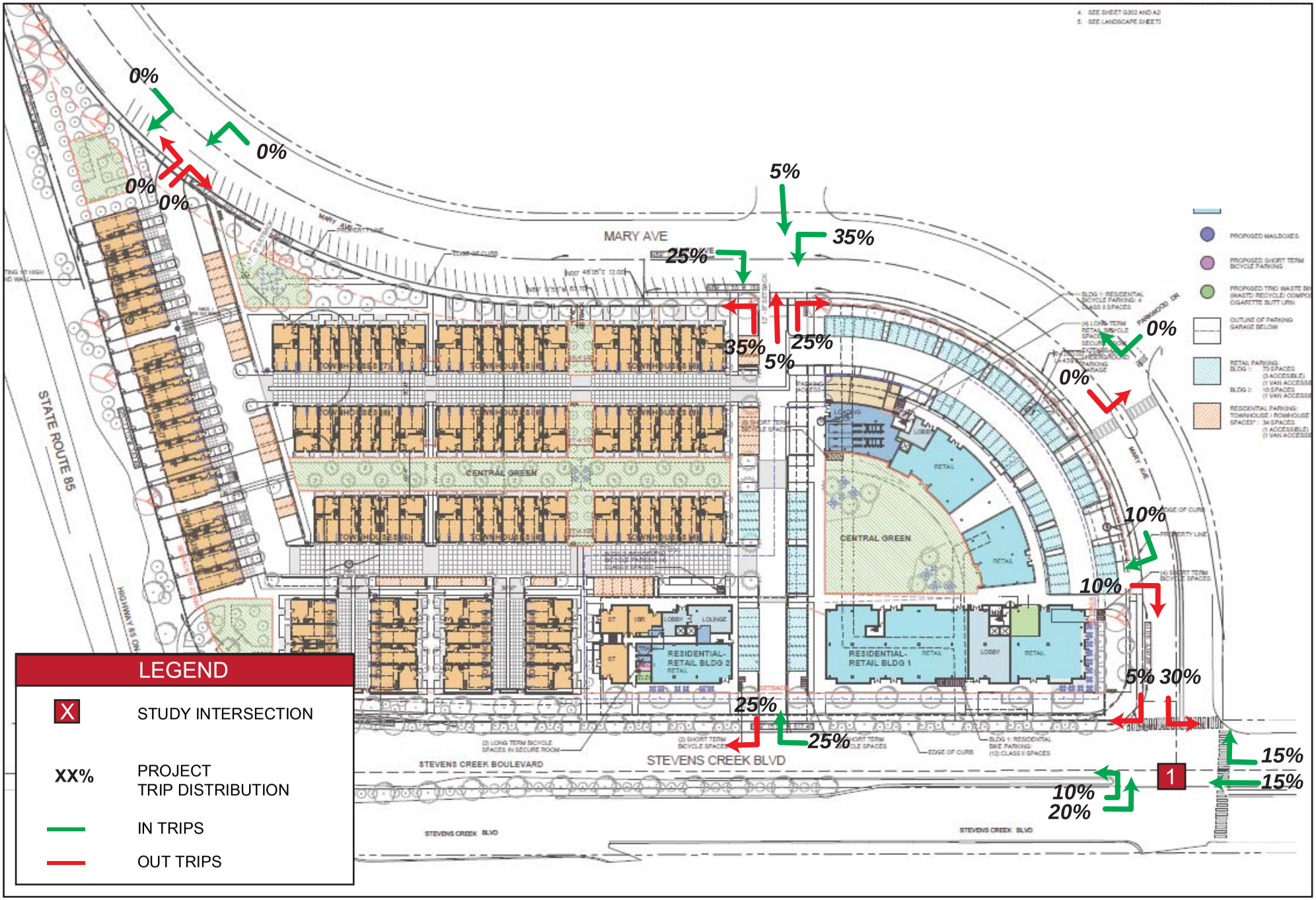

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Figure 5

Proposed Retail Trip Distribution

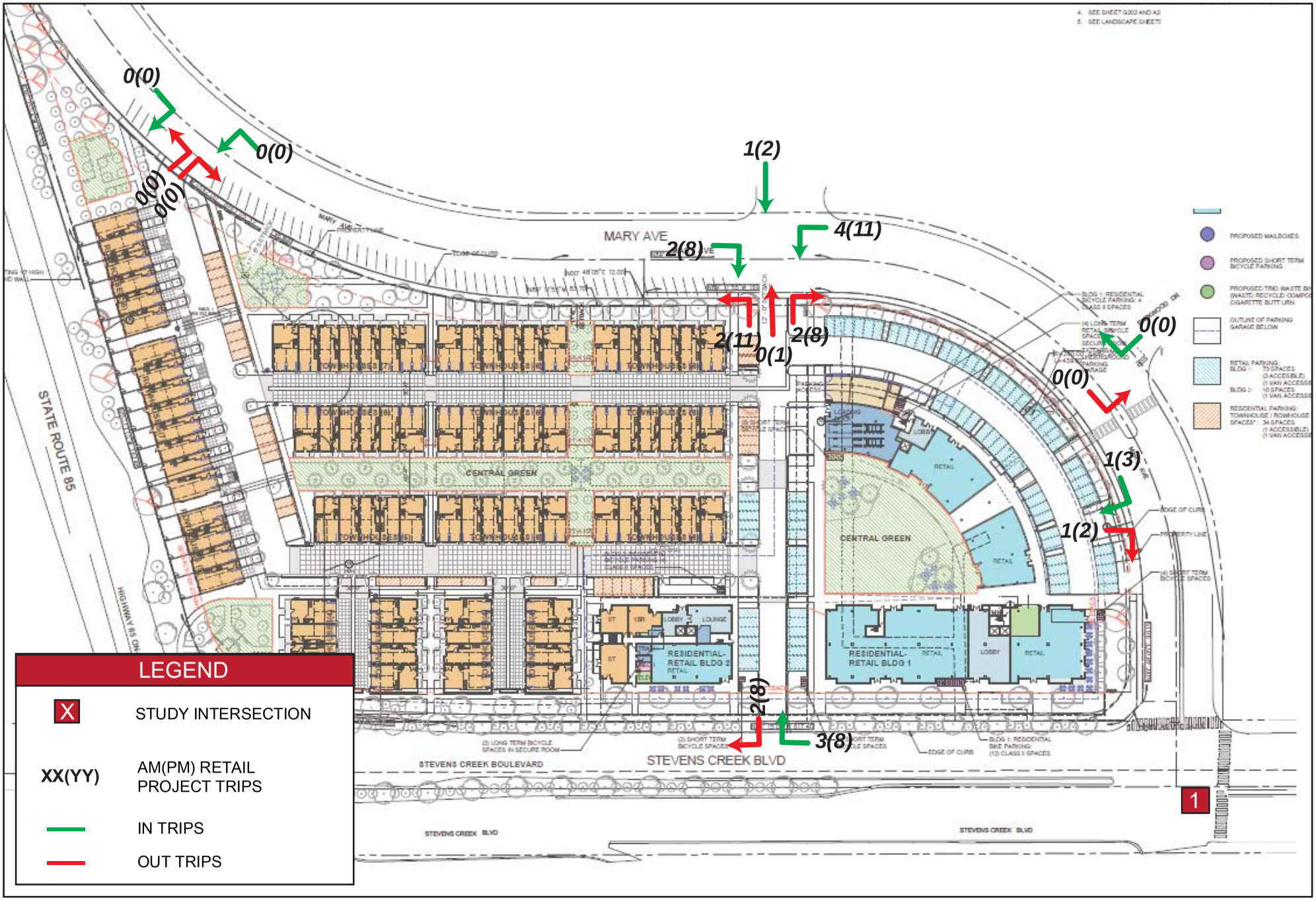

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Figure 6

Proposed Retail Trip Assignment

6. Traffic Analysis at Mary Avenue and Stevens Creek Boulevard

Analysis of intersections is based on the concept of Level of Service (LOS). The LOS of an intersection is a qualitative measurement used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. The City of Cupertino 2040 General Plan Amendment Draft EIR states that at signalized intersections, a LOS D is acceptable for both the AM and PM peak hour. The Mary Avenue and Stevens Creek Boulevard intersection is signalized, and therefore, a LOS D or better is required at this intersection.

The intersection of SR-85 Northbound Ramps and Stevens Creek Boulevard was not selected for analysis because only 30% (approximately 44 vehicles) of the net AM outbound traffic would distribute to the intersection. Two-thirds of this westbound arriving traffic (30 vehicles) are expected to travel north onto SR-85 via a free right turn movement. The remaining westbound through traffic on Stevens Creek Boulevard does not warrant analysis, because the VTA CMP threshold of 10 vehicles per lane at the intersection is not met.

Intersection LOS for this study has been determined using methods defined in the HCM 2000 and Synchro traffic analysis software. The analysis has been conducted for the weekday AM and PM peak hours.

6.1 Existing Conditions

Existing Conditions traffic operations were evaluated using existing lane geometry, traffic control, and peak hour traffic volumes. Peak hour traffic volumes were collected by National Data & Surveying Services (NDS) on Wednesday April 25, 2018. **Table 3** illustrates the LOS and delay under Existing Conditions. The existing intersection was determined to be an acceptable LOS C in both the AM peak hour period (31.5-second delay) and PM peak hour period (34.9-second delay).

Table 3 - Existing Conditions Level of Service

	Intersection	LOS Criteria	Jurisdiction[1]	Control	Existing (2018)			
					AM Peak		PM Peak	
					LOS	Delay (s)	LOS	Delay (s)
1	Mary Avenue and Stevens Creek Boulevard	D	CUP	Signal	C	31.5	C	34.9

[1]*CUP = City of Cupertino*

6.2 Existing Plus Project Conditions

Existing Plus Project Conditions traffic operations were evaluated using existing lane geometry, traffic control, and existing peak hour traffic volumes plus net new project volumes. **Figure 7** shows the intersection volumes and **Table 4** shows the LOS and delay at the intersection of Mary Avenue and Stevens Creek Boulevard under Existing Plus Project Conditions. Under Existing Plus Project conditions, the study intersection would remain at an acceptable LOS C during AM (32.6-second delay) and PM peak hours (34.8-second delay). The increase in the AM is approximately 1.1 seconds.

Figure 7 – Existing Plus Project Intersection Volumes

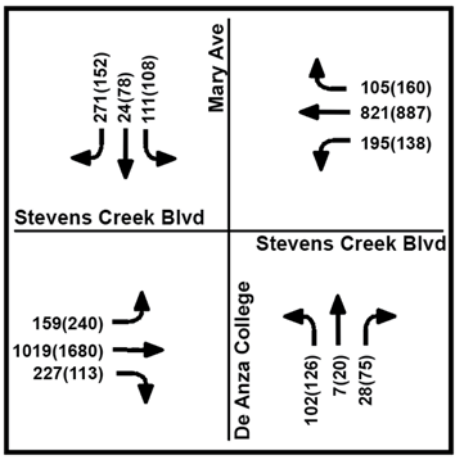


Table 4 - Existing Plus Project Conditions Level of Service

Intersection		LOS Criteria	Jurisdiction[1]	Control	Existing (2018) +Project			
					AM Peak		PM Peak	
					LOS	Delay (s)	LOS	Delay (s)
1	Mary Avenue and Stevens Creek Boulevard	D	CUP	Signal	C	32.6	C	34.8

[1]*CUP = City of Cupertino*

6.2 Background Plus Project Conditions

No Background Plus Project Conditions were evaluated for the proposed project at the Mary Avenue and Stevens Creek Boulevard intersection, because, for PM peak hour conditions, the net added project volumes would decrease. Therefore, the proposed project would result in no impact. In addition, the PM peak hour presents the worst-case analysis because of the higher existing volumes.

Under Existing Conditions in the AM peak hour, the increase in delay would be less than 1.1-seconds at the intersection of Mary Avenue and Stevens Creek Boulevard. Under Background Plus Project Conditions this increase would be less, because the percentage of project traffic related to background traffic is smaller. This marginal increase in delay does not meet VTA or City of Cupertino standards for generating impacts and the project would have no impact under Background Plus Project Conditions.

6.3 Cumulative Conditions

Traffic operations were evaluated for 2040 Cumulative Conditions based on data presented in the Sandis Traffic Impact Analysis Report, dated February 2017, which references the City of Cupertino General Plan EIR, 2014. It is assumed that the Cumulative Conditions intersection geometry of Mary Avenue and Stevens Creek Boulevard would be the same as Existing Conditions. **Table 5** shows the LOS and delay for the traffic signal at Stevens Creek Boulevard and Mary Avenue for cumulative conditions. Under Cumulative Conditions, the intersection would

operate at an acceptable LOS D during the AM peak hour (47.7-second delay) and PM peak hour (46.3-second delay).

Table 5 - Cumulative Conditions Level of Service

	Intersection	LOS Criteria	Jurisdiction[1]	Control	Cumulative (2040)			
					AM Peak		PM Peak	
					LOS	Delay (s)	LOS	Delay (s)
1	Mary Avenue and Stevens Creek Boulevard	D	CUP	Signal	D	47.7	D	46.3

[1]*CUP = City of Cupertino*

5.4 Cumulative Plus Project Conditions

Cumulative Plus Project Conditions traffic operations were evaluated using cumulative lane geometry, traffic control, and cumulative peak hour traffic volumes plus net new project volumes. It is assumed that the Cumulative Conditions intersection geometry of Mary Avenue and Stevens Creek Boulevard would be the same as Existing Conditions. **Figure 8** shows the intersection volumes and **Table 6** shows the LOS and delay signalized study intersection at Mary Avenue and Stevens Creek Boulevard. The intersection operates at an acceptable LOS D in both the AM (49.1-second delay) and PM (46.3-second delay) peak hours, as presented in the Cupertino 2040 General Plan Amendment Draft EIR.

Figure 8 – Cumulative Plus Project Intersection Volumes

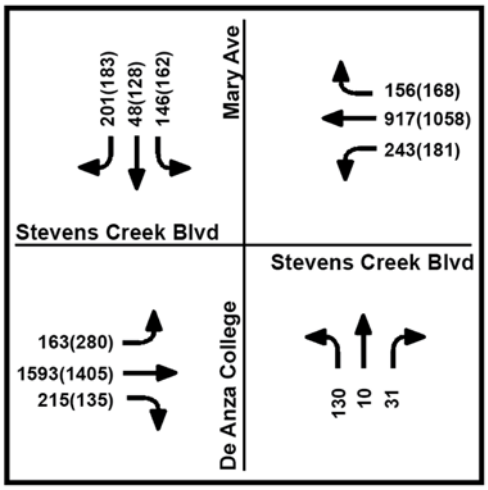


Table 6 - Cumulative Plus Project Conditions Level of Service

	Intersection	LOS Criteria	Jurisdiction[1]	Control	Cumulative (2040) + Project			
					AM Peak		PM Peak	
					LOS	Delay (s)	LOS	Delay (s)
1	Mary Avenue and Stevens Creek Boulevard	D	CUP	Signal	D	49.1	D	46.3

[1]*CUP = City of Cupertino*

7. Parking Requirements

Parking requirements for the site were calculated based on on-site supply only and the Park-and-Ride on-street parking along Mary Avenue was not included in the parking analysis. The Mary Avenue on-street parking is public and is not anticipated to be impacted by the site uses or activities. Furthermore, the project has no jurisdiction over the public parking and usage along Mary Avenue. **Table 7** provides the project parking supply and City requirements.

Table 7 – Vehicle Parking Requirements

Land Use	Project Size	City Municipal Code[1]	City Requirement	Project Supply	Surplus (Deficiency)
Row Home / Town Home	2-3 bedrooms: 88	2-3 bedrooms: 2	176	210	34
Building 1					
Retail	17,600 SQFT	1 spaces per 250 SQFT	71	73	2
Multifamily Housing	0-1 bedrooms: 45 2-3 bedrooms: 70	0-1 bedrooms: 1 2-3 bedrooms: 2	185	193	8
Building 2					
Retail	2,400 SQFT	1 spaces per 250 SQFT	10	10	0
Senior Housing	0-1 bedrooms: 39	0-1 bedrooms: 1	39	39	0
		Total	**481**	**525**	**44**

[1]City requirements are based on City of Cupertino Municipal Code Chapter 19.124, Section19.56.040A and Table 19.56.040B

Table 8 provides the bicycle parking requirements for the short-term bicycle parking, **Table 9** provides the bicycle parking requirements for long-term retail bicycle parking, and **Table 10** provides the bicycle parking requirements for long-term residential bicycle parking.

Table 8 – Short-Term Bicycle Parking Requirements

Land Use	Project Size	Code Requirements[1]	City Requirement	Project Supply
Building 1	Retail: 17,600 SQFT Residential: 115 DU	Residential:1/10 units (Class II) Retail: 1/1,250 SF (Class II)	Retail: 14.08 Residential: 11.5	Retail: 16 Residential: 12
Building 2	Retail: 2,400 SQFT Residential: 39 DU		Retail: 1.92 Residential: 3.9	Retail: 2 Residential: 4

[1]Short term requirements based on City of Cupertino Municipal Code Chapter 19.124

Table 9 – Long-Term Bicycle Parking Requirements for Retail Only

Land Use	Code Requirements[1]	Vehicle Spaces	Requirement	Project Supply
Building 1 - Retail Only	5% of vehicle spaces (Class I)	73	3.6	4
Building 2 - Retail Only	5% of vehicle spaces (Class I)	10	0.5	2

[1]Long term requirements based on Green Building Standards Non-Residential Mandatory Measure 5.106.4

Table 10 – Long-Term Bicycle Parking Requirements for Multifamily Housing and Senior Apartments

Land Use	Code Requirements[1]	Requirement	Project Supply
Building 1 - 115 DU	1 space per 2 residential units	58	58
Building 2 - 39 DU		20	20

For the parking layouts, refer to Sheet Set A200, A201, and G202 of the C2K Westport plan set for the most up-to-date site plans with parking requirements. Based on the City of Cupertino Municipal code, the proposed project parking is sufficient.

8. Pedestrian Mobility

Continuous sidewalks exist along both Mary Avenue and Stevens Creek Boulevard and the project does not propose to change these sidewalks. The project would connect to the public sidewalks and provide ADA-compliant sidewalk facilities, walkways and paths throughout the site per 2010 ADA Standards for Accessible Design. The Mary Avenue and Stevens Creek Boulevard intersection provides marked crosswalks for pedestrians and bikes on the intersection's north, east, and south legs. Additionally, a marked crosswalk with a flashing beacon on Mary Avenue provides access to the project site from the Cupertino Memorial Park and Cupertino Senior Center.

De Anza College can be accessed via sidewalks on Mary Avenue and crosswalks at Mary Avenue and Stevens Creek Boulevard. Garden Gate Elementary school can be accessed via residential sidewalks along Mary Avenue and the residential streets.

As such, employees, patrons, and residents choosing to walk to and from the site would not be adversely impacted based on pedestrian mobility and accessibility.

9. Bicycle Mobility

Existing Class II bicycle lanes along Stevens Creek Boulevard and Mary Avenue provide bicycle access to the proposed project site with a long transition to the through lanes across the SR-85 bridge crossing. In the future, the City of Cupertino plans to convert the existing Class II bike lanes to Class IV bikeways on Stevens Creek Boulevard.

To the north, a Class I multi-use bridge over I-280 exists. This path can be accessed from the Mary Avenue Class II bike lanes.

Students have the option to bike to Garden Gate Elementary school by using the Class II bike lane on Mary Avenue and sidewalks along various residential streets.

As such, employees, patrons, and residents choosing to bike to the site would not be adversely impacted based on bicyclist mobility and accessibility.

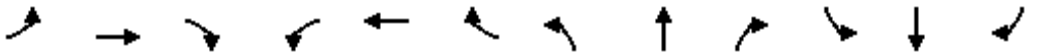
10. Vehicle Miles Traveled (VMT)

Based on the State's future requirement to conduct vehicle miles traveled (VMT) analysis for projects, a VMT analysis was performed. The VMT was determined by using CalEEMod and was calculated for Existing and Existing Plus Project Conditions. The existing 71,250 SF of commercial space, with 85% occupancy, would produce an approximate annual VMT of 2,782,747 miles, while the proposed project would reduce the annual VMT to 2,662,683 miles.

11. Conclusions

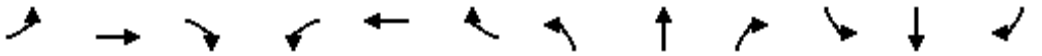
The proposed Project was evaluated to determine if significant impacts would occur at adjacent intersections or Westport Cupertino Project site driveways. The evaluation determined that the proposed Project would generate -275 daily, +47 AM peak hour (-3 IN / 50 OUT), and -22 PM peak hour (4 IN / -26 OUT) net new trips. This trip generation is below the VTA standard of 100 or more net new weekday trips; therefore, a full TIA is not required. This trip generation is also low compared to baseline volumes at adjacent study intersections and roadways, and LOS at Mary Avenue and Stevens Creek Boulevard would not degrade below acceptable levels with the addition of the Project traffic. The PM peak hour volumes are higher than the AM peak hour and present a worst-case scenario. The proposed project would result in a net reduction in PM peak hour trips and daily VMT. During the AM peak hour, the proposed project would add very few trips and would not cause impacts at the intersection of Mary Avenue and Stevens Creek Boulevard. Very few trips would be added to the SR-85 and Stevens Creek Boulevard intersections and would not cause significant impacts.

Based on the analyses conducted in this study, no potentially significant impacts are anticipated to occur due to the proposed Project. There are also no potentially significant impacts triggered by the land plan that have not already been evaluated under the City's General Plan 2040 for redevelopment of the project site.



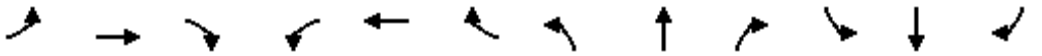
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	1019	227	195	822	106	102	7	28	99	24	239
Future Volume (vph)	152	1019	227	195	822	106	102	7	28	99	24	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	7.0		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.95		1.00	1.00	0.85
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	4867		1770	4953		3433	1549		1770	1863	1347
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	4867		1770	4953		3433	1549		1770	1863	1347
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.54	0.54	0.54	0.85	0.85	0.85
Adj. Flow (vph)	177	1185	264	227	956	123	189	13	52	116	28	281
RTOR Reduction (vph)	0	28	0	0	12	0	0	49	0	0	0	256
Lane Group Flow (vph)	177	1421	0	227	1067	0	189	16	0	116	28	25
Confl. Peds. (#/hr)			26			23			36			87
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	15.1	38.6		18.1	42.1		10.7	8.0		13.3	10.6	10.6
Effective Green, g (s)	13.1	36.6		16.1	40.1		8.7	6.0		11.3	8.6	8.6
Actuated g/C Ratio	0.14	0.38		0.17	0.42		0.09	0.06		0.12	0.09	0.09
Clearance Time (s)	4.5	5.0		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	240	1845		295	2058		309	96		207	166	120
v/s Ratio Prot	0.10	c0.29		c0.13	c0.22		0.06	0.01		c0.07	0.02	
v/s Ratio Perm												c0.02
v/c Ratio	0.74	0.77		0.77	0.52		0.61	0.17		0.56	0.17	0.21
Uniform Delay, d1	40.0	26.3		38.4	21.0		42.3	42.9		40.3	40.6	40.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.2	2.0		11.4	0.2		3.6	0.8		3.4	0.5	0.9
Delay (s)	51.3	28.3		49.9	21.2		45.8	43.7		43.7	41.1	41.7
Level of Service	D	C		D	C		D	D		D	D	D
Approach Delay (s)		30.8			26.2			45.3			42.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	96.5	Sum of lost time (s)	26.5
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



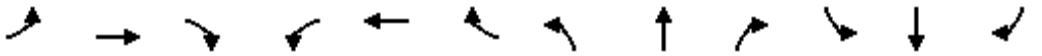
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	1680	113	138	892	165	126	20	75	123	78	138
Future Volume (vph)	225	1680	113	138	892	165	126	20	75	123	78	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	7.0		6.5	7.0		6.5	6.0		6.5	6.0	6.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	0.79		1.00	1.00	0.83
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5037		1770	4836		3433	1297		1770	1863	1313
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5037		1770	4836		3433	1297		1770	1863	1313
Peak-hour factor, PHF	0.80	0.90	0.90	0.93	0.93	0.93	0.88	0.88	0.88	0.80	0.84	0.84
Adj. Flow (vph)	281	1867	126	148	959	177	143	23	85	154	93	164
RTOR Reduction (vph)	0	5	0	0	16	0	0	80	0	0	0	147
Lane Group Flow (vph)	281	1988	0	148	1120	0	143	28	0	154	93	17
Confl. Peds. (#/hr)						86			140			87
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	22.7	55.0		14.8	47.1		10.1	8.7		15.1	13.7	13.7
Effective Green, g (s)	20.7	53.0		12.8	45.1		8.1	6.7		13.1	11.7	11.7
Actuated g/C Ratio	0.19	0.47		0.11	0.40		0.07	0.06		0.12	0.10	0.10
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.0		4.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	328	2392		203	1954		249	77		207	195	137
v/s Ratio Prot	c0.16	c0.39		0.08	0.23		0.04	0.02		c0.09	c0.05	
v/s Ratio Perm												0.01
v/c Ratio	0.86	0.83		0.73	0.57		0.57	0.36		0.74	0.48	0.13
Uniform Delay, d1	44.0	25.4		47.7	25.8		50.1	50.4		47.6	47.1	45.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.2	2.6		12.3	0.4		3.2	2.9		13.5	1.8	0.4
Delay (s)	63.2	28.0		60.0	26.2		53.3	53.3		61.1	48.9	45.7
Level of Service	E	C		E	C		D	D		E	D	D
Approach Delay (s)		32.4			30.1			53.3			52.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	111.6	Sum of lost time (s)	26.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



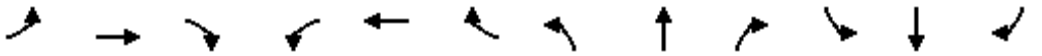
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	1019	227	195	821	105	102	7	28	111	24	271
Future Volume (vph)	159	1019	227	195	821	105	102	7	28	111	24	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	7.0		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	4866		1770	4953		3433	1548		1770	1863	1345
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	4866		1770	4953		3433	1548		1770	1863	1345
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.54	0.54	0.54	0.85	0.85	0.85
Adj. Flow (vph)	185	1185	264	227	955	122	189	13	52	131	28	319
RTOR Reduction (vph)	0	28	0	0	12	0	0	48	0	0	0	279
Lane Group Flow (vph)	185	1421	0	227	1065	0	189	17	0	131	28	40
Confl. Peds. (#/hr)			26			23			36			87
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	15.6	38.9		18.1	41.9		10.7	8.8		13.4	11.5	11.5
Effective Green, g (s)	13.6	36.9		16.1	39.9		8.7	6.8		11.4	9.5	9.5
Actuated g/C Ratio	0.14	0.38		0.16	0.41		0.09	0.07		0.12	0.10	0.10
Clearance Time (s)	4.5	5.0		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	246	1837		291	2022		305	107		206	181	130
v/s Ratio Prot	0.10	c0.29		c0.13	0.22		0.06	0.01		c0.07	0.02	
v/s Ratio Perm												c0.03
v/c Ratio	0.75	0.77		0.78	0.53		0.62	0.16		0.64	0.15	0.31
Uniform Delay, d1	40.4	26.7		39.1	21.8		42.9	42.7		41.2	40.4	41.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.2	2.1		12.7	0.2		3.7	0.7		6.3	0.4	1.4
Delay (s)	52.6	28.8		51.8	22.0		46.6	43.4		47.5	40.8	42.4
Level of Service	D	C		D	C		D	D		D	D	D
Approach Delay (s)		31.5			27.2			45.8			43.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	97.7	Sum of lost time (s)	26.5
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



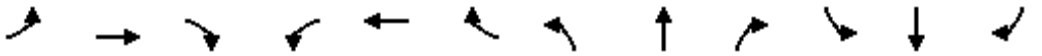
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	1680	113	138	887	160	126	20	75	108	78	152
Future Volume (vph)	240	1680	113	138	887	160	126	20	75	108	78	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	7.0		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.96		1.00	0.79		1.00	1.00	0.83
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5037		1770	4756		3433	1299		1770	1863	1314
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5037		1770	4756		3433	1299		1770	1863	1314
Peak-hour factor, PHF	0.80	0.90	0.90	0.93	0.93	0.93	0.88	0.88	0.88	0.80	0.84	0.84
Adj. Flow (vph)	300	1867	126	148	954	172	143	23	85	135	93	181
RTOR Reduction (vph)	0	5	0	0	16	0	0	80	0	0	0	163
Lane Group Flow (vph)	300	1988	0	148	1110	0	143	28	0	135	93	18
Confl. Peds. (#/hr)						86			140			87
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	23.8	54.9		14.8	46.4		10.1	9.0		13.9	12.8	12.8
Effective Green, g (s)	21.8	52.9		12.8	44.4		8.1	7.0		11.9	10.8	10.8
Actuated g/C Ratio	0.20	0.48		0.12	0.40		0.07	0.06		0.11	0.10	0.10
Clearance Time (s)	4.5	5.0		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	347	2398		203	1900		250	81		189	181	127
v/s Ratio Prot	c0.17	c0.39		0.08	0.23		0.04	0.02		c0.08	c0.05	
v/s Ratio Perm												0.01
v/c Ratio	0.86	0.83		0.73	0.58		0.57	0.35		0.71	0.51	0.14
Uniform Delay, d1	43.2	25.2		47.5	26.1		49.8	49.9		48.0	47.7	45.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.5	2.5		12.3	0.5		3.1	2.6		12.1	2.5	0.5
Delay (s)	62.7	27.7		59.8	26.6		53.0	52.5		60.0	50.1	46.4
Level of Service	E	C		E	C		D	D		E	D	D
Approach Delay (s)		32.3			30.4			52.8			51.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	111.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



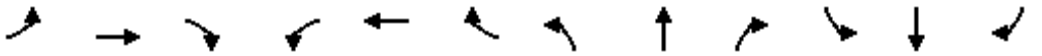
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	1593	215	243	918	157	130	10	31	134	48	169
Future Volume (vph)	156	1593	215	243	918	157	130	10	31	134	48	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	7.0		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.94		1.00	1.00	0.83
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	4937		1770	4910		3433	1559		1770	1863	1320
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	4937		1770	4910		3433	1559		1770	1863	1320
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.54	0.54	0.54	0.85	0.85	0.85
Adj. Flow (vph)	181	1852	250	283	1067	183	241	19	57	158	56	199
RTOR Reduction (vph)	0	13	0	0	16	0	0	53	0	0	0	184
Lane Group Flow (vph)	181	2089	0	283	1234	0	241	23	0	158	56	15
Confl. Peds. (#/hr)			26			23			36			87
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	15.8	47.5		20.3	52.5		12.1	9.1		13.1	10.1	10.1
Effective Green, g (s)	13.8	45.5		18.3	50.5		10.1	7.1		11.1	8.1	8.1
Actuated g/C Ratio	0.13	0.42		0.17	0.47		0.09	0.07		0.10	0.07	0.07
Clearance Time (s)	4.5	5.0		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	225	2070		298	2285		319	102		181	139	98
v/s Ratio Prot	0.10	c0.42		c0.16	c0.25		0.07	0.01		c0.09	c0.03	
v/s Ratio Perm												0.01
v/c Ratio	0.80	1.01		0.95	0.54		0.76	0.22		0.87	0.40	0.15
Uniform Delay, d1	46.0	31.5		44.6	20.7		48.0	48.1		48.0	47.9	47.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.5	22.1		38.3	0.3		9.8	1.1		33.9	1.9	0.7
Delay (s)	64.5	53.6		82.9	21.0		57.8	49.2		82.0	49.8	47.7
Level of Service	E	D		F	C		E	D		F	D	D
Approach Delay (s)		54.4			32.4			55.7			61.1	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	26.5
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



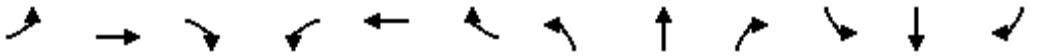
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	1405	135	181	1063	173	251	37	96	180	128	169
Future Volume (vph)	265	1405	135	181	1063	173	251	37	96	180	128	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	7.0		6.5	7.0		6.5	6.0		6.5	6.0	6.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	0.79		1.00	1.00	0.82
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5018		1770	4853		3433	1317		1770	1863	1294
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5018		1770	4853		3433	1317		1770	1863	1294
Peak-hour factor, PHF	0.80	0.90	0.90	0.93	0.93	0.93	0.88	0.88	0.88	0.80	0.84	0.84
Adj. Flow (vph)	331	1561	150	195	1143	186	285	42	109	225	152	201
RTOR Reduction (vph)	0	8	0	0	16	0	0	70	0	0	0	173
Lane Group Flow (vph)	331	1703	0	195	1313	0	285	81	0	225	152	28
Confl. Peds. (#/hr)						86			140			87
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	27.7	50.3		18.5	41.1		14.9	13.0		20.4	18.5	18.5
Effective Green, g (s)	25.7	48.3		16.5	39.1		12.9	11.0		18.4	16.5	16.5
Actuated g/C Ratio	0.21	0.40		0.14	0.33		0.11	0.09		0.15	0.14	0.14
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.0		4.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	378	2016		242	1578		368	120		270	255	177
v/s Ratio Prot	c0.19	c0.34		0.11	0.27		0.08	0.06		c0.13	c0.08	
v/s Ratio Perm												0.02
v/c Ratio	0.88	0.84		0.81	0.83		0.77	0.68		0.83	0.60	0.16
Uniform Delay, d1	45.7	32.6		50.3	37.5		52.2	52.9		49.4	48.7	45.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.7	3.4		17.5	3.9		9.8	14.0		19.3	3.7	0.4
Delay (s)	65.4	36.0		67.8	41.4		62.0	66.9		68.7	52.4	46.1
Level of Service	E	D		E	D		E	E		E	D	D
Approach Delay (s)		40.8			44.8			63.7			56.6	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.2	Sum of lost time (s)	26.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	1593	215	243	917	156	130	10	31	146	48	201
Future Volume (vph)	163	1593	215	243	917	156	130	10	31	146	48	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	7.0		6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.94		1.00	1.00	0.83
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	4937		1770	4911		3433	1559		1770	1863	1319
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	4937		1770	4911		3433	1559		1770	1863	1319
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.54	0.54	0.54	0.85	0.85	0.85
Adj. Flow (vph)	190	1852	250	283	1066	181	241	19	57	172	56	236
RTOR Reduction (vph)	0	13	0	0	16	0	0	53	0	0	0	218
Lane Group Flow (vph)	190	2089	0	283	1231	0	241	23	0	172	56	18
Confl. Peds. (#/hr)			26			23			36			87
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	16.4	47.6		20.3	52.0		12.1	9.4		13.1	10.4	10.4
Effective Green, g (s)	14.4	45.6		18.3	50.0		10.1	7.4		11.1	8.4	8.4
Actuated g/C Ratio	0.13	0.42		0.17	0.46		0.09	0.07		0.10	0.08	0.08
Clearance Time (s)	4.5	5.0		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	234	2067		297	2254		318	105		180	143	101
v/s Ratio Prot	0.11	c0.42		c0.16	c0.25		0.07	0.01		c0.10	c0.03	
v/s Ratio Perm												0.01
v/c Ratio	0.81	1.01		0.95	0.55		0.76	0.22		0.96	0.39	0.18
Uniform Delay, d1	45.9	31.7		44.9	21.3		48.2	48.0		48.7	47.8	47.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.9	22.5		39.4	0.3		9.9	1.0		53.7	1.8	0.9
Delay (s)	64.8	54.1		84.3	21.5		58.1	49.1		102.3	49.6	47.9
Level of Service	E	D		F	C		E	D		F	D	D
Approach Delay (s)		55.0			33.1			55.9			68.3	
Approach LOS		E			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	49.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	108.9	Sum of lost time (s)	26.5
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	1405	135	181	1058	168	251	37	96	162	128	183
Future Volume (vph)	280	1405	135	181	1058	168	251	37	96	162	128	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	7.0		6.5	7.0		6.5	6.0		6.5	6.0	6.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.96		1.00	0.79		1.00	1.00	0.82
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	4972		1770	4774		3433	1316		1770	1863	1293
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	4972		1770	4774		3433	1316		1770	1863	1293
Peak-hour factor, PHF	0.80	0.90	0.90	0.93	0.93	0.93	0.88	0.88	0.88	0.80	0.84	0.84
Adj. Flow (vph)	350	1561	150	195	1138	181	285	42	109	202	152	218
RTOR Reduction (vph)	0	8	0	0	15	0	0	70	0	0	0	189
Lane Group Flow (vph)	350	1703	0	195	1304	0	285	81	0	203	152	29
Confl. Peds. (#/hr)			26			86			140			87
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	29.2	51.2		18.6	40.6		14.9	13.6		19.1	17.8	17.8
Effective Green, g (s)	27.2	49.2		16.6	38.6		12.9	11.6		17.1	15.8	15.8
Actuated g/C Ratio	0.23	0.41		0.14	0.32		0.11	0.10		0.14	0.13	0.13
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.0		4.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	399	2030		243	1529		367	126		251	244	169
v/s Ratio Prot	c0.20	c0.34		0.11	0.27		0.08	0.06		c0.11	c0.08	
v/s Ratio Perm												0.02
v/c Ratio	0.88	0.84		0.80	0.85		0.78	0.65		0.81	0.62	0.17
Uniform Delay, d1	45.0	32.1		50.4	38.3		52.4	52.5		50.1	49.5	46.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.0	3.2		17.2	4.8		9.9	10.8		17.2	4.9	0.5
Delay (s)	64.0	35.3		67.5	43.1		62.3	63.3		67.3	54.4	47.0
Level of Service	E	D		E	D		E	E		E	D	D
Approach Delay (s)		40.2			46.3			62.6			56.2	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.5	Sum of lost time (s)	26.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Prepared by National Data & Surveying Services

Mary Ave/Campus Dr & Stevens Creek Blvd

Peak Hour Turning Movement Count

ID: 18-08195-001
City: Cupertino

Day: Wednesday
Date: 04/25/2018

PEAK HOURS

AM: 08:45 AM - 09:45 AM
NOON: NONE
PM: 05:15 PM - 06:15 PM

COUNT PERIODS

AM: 07:00 AM - 10:00 AM
NOON: NONE
PM: 04:00 PM - 07:00 PM

SOUTHBOUND — Mary Ave/Campus Dr

AM	239	24	99	0	247	AM
NOON	0	0	0	0	0	NOON
PM	138	78	123	0	362	PM

EASTBOUND — Stevens Creek Blvd

AM	NOON	PM	
1181	0	1204	
18	0	48	0
134	0	177	1
1019	0	1680	3
227	0	113	0

WESTBOUND — Stevens Creek Blvd

PM	NOON	AM	
165	0	106	0
892	0	822	3
125	0	187	1
13	0	8	0
1891	0	1154	

NORTHBOUND — Mary Ave/Campus Dr

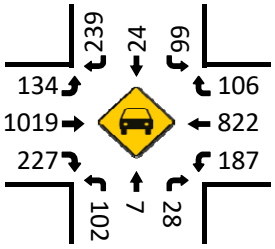
PM	316	0	126	20	75	PM
NOON	0	0	0	0	0	NOON
AM	438	0	102	7	28	AM

1	1	1	0
		0	2	0.5	0.5

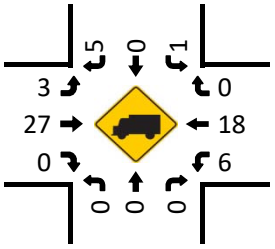
CONTROL: Signalized

TEV	3020 AM	0 NOON	3773 PM
PHF	0.91		0.97

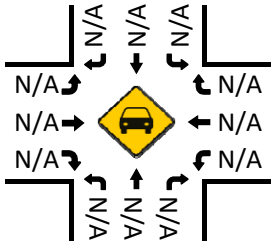
Total Vehicles (AM)



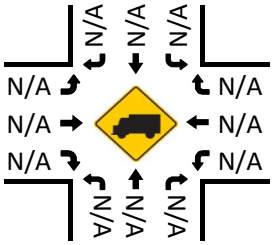
HT (AM)



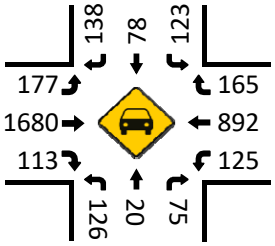
Total Vehicles (Noon)



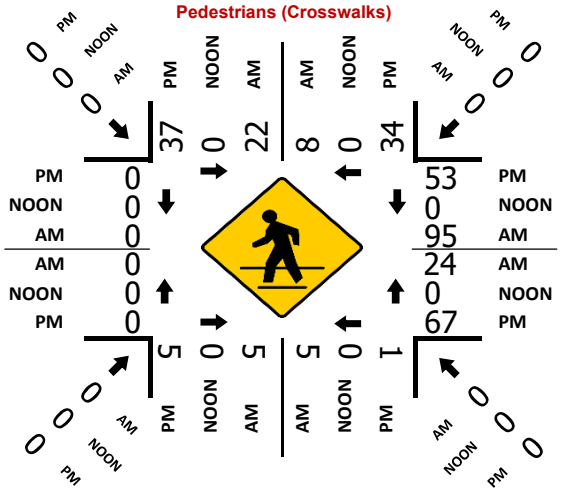
HT (NOON)



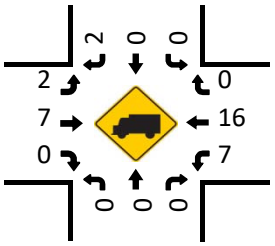
Total Vehicles (PM)



Pedestrians (Crosswalks)



HT (PM)



Kimley»Horn

MEMORANDUM

From: Frederik Venter, P.E. and Anthony Nuti, Kimley-Horn and Associates

To: Winnie Pagan and Chad Mosely, City of Cupertino Public Works

Date: September 18, 2019

Re: **Westport Cupertino – Stevens Creek Boulevard & SR 85 On Ramp Signalization Analysis**

The purpose of this memorandum is to present traffic analysis findings for the reconfiguration of the westbound right turn lane at the intersection of Stevens Creek Boulevard and SR 85 Northbound Ramp Terminal for pedestrian and bicycle crossing maneuvers. Level of service and queue analysis for the westbound right turn movement and the overall intersection are discussed in this memo. The effect of the Westport Cupertino mixed-use urban village project (hereinafter referred to as "Westport") on the westbound right turn movement and level of service at the intersection also were evaluated. The Westport project would demolish the existing shopping center (i.e., The Oaks Shopping Center) and construct 203 multi-family residential units, 39 senior units, and 20,000 square feet of retail space.

1. Introduction

The City of Cupertino is planning to reconfigure the existing westbound right turn movement from Stevens Creek Boulevard onto the Northbound State Route 85 On Ramp. This reconfiguration will include the following:

- Convert the existing westbound "free" right turn lane to a signal controlled right turn movement to allow for an exclusive protected phase for pedestrians and cyclists to cross the on-ramp leg.

The purpose of this reconfiguration is to increase pedestrian and bicycle opportunities to cross the on-ramp leg.

For this analysis, the following study intersection was analyzed:

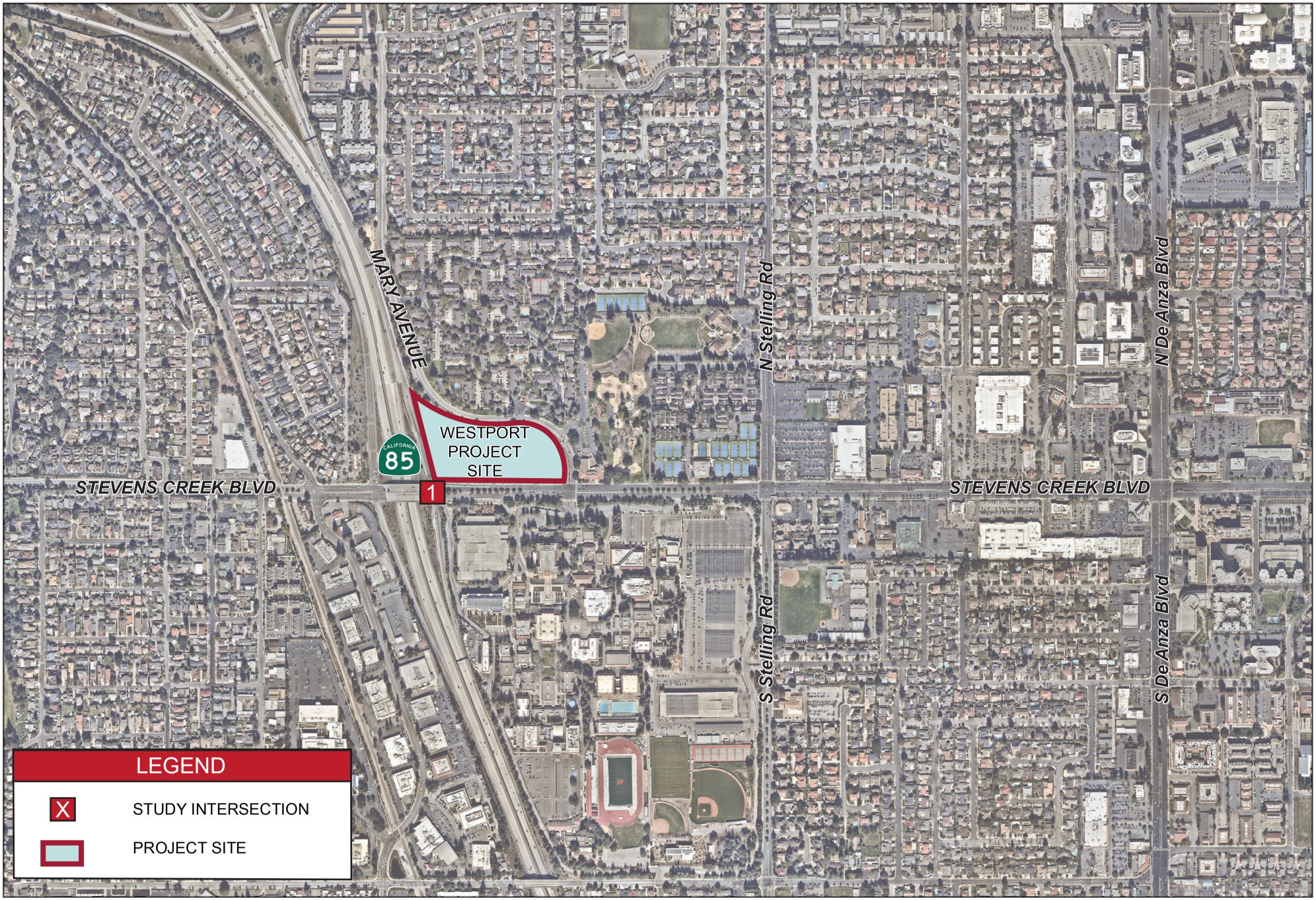
1. Stevens Creek Boulevard & State Route 85 Northbound Ramp Terminal

Figure 1 shows the location of the study intersection.

Figure 2 shows the reconfiguration of the Stevens Creek and Northbound State Route 85 On/Off Ramps provided by Toole Design Group. The planned intersection configuration is in the conceptual design stage.

Figure 3 shows the proposed site plan for the Westport project.

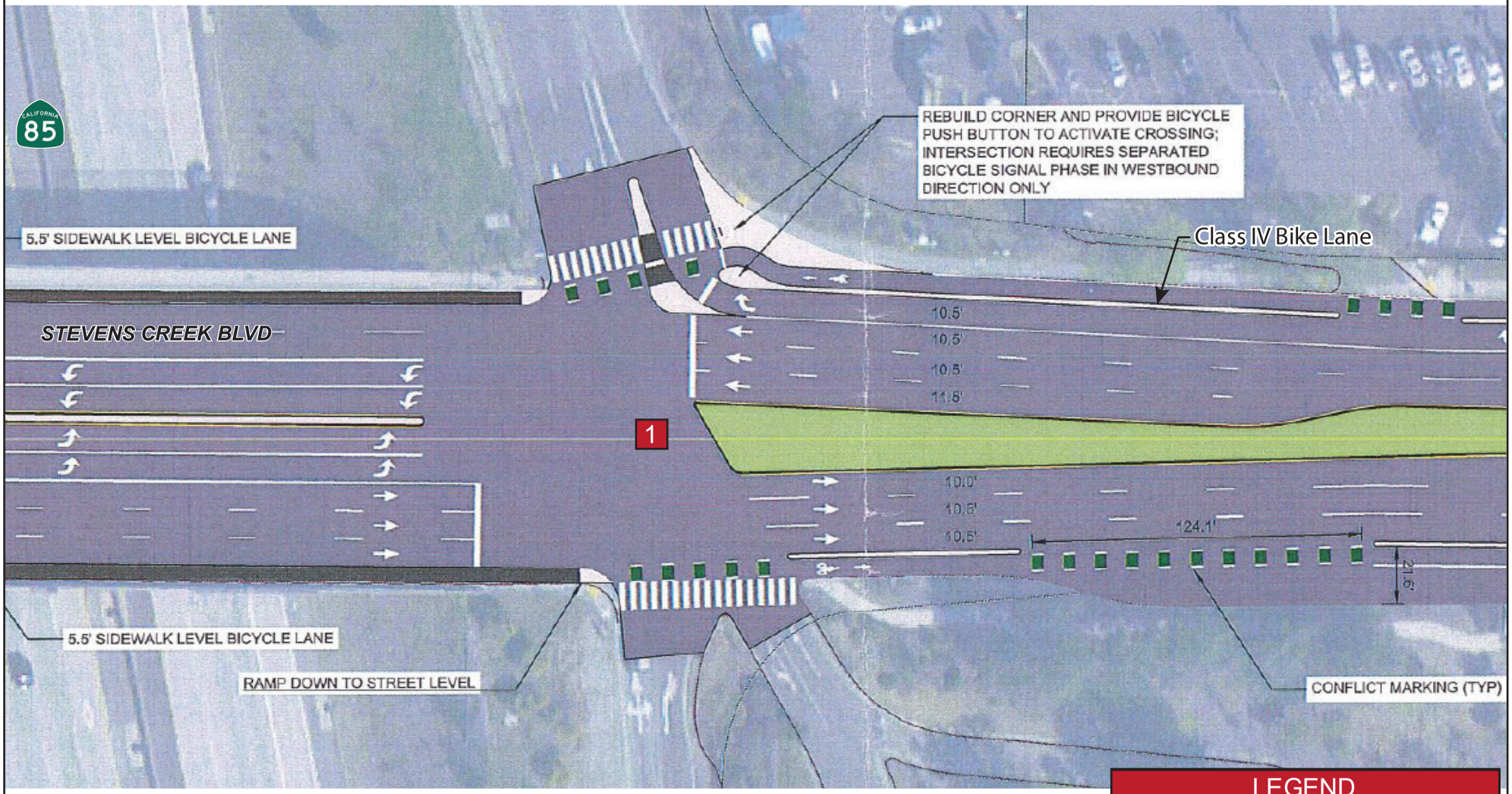
A Simtraffic microsimulation model was prepared for the analysis. The model included the Stevens Creek Boulevard/Mary Avenue intersection to the east and the Stevens Creek Boulevard/SR 85 southbound ramp terminal intersection to the west, to have accurate arrival patterns for the analysis of the study intersection, particularly the westbound right turn movement. No analysis results were reported for these adjacent intersections, since the operations at these locations will remain unaffected with the planned reconfiguration.



Kimley»Horn
Expect More. Experience Better.

N
NOT TO SCALE

Stevens Creek Blvd & SR 85 Northbound Ramp Terminal Analysis
Figure 1
Project Vicinity



Source: City and Toole Design Group

Note: The proposed layout and median island may have to be modified to comply with Caltrans requirements

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Expect More. Experience Better.

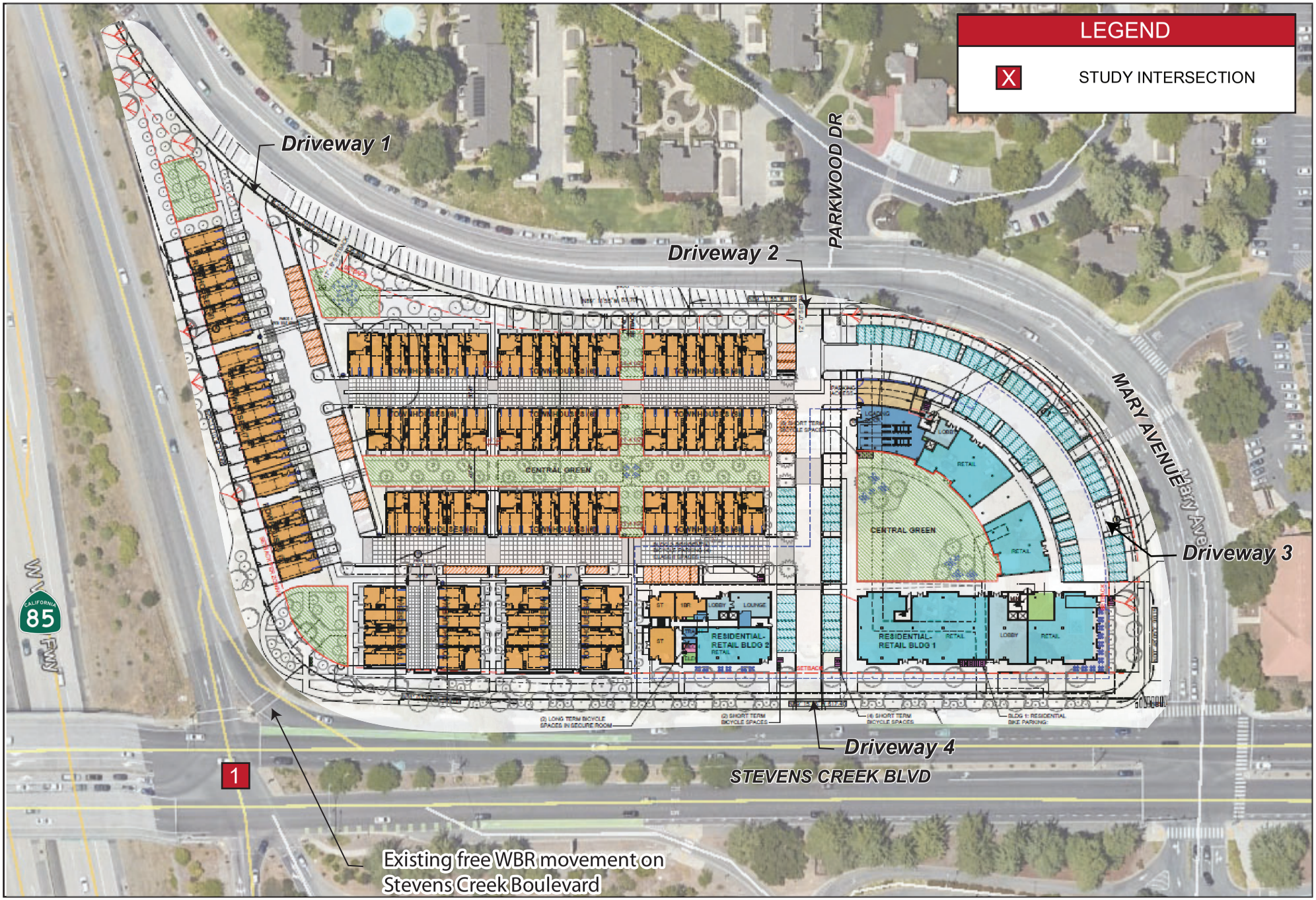
N

NOT TO SCALE

Stevens Creek Blvd & SR 85 NB Ramp Terminal Analysis

Figure 2

Proposed SR 85 NB Ramp Terminal Reconfiguration



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Stevens Creek Blvd & SR 85 NB Ramp Terminal Analysis
Figure 3

Proposed Westport Project Site

2. Analysis Methodology

The Santa Clara Valley Transportation Authority (VTA) Traffic Impact Analysis Guidelines (October 2014), City of Cupertino guidelines, and industry criteria were utilized in this analysis to determine project requirements and potential impacts.

Analysis of the study intersection is based on the concept of Level of Service (LOS). The LOS of an intersection is a qualitative measurement used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity.

Intersection delay and level of service (LOS) calculations were performed using Highway Capacity Manual (HCM) 2000 methodology in Synchro Version 9, which is consistent with TRAFFIX software. Synchro was used instead of TRAFFIX because it provides improved signal timing evaluation at the intersection of Stevens Creek and Northbound State Route 85 On/Off Ramps.

The VTA Congestion Management Plan (CMP) (December 2017) states a LOS E, except for facilities grandfathered in at LOS F, is acceptable for both the AM and PM peak hour at the study intersection. The study intersection is not identified as an intersection operating at LOS F, so a minimum of LOS E is acceptable for the study intersection.

The following scenarios were analyzed for this report in the AM and PM peak hours:

- Existing (2019) Conditions
- Existing (2019) Plus Westport and Signalized Conditions for the Westbound Right Turn Movement
- Cumulative (2040) Conditions
- Cumulative (2040) Plus Westport and Signalized Conditions for the Westbound Right Turn Movement

3. Traffic Analysis

The following section discusses traffic operations at the study intersection of Stevens Creek Boulevard and Northbound State Route 85 Ramp Terminal.

3.1 Existing (2019) Conditions LOS Analysis

Existing Conditions traffic operations were evaluated using existing lane geometry, traffic control, and peak hour traffic, pedestrian, and bicycle volumes. Counts were collected on the following days:

- AM Peak Period: May 23, 2019 (7:00 AM - 10:00 AM)
- PM Peak Period: May 22, 2019 (4:00 PM – 7:00 PM)

Counts were collected when school was in session and the weather was fair.

Current operations at the study intersection include the following:

- Protected left turns on all approaches
- No right turn on red for the Northbound State Route 85 Off Ramp right turn onto Stevens Creek Boulevard
- No right turns allowed for the De Anza Community College approach
- “Free” movements for the westbound right turn from Stevens Creek Boulevard onto the northbound on ramp of State Route 85
- The north leg has a two-stage crosswalk that allows a pedestrian or cyclist to cross the “free” westbound right turn lane when there is a gap in traffic or traffic stops for them and wait on the small refuge island provided. Then they cross the on-ramp lanes using the pedestrian signal-controlled crosswalk.

Even though right turns are not permitted for the De Anza Community College approach, some vehicles were observed performing this movement. In Synchro these vehicles were modeled as through movements since a right turn is an illegal movement.

Figure 4 shows the Existing Conditions Geometry at the study intersection.

Figure 5 shows the vehicle count data, **Figure 6** shows the pedestrian count data, and **Figure 7** shows the bike count data.

Table 1 illustrates the LOS and delay under Existing Conditions.

The 95th percentile queue for the westbound right turn is zero in Existing (2019) Conditions. The movement is a "free" right turn, and cars can perform the movement without stopping. Vehicles currently yield to pedestrians using the crosswalk at the northbound on-ramp; however, the low bicycle and pedestrian volumes do not generate queues when vehicles yield to them as they cross the westbound right turn movement.

The existing intersection currently operates at an acceptable level of service.

Figure 4 – Existing (2019) Conditions Geometry

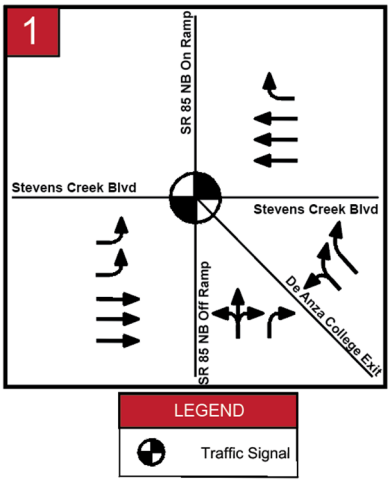

Figure 5 – Existing (2019) Conditions Peak Hour Intersection Volumes

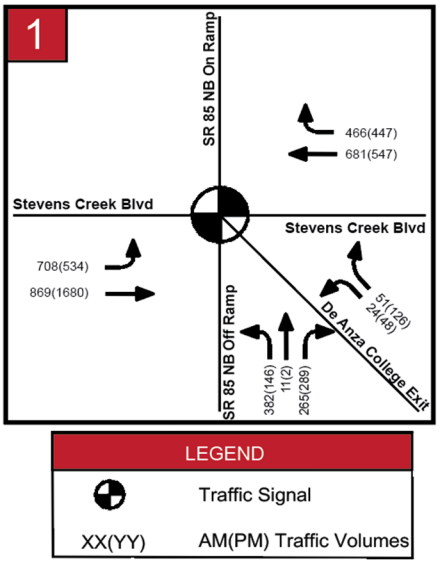

Figure 6 - Existing Peak Hour Pedestrian Count Data

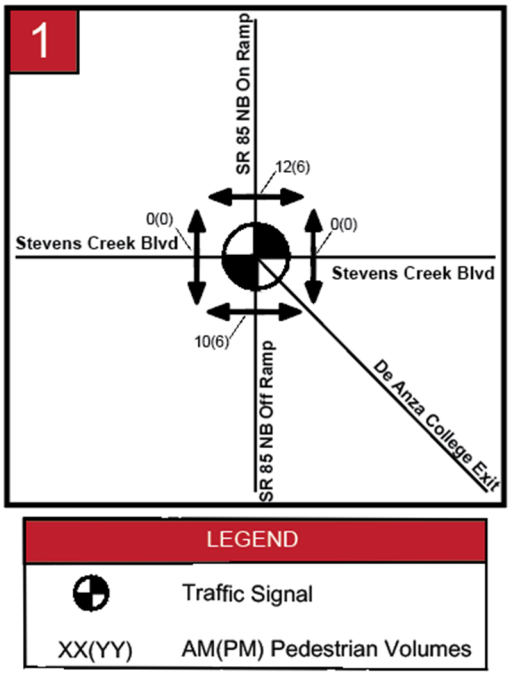

Figure 7 – Existing Peak Hour Bicycle Count Data

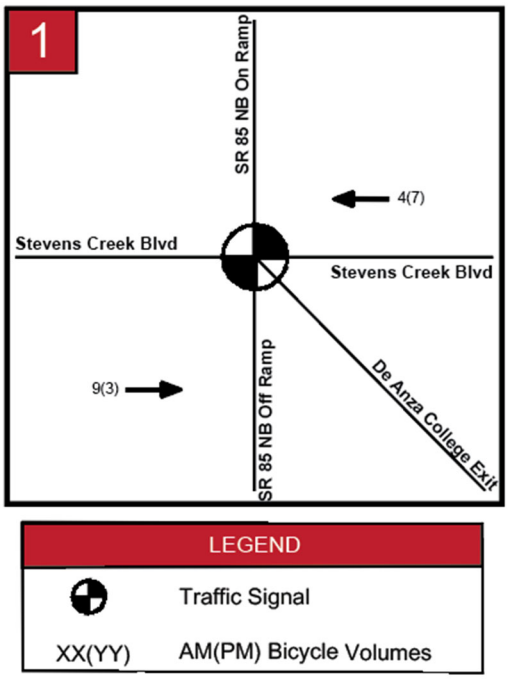

Table 1 - Existing (2019) Conditions Level of Service

	Intersection	LOS Criteria	Jurisdiction	Control	Existing (2019)			
					AM Peak		PM Peak	
					LOS	Delay	LOS	Delay
1	Stevens Creek Boulevard and NB SR 85 On/Off Ramps	E	Caltrans	Signal	C	30.0	C	24.7

Notes:
1. Analysis performed using Synchro 10 with HCM 2000 methodologies
2. Delay indicated in seconds/vehicle
3. CMP level of service (LOS) standard for the County is E
4. Intersections that fall below City standards are shown in **bold**

3.2 Trip Generation Estimates and Distribution for the Westport Project

The Westport project would generate -275 net new daily trips, 47 net new AM peak hour trips, and -22 net new PM peak hour trips, consistent with the analysis completed in the Westport Cupertino – Transportation Analysis Memo (November 27, 2018).

Figure 8 illustrates the distribution for the retail uses of the Westport project, while **Figure 9** illustrates the distribution for the residential uses.

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SR 85 Interchange Analysis
Figure 6

Retail Trip Distribution

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SR 85 Interchange Analysis
Figure 7

Residential Trip Distribution

3.3 Existing (2019) Plus Westport Project and Signalized Conditions for the Westbound Right Turn (WBR) Conditions

Traffic operations were evaluated with Synchro and SimTraffic software using the proposed signalized westbound right turn configuration with existing peak hour traffic volumes and adding the Westport project trips.

Figure 10 shows the intersection volumes with the Westport Project implemented. It was also estimated that bicycle and pedestrian volumes would increase by 20% at the crosswalk. This is based on the assumption that the improved facility and the added residential units from the Westport project would generate more pedestrian and bicycle demand. The new pedestrian and bicycle crossing volumes are shown on **Figure 11** and **Figure 12**, respectively.

To be conservative, only a pedestrian signal was analyzed because a pedestrian crossing time is longer than a bicycle crossing time. A shorter bicycle crossing time would produce shorter vehicle queues in the westbound right turn lane than would occur with a longer pedestrian crossing time.

Currently, the westbound right turn movement operates independently from the existing intersection as a "free" right turn. With the addition of signal control for the westbound right turn movement, the cars would have a continuous green right-turn arrow until a cyclist or pedestrian arrives and activates the pedestrian or bike crossing signal, at which time a red right-turn arrow would stop the cars. This pedestrian/bicycle signal call could only occur on the east-west signal phasing plan of the intersection when there are no other conflicting movements with the pedestrian and/or bicycle phase. Queues would only form in the westbound right turn pocket when the right turn arrow is red.

SimTraffic software cannot accurately simulate this signal timing plan because of the random nature of pedestrian and bicycle arrivals/crossings. Thus, an equivalent simulation was developed that is more conservative and assumes a pedestrian or bicycle call with every green east-west phase. In addition, a pedestrian crossing time was used in the simulation, which is higher compared to a bicycle crossing time.

Queues would be generated by the vehicles stopping and waiting for a pedestrian or bicycle to cross when the right turn arrow is red. Queue results after five SimTraffic simulations and HCM 2000 LOS results for the westbound right turn lane are reported in **Table 2**.

Under Existing (2019) Plus Westport and Signalized Conditions, queues for the westbound right turn movement would increase by approximately nine cars in the AM peak hour and ten cars in the PM peak hour compared to existing conditions with no signal control. The overall intersection LOS would also remain at LOS C in both the AM and PM peak hours.

Figure 13 shows the estimated queue lengths and demonstrates that no operational issues would occur.

Note that the queues reported in Table 2 and shown on Figure 13 are the 95th percentile vehicle queues. The 95th percentile queue length value indicates that a queue of this length or less would occur on 95 percent of the signal cycles that include a pedestrian or bicycle call.

It is anticipated that no median will be provided at this location, consistent with the latest Caltrans and VTA policies, and that the curb return would be squared up and the radii sufficient to accommodate truck turns. A pedestrian and cyclist would then cross the on-ramp in one phase (i.e., the current two-stage crossing procedure would be eliminated). The total crosswalk length was determined to be 85 feet, which requires approximately 25 seconds (at a walking speed of 3.5 feet per second) for the pedestrian clearance interval. Right turn on red would not be allowed for the westbound right turn movement to prevent cars from yielding (instead of stopping) to pedestrians.

Figure 10 – Existing (2019) Plus Westport and Signalized Conditions Peak Hour Intersection Volumes

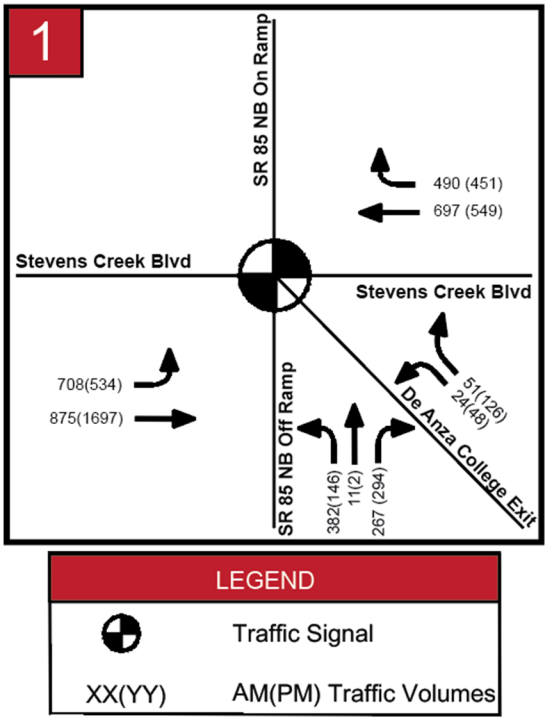


Figure 11 – Existing (2019) Plus Westport and Signalized Conditions Peak Hour Pedestrian Volumes

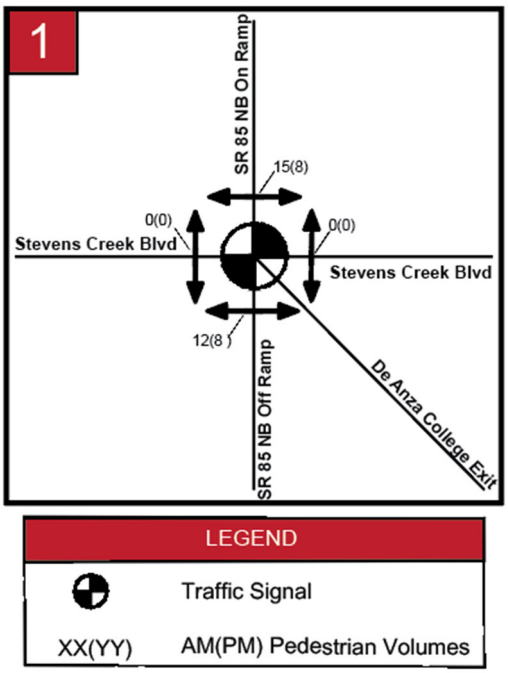


Figure 12 – Existing (2019) Plus Westport and Signalized Conditions Peak Hour Bicycle Volumes

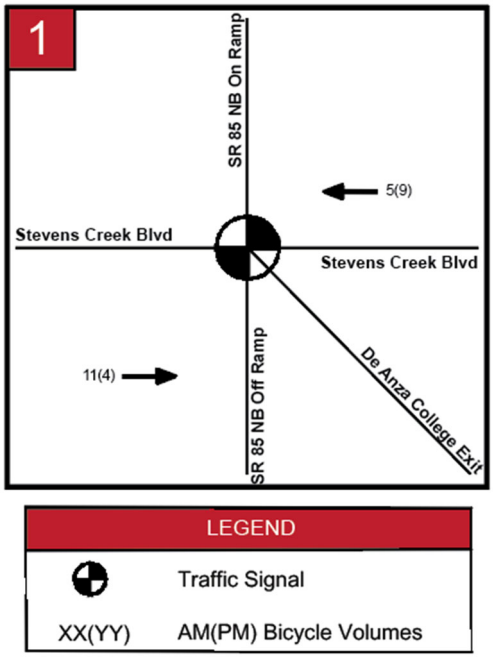
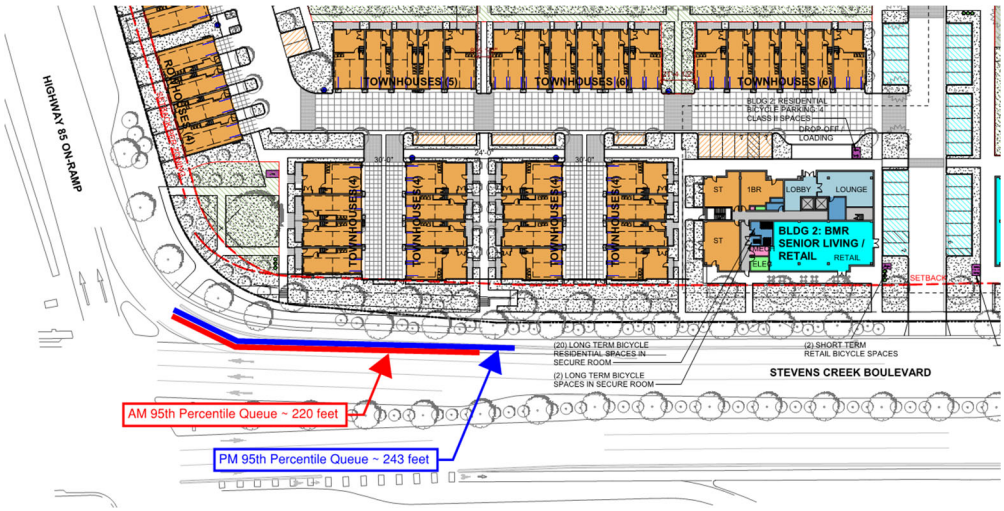


Table 2 - Existing (2019) Plus Westport and Signalized Conditions Queues

Intersection		MVMT	Existing (2019) + Westport +Signal					
			AM Peak			PM Peak		
			Delay	LOS[1]	95th Percentile Queue[2]	Delay	LOS[1]	95th Percentile Queue[2]
1	Stevens Creek Boulevard and NB SR 85 On/Off Ramps	WBRT	7.6	A	220 ft (9 cars)	8.0	A	243 ft (10 cars)

Notes
1. Analysis performed using Synchro 10 with HCM 2000 methodologies
2. Analysis completed using Simtraffic simulation software

Figure 13 - Existing (2019) Plus Westport and Signalized Conditions Queue Lengths



3.4 Cumulative (2040) Conditions

Traffic operations were evaluated for 2040 Cumulative Conditions based on data obtained from the City of Cupertino General Plan EIR, 2014 (June 6, 2014).

It is assumed that the Cumulative Conditions intersection geometry of State Route 85 and Stevens Creek Boulevard would be the same as Existing Conditions. Accordingly, vehicles would yield to pedestrians and cyclists using the crosswalk at the northbound on-ramp; however, the low bicycle and pedestrian volumes would not generate queues when vehicles yield to them as they cross the intersection.

Figure 14 shows the Cumulative (2040) volumes while **Table 3** shows the LOS and delay for the traffic signal at the study intersection. The queues for the westbound right turn are assumed to be zero because in Cumulative (2040) Conditions, the movement would be "free", and cars would perform this movement without stopping. Vehicles would yield to pedestrians and cyclists using the crosswalk at the northbound on-ramp; however, the low bicycle and pedestrian volumes would not generate queues when vehicles yield to them as they cross the westbound right turn movement.

Under Cumulative (2040) Conditions the intersection would operate at an acceptable level of service.

It should be noted that for the intersection, the PM peak hour reported delay improved with Cumulative (2040) Conditions. The reason for this occurrence is because the trips were predominately added to non-critical movements, which had a lower movement delay than the average intersection delay, and thereby decreases the overall average delay.

Figure 14 – Cumulative (2040) Conditions Peak Hour Intersection Volumes

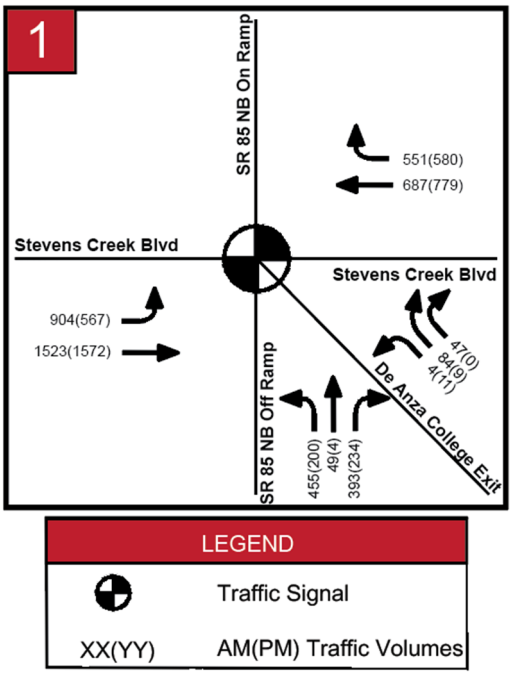


Table 3 – Cumulative (2040) Conditions Level of Service

	Intersection	LOS Criteria	Jurisdiction	Control	Cumulative (2040)			
					AM Peak		PM Peak	
					LOS	Delay	LOS	Delay
1	Stevens Creek Boulevard and NB SR 85 On/Off Ramps	E	Caltrans	Signal	D	46.1	C	20.3

Notes:
1. Analysis performed using Synchro 10 with HCM 2000 methodologies
2. Delay indicated in seconds/vehicle
3. CMP level of service (LOS) standard for the County is E
4. Intersections that fall below City standards are shown in **bold**

3.5 Cumulative (2040) Plus Westport Project and Signalized Conditions for the Westbound Right Turn (WBR) Conditions

Traffic operations were evaluated with Synchro and SimTraffic software using the proposed signalized westbound right turn configuration with Cumulative (2040) peak hour traffic volumes and adding the Westport project trips.

Figure 15 shows the intersection volumes with the Westport Project implemented. It was also assumed that bicycle and pedestrian volumes would increase by 20% at the crosswalk. The new pedestrian and bicycle crossing volumes are shown on **Figure 16** and **Figure 17**, respectively**.**

The signal phasing conditions would be the same as for Existing Plus Project conditions. Queues were analyzed for the Cumulative (2040) Plus Westport Project and Signalized WBR Conditions to determine the extent of vehicle queuing that would occur along westbound Stevens Creek Boulevard as a result of the new signal control. Queue results after five SimTraffic simulations and HCM 2000 LOS results for the westbound right turn lane are reported in **Table 4**.

Under Cumulative (2040) Plus Westport and Signalized Conditions, queues for the westbound right turn movement would increase by approximately ten cars in the AM peak hour and twelve cars in the PM peak hour compared to existing conditions with no signal control. The overall intersection LOS would also remain at LOS D in the AM peak hour and LOS C in the PM peak hour.

Figure 18 shows the estimated queue lengths and demonstrates that no operational issues would occur.

Figure 15 - Cumulative (2040) Plus Westport and Signalized Conditions Peak Hour Intersection Volumes

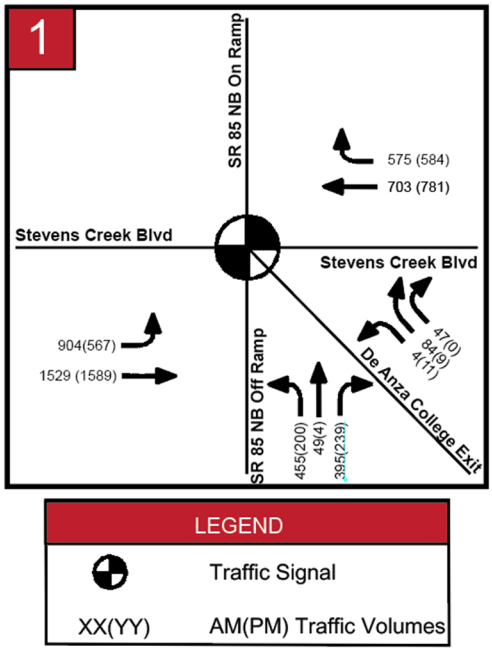


Figure 16 - Cumulative (2040) Plus Westport and Signalized Conditions Peak Hour Pedestrian Volumes

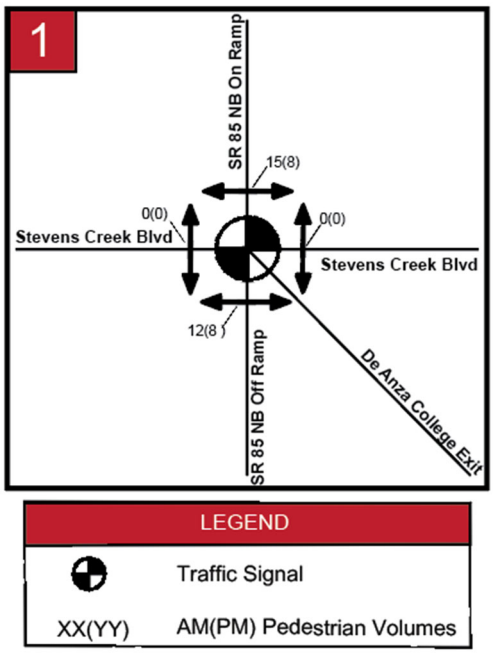


Figure 17 - Cumulative (2040) Plus Westport and Signalized Conditions Peak Hour Bicycle Volumes

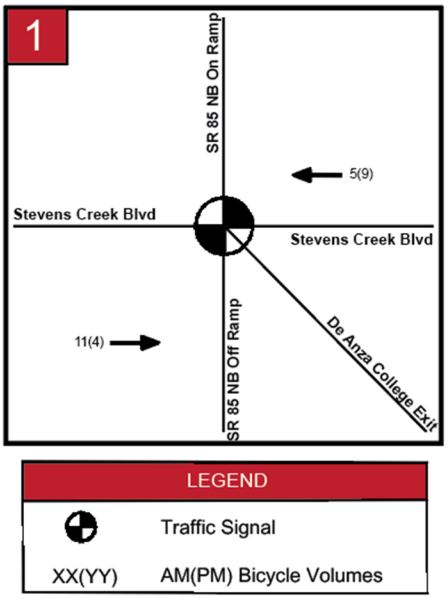
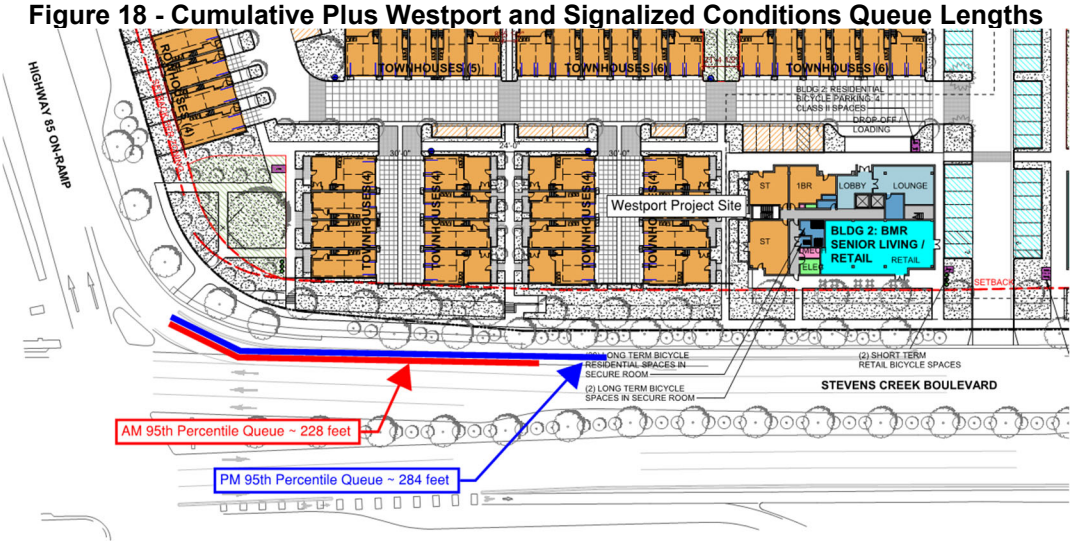


Table 4 - Cumulative (2040) Plus Westport and Signalized Conditions Queues

Intersection		MVMT	Cumulative (2040) + Westport + Signal					
			AM Peak			PM Peak		
			Delay	LOS[1]	95th Percentile Queue[2]	Delay	LOS[1]	95th Percentile Queue[2]
1	Stevens Creek Boulevard and NB SR 85 On/Off Ramps	WBRT	8.2	A	246 ft (10 cars)	11.1	B	284 ft (12 cars)

Notes
1. Analysis performed using Synchro 10 with HCM 2000 methodologies
2. Analysis completed using Simtraffic simulation software

Figure 18 - Cumulative Plus Westport and Signalized Conditions Queue Lengths



4. Conclusions

Table 5 provides a summary for the analysis of the proposed bike and pedestrian signal control phase at the intersection of Stevens Creek Boulevard and Northbound State Route 85 On/Off Ramps. With the Westport project and signalization of the westbound right turn movement, the westbound right turn queues would increase during the AM and PM peak hours of traffic. However, the increases would be minimal and would not be substantial enough to cause any operational issues along Stevens Creek Boulevard.

Table 5 - Summary Table

Scenario	Type	AM Peak	PM Peak
Existing (2019) Conditions	Intersection Delay (s)	30.0	24.7
	Intersection LOS	C	C
	WBR 95th Percentile Queue	0 feet	0 feet
Existing (2019) Plus Westport and Signalized Conditions	Intersection Delay (s)	34.3	23.0
	Intersection LOS	C	C
	WBR Delay (s)	7.6	8.0
	WBR LOS	A	A
	WBR 95th Percentile Queue	220 ft (9 cars)	243 ft (10 cars)
Cumulative (2040) Conditions	Intersection Delay (s)	46.1	20.3
	Intersection LOS	D	C
	WBR 95th Percentile Queue	0 feet	0 feet
Cumulative (2040) Plus Westport and Signalized Conditions	Intersection Delay (s)	47.6	24.7
	Intersection LOS	D	C
	WBR Delay (s)	8.2	11.1
	WBR LOS	A	B
	WBR 95th Percentile Queue	246 ft (10 cars)	284 ft (12 cars)

5. APPENDIX

A1: Existing Turning Movement Counts

A2: Existing Conditions Synchro Outputs

A3: Existing Plus Westport and Signal Conditions Synchro Outputs

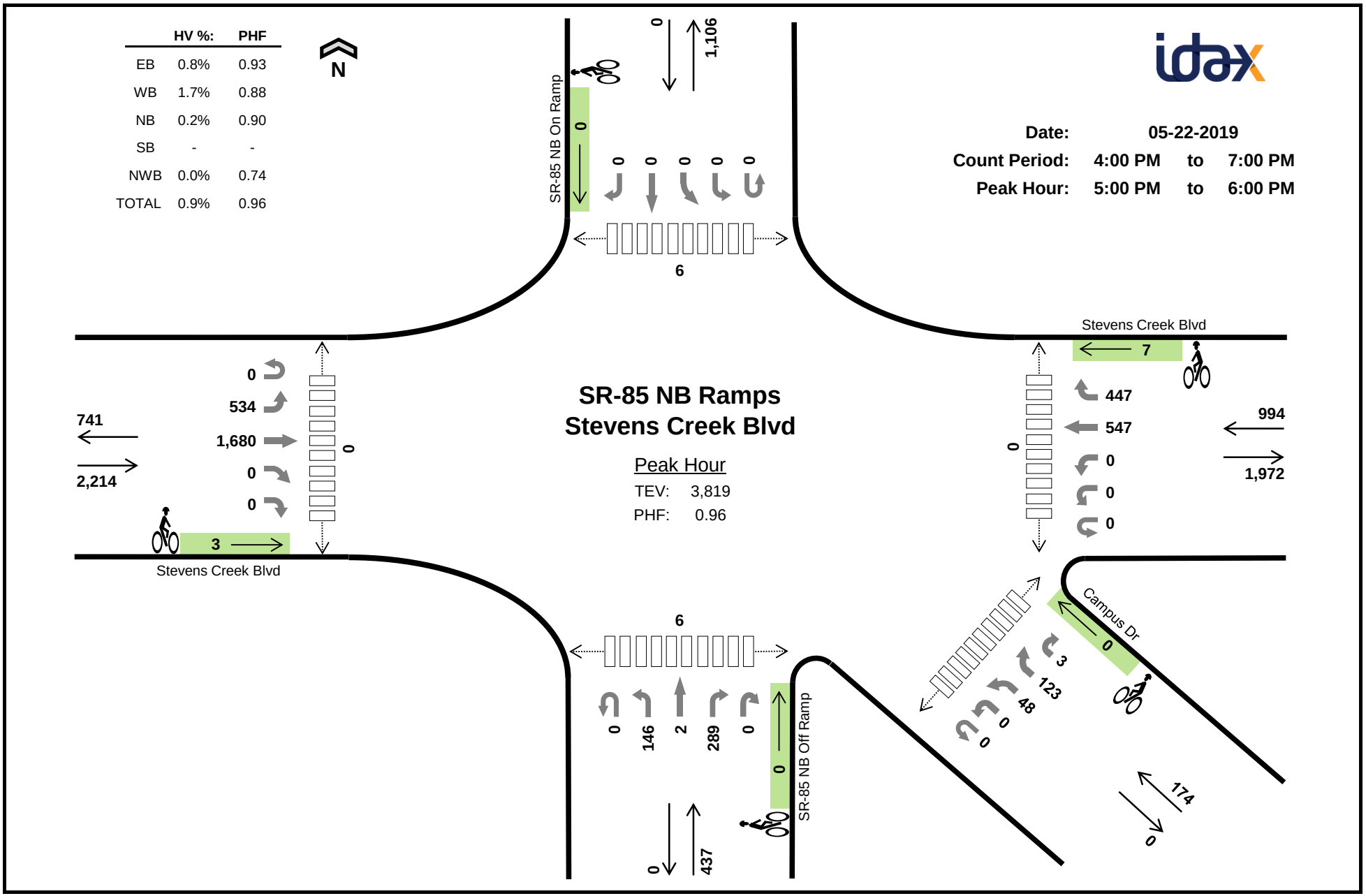
A4: Cumulative Conditions Synchro Outputs

A5: Cumulative Plus Westport and Signal Conditions Synchro Outputs

A6: Westport Trip Generation

A1: Existing Turning Movement Counts

	HV %:	PHF
EB	0.8%	0.93
WB	1.7%	0.88
NB	0.2%	0.90
SB	-	-
NWB	0.0%	0.74
TOTAL	0.9%	0.96



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Three-Hour Count Summaries

Interval Start	Stevens Creek Blvd Eastbound					Stevens Creek Blvd Westbound					SR-85 NB Off Ramp Northbound					SR-85 NB On Ramp Southbound					Campus Dr Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	115	377	0	0	0	0	0	133	106	0	35	0	38	0	0	0	0	0	0	0	0	14	26	1	845	0
4:15 PM	0	94	424	0	0	0	0	0	114	103	0	55	0	87	0	0	0	0	0	0	0	0	9	14	1	901	0
4:30 PM	0	147	445	0	0	0	0	0	111	102	0	23	0	37	0	0	0	0	0	0	0	0	8	20	2	895	0
4:45 PM	0	113	387	0	0	0	0	0	121	97	0	39	0	47	0	0	0	0	0	0	0	0	7	19	1	831	3,472
5:00 PM	**0**	**135**	**417**	**0**	**0**	**0**	**0**	**0**	**111**	**110**	**0**	**33**	**1**	**60**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**32**	**1**	**906**	3,533
5:15 PM	**0**	**128**	**467**	**0**	**0**	**0**	**0**	**0**	**138**	**102**	**0**	**35**	**0**	**82**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**28**	**1**	**991**	3,623
5:30 PM	**0**	**129**	**370**	**0**	**0**	**0**	**0**	**0**	**128**	**122**	**0**	**47**	**0**	**74**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**43**	**0**	**929**	3,657
5:45 PM	**0**	**142**	**426**	**0**	**0**	**0**	**0**	**0**	**170**	**113**	**0**	**31**	**1**	**73**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**20**	**1**	**993**	**3,819**
6:00 PM	0	133	348	0	0	0	0	0	111	108	0	43	0	74	0	0	0	0	0	0	0	0	19	56	1	893	3,806
6:15 PM	0	131	342	0	0	0	0	0	146	118	0	44	1	75	0	0	0	0	0	0	0	0	11	39	2	909	3,724
6:30 PM	0	135	254	0	0	0	0	0	157	122	0	36	1	59	0	0	0	0	0	0	0	0	13	20	3	800	3,595
6:45 PM	0	147	247	0	0	0	0	0	111	121	0	41	0	38	0	0	0	0	0	0	0	0	11	25	5	746	3,348
Count Total	0	1,549	4,504	0	0	0	0	0	1,551	1,324	0	462	4	744	0	0	0	0	0	0	0	0	140	342	19	10,639	0
Peak Hour All	**0**	**534**	**1,680**	**0**	**0**	**0**	**0**	**0**	**547**	**447**	**0**	**146**	**2**	**289**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**48**	**123**	**3**	**3,819**	**0**
Peak Hour HV	**0**	**7**	**11**	**0**	**0**	**0**	**0**	**0**	**15**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**36**	**0**
Peak Hour HV%	**-**	**1%**	**1%**	**-**	**-**	**-**	**-**	**-**	**3%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**0%**	**1%**	**0**

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

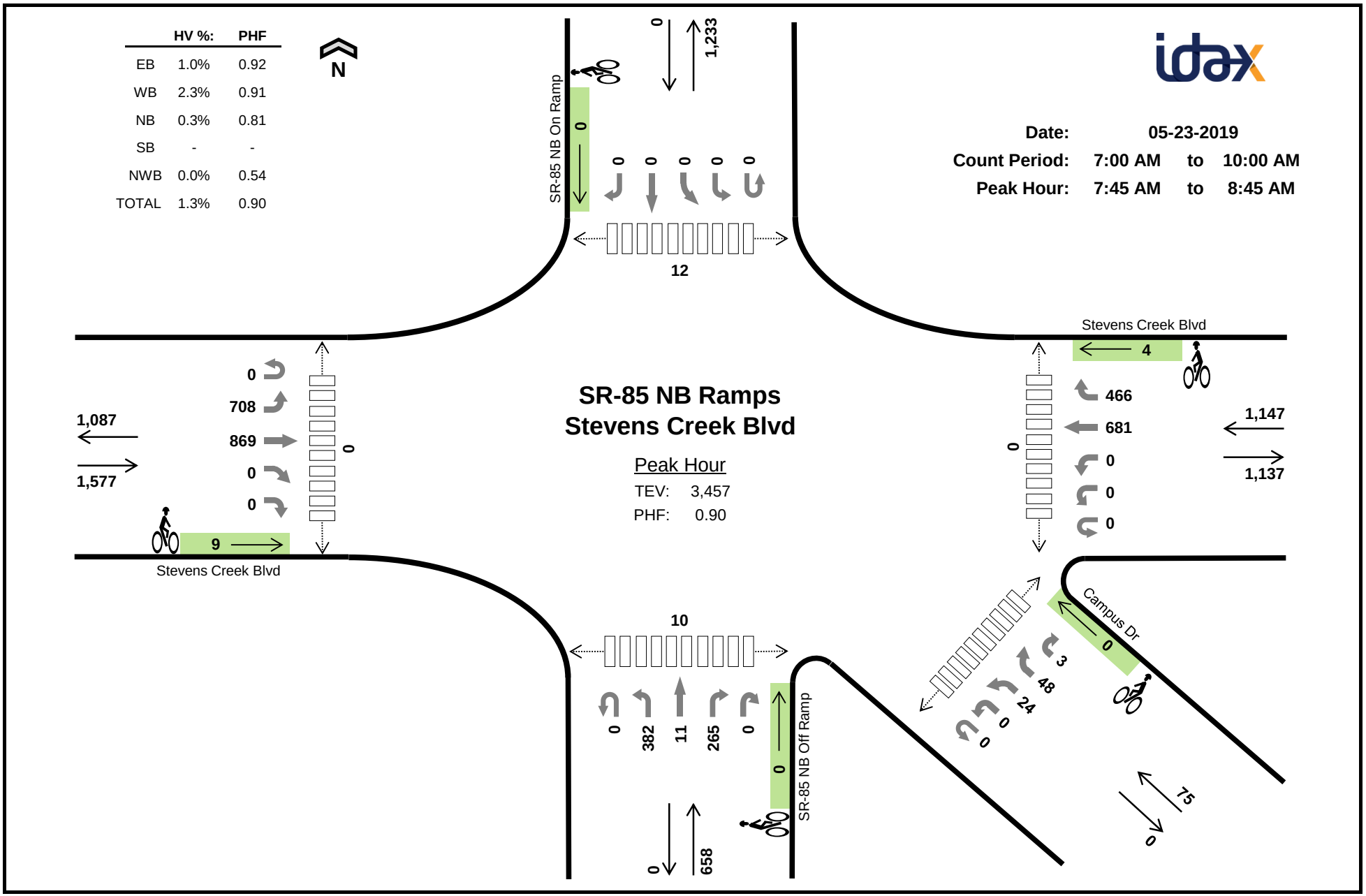
Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	NWB	Total	EB	WB	NB	SB	NWB	Total	East	West	North	South	Southeast	Total
4:00 PM	5	2	0	0	0	*7*	0	0	0	0	0	*0*	0	0	3	4	3	*10*
4:15 PM	1	4	0	0	0	*5*	1	3	0	0	0	*4*	0	0	2	0	0	*2*
4:30 PM	4	2	0	0	0	*6*	0	2	0	0	0	*2*	0	0	0	2	2	*4*
4:45 PM	4	5	0	0	0	*9*	3	2	0	0	0	*5*	0	0	2	3	3	*8*
5:00 PM	**5**	**4**	**0**	**0**	**0**	***9***	**2**	**0**	**0**	**0**	**0**	***2***	**0**	**0**	**3**	**2**	**2**	***7***
5:15 PM	**5**	**6**	**0**	**0**	**0**	***11***	**0**	**4**	**0**	**0**	**0**	***4***	**0**	**0**	**1**	**2**	**2**	***5***
5:30 PM	**6**	**3**	**1**	**0**	**0**	***10***	**0**	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**1**	**2**	**2**	***5***
5:45 PM	**2**	**4**	**0**	**0**	**0**	***6***	**1**	**2**	**0**	**0**	**0**	***3***	**0**	**0**	**1**	**0**	**0**	***1***
6:00 PM	4	1	0	0	5	*10*	2	1	0	0	2	*5*	0	0	1	3	3	*7*
6:15 PM	2	3	0	0	0	*5*	0	0	0	0	0	*0*	0	0	1	1	1	*3*
6:30 PM	2	3	0	0	0	*5*	0	2	0	0	0	*2*	0	0	1	2	2	*5*
6:45 PM	9	3	0	0	0	*12*	0	1	0	0	0	*1*	0	0	2	2	2	*6*
Count Total	49	40	1	0	5	*95*	9	18	0	0	2	*29*	0	0	18	23	22	*63*
Peak Hr	**18**	**17**	**1**	**0**	**0**	***36***	**3**	**7**	**0**	**0**	**0**	***10***	**0**	**0**	**6**	**6**	**6**	*18*

Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Stevens Creek Blvd					Stevens Creek Blvd					SR-85 NB Off Ramp					SR-85 NB On Ramp					Campus Dr					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northwestbound						
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	1	4	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
4:15 PM	0	1	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
4:30 PM	0	1	3	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
4:45 PM	0	1	3	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	27
5:00 PM	**0**	**3**	**2**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	29
5:15 PM	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	35
5:30 PM	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	39
5:45 PM	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**36**
6:00 PM	0	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	10	37
6:15 PM	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	31
6:30 PM	0	0	2	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	26
6:45 PM	0	1	8	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	32
Count Total	0	15	34	0	0	0	0	0	30	10	0	0	0	1	0	0	0	0	0	0	0	0	5	0	0	95	0
Peak Hour	**0**	**7**	**11**	**0**	**0**	**0**	**0**	**0**	**15**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	36	**0**

Three-Hour Count Summaries - Bikes

Interval Start	Stevens Creek Blvd					Stevens Creek Blvd					SR-85 NB Off Ramp					SR-85 NB On Ramp					Campus Dr					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northwestbound						
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
4:30 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
4:45 PM	0	0	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	11
5:00 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	13
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	13
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	12
5:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**10**
6:00 PM	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	5	13
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
6:30 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	10
6:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8
Count Total	0	0	9	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	29	0
Peak Hour	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	10	**0**



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

Three-Hour Count Summaries

Interval Start	Stevens Creek Blvd Eastbound					Stevens Creek Blvd Westbound					SR-85 NB Off Ramp Northbound					SR-85 NB On Ramp Southbound					Campus Dr Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	0	86	96	0	0	0	0	0	50	82	0	44	1	45	0	0	0	0	0	0	0	0	0	2	0	406	0
7:15 AM	0	106	147	0	0	0	0	0	70	103	0	40	0	35	0	0	0	0	0	0	0	0	2	11	0	514	0
7:30 AM	0	149	127	0	0	0	0	0	138	126	0	54	1	38	0	0	0	0	0	0	0	0	2	8	0	643	0
7:45 AM	**0**	**187**	**206**	**0**	**0**	**0**	**0**	**0**	**188**	**112**	**0**	**75**	**1**	**38**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**12**	**0**	**821**	2,384
8:00 AM	**0**	**163**	**212**	**0**	**0**	**0**	**0**	**0**	**157**	**126**	**0**	**106**	**3**	**95**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**1**	**869**	2,847
8:15 AM	**0**	**163**	**265**	**0**	**0**	**0**	**0**	**0**	**201**	**115**	**0**	**94**	**4**	**78**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**21**	**1**	**955**	3,288
8:30 AM	**0**	**195**	**186**	**0**	**0**	**0**	**0**	**0**	**135**	**113**	**0**	**107**	**3**	**54**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**11**	**1**	**812**	**3,457**
8:45 AM	0	139	167	0	0	0	0	0	138	127	0	104	3	67	0	0	0	0	0	0	0	0	8	11	0	764	3,400
9:00 AM	0	126	193	0	0	0	0	0	110	109	0	56	0	44	0	0	0	0	0	0	0	0	3	15	2	658	3,189
9:15 AM	0	145	283	0	0	0	0	0	107	131	0	21	1	49	0	0	0	0	0	0	0	0	12	34	0	783	3,017
9:30 AM	0	191	187	0	0	0	0	0	114	163	0	24	1	20	0	0	0	0	0	0	0	0	12	32	0	744	2,949
9:45 AM	0	169	186	0	0	0	0	0	97	140	0	30	0	29	0	0	0	0	0	0	0	0	8	18	0	677	2,862
Count Total	0	1,819	2,255	0	0	0	0	0	1,505	1,447	0	755	18	592	0	0	0	0	0	0	0	0	71	179	5	8,646	0
Peak Hour All	**0**	**708**	**869**	**0**	**0**	**0**	**0**	**0**	**681**	**466**	**0**	**382**	**11**	**265**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**48**	**3**	**3,457**	**0**
Peak Hour HV	**0**	**4**	**12**	**0**	**0**	**0**	**0**	**0**	**13**	**13**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**44**	**0**
Peak Hour HV%	**-**	**1%**	**1%**	**-**	**-**	**-**	**-**	**-**	**2%**	**3%**	**-**	**0%**	**9%**	**0%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**0%**	**1%**	**0**

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	NWB	Total	EB	WB	NB	SB	NWB	Total	East	West	North	South	Southeast	Total
7:00 AM	5	8	2	0	0	*15*	1	0	0	0	0	*1*	0	0	3	0	0	*3*
7:15 AM	6	7	1	0	0	*14*	2	0	0	0	0	*2*	0	0	0	1	1	*2*
7:30 AM	4	2	0	0	0	*6*	0	2	0	0	0	*2*	0	0	2	1	1	*4*
7:45 AM	**5**	**9**	**0**	**0**	**0**	***14***	**1**	**2**	**0**	**0**	**0**	***3***	**0**	**0**	**1**	**0**	**0**	***1***
8:00 AM	**2**	**8**	**0**	**0**	**0**	***10***	**3**	**0**	**0**	**0**	**0**	***3***	**0**	**0**	**4**	**4**	**4**	***12***
8:15 AM	**3**	**6**	**1**	**0**	**0**	***10***	**2**	**2**	**0**	**0**	**0**	***4***	**0**	**0**	**6**	**3**	**3**	***12***
8:30 AM	**6**	**3**	**1**	**0**	**0**	***10***	**3**	**0**	**0**	**0**	**0**	***3***	**0**	**0**	**1**	**3**	**3**	***7***
8:45 AM	6	9	1	0	0	*16*	0	0	0	0	0	*0*	0	0	5	1	1	*7*
9:00 AM	5	8	1	0	0	*14*	0	0	1	0	0	*1*	0	0	1	6	6	*13*
9:15 AM	5	7	0	0	0	*12*	2	0	0	0	0	*2*	0	0	1	5	5	*11*
9:30 AM	9	4	1	0	0	*14*	2	3	0	0	0	*5*	0	0	6	2	2	*10*
9:45 AM	5	7	0	0	1	*13*	0	0	0	0	0	*0*	0	0	2	4	4	*10*
Count Total	61	78	8	0	1	*148*	16	9	1	0	0	*26*	0	0	32	30	30	*92*
Peak Hr	**16**	**26**	**2**	**0**	**0**	***44***	**9**	**4**	**0**	**0**	**0**	***13***	**0**	**0**	**12**	**10**	**10**	*32*

Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Stevens Creek Blvd					Stevens Creek Blvd					SR-85 NB Off Ramp					SR-85 NB On Ramp					Campus Dr					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northwestbound						
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	5	0	0	0	0	0	3	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	15	0
7:15 AM	0	1	5	0	0	0	0	0	3	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0
7:30 AM	0	1	3	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
7:45 AM	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**5**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	49
8:00 AM	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	44
8:15 AM	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	40
8:30 AM	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**44**
8:45 AM	0	5	1	0	0	0	0	0	4	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	16	46
9:00 AM	0	5	0	0	0	0	0	0	5	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14	50
9:15 AM	0	1	4	0	0	0	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	52
9:30 AM	0	3	6	0	0	0	0	0	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14	56
9:45 AM	0	1	4	0	0	0	0	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	13	53
Count Total	0	21	40	0	0	0	0	0	38	40	0	5	1	2	0	0	0	0	0	0	0	0	0	1	0	148	0
Peak Hour	**0**	**4**	**12**	**0**	**0**	**0**	**0**	**0**	**13**	**13**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	44	**0**

Three-Hour Count Summaries - Bikes

Interval Start	Stevens Creek Blvd					Stevens Creek Blvd					SR-85 NB Off Ramp					SR-85 NB On Ramp					Campus Dr					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northwestbound						
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:45 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	8
8:00 AM	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	10
8:15 AM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	12
8:30 AM	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**13**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	8
9:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6
9:30 AM	0	0	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Count Total	0	0	16	0	0	0	0	0	9	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	26	0
Peak Hour	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	13	**0**

A2: Existing Conditions Synchro Outputs

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	708	869	681	466	382	11	265	24	51
Future Volume (vph)	708	869	681	466	382	11	265	24	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	*0.83	*1.00	*1.00	*0.92		*0.92	*0.92	*0.92	*1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85		1.00	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3123	5644	5588	1433		1731	1731	1748	1900
Flt Permitted	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3123	5644	5588	1433		1731	1731	1748	1900
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	708	869	681	466	382	11	265	24	51
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	708	869	681	466	0	420	238	39	36
Confl. Peds. (#/hr)	12			12					
Confl. Bikes (#/hr)				4					
Heavy Vehicles (%)	1%	1%	2%	2%	1%	1%	1%	0%	0%
Turn Type	Prot	NA	NA	Free	Split	NA	Perm	Prot	Prot
Protected Phases	7	4	8		2	2		1	1
Permitted Phases				Free			2		
Actuated Green, G (s)	26.7	45.8	15.1	93.2		29.8	29.8	5.6	5.6
Effective Green, g (s)	24.7	43.8	13.1	93.2		27.8	27.8	3.6	3.6
Actuated g/C Ratio	0.27	0.47	0.14	1.00		0.30	0.30	0.04	0.04
Clearance Time (s)	4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	827	2652	785	1433		516	516	67	73
v/s Ratio Prot	c0.23	0.15	c0.12			c0.24		0.02	0.02
v/s Ratio Perm				c0.33			0.14		
v/c Ratio	0.86	0.33	0.87	0.33		0.81	0.46	0.58	0.49
Uniform Delay, d1	32.6	15.5	39.2	0.0		30.3	26.6	44.1	43.9
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	8.7	0.1	10.0	0.6		9.5	0.7	12.2	5.2
Delay (s)	41.2	15.5	49.2	0.6		39.8	27.3	56.3	49.1
Level of Service	D	B	D	A		D	C	E	D
Approach Delay (s)		27.1	29.4			35.3		52.8	
Approach LOS		C	C			D		D	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	24.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	534	1680	547	447	146	2	289	48	126
Future Volume (vph)	534	1680	547	447	146	2	289	48	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	6.0		7.0	7.0	7.0	7.0
Lane Util. Factor	*0.83	*1.00	*1.00	*0.92		*0.92	*0.92	*0.92	*1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85		1.00	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3123	5644	5588	1434		1731	1731	1748	1900
Flt Permitted	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3123	5644	5588	1434		1731	1731	1748	1900
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	534	1680	547	447	146	2	289	48	126
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	534	1680	547	447	0	226	211	90	84
Confl. Peds. (#/hr)	6			6					
Confl. Bikes (#/hr)				7					
Heavy Vehicles (%)	1%	1%	2%	2%	1%	1%	1%	0%	0%
Turn Type	Prot	NA	NA	Free	Split	NA	Perm	Prot	Prot
Protected Phases	7	4	8		2	2		1	1
Permitted Phases				Free			2		
Actuated Green, G (s)	21.6	42.5	15.9	87.6		18.2	18.2	11.9	11.9
Effective Green, g (s)	19.6	40.5	13.9	87.6		16.2	16.2	9.9	9.9
Actuated g/C Ratio	0.22	0.46	0.16	1.00		0.18	0.18	0.11	0.11
Clearance Time (s)	5.0	5.0	5.0			5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	698	2609	886	1434		320	320	197	214
v/s Ratio Prot	0.17	c0.30	0.10			c0.13		0.05	0.04
v/s Ratio Perm				c0.31			0.12		
v/c Ratio	0.77	0.64	0.62	0.31		0.71	0.66	0.46	0.39
Uniform Delay, d1	31.8	18.0	34.4	0.0		33.5	33.1	36.3	36.1
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	0.6	1.3	0.6		6.9	4.9	1.7	1.2
Delay (s)	36.8	18.6	35.7	0.6		40.4	38.0	38.0	37.2
Level of Service	D	B	D	A		D	D	D	D
Approach Delay (s)		23.0	19.9			39.2		37.6	
Approach LOS		C	B			D		D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	28.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

A3: Existing Plus Westport and Signal Conditions Synchro Outputs

Intersection: 2: NORTHBOUND SR 85 RAMPS & DE ANZA COLLEGE DWY & STEVENS CREEK BLVD

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	B19	B19	NB
Directions Served	L	L	T	T	T	T	T	T	R	T	T	LTR
Maximum Queue (ft)	358	360	175	176	201	125	223	208	245	13	57	514
Average Queue (ft)	286	295	78	74	84	42	109	91	93	1	3	485
95th Queue (ft)	396	402	147	149	163	99	199	181	220	8	27	591
Link Distance (ft)	346	346	346	346	346	176	176	176	176	591	591	436
Upstream Blk Time (%)	8	11					2	1	3			68
Queuing Penalty (veh)	33	44					7	3	8			0
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: NORTHBOUND SR 85 RAMPS & DE ANZA COLLEGE DWY & STEVENS CREEK BLVD

Movement	NB	B27	NW	NW
Directions Served	R	T	LR	R
Maximum Queue (ft)	485	601	74	65
Average Queue (ft)	234	433	43	19
95th Queue (ft)	483	812	81	53
Link Distance (ft)	436	559	69	69
Upstream Blk Time (%)	1	57	7	1
Queuing Penalty (veh)	0	0	4	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	708	875	697	490	382	11	267	24	51
Future Volume (vph)	708	875	697	490	382	11	267	24	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	*0.83	*1.00	*1.00	*0.92		*0.92	*0.92	*0.92	*1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85		1.00	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3123	5644	5588	1457		1731	1731	1748	1900
Flt Permitted	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3123	5644	5588	1457		1731	1731	1748	1900
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	708	875	697	490	382	11	267	24	51
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	708	875	697	490	0	420	240	39	36
Confl. Peds. (#/hr)	12			12					
Confl. Bikes (#/hr)				5					
Heavy Vehicles (%)	1%	1%	2%	2%	1%	1%	1%	0%	0%
Turn Type	Prot	NA	NA	custom	Split	NA	Prot	Prot	Prot
Protected Phases	1!	6	2	1 7 8!	8	8!	8	7	7!
Permitted Phases									
Actuated Green, G (s)	22.1	44.8	18.7	59.2		23.1	23.1	6.0	6.0
Effective Green, g (s)	20.1	42.8	16.7	57.2		21.1	21.1	4.0	4.0
Actuated g/C Ratio	0.23	0.50	0.19	0.67		0.25	0.25	0.05	0.05
Clearance Time (s)	4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	730	2812	1086	970		425	425	81	88
v/s Ratio Prot	c0.23	0.16	c0.12	c0.34		c0.24	0.14	0.02	0.02
v/s Ratio Perm									
v/c Ratio	0.97	0.31	0.64	0.51		0.99	0.56	0.48	0.41
Uniform Delay, d1	32.6	12.8	31.8	7.2		32.3	28.4	39.9	39.8
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	25.7	0.1	1.3	0.4		40.1	1.7	4.5	3.1
Delay (s)	58.3	12.9	33.2	7.6		72.4	30.1	44.4	42.9
Level of Service	E	B	C	A		E	C	D	D
Approach Delay (s)		33.2	22.6			57.0		43.7	
Approach LOS		C	C			E		D	

Intersection Summary			
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	85.9	Sum of lost time (s)	24.0
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Intersection: 2: NORTHBOUND SR 85 RAMPS & DE ANZA COLLEGE DWY & STEVENS CREEK BLVD

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	B19	B19	NB
Directions Served	L	L	T	T	T	T	T	T	R	T	T	LTR
Maximum Queue (ft)	264	276	280	257	251	125	200	167	248	40	82	246
Average Queue (ft)	167	163	165	149	141	33	79	52	102	1	5	154
95th Queue (ft)	253	262	250	240	233	89	171	125	243	32	38	224
Link Distance (ft)	346	346	346	346	346	176	176	176	176	591	591	436
Upstream Blk Time (%)			0			0	1	0	4			
Queuing Penalty (veh)			0			0	3	0	10			
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: NORTHBOUND SR 85 RAMPS & DE ANZA COLLEGE DWY & STEVENS CREEK BLVD

Movement	NB	NW	NW
Directions Served	R	LR	R
Maximum Queue (ft)	191	91	78
Average Queue (ft)	97	66	41
95th Queue (ft)	171	89	77
Link Distance (ft)	436	69	69
Upstream Blk Time (%)		30	5
Queuing Penalty (veh)		15	2
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	534	1697	549	451	146	2	294	48	126
Future Volume (vph)	534	1697	549	451	146	2	294	48	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	*0.83	*1.00	*1.00	*0.92		*0.92	*0.92	*0.92	*1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85		1.00	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3123	5644	5588	1457		1731	1731	1748	1900
Flt Permitted	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3123	5644	5588	1457		1731	1731	1748	1900
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	534	1697	549	451	146	2	294	48	126
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	534	1697	549	451	0	230	212	90	84
Confl. Peds. (#/hr)	8			8					
Confl. Bikes (#/hr)				9					
Heavy Vehicles (%)	1%	1%	2%	2%	1%	1%	1%	0%	0%
Turn Type	Prot	NA	NA	custom	Split	NA	Prot	Prot	Prot
Protected Phases	1!	6	2	1 7 8!	8	8!	8	7	7!
Permitted Phases									
Actuated Green, G (s)	16.4	38.0	17.6	46.9		16.3	16.3	6.2	6.2
Effective Green, g (s)	14.4	36.0	15.6	44.9		14.3	14.3	4.2	4.2
Actuated g/C Ratio	0.20	0.50	0.22	0.62		0.20	0.20	0.06	0.06
Clearance Time (s)	4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	620	2802	1202	902		341	341	101	110
v/s Ratio Prot	c0.17	c0.30	0.10	c0.31		0.13	0.12	0.05	0.04
v/s Ratio Perm									
v/c Ratio	0.86	0.61	0.46	0.50		0.67	0.62	0.89	0.76
Uniform Delay, d1	28.1	13.1	24.8	7.6		26.9	26.6	33.9	33.7
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	11.8	0.4	0.3	0.4		5.2	3.5	56.0	26.4
Delay (s)	39.9	13.5	25.0	8.0		32.1	30.1	90.0	60.1
Level of Service	D	B	C	A		C	C	F	E
Approach Delay (s)		19.8	17.4			31.2		75.5	
Approach LOS		B	B			C		E	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	24.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

A4: Cumulative Conditions Synchro Outputs

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	904	1523	687	551	455	49	393	4	84	47
Future Volume (vph)	904	1523	687	551	455	49	393	4	84	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lane Util. Factor	*0.83	*1.00	*1.00	*0.92		*0.92	*0.92	*0.92	*1.00	
Frpb, ped/bikes	1.00	1.00	1.00	0.98		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85		1.00	1.00	1.00	1.00	
Flt Protected	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Satd. Flow (prot)	3123	5644	5588	1433		1731	1731	1748	1900	
Flt Permitted	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Satd. Flow (perm)	3123	5644	5588	1433		1731	1731	1748	1900	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	904	1523	687	551	455	49	393	4	84	47
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	64	0
Lane Group Flow (vph)	904	1523	687	551	0	543	354	68	3	0
Confl. Peds. (#/hr)	12			12						
Confl. Bikes (#/hr)				4						
Heavy Vehicles (%)	1%	1%	2%	2%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA	NA	Free	Split	NA	Perm	Prot	Prot	
Protected Phases	7	4	8		2	2		1	1	
Permitted Phases				Free			2			
Actuated Green, G (s)	29.0	48.0	15.0	100.0		34.0	34.0	6.0	6.0	
Effective Green, g (s)	27.0	46.0	13.0	100.0		32.0	32.0	4.0	4.0	
Actuated g/C Ratio	0.27	0.46	0.13	1.00		0.32	0.32	0.04	0.04	
Clearance Time (s)	4.0	4.0	4.0			4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	843	2596	726	1433		553	553	69	76	
v/s Ratio Prot	c0.29	0.27	c0.12			c0.31		c0.04	0.00	
v/s Ratio Perm				0.38			0.20			
v/c Ratio	1.07	0.59	0.95	0.38		0.98	0.64	0.99	0.04	
Uniform Delay, d1	36.5	20.0	43.2	0.0		33.7	29.1	48.0	46.1	
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	52.3	0.3	21.1	0.8		33.5	2.5	102.6	0.2	
Delay (s)	88.8	20.3	64.2	0.8		67.2	31.6	150.6	46.3	
Level of Service	F	C	E	A		E	C	F	D	
Approach Delay (s)		45.8	36.0			53.1		98.8		
Approach LOS		D	D			D		F		

Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	122.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	567	1572	779	580	200	4	234	11	9
Future Volume (vph)	567	1572	779	580	200	4	234	11	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	6.0		7.0	7.0	7.0	7.0
Lane Util. Factor	*0.83	*1.00	*1.00	*0.92		*0.92	*0.92	*0.92	*1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85		1.00	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3123	5644	5588	1434		1731	1731	1748	1900
Flt Permitted	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3123	5644	5588	1434		1731	1731	1748	1900
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	567	1572	779	580	200	4	234	11	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	567	1572	779	580	0	230	208	12	8
Confl. Peds. (#/hr)	6			6					
Confl. Bikes (#/hr)				7					
Heavy Vehicles (%)	1%	1%	2%	2%	1%	1%	1%	0%	0%
Turn Type	Prot	NA	NA	Free	Split	NA	Perm	Prot	Prot
Protected Phases	7	4	8		2	2		1	1
Permitted Phases				Free			2		
Actuated Green, G (s)	22.1	47.8	20.7	84.0		18.3	18.3	2.9	2.9
Effective Green, g (s)	20.1	45.8	18.7	84.0		16.3	16.3	0.9	0.9
Actuated g/C Ratio	0.24	0.55	0.22	1.00		0.19	0.19	0.01	0.01
Clearance Time (s)	5.0	5.0	5.0			5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	747	3077	1243	1434		335	335	18	20
v/s Ratio Prot	c0.18	0.28	c0.14			c0.13		0.01	0.00
v/s Ratio Perm				c0.40			0.12		
v/c Ratio	0.76	0.51	0.63	0.40		0.69	0.62	0.67	0.40
Uniform Delay, d1	29.7	12.0	29.5	0.0		31.5	31.0	41.4	41.3
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	0.1	1.0	0.8		5.7	3.6	66.1	12.6
Delay (s)	34.1	12.2	30.5	0.8		37.2	34.6	107.5	53.9
Level of Service	C	B	C	A		D	C	F	D
Approach Delay (s)		18.0	17.8			36.0		86.0	
Approach LOS		B	B			D		F	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

A5: Cumulative Plus Westport and Signal Conditions Synchro Outputs

Intersection: 2: NORTHBOUND SR 85 RAMPS & DE ANZA COLLEGE DWY & STEVENS CREEK BLVD

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	B19	B19	B19
Directions Served	L	L	T	T	T	T	T	T	R	T	T	T
Maximum Queue (ft)	361	359	354	369	363	207	234	224	242	118	23	107
Average Queue (ft)	320	322	217	227	227	88	141	116	104	8	1	7
95th Queue (ft)	426	417	358	385	390	178	229	208	246	55	15	51
Link Distance (ft)	346	346	346	346	346	166	166	166	166	591	591	591
Upstream Blk Time (%)	19	18	0	1	2	3	9	4	4			
Queuing Penalty (veh)	104	97	2	7	12	9	27	11	14			
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: NORTHBOUND SR 85 RAMPS & DE ANZA COLLEGE DWY & STEVENS CREEK BLVD

Movement	NB	NB	B27	NW	NW
Directions Served	LTR	R	T	LR	R>
Maximum Queue (ft)	521	433	594	66	77
Average Queue (ft)	505	234	543	42	55
95th Queue (ft)	518	419	694	73	85
Link Distance (ft)	436	436	559	58	58
Upstream Blk Time (%)	66	0	57	11	25
Queuing Penalty (veh)	0	0	0	6	13
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	904	1529	703	575	455	49	395	4	84	47
Future Volume (vph)	904	1529	703	575	455	49	395	4	84	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	
Lane Util. Factor	*0.83	*1.00	*1.00	*0.92		*0.92	*0.92	*0.92	*1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85		1.00	1.00	1.00	1.00	
Flt Protected	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Satd. Flow (prot)	3123	5644	5588	1457		1731	1731	1748	1900	
Flt Permitted	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Satd. Flow (perm)	3123	5644	5588	1457		1731	1731	1748	1900	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	904	1529	703	575	455	49	395	4	84	47
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	904	1529	703	575	0	544	355	68	67	0
Confl. Peds. (#/hr)	12			12						
Confl. Bikes (#/hr)				5						
Heavy Vehicles (%)	1%	1%	2%	2%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA	NA	custom	Split	NA	Prot	Prot	Prot	
Protected Phases	1!	6	2	1 7 8!	8	8!	8	7	7!	
Permitted Phases										
Actuated Green, G (s)	40.1	68.9	24.8	98.2		43.1	43.1	7.0	7.0	
Effective Green, g (s)	38.1	66.9	22.8	96.2		41.1	41.1	5.0	5.0	
Actuated g/C Ratio	0.29	0.51	0.17	0.73		0.31	0.31	0.04	0.04	
Clearance Time (s)	4.0	4.0	4.0			4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	908	2882	972	1069		543	543	66	72	
v/s Ratio Prot	c0.29	0.27	c0.13	0.39		c0.31	0.21	c0.04	0.04	
v/s Ratio Perm										
v/c Ratio	1.00	0.53	0.72	0.54		1.00	0.65	1.03	0.93	
Uniform Delay, d1	46.4	21.5	51.1	7.6		45.0	38.8	63.0	62.8	
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	28.6	0.2	2.7	0.5		39.1	2.8	119.5	82.0	
Delay (s)	75.0	21.7	53.8	8.2		84.0	41.6	182.5	144.9	
Level of Service	E	C	D	A		F	D	F	F	
Approach Delay (s)		41.5	33.3			67.3		163.8		
Approach LOS		D	C			E		F		

Intersection Summary			
HCM 2000 Control Delay	47.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	131.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	123.9%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Intersection: 2: NORTHBOUND SR 85 RAMPS & DE ANZA COLLEGE DWY & STEVENS CREEK BLVD

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	B19	B19	B19
Directions Served	L	L	T	T	T	T	T	T	R	T	T	T
Maximum Queue (ft)	334	331	299	308	292	228	204	209	265	39	8	188
Average Queue (ft)	197	205	159	142	140	85	93	81	155	1	0	20
95th Queue (ft)	312	321	278	264	257	174	182	170	284	19	6	100
Link Distance (ft)	346	346	346	346	346	176	176	176	176	591	591	591
Upstream Blk Time (%)	0	0	0	0	0	1	1	1	8			
Queuing Penalty (veh)	2	1	0	0	0	3	5	3	30			
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: NORTHBOUND SR 85 RAMPS & DE ANZA COLLEGE DWY & STEVENS CREEK BLVD

Movement	NB	NB	B27	NW	NW
Directions Served	LTR	R	T	LR	R
Maximum Queue (ft)	336	243	96	61	41
Average Queue (ft)	178	91	12	20	3
95th Queue (ft)	318	195	121	55	21
Link Distance (ft)	436	436	559	69	69
Upstream Blk Time (%)	3		0	0	0
Queuing Penalty (veh)	0		0	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	567	1589	781	584	200	4	239	11	9
Future Volume (vph)	567	1589	781	584	200	4	239	11	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	*0.83	*1.00	*1.00	*0.92		*0.92	*0.92	*0.92	*1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85		1.00	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (prot)	3123	5644	5588	1457		1731	1731	1748	1900
Flt Permitted	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Satd. Flow (perm)	3123	5644	5588	1457		1731	1731	1748	1900
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	567	1589	781	584	200	4	239	11	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	567	1589	781	584	0	233	210	12	8
Confl. Peds. (#/hr)	8			8					
Confl. Bikes (#/hr)				9					
Heavy Vehicles (%)	1%	1%	2%	2%	1%	1%	1%	0%	0%
Turn Type	Prot	NA	NA	custom	Split	NA	Prot	Prot	Prot
Protected Phases	1!	6	2	1 7 8!	8	8!	8	7	7!
Permitted Phases									
Actuated Green, G (s)	16.2	39.4	19.2	48.9		18.6	18.6	6.1	6.1
Effective Green, g (s)	14.2	37.4	17.2	46.9		16.6	16.6	4.1	4.1
Actuated g/C Ratio	0.19	0.49	0.23	0.62		0.22	0.22	0.05	0.05
Clearance Time (s)	4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	582	2773	1262	897		377	377	94	102
v/s Ratio Prot	c0.18	c0.28	0.14	c0.40		0.13	0.12	0.01	0.00
v/s Ratio Perm									
v/c Ratio	0.97	0.57	0.62	0.65		0.62	0.56	0.13	0.08
Uniform Delay, d1	30.8	13.7	26.5	9.4		26.9	26.5	34.3	34.2
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	30.6	0.3	0.9	1.7		3.0	1.8	0.6	0.3
Delay (s)	61.4	14.0	27.4	11.1		29.9	28.3	34.9	34.5
Level of Service	E	B	C	B		C	C	C	C
Approach Delay (s)		26.4	20.4			29.1		34.8	
Approach LOS		C	C			C		C	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	24.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

A6: Westport Trip Generation

Table 1
Project

TRIP GENERATION - WESTPORT

Land Uses	ITE Land Use Code	Project Size		WEEKDAY	AM PEAK HOUR				PM PEAK HOUR			
				Daily Trips	Total Peak Hour	IN	/	OUT	Total Peak Hour	IN	/	OUT
Multifamily Housing (Low Rise)	220	-	Dwelling Unit(s)	7.32	0.46	23%	/	77%	0.56	63%	/	37%
Multifamily Housing (Mid-Rise)	221	-	Dwelling Unit(s)	5.44	0.36	26%	/	74%	0.44	61%	/	39%
Senior Adult Housing-Attached	252	-	Dwelling Unit(s)	3.70	0.20	35%	/	65%	0.26	55%	/	45%
Shopping Center	820	-	1,000 Sq Ft GLA	37.75	0.94	62%	/	38%	3.81	48%	/	52%
Existing Conditions												
Shopping Center (100% Occupancy)	820	71.254	1,000 Sq Ft GLA	2690	67	42	/	25	271	130	/	141
Shopping Center (85% Occupancy)[1]	820	60.566	1,000 Sq Ft GLA	2287	57	36	/	21	230	110	/	120
Pass-By Trips for Shopping Center (PM = 34%) [3,4]				(78)	0	0	/	0	(78)	(37)	/	(41)
TOAL EXISTING TRIP CREDIT				**2209**	**57**	**36**	**/**	**21**	**152**	**73**	**/**	**79**
Proposed Conditions												
Multifamily Housing (Low-Rise)	220	88	Dwelling Unit(s)	646	40	9	/	31	49	31	/	18
Multifamily Housing (Mid-Rise)	221	115	Dwelling Unit(s)	626	41	11	/	30	51	31	/	20
Senior Adult Housing-Attached	252	39	Dwelling Unit(s)	146	8	3	/	5	10	6	/	4
Shopping Center	820	20.000	1,000 Sq Ft GLA	756	19	12	/	7	76	36	/	40
Gross Trips Generated before Internal Capture				2,174	108	35	/	73	186	104	/	82
Internal Capture Trips												
Multifamily Housing (Low-Rise)	220	88	Dwelling Unit(s)	(44)	(1)	0	/	(1)	(6)	(4)	/	(2)
Multifamily Housing (Mid-Rise)	221	115	Dwelling Unit(s)	(42)	0	0	/	0	(7)	(5)	/	(2)
Senior Adult Housing-Attached	252	39	Dwelling Unit(s)	(10)	0	0	/	0	(1)	(1)	/	0
Shopping Center	820	20.000	1,000 Sq Ft GLA	(90)	(1)	(1)	/	0	(14)	(4)	/	(10)
Internal Capture Reduction				(186)	(2)	(1)	/	(1)	(28)	(14)	/	(14)
Trip Reductions due to Internal Capture[5]				9%	2%	3%	/	1%	15%	13%	/	17%
Additional Project Trip Reductions												
VTA Major Bus Stop (Daily, AM, PM = 2%) [2]				(28)	(2)	(1)	/	(1)	(2)	(1)	/	(1)
Pass-By Trips for Shopping Center (PM = 34%) [3,4]				(26)	0	0		0	(26)	(12)	/	(14)
Project Trips				**1,934**	**104**	**33**	**/**	**71**	**130**	**77**	**/**	**53**
Existing Trip Credit				**(2209)**	**(57)**	**(36)**	**/**	**(21)**	**(152)**	**(73)**	**/**	**(79)**
Total Project Trips				**1934**	**104**	**33**	**/**	**71**	**130**	**77**	**/**	**53**
Net New Project Trips				**(275)**	**47**	**(3)**	**/**	**50**	**(22)**	**4**	**/**	**(26)**

Notes:
1. Assume current retail is 85% occupied
2. Per VTA Transportation Impact Analysis guidelines, a 2% vehicle trip reduction for housing trips can be applied for a nearby major bus stop
3. Pass-By trip reduction applied to shopping center PM peak hour trips and based on average rates from Appendix E ITE Trip Generation Handbook 3rd Edition
4. Daily pass-by trips only represent PM peak hour pass-by trips because no daily pass-by trip is resented in the ITE Trip Generation Handbook.
5. Trips reductions due to internal capture was calculated using NCHRP 684 methodology
6. Trip generation land uses based on average rates from ITE Trip Generation 10th Edition