URBAN CROSSROADS

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July 28, 2011

Mr. Bentley T. Kerr
BLUESTONE COMMUNITIES
41 Corporate Park, Suite 380
Irvine, CA 92606

Subject: Arantine Hills Specific Plan Addendum – Existing Plus Project Conditions

Dear Mr. Kerr:

Urban Crossroads, Inc. is pleased to submit this letter which presents the existing plus project traffic conditions analysis for the proposed Arantine Hills Specific Plan ("Project"). The analysis presented in this letter serves as an addendum to the *Arantine Hills Specific Plan Traffic Impact Analysis (TIA)* (June 23, 2011).

INTRODUCTION

Although not required by the lead jurisdiction's traffic impact analysis guidelines, for purposes of full disclosure and in an effort to satisfy the CEQA Guideline section 15125(a), an analysis of existing traffic volumes plus traffic generated by the proposed Project has been assessed. The reason this particular analysis scenario is provided for informational purposes only, and why most traffic impact study guidelines published by local jurisdictions throughout California do not typically require analysis of the "E+P" scenario is that it rarely materializes as an actual scenario in the real world. In fact, the time period between the date a Notice of Preparation is issued and the date project buildout occurs can often be a period of several years or more. During this time period, other projects are being constructed, the transportation network is evolving and traffic patterns are changing. Therefore, the "E+P" scenario never materializes in real world conditions and thus does not accurately describe the environment that exists when a particular project is constructed and becomes operational.

In addition, unlike other areas of CEQA inquiry, such as the construction of a building where none currently exists, which in the context of a habitat corridor there is true utility to performing an "E+P" analysis. However, in the context of traffic impacts that are derivative of a development project, traffic is virtually always a cumulative issue. By their very nature, traffic impacts are very fluid and are influenced by other growth and projects that are occurring throughout the transportation network. In other words, because normal increases in traffic occur over time, background traffic levels that occur at the time the Project is actually constructed are a more accurate representation of the existing baseline against which to measure the true impacts of a proposed Project. Nevertheless, Urban Crossroads has conducted level of service calculations for study intersections and the freeway mainline to evaluate their operations under hypothetical E+P traffic conditions for buildout of the proposed Project.

This letter discusses the traffic forecasts for E+P conditions and the resulting intersection, roadway segment, and freeway facility operations. As previously noted, this scenario is presented for informational purposes only. Consistent with the City of Corona traffic study guidelines, direct and cumulative traffic impacts were previously assessed in the Project TIA through the evaluation of 2014 (Phase 1), 2019 (Project Buildout), and future year 2035 without and with Project traffic conditions.

For the purposes of this evaluation, intersections found to operate below the City's requisite level of service (LOS) thresholds for E+P traffic conditions have been noted, and improvements to address the deficient intersections have been identified based on the following criteria:

- If an intersection is projected to operate at an acceptable LOS under existing (2009) traffic conditions and the addition of Project traffic is expected to cause the intersection to operate at an unacceptable LOS, then intersection improvements have been recommended to achieve the intersection's LOS standard.

- If an intersection is projected to operate at an unacceptable LOS under existing (2009) traffic conditions and the Project contributes to the continued deficient peak hour intersection operations, then improvements have been recommended to achieve "pre-project" (existing) LOS.

VOLUME DEVELOPMENT FOR EXISTING PLUS PROJECT SCENARIO

Consistent with the analysis previously performed in the TIA, the intersections evaluated for this addendum letter are shown in Exhibit 1. To assess E+P traffic conditions at each of the intersections shown in Exhibit 1, traffic generated by the proposed Project (based Project buildout) has been added to existing traffic, with no adjustment to account for ambient traffic growth. E+P morning (7am-9am) and evening (4pm-6pm) peak hour intersection traffic volumes are shown on Exhibits 2 and 3, while E+P average daily traffic (ADT) volumes are shown on Exhibit 4.

E+P TRAFFIC CONDITIONS

Traffic Signal Warrant Analysis

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an otherwise unsignalized intersection. This study uses the signal warrant criteria presented in the latest edition of the Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices (MUTCD)*, as amended by *the MUTCD 2003 California Supplement*.

Specifically, this evaluation utilizes the CAMUTCD peak hour volume-based Warrant 3. The peak hour volume-based warrant provides specialized criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating at or above 40 miles per hour). Consistent with the methodology used in the TIA, the

roadway segment speed limit for each intersection leg was the basis for determining whether urban or rural warrants were used for a given intersection.

As previously presented in the TIA, the following two (2) unsignalized intersections meet the peak hour volume based warrant for existing (2009) traffic conditions:

Masters Drive (NS) at:
- California Avenue (EW) [1]
- Eagle Glen Parkway (EW) [3]

Based on E+P conditions, the following three (3) intersections were found to meet a peak hour warrant with the addition of project –related traffic:

Street "C" (NS) at:
- Eagle Glen Parkway (EW) [13]

Street "A" (NS) at:
- Driveway 1 (EW) [15]
- Street "B" (EW) [16]

A summary of the traffic signal warrant analysis is graphically shown on Exhibit 5. Traffic signal warrant analysis worksheets are provided in Attachment "A".

Peak Hour Intersection Analysis

The results of the E+P conditions intersection operations analysis are summarized in Table 1, along with the existing intersection geometrics and traffic control devices at each analysis location (previously presented in the TIA). Existing (2009) peak hour intersection delay and associated LOS grades have also been provided for each of the existing study area intersections. For E+P traffic conditions the following intersections were found to operate at an unacceptable LOS during one or both of the peak hours:

Masters Drive (NS) at:
- California Avenue (EW) [1] – LOS F (AM peak hour only)
- Eagle Glen Parkway (EW) [3] – LOS F (PM peak hour only)

I-15 Southbound Ramps (NS) at:
- Cajalco Road (EW) [8] – LOS F (AM and PM peak hours)

I-15 Northbound Ramps (NS) at:
- Cajalco Road (EW) [10] – LOS F (AM and PM peak hours)

The intersection of Masters Drive at California Avenue was previously found to operate at an unacceptable LOS during the AM peak hour for existing (2009) traffic conditions. Due to right-of-way constraints at this

intersection (the intersection is bound on all four corners by existing single family homes), and the fact that the intersection meets a peak hour volume based signal warrant for existing conditions, it is recommended that a traffic signal be installed at this intersection to address the existing LOS deficiency. Table 2 identifies the recommended intersection improvements to achieve the requisite intersection LOS standard for each of the remaining intersections found to operate at a deficient LOS for E+P traffic conditions.

HCM analysis worksheets for E+P traffic conditions have been provided in Attachment "B".

Ramp Metering Analysis

Consistent with the methodology used to perform the TIA, E+P conditions ramp metering analysis has been performed based upon the ramp metered lane traffic flow threshold outlined in the Caltrans Ramp Meter Design Manual. The number of required ramp metered lanes is determined based on a threshold of 900 vehicles per hour for each lane. The results of this analysis are summarized in Table 3. Table 3 indicates that the following number of ramp metered lanes needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 2 lanes

The I-15 Northbound On-Ramp at El Cerrito Road currently has ramp metering; all other freeway on-ramps were found to be free-flow at the time of field review (2009). The contribution of project-related traffic did not result in any changes to the number of metered ramp lanes as compared to existing (2009) traffic conditions.

Ramp Merge and Diverge Analysis

Ramp merge and diverge analysis results for E+P conditions have been calculated based on the existing number of freeway mainline travel lanes, which for the segments analyzed are three mixed flow lanes in each direction. The results of this ramp merge and diverge analysis are summarized in Table 4. The addition of project-related traffic results in the I-15 Southbound off-ramp at El Cerrito Road diverge to operate at LOS "F" during the PM peak hour for E+P traffic conditions as compared to LOS "C" operations under existing (2009) traffic conditions. All other ramp junctions were found to operate at the same LOS as previously reported for existing (2009) traffic conditions.

The ramp merge/diverge analysis worksheets for E+P traffic conditions are included in Attachment "C".

Roadway Link Analysis

The E+P roadway link analysis results have been calculated based on the link capacities for each of the General Plan roadway classifications as listed in the City of Corona Street Design Table (as previously presented in the TIA). The Roadway Link Analysis results for E+P conditions are summarized in Table 5, which illustrates the following three (3) existing roadway segments are projected to potentially exceed capacity with the addition of project-related traffic:

- Master Drive, south of California Avenue
- El Cerrito Road, east of Bedford Canyon Road
- Eagle Glen Parkway, east of Bedford Canyon Road

As previously discussed in the TIA, roadway capacities based on average daily traffic (ADT) forecasts are "rule of thumb" estimates typically used for long-range roadway planning purposes only (e.g., general plan level roadway designation determination), and are affected by such factors as intersection (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian/bicycle traffic. As such, where the ADT-based roadway segment analysis indicates a potential deficiency (i.e., daily volume exceeds planning level capacity), then a more thorough review of peak hour intersection operations should be performed. The HCM based intersection analysis methodology more accurately accounts for many of the factors that affect roadway capacity and its ability to accommodate peak traffic flows.

Based on a review of the peak hour intersection operations analysis results for E+P conditions, the intersections on each side of the potentially impacted roadway segments were found to operate at acceptable LOS during the peak hours with the recommended improvements shown in Table 2. As such, additional roadway widening beyond the improvements listed on Table 2 would not appear necessary to accommodate peak traffic flows.

If you have any questions or require any additional information regarding this response to comments, please give me a call at (949) 660-1994 ext. 203.

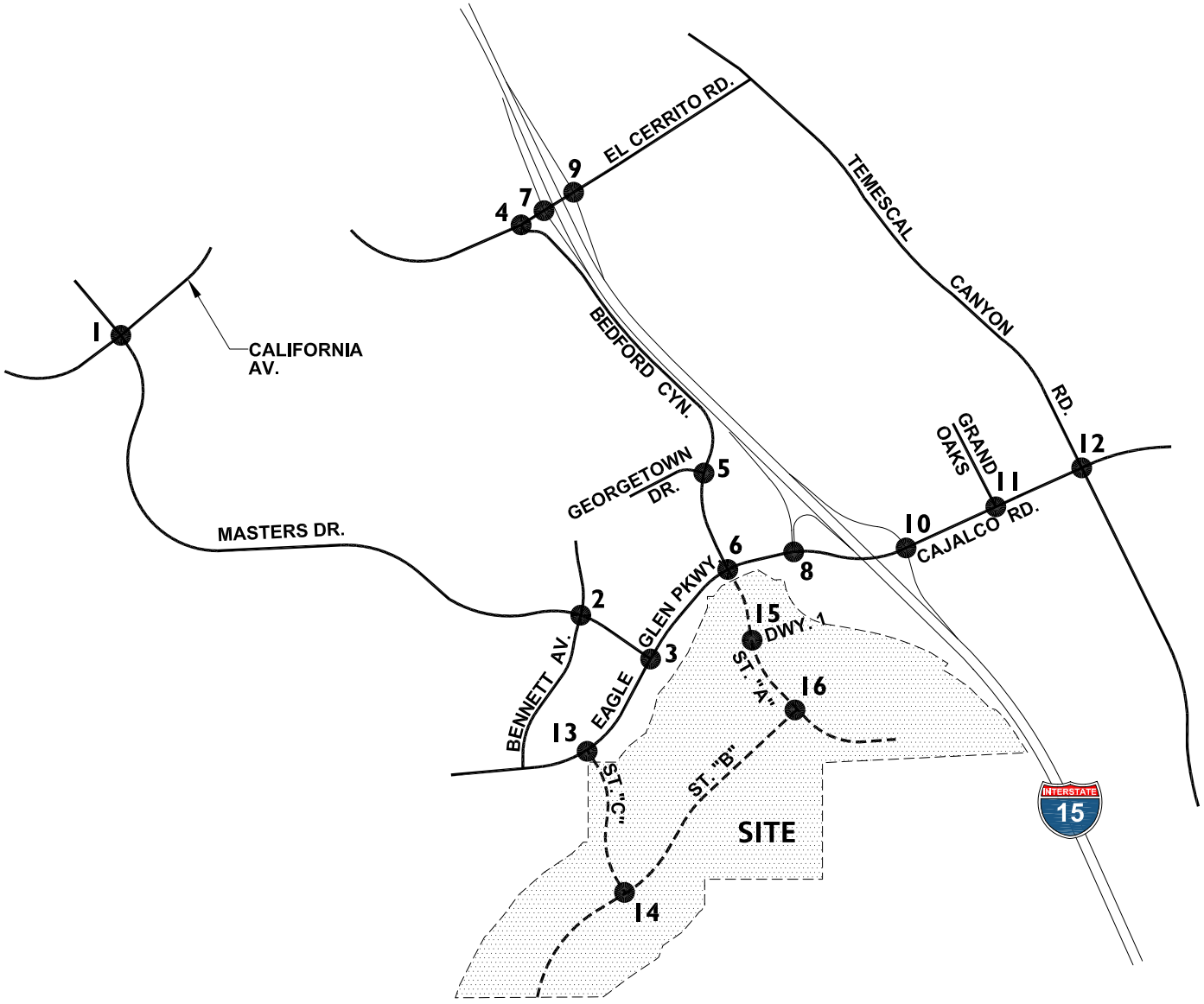
Respectfully submitted,

URBAN CROSSROADS, INC.

Bill Lawson, PE, AICP, PTP
Principal
JN:06694-16 Letter
Attachments

EXHIBIT 1

EXISTING PLUS PROJECT CONDITIONS LOCATION MAP



LEGEND:

● = INTERSECTION ANALYSIS LOCATION

N

EXHIBIT 2

EXISTING PLUS PROJECT AM PEAK HOUR INTERSECTION VOLUMES

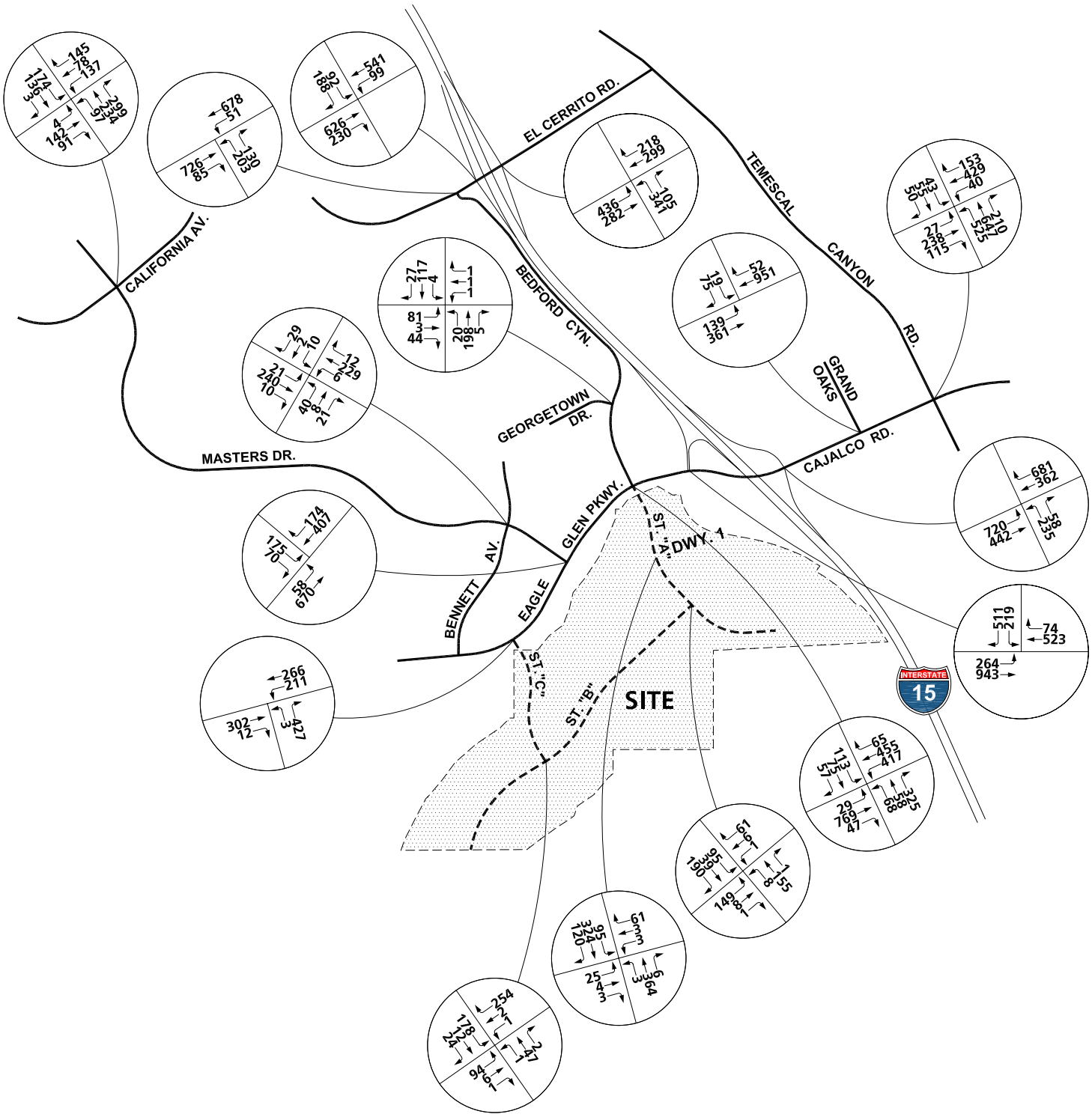


EXHIBIT 3

EXISTING PLUS PROJECT PM PEAK HOUR INTERSECTION VOLUMES

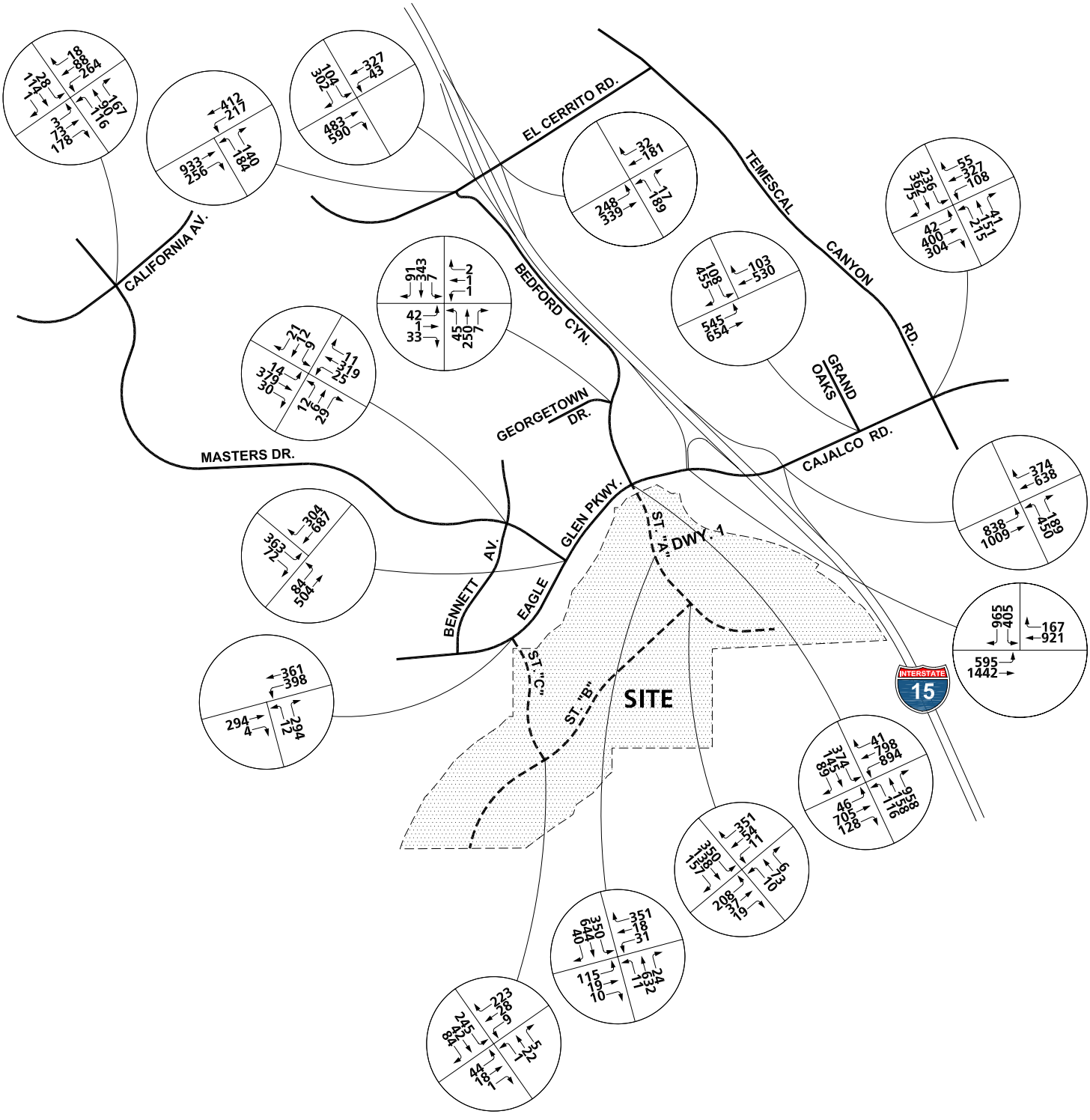


EXHIBIT 4

EXISTING PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 5

TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY

LEGEND:

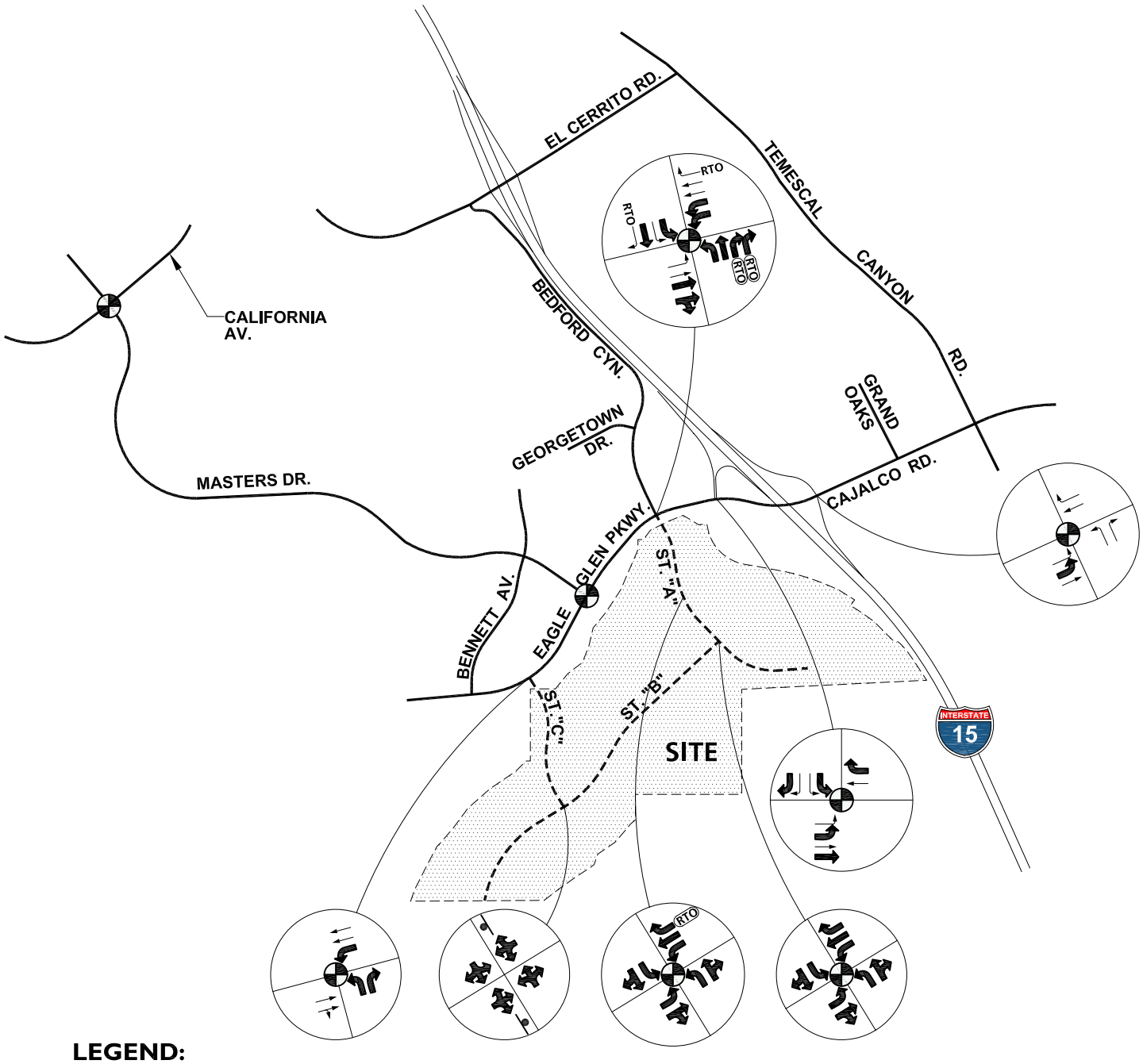
E = TRAFFIC SIGNAL WARRANTED FOR EXISTING CONDITIONS

P = TRAFFIC SIGNAL WARRANTED FOR EXISTING PLUS PROJECT CONDITIONS

N

EXHIBIT 6

RECOMMENDED INTERSECTION IMPROVEMENTS FOR EXISTING PLUS PROJECT CONDITIONS



LEGEND:

- = TRAFFIC SIGNAL
- = STOP SIGN
- = EXISTING LANE
- = CURRENT PHASE IMPROVEMENTS
- RTO = RIGHT TURN OVERLAP
- (RTO) = CURRENT PHASE RIGHT TURN OVERLAP IMPROVEMENT

N

Table 1

Existing Plus Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Existing				E+P				LOS Std.
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (Sec.)		Level of Service		Delay[2] (Sec.)		Level of Service		
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM	
1	Masters Dr. (NS) at: • California Av. (EW)	AWS	1	1	0	1	1	0	1	1	0	1	1	1	***45.4***	11.1	***F*[4]**	B	***86.1***	14.7	***F***	B	C
2	Masters Dr. (NS) at: • Bennett Av. (EW)	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	8.6	9.2	A	A	10.5	13.0	B	B	C
3	Masters Dr. (NS) at: • Eagle Glen Pkwy. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	11.5	14.2	B	B	33.7	***68.8***	D	***F***	D
4	Bedford Cyn. Rd. (NS) at: • El Cerrito Rd. (EW)	TS	1	0	1	0	0	0	0	2	0	1	2	0	17.4	19.4	B	B	19.2	25.1	B	C	D
5	Bedford Cyn. Rd. (NS) at: • Georgetown Dr. (EW)	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	8.7	9.1	A	A	9.3	11.5	A	B	C
6	Bedford Cyn. Rd. (NS) at: • Eagle Glen Pkwy. (EW)		Intersection Requires Improvements With Project for Site Access																				
7	I-15 SB Ramps (NS) at: • El Cerrito Rd. (EW)	TS	0	0	0	1	0	1	0	2	0	1	2	0	20.9	24.0	C	C	20.7	23.7	C	C	D
8	I-15 SB Ramps (NS) at: • Cajalco Rd. (EW)	TS	0	0	0	1	0	1	1	1	0	0	1	0	25.3	35.3	C	D	***--*[4]	***--*[4]	***F***	***F***	E
9	I-15 NB Ramps (NS) at: • El Cerrito Rd. (EW)	TS	0	1!	0	0	0	0	2	1	0	0	2	0	36.7	28.8	D	C	36.8	28.7	D	C	D
10	I-15 NB Ramps (NS) at: • Cajalco Rd. (EW)	TS	1	0	1	0	0	0	1	1	0	0	1	1	28.1	32.3	C	C	***85.2***	***93.0***	***F***	***F***	E
11	Grand Oaks (NS) at: • Cajalco Rd. (EW)	TS	0	0	0	1	0	2>	2	2	0	0	3	1	14.6	24.1	B	C	14.6	24.8	B	C	D
12	Temescal Cyn. Rd. (NS) at: • Cajalco Rd. (EW)	TS	2	1	1	1	2	0	1	1	1	1	3	0	35.1	37.9	D	D	36.8	38.1	D	D	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap 1>> = Free-Right

[2] Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

[4] -- = Average Delay >100 or Critical Vol/Cap >1.0; Intersection Unstable; Level of Service "F".

Table 2

Existing Plus Project Conditions
Intersection Operations Analysis Summary With Improvements

Intersection		Traffic	Intersection Approach Lanes[1]												E+P Delay[2] (Sec.)		E+P Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Masters Dr. (NS) at:																		
	• California Av. (EW)	**TS**	1	1	0	1	1	0	1	1	0	1	1	1	18.1	11.7	B	B	C
3	Masters Dr. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	**TS**	0	0	0	1	0	1	1	2	0	0	2	0	14.4	20.0	B	C	D
6	Bedford Cyn. Rd. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	TS	**1**	**1**	**2>**	**2**	**1**	1>	1	**3**	0	**2**	2	1>	32.4	49.4	C	D	D
8	I-15 SB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	**2**	0	**2**	**2**	**2**	0	0	1	**1**	17.6	41.0	B	D	E
10	I-15 NB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	1	0	1	0	0	0	**2**	1	0	0	1	1	27.5	43.5	C	D	E
13	St. C (NS) at:																		
	• Eagle Glen Pkwy. (EW)	**TS**	**1**	0	**1**	0	0	0	0	2	0	**1**	2	0	29.8	26.8	C	C	D
14	St. C (NS) at:																		
	• St. B (EW)	**CSS**	0	**1!**	0	0	**1!**	0	0	**1!**	0	0	**1!**	0	24.6	27.3	C	D	D
15	St. A (NS) at:																		
	• Dwy. 1 (EW)	**TS**	**1**	**1**	0	**1**	**1**	0	**1**	**1**	0	**1**	**1**	**1>**	10.6	20.7	B	C	D
16	St. A (NS) at:																		
	• St. B (EW)	**TS**	**1**	**1**	0	**1**	**1**	0	**1**	**1**	0	**1**	**1**	**1**	10.1	12.8	B	B	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap 1>> = Free-Right

[2] Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

[4] -- = Average Delay >100 or Critical Vol/Cap >1.0; Intersection Unstable; Level of Service "F".

Table 3

Existing Plus Project Conditions

Ramp Metering Analysis Summary

On-Ramp Location		Peak Hour Traffic		Required Number of Ramp Metered Lanes[1]
No.	Name	AM	PM	
1	I-15 Southbound On-Ramp at El Cerrito Road	329	633	1
2	I-15 Northbound On-Ramp at El Cerrito Road	654	280	1
3	I-15 Southbound On-Ramp at Cajalco Road	338	762	1
4	I-15 Northbound On-Ramp at Cajalco Road	1,401	1,212	2

[1] = Ramp metered lane traffic flow threshold is 900 vehicles per hour (vph).

Table 4

Existing Plus Project Conditions

Ramp Merge and Diverge Analysis Summary

Freeway		Ramp Junction	Junction Type	Ramp Traffic		Main-Line Lanes	Ramp Lanes	Density[1] (pc/mi/ln)		Level of Service	
				AM	PM			AM	PM	AM	PM
I-15 Freeway	Southbound	El Cerrito Off-Ramp	Diverge	280	406	3	1	27.0	32.9	C	F
		El Cerrito On-Ramp[2]	Weave	329	633	3+1	1	42.8	56.0	E	F
		Cajalco Off-Ramp[2]	Weave	730	1,314	3+1	1				
		Cajalco On-Ramp	Merge	338	762	3	1	34.0	38.3	D	F
	Northbound	El Cerrito On-Ramp	Merge	654	280	3	1	36.9	34.4	F	D
		El Cerrito Off-Ramp	Diverge	446	206	3	1	39.0	37.7	E	E
		Cajalco On-Ramp	Merge	1,401	1,212	3	2	39.1	38.6	E	E
		Cajalco Off-Ramp	Diverge	293	606	3	1	33.1	35.4	D	E

[1] Density calculated based on the Highway Capacity Manual (HCM) analysis; (pc/mi/ln) = passenger car per mile per lane

[2] Weave segment; Ramp distances less than 2,500 feet.

Table 5

Existing Plus Project Project Conditions
Roadway Link Capacity Analysis

Roadway	Segment	General Plan Roadway Section	General Plan Roadway Capacity	E+P Traffic	Volume/ Capacity Ratio	Average Daily Vehicle Capacity Threshold
Masters Dr.	North of California Av.	2	10,000	5,000	0.50	Acceptable
	South of California Av.	2	10,000	10,700	1.07	Potentially Exceeds Capacity
	North of Bennett Av.	2	10,000	8,800	0.88	Approaching Capacity
	North of Eagle Glen Pkwy.	2	10,000	9,300	0.93	Approaching Capacity
Bennett Av.	North of Masters Dr.	2	10,000	900	0.09	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	1,400	0.14	Acceptable
Bedford Cyn.	South of El Cerrito Rd.	2	10,000	8,500	0.85	Approaching Capacity
	North of Georgetown Dr.	2	10,000	8,400	0.84	Approaching Capacity
	North of Eagle Glen Pkwy.	4	20,000	8,800	0.44	Acceptable
Temescal Canyon Rd.	North of Cajalco Rd.	4	20,000	10,900	0.55	Acceptable
	South of Cajalco Rd.	4	20,000	14,000	0.70	Acceptable
California Av.	West of Masters Dr.	2	10,000	5,300	0.53	Acceptable
	East of Masters Dr.	2	10,000	9,500	0.95	Approaching Capacity
El Cerrito Rd.	West of Bedford Cyn.	2	10,000	20,800	2.08	Potentially Exceeds Capacity
	East of Bedford Cyn.	4	20,000	20,300	1.02	Potentially Exceeds Capacity
	East of I-15 NB Ramps	4	20,000	9,400	0.47	Acceptable
Georgetown Dr.	West of Bedford Cyn.	2	10,000	2,500	0.25	Acceptable
Eagle Glen Pkwy./	East of Bennett Av.	4	20,000	300	0.02	Acceptable
Cajalco Rd.	West of Masters Dr.	4	20,000	12,800	0.64	Acceptable
	West of Bedford Cyn.	4	20,000	19,200	0.96	Approaching Capacity
	East of Bedford Cyn.	4	20,000	39,000	1.95	Potentially Exceeds Capacity
	East of I-15 SB Ramps	4	20,000	33,700	1.69	Potentially Exceeds Capacity
	East of I-15 NB Ramps	6	50,000	16,100	0.32	Acceptable
	East of Grand Oaks	6	50,000	15,000	0.30	Acceptable
	East of Temescal Cyn. Rd.	2	10,000	12,900	1.29	Potentially Exceeds Capacity
Steet "A"	South of Eagle Glen Pkwy.	4	20,000	21,900	1.10	Potentially Exceeds Capacity
	North of Street "B"	4	20,000	13,200	0.66	Acceptable
	South of Street "B"	2	10,000	2,200	0.22	Acceptable
Street "B"	West of Street "C"	2	10,000	700	0.07	Acceptable
	East of Street "C"	2	10,000	4,900	0.49	Acceptable
	East of Street "A"	2	10,000	7,200	0.72	Acceptable
Street "C"	South of Eagle Glen Pkwy.	2	10,000	7,300	0.73	Acceptable
	South of St. "B"	2	10,000	700	0.07	Acceptable

ATTACHMENT "A"

TRAFFIC SIGNAL WARRANT ANALYSIS

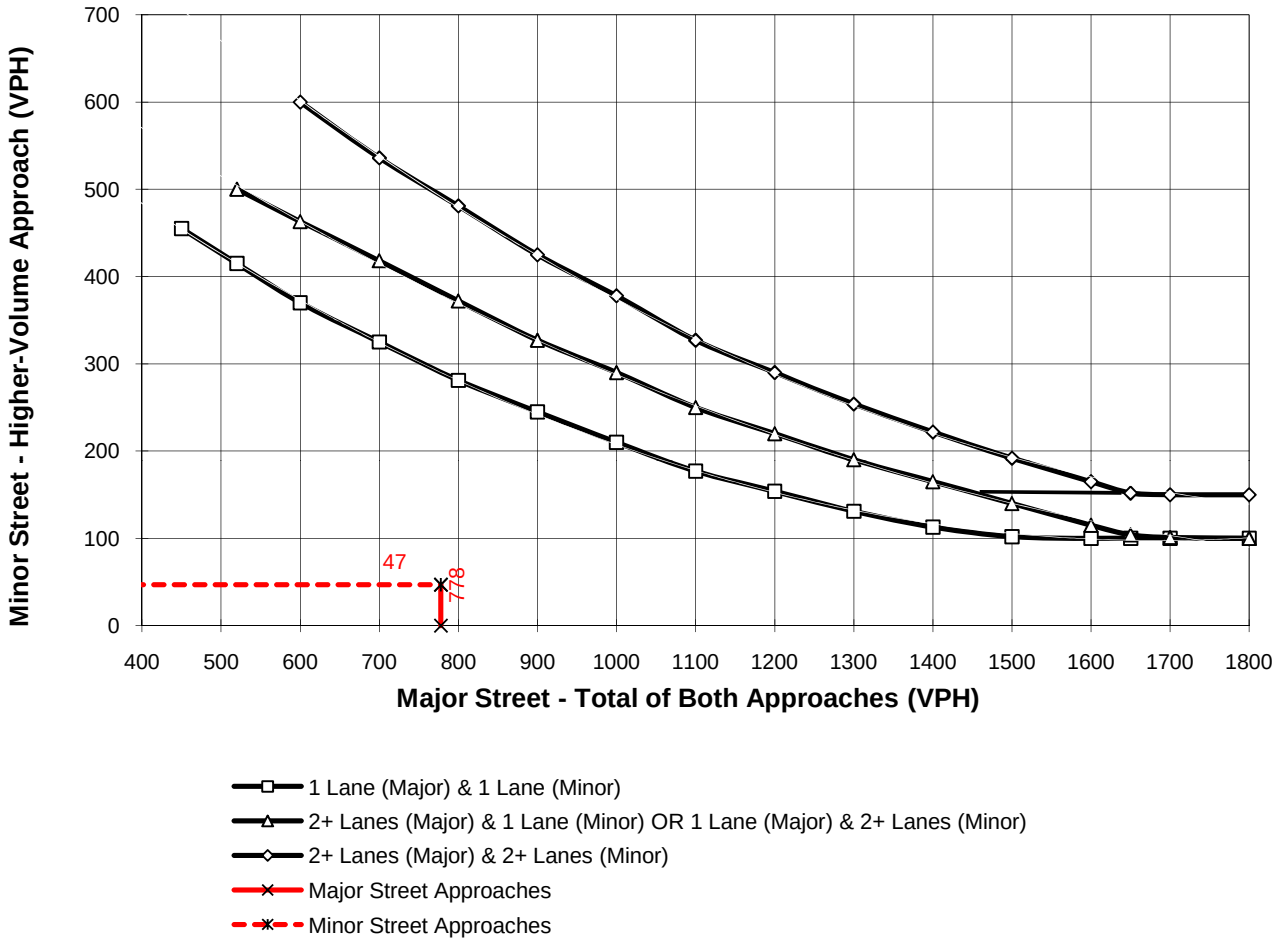
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **Existing Plus Project Conditions**

Major Street Name = **Masters Drive**
Total of Both Approaches (VPH) = **778**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Bennett Avenue**
High Volume Approach (VPH) = **47**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach

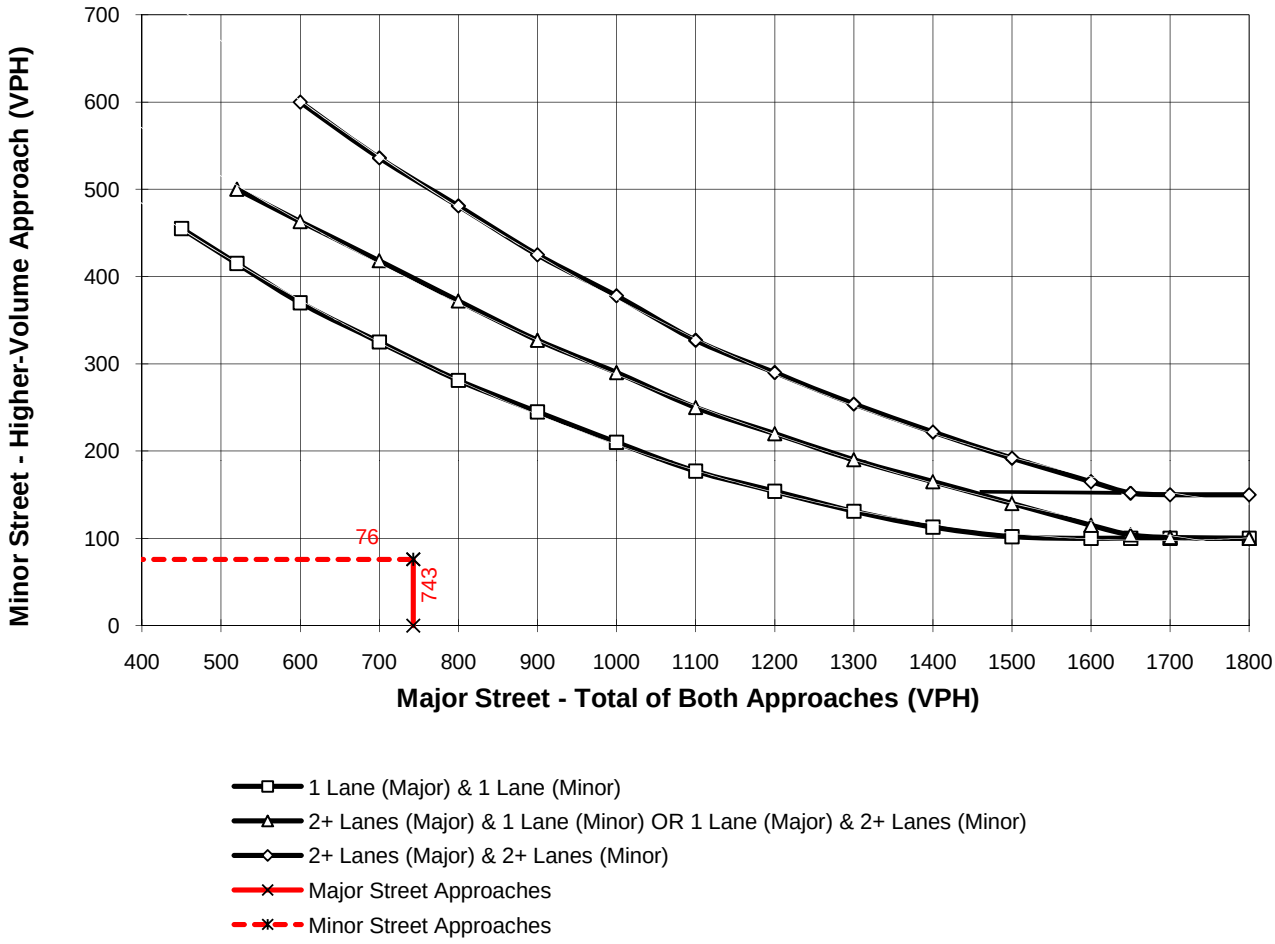
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **Existing Plus Project Conditions**

Major Street Name = **Bedford Canyon Road** Total of Both Approaches (VPH) = **743**
Number of Approach Lanes on Major Street = **2**

Minor Street Name = **Georgetown Drive** High Volume Approach (VPH) = **76**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

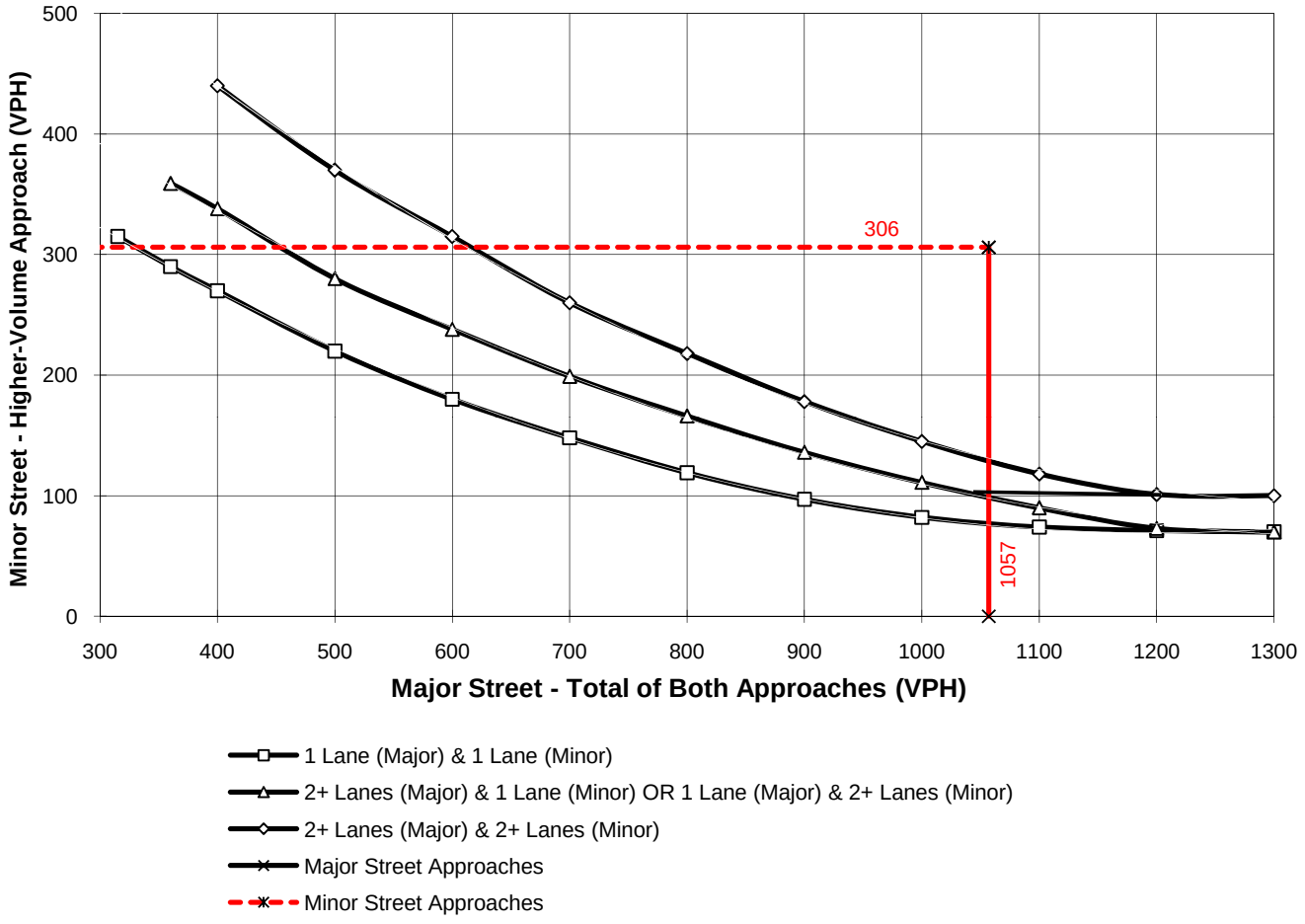
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions**

Major Street Name = **Eagle Glen Parkway** Total of Both Approaches (VPH) = **1057**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Street "C"** High Volume Approach (VPH) = **306**
Number of Approach Lanes Minor Street = **2**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

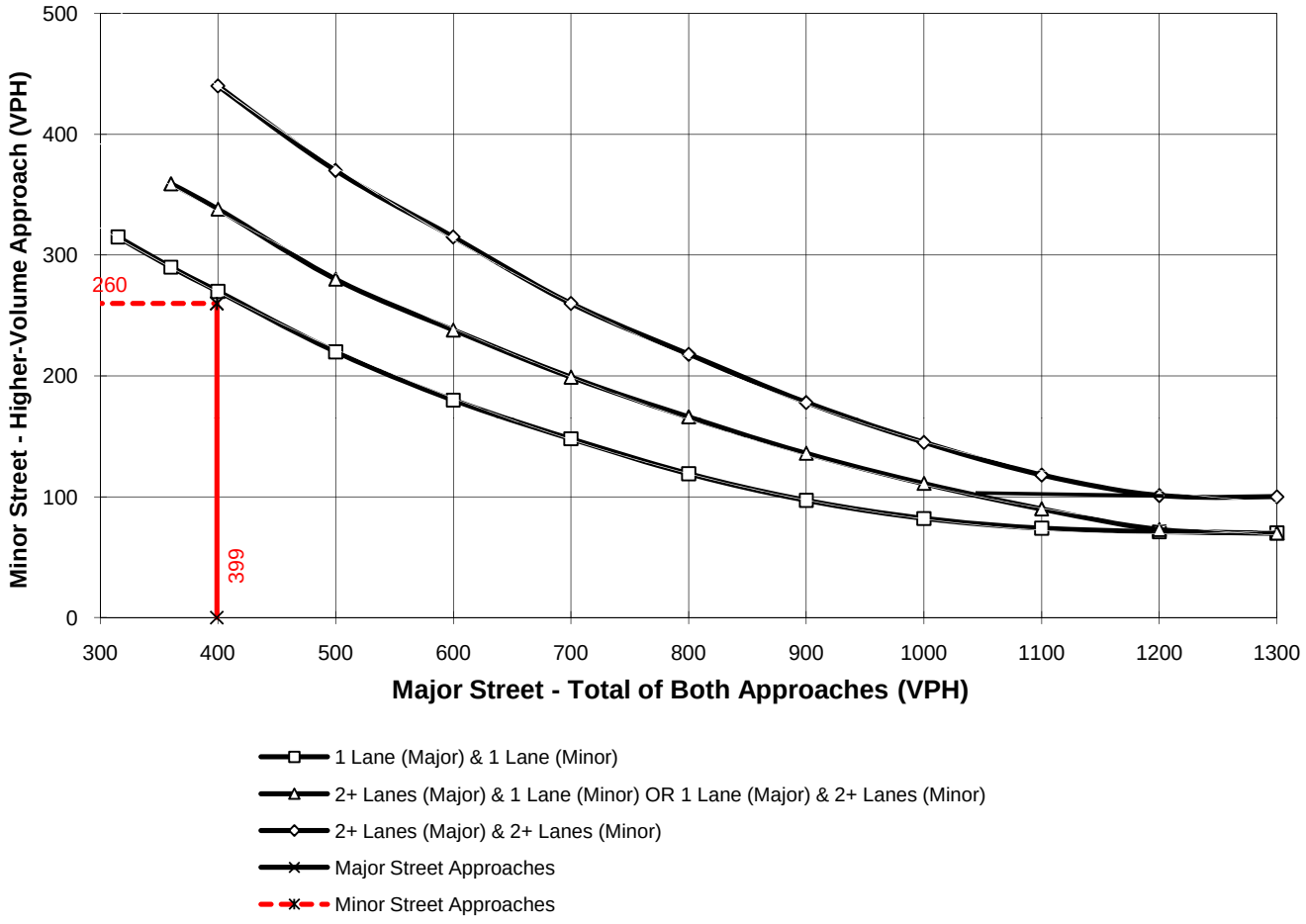
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions**

Major Street Name = **Street "C"**
Total of Both Approaches (VPH) = **399**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Street "B"**
High Volume Approach (VPH) = **260**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

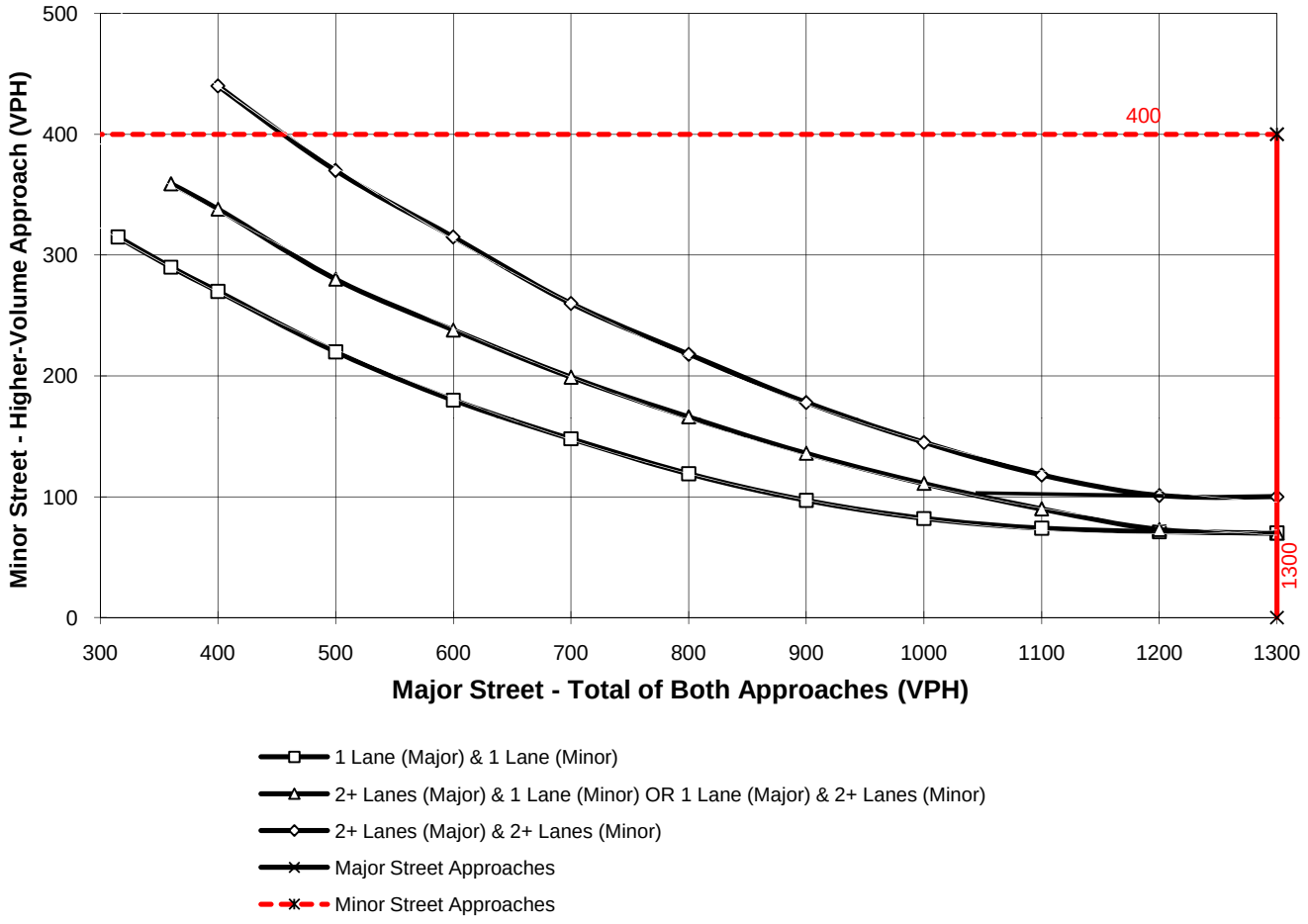
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions**

Major Street Name = **Street "A"**
Total of Both Approaches (VPH) = **1701**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Driveway 1**
High Volume Approach (VPH) = **400**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

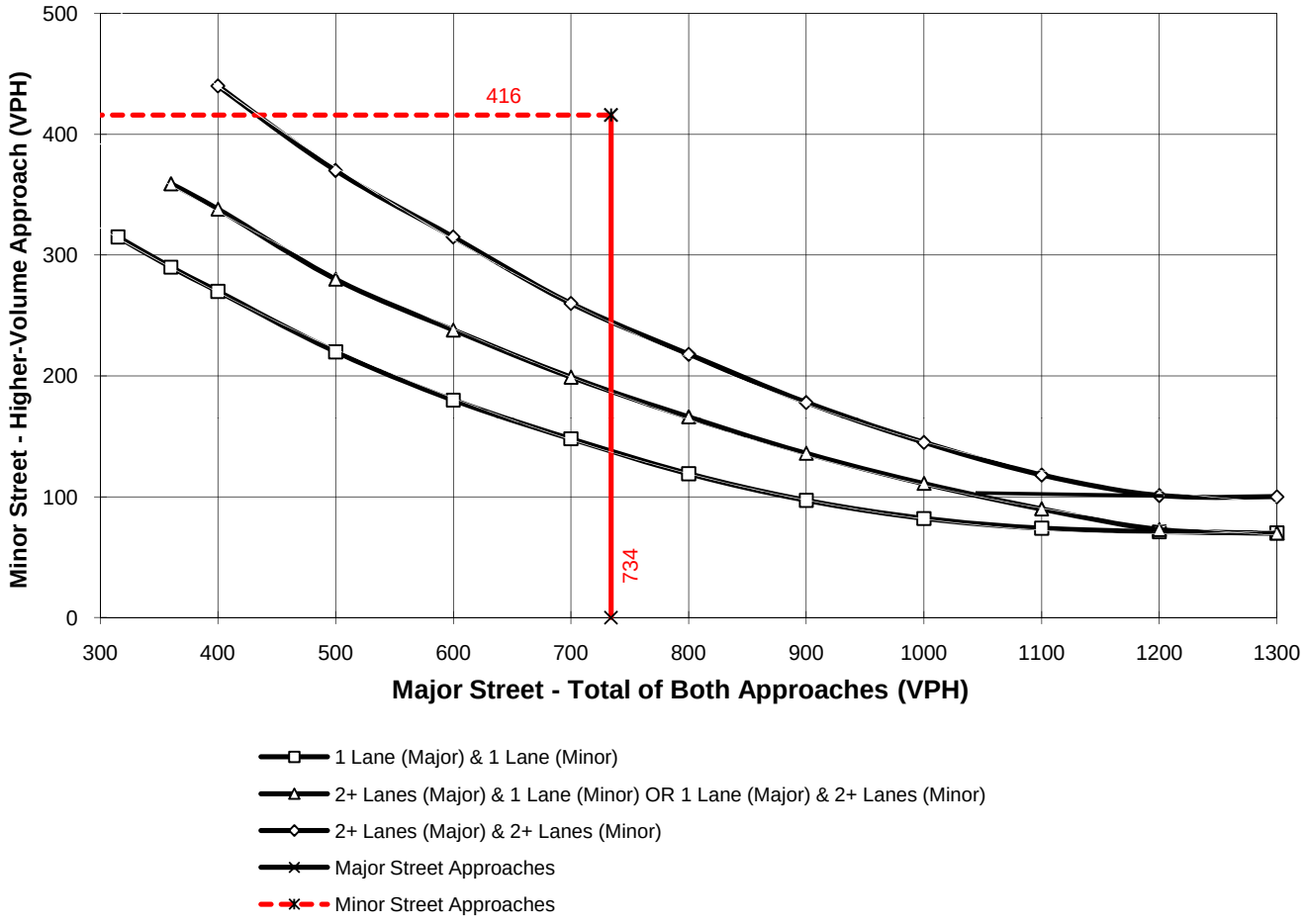
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions**

Major Street Name = **Street "A"**
Total of Both Approaches (VPH) = **734**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Street "B"**
High Volume Approach (VPH) = **416**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach

ATTACHMENT "B"

HCM ANALYSIS WORKSHEETS FOR
EXISTING PLUS PROJECT CONDITIONS

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.395
Loss Time (sec):	0	Average Delay (sec/veh):	86.1
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	73	222	222	174	112	3	4	142	58	106	78	145
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	73	222	222	174	112	3	4	142	58	106	78	145
Added Vol:	24	12	77	0	24	0	0	0	33	31	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	97	234	299	174	136	3	4	142	91	137	78	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PHF Volume:	121	293	374	218	170	4	5	178	114	171	98	181
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	121	293	374	218	170	4	5	178	114	171	98	181
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	121	293	374	218	170	4	5	178	114	171	98	181
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.44	0.56	1.00	0.98	0.02	1.00	0.61	0.39	1.00	1.00	1.00
Final Sat.:	419	210	268	401	415	9	386	260	167	372	391	425
Capacity Analysis Module:												
Vol/Sat:	0.29	1.40	1.40	0.54	0.41	0.41	0.01	0.68	0.68	0.46	0.25	0.43
Crit Moves:		****		****					****	****		
Delay/Veh:	14.4	212	211.7	21.2	16.5	16.5	11.9	26.3	26.3	19.7	14.5	16.8
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.4	212	211.7	21.2	16.5	16.5	11.9	26.3	26.3	19.7	14.5	16.8
LOS by Move:	B	F	F	C	C	C	B	D	D	C	B	C
ApproachDel:	181.3			19.1			26.1			17.4		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	181.3			19.1			26.1			17.4		
LOS by Appr:	F			C			D			C		
AllWayAvgQ:	0.4	26.7	26.7	1.1	0.6	0.6	0.0	1.8	1.8	0.8	0.3	0.7

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.839
Loss Time (sec):	8	Average Delay (sec/veh):	18.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	0 0	1! 0	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	73	222	222	174	112	3	4	142	58	106	78	145
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	73	222	222	174	112	3	4	142	58	106	78	145
Added Vol:	24	12	77	0	24	0	0	0	33	31	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	97	234	299	174	136	3	4	142	91	137	78	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PHF Volume:	121	293	374	218	170	4	5	178	114	171	98	181
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	121	293	374	218	170	4	5	178	114	171	98	181
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	121	293	374	218	170	4	5	178	114	171	98	181
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.59	0.92	0.92	0.41	0.41	0.41	0.69	0.94	0.94	0.41	1.00	0.85
Lanes:	1.00	0.44	0.56	0.56	0.43	0.01	1.00	0.61	0.39	1.00	1.00	1.00
Final Sat.:	1115	764	976	428	335	7	1313	1090	698	779	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.11	0.38	0.38	0.51	0.51	0.51	0.00	0.16	0.16	0.22	0.05	0.11
Crit Moves:					****					****		
Green/Cycle:	0.60	0.60	0.60	0.60	0.60	0.60	0.26	0.26	0.26	0.26	0.26	0.26
Volume/Cap:	0.18	0.63	0.63	0.84	0.84	0.84	0.01	0.62	0.62	0.84	0.20	0.43
Delay/Veh:	5.4	8.9	8.9	22.3	22.3	22.3	16.4	22.1	22.1	46.3	17.4	19.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	5.4	8.9	8.9	22.3	22.3	22.3	16.4	22.1	22.1	46.3	17.4	19.1
LOS by Move:	A	A	A	C	C	C	B	C	C	D	B	B
HCM2kAvgQ:	1	9	9	9	9	9	0	6	6	6	2	3

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bonnett Av. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.407
Loss Time (sec):	0	Average Delay (sec/veh):	10.5
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	6	111	12	21	133	10	40	8	21	10	2	29
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	111	12	21	133	10	40	8	21	10	2	29
Added Vol:	0	118	0	0	107	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	229	12	21	240	10	40	8	21	10	2	29
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	7	261	14	24	274	11	46	9	24	11	2	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	261	14	24	274	11	46	9	24	11	2	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	261	14	24	274	11	46	9	24	11	2	33
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.95	0.05	1.00	0.96	0.04	0.58	0.12	0.30	0.24	0.05	0.71
Final Sat.:	629	663	35	633	672	28	359	72	189	156	31	453
Capacity Analysis Module:												
Vol/Sat:	0.01	0.39	0.39	0.04	0.41	0.41	0.13	0.13	0.13	0.07	0.07	0.07
Crit Moves:		****			****			****			****	
Delay/Veh:	8.4	10.9	10.9	8.5	11.1	11.1	9.0	9.0	9.0	8.4	8.4	8.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.4	10.9	10.9	8.5	11.1	11.1	9.0	9.0	9.0	8.4	8.4	8.4
LOS by Move:	A	B	B	A	B	B	A	A	A	A	A	A
ApproachDel:	10.9			10.9			9.0			8.4		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	10.9			10.9			9.0			8.4		
LOS by Appr:	B			B			A			A		
AllWayAvgQ:	0.0	0.6	0.6	0.0	0.6	0.6	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.906
Loss Time (sec):	0	Average Delay (sec/veh):	33.7
Optimal Cycle:	0	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			1 0 2 0 0			0 0 1 1 0		
Volume Module:												
Base Vol:	0	0	0	130	0	8	7	293	0	0	257	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	130	0	8	7	293	0	0	257	107
Added Vol:	0	0	0	45	0	62	51	377	0	0	150	67
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	175	0	70	58	670	0	0	407	174
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
PHF Volume:	0	0	0	226	0	90	75	866	0	0	526	225
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	226	0	90	75	866	0	0	526	225
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	226	0	90	75	866	0	0	526	225
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.40	0.60
Final Sat.:	0	0	0	406	0	464	439	955	0	0	706	315
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.56	xxxx	0.19	0.17	0.91	xxxx	xxxx	0.74	0.71
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	20.7	0.0	11.7	12.3	47.8	0.0	0.0	27.0	24.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	20.7	0.0	11.7	12.3	47.8	0.0	0.0	27.0	24.0
LOS by Move:	*	*	*	C	*	B	B	E	*	*	D	C
ApproachDel:	xxxxxx			18.2			45.0			26.1		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			18.2			45.0			26.1		
LOS by Appr:	*			C			E			D		
AllWayAvgQ:	0.0	0.0	0.0	1.1	0.0	0.2	0.2	5.0	0.0	0.0	2.5	2.1

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	75	Critical Vol./Cap.(X):	0.458
Loss Time (sec):	12	Average Delay (sec/veh):	14.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	130	0	8	7	293	0	0	257	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	130	0	8	7	293	0	0	257	107
Added Vol:	0	0	0	45	0	62	51	377	0	0	150	67
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	175	0	70	58	670	0	0	407	174
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
PHF Volume:	0	0	0	226	0	90	75	866	0	0	526	225
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	226	0	90	75	866	0	0	526	225
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	226	0	90	75	866	0	0	526	225
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.91	0.91
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.40	0.60
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	2415	1032
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.13	0.00	0.06	0.04	0.24	0.00	0.00	0.22	0.22
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.27	0.00	0.27	0.13	0.57	0.00	0.00	0.44	0.44
Volume/Cap:	0.00	0.00	0.00	0.47	0.00	0.21	0.31	0.42	0.00	0.00	0.49	0.49
Delay/Veh:	0.0	0.0	0.0	23.8	0.0	21.6	30.1	9.1	0.0	0.0	15.3	15.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	23.8	0.0	21.6	30.1	9.1	0.0	0.0	15.3	15.3
LOS by Move:	A	A	A	C	A	C	C	A	A	A	B	B
HCM2kAvgQ:	0	0	0	5	0	2	2	6	0	0	6	6

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.477
Loss Time (sec): 12 Average Delay (sec/veh): 19.2
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	176	0	104	0	0	0	0	726	46	28	678	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	176	0	104	0	0	0	0	726	46	28	678	0
Added Vol:	27	0	26	0	0	0	0	0	39	23	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	203	0	130	0	0	0	0	726	85	51	678	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	236	0	151	0	0	0	0	844	99	59	788	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	236	0	151	0	0	0	0	844	99	59	788	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	236	0	151	0	0	0	0	844	99	59	788	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.93	0.93	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.79	0.21	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3180	372	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.13	0.00	0.09	0.00	0.00	0.00	0.00	0.27	0.27	0.03	0.22	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.27	0.00	0.27	0.00	0.00	0.00	0.00	0.55	0.55	0.08	0.63	0.00
Volume/Cap:	0.49	0.00	0.35	0.00	0.00	0.00	0.00	0.49	0.49	0.39	0.35	0.00
Delay/Veh:	37.6	0.0	35.8	0.0	0.0	0.0	0.0	16.9	16.9	53.8	10.6	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.6	0.0	35.8	0.0	0.0	0.0	0.0	16.9	16.9	53.8	10.6	0.0
LOS by Move:	D	A	D	A	A	A	A	B	B	D	B	A
HCM2kAvgQ:	8	0	5	0	0	0	0	11	11	2	7	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

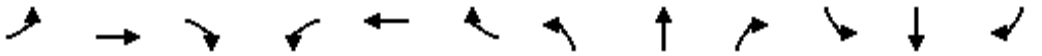
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.312
Loss Time (sec):	0	Average Delay (sec/veh):	9.3
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	0 1	0 0	1	0 1	0 0	1	0 0	1! 0	0
Volume Module:												
Base Vol:	16	144	5	4	55	27	81	3	30	1	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	16	144	5	4	55	27	81	3	30	1	1	1
Added Vol:	4	54	0	0	62	0	0	0	14	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	20	198	5	4	117	27	81	3	44	1	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.00	0.90	0.90	0.90
PHF Volume:	22	220	6	4	130	30	90	3	0	1	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	22	220	6	4	130	30	90	3	0	1	1	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	22	220	6	4	130	30	90	3	0	1	1	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.98	0.02	0.03	0.97	1.00	0.96	0.04	1.00	0.34	0.33	0.33
Final Sat.:	652	704	18	23	681	817	554	21	706	204	204	204
Capacity Analysis Module:												
Vol/Sat:	0.03	0.31	0.31	0.19	0.19	0.04	0.16	0.16	0.00	0.01	0.01	0.01
Crit Moves:			****		****			****			****	
Delay/Veh:	8.3	9.8	9.8	8.9	8.9	7.2	9.7	9.7	0.0	8.5	8.5	8.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.3	9.8	9.8	8.9	8.9	7.2	9.7	9.7	0.0	8.5	8.5	8.5
LOS by Move:	A	A	A	A	A	A	A	A	*	A	A	A
ApproachDel:	9.6			8.6			9.7			8.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.6			8.6			9.7			8.5		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.0	0.4	0.4	0.2	0.2	0.0	0.2	0.2	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	769	47	417	455	65	68	58	325	113	75	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		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	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5035		3433	3539	1536	1770	1863	2727	3433	1863	1554
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5035		3433	3539	1536	1770	1863	2727	3433	1863	1554
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	34	894	55	485	529	76	79	67	378	131	87	66
RTOR Reduction (vph)	0	6	0	0	0	38	0	0	27	0	0	45
Lane Group Flow (vph)	34	943	0	485	529	38	79	67	351	131	87	21
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6	7	3	8	1	7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	5.5	32.2		24.9	51.6	60.6	13.9	37.9	62.8	9.0	33.0	38.5
Effective Green, g (s)	5.5	32.2		24.9	51.6	60.6	13.9	37.9	62.8	9.0	33.0	38.5
Actuated g/C Ratio	0.05	0.27		0.21	0.43	0.51	0.12	0.32	0.52	0.08	0.28	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	81	1351		712	1522	827	205	588	1518	257	512	499
v/s Ratio Prot	0.02	c0.19		c0.14	0.15	0.00	c0.04	0.04	c0.05	c0.04	0.05	0.00
v/s Ratio Perm						0.02			0.08			0.01
v/c Ratio	0.42	0.70		0.68	0.35	0.05	0.39	0.11	0.23	0.51	0.17	0.04
Uniform Delay, d1	55.7	39.5		43.9	22.9	15.1	49.1	29.1	15.5	53.4	33.1	28.1
Progression Factor	1.00	1.00		0.76	0.67	0.41	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	3.0		2.3	0.5	0.1	5.4	0.4	0.1	7.1	0.7	0.0
Delay (s)	59.2	42.5		35.7	15.8	6.3	54.5	29.5	15.6	60.4	33.8	28.1
Level of Service	E	D		D	B	A	D	C	B	E	C	C
Approach Delay (s)		43.1			24.0			23.2			44.8	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM Average Control Delay	32.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Description: Intersection Improvements
- Add 3rd Westbound Left Turn Lane

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.526
Loss Time (sec):	12	Average Delay (sec/veh):	20.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	1	0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	92	0	188	0	600	230	99	518	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	92	0	188	0	600	230	99	518	0
Added Vol:	0	0	0	0	0	0	0	26	0	0	23	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	92	0	188	0	626	230	99	541	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	104	0	213	0	709	260	112	613	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	104	0	213	0	709	260	112	613	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	104	0	213	0	709	260	112	613	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.91	0.91	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.46	0.54	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	2534	931	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.13	0.00	0.28	0.28	0.06	0.17	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.53	0.53	0.12	0.65	0.00
Volume/Cap:	0.00	0.00	0.00	0.23	0.00	0.53	0.00	0.53	0.53	0.53	0.26	0.00
Delay/Veh:	0.0	0.0	0.0	36.0	0.0	40.1	0.0	18.6	18.6	52.2	8.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	36.0	0.0	40.1	0.0	18.6	18.6	52.2	8.9	0.0
LOS by Move:	A	A	A	D	A	D	A	B	B	D	A	A
HCM2kAvgQ:	0	0	0	3	0	7	0	12	12	4	5	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

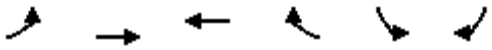
Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.980
Loss Time (sec):	12	Average Delay (sec/veh):	111.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0 0	0	1 0	0 0	1	1 0	1 0	0	0 0	0 1	0
Volume Module:												
Base Vol:	0	0	0	219	0	201	98	409	0	0	267	74
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	219	0	201	98	409	0	0	267	74
Added Vol:	0	0	0	0	0	310	166	534	0	0	256	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	219	0	511	264	943	0	0	523	74
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	238	0	555	287	1024	0	0	568	80
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	238	0	555	287	1024	0	0	568	80
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	238	0	555	287	1024	0	0	568	80
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.88	0.12
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1636	232
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.13	0.00	0.34	0.16	0.54	0.00	0.00	0.35	0.35
Crit Moves:						****		****				
Green/Cycle:	0.00	0.00	0.00	0.25	0.00	0.25	0.39	0.65	0.00	0.00	0.25	0.25
Volume/Cap:	0.00	0.00	0.00	0.52	0.00	1.37	0.40	0.83	0.00	0.00	1.37	1.37
Delay/Veh:	0.0	0.0	0.0	39.8	0.0	224.8	26.5	21.0	0.0	0.0	223	222.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	39.8	0.0	224.8	26.5	21.0	0.0	0.0	223	222.5
LOS by Move:	A	A	A	D	A	F	C	C	A	A	F	F
HCM2kAvgQ:	0	0	0	8	0	40	7	29	0	0	45	45

Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	264	943	523	74	219	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.97	0.88
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3539	1863	1583	3433	2734
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	1863	1583	3433	2734
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	287	1025	568	80	238	555
RTOR Reduction (vph)	0	0	0	37	0	439
Lane Group Flow (vph)	287	1025	568	43	238	116
Confl. Peds. (#/hr)						5
Turn Type	Prot			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	19.0	87.0	64.0	64.0	25.0	25.0
Effective Green, g (s)	19.0	87.0	64.0	64.0	25.0	25.0
Actuated g/C Ratio	0.16	0.72	0.53	0.53	0.21	0.21
Clearance Time (s)	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
Lane Grp Cap (vph)	544	2566	994	844	715	570
v/s Ratio Prot	c0.08	0.29	c0.30		c0.07	
v/s Ratio Perm				0.03		0.04
v/c Ratio	0.53	0.40	0.57	0.05	0.33	0.20
Uniform Delay, d1	46.4	6.4	18.8	13.4	40.4	39.3
Progression Factor	0.82	0.21	0.20	0.19	1.00	1.00
Incremental Delay, d2	0.8	0.4	2.0	0.1	1.3	0.8
Delay (s)	39.0	1.7	5.7	2.6	41.7	40.1
Level of Service	D	A	A	A	D	D
Approach Delay (s)		9.9	5.3		40.5	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.695
Loss Time (sec):	12	Average Delay (sec/veh):	36.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	341	0	105	0	0	0	436	256	0	0	276	218
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	341	0	105	0	0	0	436	256	0	0	276	218
Added Vol:	0	0	0	0	0	0	0	26	0	0	23	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	341	0	105	0	0	0	436	282	0	0	299	218
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
PHF Volume:	403	0	124	0	0	0	515	333	0	0	353	258
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	403	0	124	0	0	0	515	333	0	0	353	258
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	403	0	124	0	0	0	515	333	0	0	353	258
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	1.00	0.93	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.89	0.89
Lanes:	0.76	0.00	0.24	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.16	0.84
Final Sat.:	1354	0	417	0	0	0	3502	1900	0	0	1956	1426
Capacity Analysis Module:												
Vol/Sat:	0.30	0.00	0.30	0.00	0.00	0.00	0.15	0.18	0.00	0.00	0.18	0.18
Crit Moves:			****				****				****	
Green/Cycle:	0.43	0.00	0.43	0.00	0.00	0.00	0.21	0.47	0.00	0.00	0.26	0.26
Volume/Cap:	0.69	0.00	0.69	0.00	0.00	0.00	0.69	0.37	0.00	0.00	0.69	0.69
Delay/Veh:	30.7	0.0	30.7	0.0	0.0	0.0	46.6	20.6	0.0	0.0	42.5	42.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.7	0.0	30.7	0.0	0.0	0.0	46.6	20.6	0.0	0.0	42.5	42.5
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	16	0	16	0	0	0	9	7	0	0	12	12

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

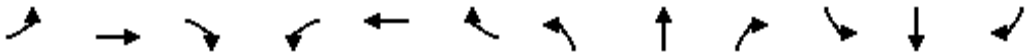
Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 1.136
Loss Time (sec): 12 Average Delay (sec/veh): 85.2
Optimal Cycle: OPTIMIZED Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0	0	0 0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	88	0	58	0	0	0	302	326	0	0	253	681
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	0	58	0	0	0	302	326	0	0	253	681
Added Vol:	147	0	0	0	0	0	418	116	0	0	109	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	235	0	58	0	0	0	720	442	0	0	362	681
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	253	0	62	0	0	0	774	475	0	0	389	732
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	253	0	62	0	0	0	774	475	0	0	389	732
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	253	0	62	0	0	0	774	475	0	0	389	732
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.14	0.00	0.04	0.00	0.00	0.00	0.43	0.25	0.00	0.00	0.20	0.45
Crit Moves:	****						****					****
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.38	0.78	0.00	0.00	0.40	0.40
Volume/Cap:	1.12	0.00	0.31	0.00	0.00	0.00	1.14	0.32	0.00	0.00	0.51	1.14
Delay/Veh:	147.5	0.0	48.7	0.0	0.0	0.0	116.8	4.2	0.0	0.0	27.9	116.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	147.5	0.0	48.7	0.0	0.0	0.0	116.8	4.2	0.0	0.0	27.9	116.3
LOS by Move:	F	A	D	A	A	A	F	A	A	A	C	F
HCM2kAvgQ:	16	0	2	0	0	0	40	5	0	0	11	39

Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	720	442	0	0	362	681	235	0	58	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	1.00			1.00	1.00	1.00		1.00			
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	1863			1863	1583	1770		1553			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	1863			1863	1583	1770		1553			
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	774	475	0	0	389	732	253	0	62	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	272	0	0	50	0	0	0
Lane Group Flow (vph)	774	475	0	0	389	460	253	0	12	0	0	0
Confl. Peds. (#/hr)									5			
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot					Perm	Prot		custom			
Protected Phases	5	2			6		8					
Permitted Phases						6			8			
Actuated Green, G (s)	32.0	88.0			52.0	52.0	24.0		24.0			
Effective Green, g (s)	32.0	88.0			52.0	52.0	24.0		24.0			
Actuated g/C Ratio	0.27	0.73			0.43	0.43	0.20		0.20			
Clearance Time (s)	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			
Lane Grp Cap (vph)	915	1366			807	686	354		311			
v/s Ratio Prot	c0.23	0.26			0.21		c0.14					
v/s Ratio Perm						c0.29			0.01			
v/c Ratio	0.85	0.35			0.48	0.67	0.71		0.04			
Uniform Delay, d1	41.7	5.7			24.4	27.2	44.8		38.7			
Progression Factor	0.74	0.47			0.29	0.97	1.00		1.00			
Incremental Delay, d2	6.9	0.7			2.0	4.9	11.7		0.2			
Delay (s)	37.6	3.4			9.1	31.3	56.5		38.9			
Level of Service	D	A			A	C	E		D			
Approach Delay (s)		24.6			23.6			53.0			0.0	
Approach LOS		C			C			D			A	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.284
Loss Time (sec): 12 Average Delay (sec/veh): 14.6
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0 0	0	1 0	0 0	2	2 0	2 0	0	0 0	3 0	1
Volume Module:												
Base Vol:	0	0	0	19	0	70	119	265	0	0	847	52
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	19	0	70	119	265	0	0	847	52
Added Vol:	0	0	0	0	0	5	20	96	0	0	104	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	19	0	75	139	361	0	0	951	52
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	21	0	82	152	395	0	0	1042	57
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	21	0	82	152	395	0	0	1042	57
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	21	0	82	152	395	0	0	1042	57
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.01	0.00	0.03	0.04	0.11	0.00	0.00	0.20	0.04
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.17	0.00	0.30	0.13	0.73	0.00	0.00	0.60	0.60
Volume/Cap:	0.00	0.00	0.00	0.07	0.00	0.10	0.33	0.15	0.00	0.00	0.33	0.06
Delay/Veh:	0.0	0.0	0.0	42.2	0.0	30.6	47.9	4.8	0.0	0.0	11.9	9.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	42.2	0.0	30.6	47.9	4.8	0.0	0.0	11.9	9.8
LOS by Move:	A	A	A	D	A	C	D	A	A	A	B	A
HCM2kAvgQ:	0	0	0	1	0	1	3	2	0	0	7	1

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.629
Loss Time (sec):	16	Average Delay (sec/veh):	36.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Include				Include				Include			
Min. Green:	10	20	20		10	20	20		10	20	20		10	20	20	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	2	0 1	0	1	1	0 1	1	0	1	0 1	0	1	1	0 2	1	0
Volume Module:																
Base Vol:	494	647	210		43	55	32		15	182	87		40	373	153	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	494	647	210		43	55	32		15	182	87		40	373	153	
Added Vol:	31	0	0		0	0	18		12	56	28		0	56	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	525	647	210		43	55	50		27	238	115		40	429	153	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94	
PHF Volume:	559	689	224		46	59	53		29	253	122		43	457	163	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	559	689	224		46	59	53		29	253	122		43	457	163	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	559	689	224		46	59	53		29	253	122		43	457	163	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.92	1.00	0.85		0.95	0.88	0.88		0.95	1.00	0.85		0.95	0.87	0.87	
Lanes:	2.00	1.00	1.00		1.00	1.05	0.95		1.00	1.00	1.00		1.00	2.21	0.79	
Final Sat.:	3502	1900	1615		1805	1757	1597		1805	1900	1615		1805	3674	1310	
Capacity Analysis Module:																
Vol/Sat:	0.16	0.36	0.14		0.03	0.03	0.03		0.02	0.13	0.08		0.02	0.12	0.12	
Crit Moves:		****			****					****			****			
Green/Cycle:	0.29	0.51	0.51		0.08	0.30	0.30		0.09	0.19	0.19		0.08	0.18	0.18	
Volume/Cap:	0.55	0.71	0.27		0.30	0.11	0.11		0.18	0.71	0.40		0.28	0.69	0.69	
Delay/Veh:	36.5	24.9	16.8		52.9	30.1	30.1		50.9	52.1	43.7		52.7	48.2	48.2	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	36.5	24.9	16.8		52.9	30.1	30.1		50.9	52.1	43.7		52.7	48.2	48.2	
LOS by Move:	D	C	B		D	C	C		D	D	D		D	D	D	
HCM2kAvgQ:	9	20	5		2	2	2		1	9	4		2	9	9	

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 St. "C" (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	110	Critical Vol./Cap.(X):	0.554
Loss Time (sec):	12	Average Delay (sec/veh):	29.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	20	0	20	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	300	0	0	265	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	0	0	300	0	0	265	0
Added Vol:	3	0	427	0	0	0	0	2	12	211	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	3	0	427	0	0	0	0	302	12	211	266	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	3	0	449	0	0	0	0	318	13	222	280	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	3	0	449	0	0	0	0	318	13	222	280	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	3	0	449	0	0	0	0	318	13	222	280	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.94	0.94	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.92	0.08	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3451	137	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.09	0.09	0.12	0.08	0.00
Crit Moves:			****					****		****		
Green/Cycle:	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.17	0.17	0.22	0.39	0.00
Volume/Cap:	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.55	0.55	0.55	0.20	0.00
Delay/Veh:	13.6	0.0	19.7	0.0	0.0	0.0	0.0	43.2	43.2	39.6	22.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.6	0.0	19.7	0.0	0.0	0.0	0.0	43.2	43.2	39.6	22.4	0.0
LOS by Move:	B	A	B	A	A	A	A	D	D	D	C	A
HCM2kAvgQ:	0	0	11	0	0	0	0	6	6	6	3	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 St. "C" (NS) / St. "B" (EW)

Average Delay (sec/veh): 10.3 Worst Case Level Of Service: C[24.6]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	0	0 1! 0	0		0	0 1! 0	0		0	0 1! 0	0		0	0 1! 0	0	
Volume Module:																
Base Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	0	0		0	0	0		0	0	0		0	0	0	
Added Vol:	0	47	0		178	12	24		94	0	0		0	0	254	
AM Int:	1	0	2		0	0	0		0	6	1		1	2	0	
Initial Fut:	1	47	2		178	12	24		94	6	1		1	2	254	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	1	49	2		187	13	25		99	6	1		1	2	267	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
FinalVolume:	1	49	2		187	13	25		99	6	1		1	2	267	
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx		4.1	xxxx	xxxxx		7.1	6.5	6.2		7.1	6.5	6.2	
FollowUpTim:	2.2	xxxx	xxxxx		2.2	xxxx	xxxxx		3.5	4.0	3.3		3.5	4.0	3.3	
Capacity Module:																
Cnflict Vol:	38	xxxx	xxxxx		52	xxxx	xxxxx		587	454	25		456	465	51	
Potent Cap.:	1585	xxxx	xxxxx		1567	xxxx	xxxxx		424	505	1057		518	498	1023	
Move Cap.:	1585	xxxx	xxxxx		1567	xxxx	xxxxx		280	437	1057		459	431	1023	
Volume/Cap:	0.00	xxxx	xxxx		0.12	xxxx	xxxx		0.35	0.01	0.00		0.00	0.00	0.26	
Level Of Service Module:																
2Way95thQ:	0.0	xxxx	xxxxx		0.4	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	
Control Del:	7.3	xxxx	xxxxx		7.6	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*		A	*	*		*	*	*		*	*	*	
Movement:	LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	288	xxxxx		xxxx	1008	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	1.6	xxxxx		xxxxx	1.1	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	24.6	xxxxx		xxxxx	9.9	xxxxx	
Shared LOS:	*	*	*		*	*	*		*	C	*		*	A	*	
ApproachDel:	xxxxxx				xxxxxx				24.6				9.9			
ApproachLOS:	*				*				C				A			

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #15 St. "A" (NS) / Dwy. 1 (EW)

Cycle (sec):	70	Critical Vol./Cap.(X):	0.337
Loss Time (sec):	12	Average Delay (sec/veh):	10.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	15	15	10	15	15	10	15	15	10	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	364	0	95	324	120	25	0	0	0	0	61
AM Int:	3	0	6	0	0	0	0	4	3	3	3	0
Initial Fut:	3	364	6	95	324	120	25	4	3	3	3	61
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	3	383	6	100	341	126	26	4	3	3	3	64
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	3	383	6	100	341	126	26	4	3	3	3	64
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	3	383	6	100	341	126	26	4	3	3	3	64
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	0.95	0.96	0.96	0.77	0.94	0.94	0.76	1.00	0.85
Lanes:	1.00	0.98	0.02	1.00	0.73	0.27	1.00	0.57	0.43	1.00	1.00	1.00
Final Sat.:	1805	1865	31	1805	1331	493	1457	1016	762	1450	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.21	0.21	0.06	0.26	0.26	0.02	0.00	0.00	0.00	0.00	0.04
Crit Moves:		****		****			****					
Green/Cycle:	0.00	0.54	0.54	0.15	0.68	0.68	0.14	0.14	0.14	0.14	0.14	0.29
Volume/Cap:	0.38	0.38	0.38	0.38	0.38	0.38	0.13	0.03	0.03	0.02	0.01	0.14
Delay/Veh:	60.8	9.6	9.6	28.0	5.0	5.0	26.5	25.9	25.9	25.8	25.8	18.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	60.8	9.6	9.6	28.0	5.0	5.0	26.5	25.9	25.9	25.8	25.8	18.6
LOS by Move:	E	A	A	C	A	A	C	C	C	C	C	B
HCM2kAvgQ:	0	5	5	2	4	4	1	0	0	0	0	1

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - AM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #16 St. "A" (NS) / St. "B" (EW)

Cycle (sec): 60 Critical Vol./Cap.(X): 0.292
Loss Time (sec): 8 Average Delay (sec/veh): 10.1
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Permitted				Permitted				Permitted				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	15	15	15		15	15	15		15	15	15		15	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	1	0 0	1	0	1	0 0	1	0	1	0 0	1	0	1	0	1	0 1
Volume Module:																
Base Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	0	0		0	0	0		0	0	0		0	0	0	
Added Vol:	0	155	0		95	39	190		149	0	0		0	0	61	
AM Int:	8	0	1		0	0	0		0	8	1		1	6	0	
Initial Fut:	8	155	1		95	39	190		149	8	1		1	6	61	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	8	163	1		100	41	200		157	8	1		1	6	64	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	8	163	1		100	41	200		157	8	1		1	6	64	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	8	163	1		100	41	200		157	8	1		1	6	64	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.59	1.00	1.00		0.65	0.88	0.88		0.76	0.98	0.98		0.76	1.00	0.85	
Lanes:	1.00	0.99	0.01		1.00	0.17	0.83		1.00	0.89	0.11		1.00	1.00	1.00	
Final Sat.:	1117	1886	12		1229	283	1381		1452	1660	208		1446	1900	1615	
Capacity Analysis Module:																
Vol/Sat:	0.01	0.09	0.09		0.08	0.14	0.14		0.11	0.01	0.01		0.00	0.00	0.04	
Crit Moves:						****			****							
Green/Cycle:	0.50	0.50	0.50		0.50	0.50	0.50		0.37	0.37	0.37		0.37	0.37	0.37	
Volume/Cap:	0.02	0.17	0.17		0.16	0.29	0.29		0.29	0.01	0.01		0.00	0.01	0.11	
Delay/Veh:	7.7	8.4	8.4		8.4	9.1	9.1		13.6	12.0	12.0		11.9	11.9	12.5	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	7.7	8.4	8.4		8.4	9.1	9.1		13.6	12.0	12.0		11.9	11.9	12.5	
LOS by Move:	A	A	A		A	A	A		B	B	B		B	B	B	
HCM2kAvgQ:	0	2	2		1	3	3		2	0	0		0	0	1	

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.588
Loss Time (sec):	0	Average Delay (sec/veh):	14.7
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	55	61	121	28	94	1	3	73	124	194	88	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	61	121	28	94	1	3	73	124	194	88	18
Added Vol:	61	29	46	0	20	0	0	0	54	70	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	116	90	167	28	114	1	3	73	178	264	88	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	121	94	175	29	119	1	3	76	186	276	92	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	121	94	175	29	119	1	3	76	186	276	92	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	121	94	175	29	119	1	3	76	186	276	92	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.35	0.65	1.00	0.99	0.01	1.00	0.29	0.71	1.00	1.00	1.00
Final Sat.:	477	192	357	438	465	4	468	158	386	469	497	547
Capacity Analysis Module:												
Vol/Sat:	0.25	0.49	0.49	0.07	0.26	0.26	0.01	0.48	0.48	0.59	0.19	0.03
Crit Moves:		****			****				****	****		
Delay/Veh:	12.3	14.4	14.4	10.8	12.0	12.0	10.0	14.2	14.2	19.6	11.2	9.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.3	14.4	14.4	10.8	12.0	12.0	10.0	14.2	14.2	19.6	11.2	9.2
LOS by Move:	B	B	B	B	B	B	B	B	B	C	B	A
ApproachDel:	13.7			11.8			14.2			17.1		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	13.7			11.8			14.2			17.1		
LOS by Appr:	B			B			B			C		
AllWayAvgQ:	0.3	0.8	0.8	0.1	0.3	0.3	0.0	0.8	0.8	1.2	0.2	0.0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.472
Loss Time (sec):	8	Average Delay (sec/veh):	11.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Permitted				Permitted				Permitted				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	15	15	15		15	15	15		15	15	15		15	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	1	0	0	1	0	0	0	1!	0	0	1	0	1	0	1	0
Volume Module:																
Base Vol:	55	61	121		28	94	1		3	73	124		194	88	18	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	55	61	121		28	94	1		3	73	124		194	88	18	
Added Vol:	61	29	46		0	20	0		0	0	54		70	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	116	90	167		28	114	1		3	73	178		264	88	18	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.96	0.96	0.96		0.96	0.96	0.96		0.96	0.96	0.96		0.96	0.96	0.96	
PHF Volume:	121	94	175		29	119	1		3	76	186		276	92	19	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	121	94	175		29	119	1		3	76	186		276	92	19	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	121	94	175		29	119	1		3	76	186		276	92	19	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.70	0.90	0.90		0.91	0.91	0.91		0.69	0.89	0.89		0.58	1.00	0.85	
Lanes:	1.00	0.35	0.65		0.19	0.80	0.01		1.00	0.29	0.71		1.00	1.00	1.00	
Final Sat.:	1328	601	1115		339	1378	12		1321	494	1205		1094	1900	1615	
Capacity Analysis Module:																
Vol/Sat:	0.09	0.16	0.16		0.09	0.09	0.09		0.00	0.15	0.15		0.25	0.05	0.01	
Crit Moves:		****											****			
Green/Cycle:	0.33	0.33	0.33		0.33	0.33	0.33		0.53	0.53	0.53		0.53	0.53	0.53	
Volume/Cap:	0.28	0.47	0.47		0.26	0.26	0.26		0.00	0.29	0.29		0.47	0.09	0.02	
Delay/Veh:	15.1	16.5	16.5		14.9	14.9	14.9		6.5	7.9	7.9		9.3	6.9	6.6	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	15.1	16.5	16.5		14.9	14.9	14.9		6.5	7.9	7.9		9.3	6.9	6.6	
LOS by Move:	B	B	B		B	B	B		A	A	A		A	A	A	
HCM2kAvgQ:	2	4	4		2	2	2		0	3	3		4	1	0	

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bonnett Av. (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.599
Loss Time (sec): 0 Average Delay (sec/veh): 13.0
Optimal Cycle: 0 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	25	153	11	14	216	30	12	6	29	9	12	21
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	25	153	11	14	216	30	12	6	29	9	12	21
Added Vol:	0	166	0	0	163	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	25	319	11	14	379	30	12	6	29	9	12	21
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	26	332	11	15	394	31	12	6	30	9	12	22
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	26	332	11	15	394	31	12	6	30	9	12	22
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	26	332	11	15	394	31	12	6	30	9	12	22
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.97	0.03	1.00	0.93	0.07	0.25	0.13	0.62	0.21	0.29	0.50
Final Sat.:	628	673	23	635	658	52	148	74	357	122	163	285
Capacity Analysis Module:												
Vol/Sat:	0.04	0.49	0.49	0.02	0.60	0.60	0.08	0.08	0.08	0.08	0.08	0.08
Crit Moves:		****			****			****			****	
Delay/Veh:	8.6	12.5	12.5	8.4	14.8	14.8	8.9	8.9	8.9	9.0	9.0	9.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.6	12.5	12.5	8.4	14.8	14.8	8.9	8.9	8.9	9.0	9.0	9.0
LOS by Move:	A	B	B	A	B	B	A	A	A	A	A	A
ApproachDel:	12.3			14.6			8.9			9.0		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	12.3			14.6			8.9			9.0		
LOS by Appr:	B			B			A			A		
AllWayAvgQ:	0.0	0.9	0.9	0.0	1.4	1.4	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	1.126
Loss Time (sec):	0	Average Delay (sec/veh):	68.8
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0 0	0	1 0	0 0	1	1 0	2 0	0	0 0	1 1	0
Volume Module:												
Base Vol:	0	0	0	254	0	18	15	272	0	0	336	207
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	254	0	18	15	272	0	0	336	207
Added Vol:	0	0	0	109	0	54	69	232	0	0	351	97
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	363	0	72	84	504	0	0	687	304
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	398	0	79	92	553	0	0	753	333
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	398	0	79	92	553	0	0	753	333
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	398	0	79	92	553	0	0	753	333
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.39	0.61
Final Sat.:	0	0	0	417	0	477	393	833	0	0	669	309
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.95	xxxx	0.17	0.23	0.66	xxxx	xxxx	1.13	1.08
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	62.4	0.0	11.6	14.5	26.4	0.0	0.0	107	89.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	62.4	0.0	11.6	14.5	26.4	0.0	0.0	107	89.6
LOS by Move:	*	*	*	F	*	B	B	D	*	*	F	F
ApproachDel:	xxxxxx			54.0			24.7			101.6		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			54.0			24.7			101.6		
LOS by Appr:	*			F			C			F		
AllWayAvgQ:	0.0	0.0	0.0	5.9	0.0	0.2	0.3	1.7	0.0	0.0	13.6	11.1

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	70	Critical Vol./Cap.(X):	0.709
Loss Time (sec):	12	Average Delay (sec/veh):	20.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	254	0	18	15	272	0	0	336	207
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	254	0	18	15	272	0	0	336	207
Added Vol:	0	0	0	109	0	54	69	232	0	0	351	97
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	363	0	72	84	504	0	0	687	304
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	398	0	79	92	553	0	0	753	333
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	398	0	79	92	553	0	0	753	333
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	398	0	79	92	553	0	0	753	333
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.91	0.91
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.39	0.61
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	2387	1056
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.22	0.00	0.05	0.05	0.15	0.00	0.00	0.32	0.32
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.29	0.00	0.29	0.14	0.54	0.00	0.00	0.40	0.40
Volume/Cap:	0.00	0.00	0.00	0.77	0.00	0.17	0.36	0.28	0.00	0.00	0.79	0.79
Delay/Veh:	0.0	0.0	0.0	30.0	0.0	19.0	27.9	8.7	0.0	0.0	21.5	21.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	30.0	0.0	19.0	27.9	8.7	0.0	0.0	21.5	21.5
LOS by Move:	A	A	A	C	A	B	C	A	A	A	C	C
HCM2kAvgQ:	0	0	0	10	0	1	2	3	0	0	10	10

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.666
Loss Time (sec): 12 Average Delay (sec/veh): 25.1
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	102	0	98	0	0	0	0	933	181	174	412	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	102	0	98	0	0	0	0	933	181	174	412	0
Added Vol:	82	0	42	0	0	0	0	0	75	43	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	184	0	140	0	0	0	0	933	256	217	412	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	196	0	149	0	0	0	0	995	273	231	439	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	196	0	149	0	0	0	0	995	273	231	439	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	196	0	149	0	0	0	0	995	273	231	439	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.92	0.92	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.57	0.43	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	2742	752	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.11	0.00	0.09	0.00	0.00	0.00	0.00	0.36	0.36	0.13	0.12	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.16	0.00	0.16	0.00	0.00	0.00	0.00	0.54	0.54	0.19	0.74	0.00
Volume/Cap:	0.67	0.00	0.57	0.00	0.00	0.00	0.00	0.67	0.67	0.67	0.17	0.00
Delay/Veh:	52.9	0.0	49.2	0.0	0.0	0.0	0.0	20.4	20.4	49.8	4.8	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	52.9	0.0	49.2	0.0	0.0	0.0	0.0	20.4	20.4	49.8	4.8	0.0
LOS by Move:	D	A	D	A	A	A	A	C	C	D	A	A
HCM2kAvgQ:	8	0	6	0	0	0	0	18	18	8	3	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

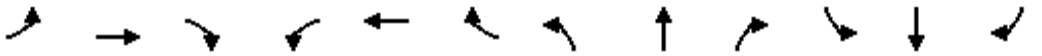
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.545
Loss Time (sec):	0	Average Delay (sec/veh):	11.5
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	0 1	0 0	1	0 1	0 0	1	0 0	1! 0	0
Volume Module:												
Base Vol:	26	126	7	7	225	91	42	1	22	1	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	126	7	7	225	91	42	1	22	1	1	2
Added Vol:	19	124	0	0	118	0	0	0	11	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	250	7	7	343	91	42	1	33	1	1	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.00	0.89	0.89	0.89
PHF Volume:	50	280	8	8	384	102	47	1	0	1	1	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	280	8	8	384	102	47	1	0	1	1	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	50	280	8	8	384	102	47	1	0	1	1	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.97	0.03	0.02	0.98	1.00	0.98	0.02	1.00	0.25	0.25	0.50
Final Sat.:	633	684	19	14	704	830	479	11	582	133	133	266
Capacity Analysis Module:												
Vol/Sat:	0.08	0.41	0.41	0.55	0.55	0.12	0.10	0.10	0.00	0.01	0.01	0.01
Crit Moves:		****			****			****			****	
Delay/Veh:	8.8	11.2	11.2	13.4	13.4	7.5	10.1	10.1	0.0	9.2	9.2	9.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.8	11.2	11.2	13.4	13.4	7.5	10.1	10.1	0.0	9.2	9.2	9.2
LOS by Move:	A	B	B	B	B	A	B	B	*	A	A	A
ApproachDel:	10.8			12.2			10.1			9.2		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	10.8			12.2			10.1			9.2		
LOS by Appr:	B			B			B			A		
AllWayAvgQ:	0.1	0.7	0.7	1.1	1.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	705	128	894	798	41	116	158	958	374	145	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		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	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4952		3433	3539	1539	1770	1863	2736	3433	1863	1556
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4952		3433	3539	1539	1770	1863	2736	3433	1863	1556
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	766	139	972	867	45	126	172	1041	407	158	97
RTOR Reduction (vph)	0	22	0	0	0	21	0	0	7	0	0	61
Lane Group Flow (vph)	50	883	0	972	867	24	126	172	1034	407	158	36
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6	7	3	8	1	7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	7.9	27.3		31.0	50.4	63.4	12.0	32.7	63.7	13.0	33.7	41.6
Effective Green, g (s)	7.9	27.3		31.0	50.4	63.4	12.0	32.7	63.7	13.0	33.7	41.6
Actuated g/C Ratio	0.07	0.23		0.26	0.42	0.53	0.10	0.27	0.53	0.11	0.28	0.35
Clearance Time (s)	4.0	4.0		4.0	4.0	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	117	1127		887	1486	813	177	508	1544	372	523	539
v/s Ratio Prot	0.03	c0.18		c0.28	0.24	0.00	0.07	0.09	c0.17	c0.12	0.08	0.00
v/s Ratio Perm						0.01			0.20			0.02
v/c Ratio	0.43	0.78		1.10	0.58	0.03	0.71	0.34	0.67	1.09	0.30	0.07
Uniform Delay, d1	53.9	43.6		44.5	26.7	13.6	52.3	35.0	20.5	53.5	33.9	26.2
Progression Factor	1.00	1.00		0.78	0.66	0.30	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	5.5		45.1	0.2	0.0	21.5	1.8	1.1	74.4	1.5	0.1
Delay (s)	56.4	49.1		79.9	17.9	4.0	73.9	36.8	21.6	127.9	35.4	26.3
Level of Service	E	D		E	B	A	E	D	C	F	D	C
Approach Delay (s)		49.4			49.5			28.5			90.9	
Approach LOS		D			D			C			F	

Intersection Summary			
HCM Average Control Delay	49.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Intersection Improvements
- Add 3rd Westbound Left Turn Lane

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.652
Loss Time (sec):	12	Average Delay (sec/veh):	23.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0	1 0	0 1	0	0 1	0	1	0 2	0 0
Volume Module:												
Base Vol:	0	0	0	104	0	302	0	441	590	43	284	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	104	0	302	0	441	590	43	284	0
Added Vol:	0	0	0	0	0	0	0	42	0	0	43	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	104	0	302	0	483	590	43	327	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	0	0	0	108	0	313	0	500	611	45	339	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	108	0	313	0	500	611	45	339	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	108	0	313	0	500	611	45	339	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.87	0.87	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	1657	1657	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.19	0.00	0.30	0.37	0.02	0.09	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.28	0.00	0.28	0.00	0.54	0.54	0.08	0.62	0.00
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.69	0.00	0.56	0.69	0.30	0.15	0.00
Delay/Veh:	0.0	0.0	0.0	33.2	0.0	42.9	0.0	18.9	21.8	52.8	9.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.2	0.0	42.9	0.0	18.9	21.8	52.8	9.7	0.0
LOS by Move:	A	A	A	C	A	D	A	B	C	D	A	A
HCM2kAvgQ:	0	0	0	3	0	11	0	12	17	2	3	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

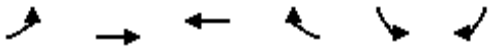
Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 1.785
Loss Time (sec): 12 Average Delay (sec/veh): 320.0
Optimal Cycle: OPTIMIZED Level Of Service: F

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Split Phase				Split Phase				Protected				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0		15	0	15		10	15	0		0	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	0	0	0	0 0	1	0	0	0 1	1	0	1	0 0	0	0	0	1 0
Volume Module:																
Base Vol:	0	0	0		405	0	266		263	591	0		0	382	167	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	0	0		405	0	266		263	591	0		0	382	167	
Added Vol:	0	0	0		0	0	643		298	779	0		0	490	0	
Passby:	0	0	0		0	0	56		34	72	0		0	49	0	
Initial Fut:	0	0	0		405	0	965		595	1442	0		0	921	167	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94	
PHF Volume:	0	0	0		430	0	1026		632	1532	0		0	979	177	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	0	0	0		430	0	1026		632	1532	0		0	979	177	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	0	0	0		430	0	1026		632	1532	0		0	979	177	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	1.00	1.00	1.00		0.95	1.00	0.85		0.95	1.00	1.00		1.00	0.98	0.98	
Lanes:	0.00	0.00	0.00		1.00	0.00	1.00		1.00	1.00	0.00		0.00	0.85	0.15	
Final Sat.:	0	0	0		1805	0	1615		1805	1900	0		0	1575	286	
Capacity Analysis Module:																
Vol/Sat:	0.00	0.00	0.00		0.24	0.00	0.63		0.35	0.81	0.00		0.00	0.62	0.62	
Crit Moves:							****		****					****		
Green/Cycle:	0.00	0.00	0.00		0.36	0.00	0.36		0.20	0.54	0.00		0.00	0.35	0.35	
Volume/Cap:	0.00	0.00	0.00		0.67	0.00	1.79		1.79	1.48	0.00		0.00	1.79	1.79	
Delay/Veh:	0.0	0.0	0.0		35.5	0.0	399.0		412.9	249	0.0		0.0	399	398.9	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	0.0	0.0	0.0		35.5	0.0	399.0		412.9	249	0.0		0.0	399	398.9	
LOS by Move:	A	A	A		D	A	F		F	F	A		A	F	F	
HCM2kAvgQ:	0	0	0		14	0	93		57	115	0		0	102	102	

Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	595	1442	921	167	405	965
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.97	0.88
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3539	1863	1583	3433	2731
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	1863	1583	3433	2731
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	633	1534	980	178	431	1027
RTOR Reduction (vph)	0	0	0	60	0	500
Lane Group Flow (vph)	633	1534	980	118	431	527
Confl. Peds. (#/hr)						5
Turn Type	Prot			Perm		Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	22.0	89.4	63.4	63.4	22.6	22.6
Effective Green, g (s)	22.0	89.4	63.4	63.4	22.6	22.6
Actuated g/C Ratio	0.18	0.75	0.53	0.53	0.19	0.19
Clearance Time (s)	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
Lane Grp Cap (vph)	629	2637	984	836	647	514
v/s Ratio Prot	c0.18	0.43	c0.53		0.13	
v/s Ratio Perm				0.07		c0.19
v/c Ratio	1.01	0.58	1.00	0.14	0.67	1.03
Uniform Delay, d1	49.0	6.9	28.2	14.4	45.2	48.7
Progression Factor	0.89	0.47	0.32	0.29	1.00	1.00
Incremental Delay, d2	28.4	0.5	16.3	0.1	5.4	46.3
Delay (s)	72.0	3.8	25.3	4.2	50.6	95.0
Level of Service	E	A	C	A	D	F
Approach Delay (s)		23.7	22.0		81.9	
Approach LOS		C	C		F	

Intersection Summary			
HCM Average Control Delay	41.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.293
Loss Time (sec): 12 Average Delay (sec/veh): 28.7
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	189	0	17	0	0	0	248	297	0	0	138	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	189	0	17	0	0	0	248	297	0	0	138	32
Added Vol:	0	0	0	0	0	0	0	42	0	0	43	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	189	0	17	0	0	0	248	339	0	0	181	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	203	0	18	0	0	0	266	364	0	0	194	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	203	0	18	0	0	0	266	364	0	0	194	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	203	0	18	0	0	0	266	364	0	0	194	34
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.95	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.93	0.93
Lanes:	0.92	0.00	0.08	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.70	0.30
Final Sat.:	1648	0	148	0	0	0	3502	1900	0	0	3000	530
Capacity Analysis Module:												
Vol/Sat:	0.12	0.00	0.12	0.00	0.00	0.00	0.08	0.19	0.00	0.00	0.06	0.06
Crit Moves:	****						****				****	
Green/Cycle:	0.42	0.00	0.42	0.00	0.00	0.00	0.26	0.48	0.00	0.00	0.22	0.22
Volume/Cap:	0.29	0.00	0.29	0.00	0.00	0.00	0.29	0.40	0.00	0.00	0.29	0.29
Delay/Veh:	23.3	0.0	23.3	0.0	0.0	0.0	35.8	20.3	0.0	0.0	39.2	39.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.3	0.0	23.3	0.0	0.0	0.0	35.8	20.3	0.0	0.0	39.2	39.2
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	5	0	5	0	0	0	4	8	0	0	4	4

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 1.196
Loss Time (sec): 12 Average Delay (sec/veh): 93.0
Optimal Cycle: OPTIMIZED Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1 0	0	0 0	1 0	1
Volume Module:												
Base Vol:	111	0	189	0	0	0	190	806	0	0	438	374
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	111	0	189	0	0	0	190	806	0	0	438	374
Added Vol:	306	0	0	0	0	0	592	187	0	0	184	0
Passby:	33	0	0	0	0	0	56	16	0	0	16	0
Initial Fut:	450	0	189	0	0	0	838	1009	0	0	638	374
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	462	0	194	0	0	0	860	1036	0	0	655	384
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	462	0	194	0	0	0	860	1036	0	0	655	384
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	462	0	194	0	0	0	860	1036	0	0	655	384
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.26	0.00	0.12	0.00	0.00	0.00	0.48	0.55	0.00	0.00	0.34	0.24
Crit Moves:	****						****				****	
Green/Cycle:	0.21	0.00	0.21	0.00	0.00	0.00	0.40	0.69	0.00	0.00	0.29	0.29
Volume/Cap:	1.20	0.00	0.56	0.00	0.00	0.00	1.20	0.79	0.00	0.00	1.20	0.83
Delay/Veh:	158.2	0.0	44.3	0.0	0.0	0.0	137.7	16.4	0.0	0.0	148	51.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	158.2	0.0	44.3	0.0	0.0	0.0	137.7	16.4	0.0	0.0	148	51.4
LOS by Move:	F	A	D	A	A	A	F	B	A	A	F	D
HCM2kAvgQ:	29	0	7	0	0	0	47	24	0	0	38	14

Note: Queue reported is the number of cars per lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	838	1009	0	0	638	374	450	0	189	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	1.00			1.00	1.00	1.00		1.00			
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	1863			1863	1583	1770		1556			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	1863			1863	1583	1770		1556			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	864	1040	0	0	658	386	464	0	195	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	229	0	0	101	0	0	0
Lane Group Flow (vph)	864	1040	0	0	658	157	464	0	94	0	0	0
Confl. Peds. (#/hr)									5			
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot					Perm	Prot		custom			
Protected Phases	5	2			6		8					
Permitted Phases						6			8			
Actuated Green, G (s)	31.0	79.5			44.5	44.5	32.5		32.5			
Effective Green, g (s)	31.0	79.5			44.5	44.5	32.5		32.5			
Actuated g/C Ratio	0.26	0.66			0.37	0.37	0.27		0.27			
Clearance Time (s)	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			
Lane Grp Cap (vph)	887	1234			691	587	479		421			
v/s Ratio Prot	c0.25	0.56			c0.35		c0.26					
v/s Ratio Perm						0.10			0.06			
v/c Ratio	0.97	0.84			0.95	0.27	0.97		0.22			
Uniform Delay, d1	44.1	15.5			36.7	26.4	43.2		34.0			
Progression Factor	1.00	0.94			0.61	0.61	1.00		1.00			
Incremental Delay, d2	20.9	5.8			23.8	1.1	34.0		1.2			
Delay (s)	64.9	20.4			46.2	17.0	77.3		35.2			
Level of Service	E	C			D	B	E		D			
Approach Delay (s)		40.6			35.4			64.8			0.0	
Approach LOS		D			D			E			A	

Intersection Summary			
HCM Average Control Delay	43.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.486
Loss Time (sec): 12 Average Delay (sec/veh): 24.8
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0 0	0	1 0	0 0	2	2 0	2 0	0	0 0	3 0	1
Volume Module:												
Base Vol:	0	0	0	108	0	437	535	460	0	0	348	103
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	108	0	437	535	460	0	0	348	103
Added Vol:	0	0	0	0	0	18	10	178	0	0	166	0
Passby:	0	0	0	0	0	0	0	16	0	0	16	0
Initial Fut:	0	0	0	108	0	455	545	654	0	0	530	103
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	0	0	0	113	0	476	571	685	0	0	555	108
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	113	0	476	571	685	0	0	555	108
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	113	0	476	571	685	0	0	555	108
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.17	0.16	0.19	0.00	0.00	0.11	0.07
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.34	0.00	0.68	0.34	0.56	0.00	0.00	0.22	0.22
Volume/Cap:	0.00	0.00	0.00	0.18	0.00	0.25	0.49	0.34	0.00	0.00	0.49	0.30
Delay/Veh:	0.0	0.0	0.0	27.6	0.0	7.5	32.0	14.7	0.0	0.0	41.2	39.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	27.6	0.0	7.5	32.0	14.7	0.0	0.0	41.2	39.6
LOS by Move:	A	A	A	C	A	A	C	B	A	A	D	D
HCM2kAvgQ:	0	0	0	3	0	4	8	7	0	0	6	3

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.578
Loss Time (sec):	16	Average Delay (sec/veh):	38.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Include				Include				Include			
Min. Green:	10	20	20		10	20	20		10	20	20		10	20	20	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	2	0 1	0	1	1	0 1	1	0	1	0 1	0	1	1	0 2	1	0
Volume Module:																
Base Vol:	169	151		41	236	362		51	13	301		254	108	231		55
Growth Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Initial Bse:	169	151		41	236	362		51	13	301		254	108	231		55
Added Vol:	46	0		0	0	0		24	29	99		50	0	96		0
PasserByVol:	0	0		0	0	0		0	0	0		0	0	0		0
Initial Fut:	215	151		41	236	362		75	42	400		304	108	327		55
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Adj:	0.96	0.96		0.96	0.96	0.96		0.96	0.96	0.96		0.96	0.96	0.96		0.96
PHF Volume:	224	157		43	246	377		78	44	417		317	113	341		57
Reduct Vol:	0	0		0	0	0		0	0	0		0	0	0		0
Reduced Vol:	224	157		43	246	377		78	44	417		317	113	341		57
PCE Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
MLF Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
FinalVolume:	224	157		43	246	377		78	44	417		317	113	341		57
Saturation Flow Module:																
Sat/Lane:	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900		1900
Adjustment:	0.92	1.00		0.85	0.95	0.93		0.93	0.95	1.00		0.85	0.95	0.89		0.89
Lanes:	2.00	1.00		1.00	1.00	1.66		0.34	1.00	1.00		1.00	1.00	2.57		0.43
Final Sat.:	3502	1900		1615	1805	2913		603	1805	1900		1615	1805	4342		730
Capacity Analysis Module:																
Vol/Sat:	0.06	0.08		0.03	0.14	0.13		0.13	0.02	0.22		0.20	0.06	0.08		0.08
Crit Moves:		****			****					****			****			
Green/Cycle:	0.13	0.17		0.17	0.23	0.26		0.26	0.16	0.37		0.37	0.10	0.31		0.31
Volume/Cap:	0.49	0.50		0.16	0.60	0.49		0.49	0.15	0.60		0.53	0.60	0.25		0.25
Delay/Veh:	49.1	46.7		43.1	43.8	37.8		37.8	43.9	32.2		30.8	56.5	30.7		30.7
User DelAdj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
AdjDel/Veh:	49.1	46.7		43.1	43.8	37.8		37.8	43.9	32.2		30.8	56.5	30.7		30.7
LOS by Move:	D	D		D	D	D		D	D	C		C	E	C		C
HCM2kAvgQ:	4	6		1	9	8		8	1	12		9	5	4		4

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 St. "C" (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	105	Critical Vol./Cap.(X):	0.577
Loss Time (sec):	12	Average Delay (sec/veh):	26.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	20	0	20	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	287	0	0	354	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	0	0	287	0	0	354	0
Added Vol:	12	0	294	0	0	0	0	7	4	398	7	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	12	0	294	0	0	0	0	294	4	398	361	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	13	0	309	0	0	0	0	309	4	419	380	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	13	0	309	0	0	0	0	309	4	419	380	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	13	0	309	0	0	0	0	309	4	419	380	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.97	0.03	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3554	48	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.01	0.00	0.19	0.00	0.00	0.00	0.00	0.09	0.09	0.23	0.11	0.00
Crit Moves:			****					****		****		
Green/Cycle:	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.15	0.15	0.40	0.55	0.00
Volume/Cap:	0.02	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.58	0.58	0.19	0.00
Delay/Veh:	23.6	0.0	30.5	0.0	0.0	0.0	0.0	43.0	43.0	25.6	11.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.6	0.0	30.5	0.0	0.0	0.0	0.0	43.0	43.0	25.6	11.7	0.0
LOS by Move:	C	A	C	A	A	A	A	D	D	C	B	A
HCM2kAvgQ:	0	0	9	0	0	0	0	6	6	10	3	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #14 St. "C" (NS) / St. "B" (EW)

Average Delay (sec/veh): 9.3 Worst Case Level Of Service: D[27.3]

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Uncontrolled						Uncontrolled						Stop Sign						Stop Sign					
Rights:	Include						Include						Include						Include					
Lanes:	0	0	1!	0	0		0	0	1!	0	0		0	0	1!	0	0		0	0	1!	0	0	
Volume Module:																								
Base Vol:	0		0		0		0		0		0		0		0		0		0		0		0	
Growth Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	0		0		0		0		0		0		0		0		0		0		0		0	
Added Vol:	0		22		0		245		42		84		44		0		0		0		0		223	
PM Int:	1		0		5		0		0		0		0		18		1		9		28		0	
Initial Fut:	1		22		5		245		42		84		44		18		1		9		28		223	
User Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95		0.95	
PHF Volume:	1		23		5		258		44		88		46		19		1		9		29		235	
Reduct Vol:	0		0		0		0		0		0		0		0		0		0		0		0	
FinalVolume:	1		23		5		258		44		88		46		19		1		9		29		235	
Critical Gap Module:																								
Critical Gp:	4.1	xxxx	xxxxx				4.1	xxxx	xxxxx				7.1		6.5		6.2		7.1		6.5		6.2	
FollowUpTim:	2.2	xxxx	xxxxx				2.2	xxxx	xxxxx				3.5		4.0		3.3		3.5		4.0		3.3	
Capacity Module:																								
Cnflict Vol:	133	xxxx	xxxxx				28	xxxx	xxxxx				764		635		88		642		676		26	
Potent Cap.:	1465	xxxx	xxxxx				1598	xxxx	xxxxx				323		399		975		390		378		1056	
Move Cap.:	1465	xxxx	xxxxx				1598	xxxx	xxxxx				199		323		975		318		306		1056	
Volume/Cap:	0.00	xxxx	xxxx				0.16	xxxx	xxxx				0.23		0.06		0.00		0.03		0.10		0.22	
Level Of Service Module:																								
2Way95thQ:	0.0	xxxx	xxxxx				0.6	xxxx	xxxxx				xxxx		xxxx		xxxxx		xxxx		xxxx		xxxxx	
Control Del:	7.5	xxxx	xxxxx				7.7	xxxx	xxxxx				xxxxx		xxxx		xxxxx		xxxxx		xxxx		xxxxx	
LOS by Move:	A		*		*		A		*		*		*		*		*		*		*		*	
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx				xxxx		227		xxxxx		xxxx		786		xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx		1.2		xxxxx		xxxxx		1.6		xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx		27.3		xxxxx		xxxxx		12.0		xxxxx	
Shared LOS:	*		*		*		*		*		*		*		D		*		*		B		*	
ApproachDel:	xxxxxx						xxxxxx						27.3						12.0					
ApproachLOS:	*						*						D						B					

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #15 St. "A" (NS) / Dwy. 1 (EW)

Cycle (sec):	75	Critical Vol./Cap.(X):	0.779
Loss Time (sec):	12	Average Delay (sec/veh):	20.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	15	15	10	15	15	10	15	15	10	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	632	0	350	644	40	115	0	0	0	0	351
PM Int:	11	0	24	0	0	0	0	19	10	31	18	0
Initial Fut:	11	632	24	350	644	40	115	19	10	31	18	351
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	12	665	25	368	678	42	121	20	11	33	19	369
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	12	665	25	368	678	42	121	20	11	33	19	369
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	12	665	25	368	678	42	121	20	11	33	19	369
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	0.99	0.99	0.75	0.95	0.95	0.74	1.00	0.85
Lanes:	1.00	0.96	0.04	1.00	0.94	0.06	1.00	0.66	0.34	1.00	1.00	1.00
Final Sat.:	1805	1820	69	1805	1773	110	1431	1180	621	1412	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.37	0.37	0.20	0.38	0.38	0.08	0.02	0.02	0.02	0.01	0.23
Crit Moves:		****		****			****					
Green/Cycle:	0.01	0.45	0.45	0.25	0.70	0.70	0.13	0.13	0.13	0.13	0.13	0.39
Volume/Cap:	0.55	0.81	0.81	0.81	0.55	0.55	0.63	0.13	0.13	0.17	0.07	0.59
Delay/Veh:	64.5	23.3	23.3	36.4	6.2	6.2	37.6	28.9	28.9	29.3	28.6	19.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	64.5	23.3	23.3	36.4	6.2	6.2	37.6	28.9	28.9	29.3	28.6	19.8
LOS by Move:	E	C	C	D	A	A	D	C	C	C	C	B
HCM2kAvgQ:	0	15	15	8	8	8	4	1	1	1	0	8

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
E+P Conditions - PM Peak Hour - With Improvements
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #16 St. "A" (NS) / St. "B" (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.583
Loss Time (sec):	8	Average Delay (sec/veh):	12.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	73	0	350	138	157	208	0	0	0	0	351
PM Int:	10	0	6	0	0	0	0	37	19	11	54	0
Initial Fut:	10	73	6	350	138	157	208	37	19	11	54	351
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	11	77	6	368	145	165	219	39	20	12	57	369
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	11	77	6	368	145	165	219	39	20	12	57	369
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	11	77	6	368	145	165	219	39	20	12	57	369
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.52	0.99	0.99	0.70	0.92	0.92	0.72	0.95	0.95	0.72	1.00	0.85
Lanes:	1.00	0.92	0.08	1.00	0.47	0.53	1.00	0.66	0.34	1.00	1.00	1.00
Final Sat.:	979	1736	143	1334	818	930	1372	1191	612	1368	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.04	0.04	0.28	0.18	0.18	0.16	0.03	0.03	0.01	0.03	0.23
Crit Moves:				****								****
Green/Cycle:	0.47	0.47	0.47	0.47	0.47	0.47	0.39	0.39	0.39	0.39	0.39	0.39
Volume/Cap:	0.02	0.09	0.09	0.58	0.37	0.37	0.41	0.08	0.08	0.02	0.08	0.58
Delay/Veh:	8.4	8.7	8.7	12.9	10.4	10.4	13.7	11.5	11.5	11.2	11.5	15.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.4	8.7	8.7	12.9	10.4	10.4	13.7	11.5	11.5	11.2	11.5	15.7
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	0	1	1	5	4	4	3	1	1	0	1	6

Note: Queue reported is the number of cars per lane.

ATTACHMENT "C"

EXISTING PLUS PROJECT CONDITIONS
RAMP MERGE AND DIVERGE ANALYSIS WORKSHEETS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroad, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 329 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6223	0.95	Level	11	0	0.948	1.00	6911
Ramp	280	0.95	Level	11	0	0.948	1.00	311
UpStream								
DownStream	329	0.95	Level	11	0	0.948	1.00	365

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.573 using Equation (Exhibit 25-12)
V_{12} = 4092 pc/h
V_3 or V_{av34} 2819 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4211 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	6911	Exhibit 25-14	7050	No
$V_{FO} = V_F - V_R$	6600	Exhibit 25-14	7050	No
V_R	311	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4092	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 27.0 (pc/mi/ln)
LOS = C (Exhibit 25-4)

Speed Determination

D_s = 0.456 (Exhibit 25-19)
S_R= 54.5 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 58.1 mph (Exhibit 25-15)

FREEWAY WEAVING WORKSHEET

General Information

Analyst	IC
Agency/Company	Urban Crossroads, Inc.
Date Performed	7/20/2011
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	E+P

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65
Weaving number of lanes, N	3
Weaving seg length, L (ft)	2100
Terrain	Level

Weaving type	B
Volume ratio, VR	0.16
Weaving ratio, R	0.31

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5542	0.95	11	0	1.5	1.2	0.948	1.00	6154
V_{o2}	0	0.95	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	730	0.95	11	0	1.5	1.2	0.948	1.00	810
V_{w2}	329	0.95	11	0	1.5	1.2	0.948	1.00	365
V_w				1175	V_{nw}				6154
V									7329

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.57	0.26		
Weaving and non-weaving speeds, Si (mi/h)	50.04	58.64		

Number of lanes required for unconstrained operation, Nw	0.46
Maximum number of lanes, Nw (max)	3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	57.07
Weaving segment density, D (pc/mi/ln)	42.81
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6348

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 730 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5542	0.95	Level	11	0	0.948	1.00	6155
Ramp	338	0.95	Level	11	0	0.948	1.00	375
UpStream	730	0.95	Level	11	0	0.948	1.00	811
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1003.22 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 3623 pc/h
V_3 or V_{av34} 2532 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	6530	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3998	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 34.0 (pc/mi/ln)
LOS = D (Exhibit 25-4)

Speed Determination

M_S = 0.506 (Exibit 25-19)
S_R= 53.4 mph (Exhibit 25-19)
S_0= 57.1 mph (Exhibit 25-19)
S = 54.8 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 446 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5797	0.95	Level	11	0	0.948	1.00	6438
Ramp	654	0.95	Level	11	0	0.948	1.00	726
UpStream	446	0.95	Level	11	0	0.948	1.00	495
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1227.70 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 3826 pc/h
V_3 or V_{av34} 2612 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7164	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4552	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 36.9 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.649 (Exibit 25-19)
S_R= 50.1 mph (Exhibit 25-19)
S_0= 56.6 mph (Exhibit 25-19)
S = 52.3 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroad, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{up} = 3200 ft
V_u = 654 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	6243	0.95	Level	11	0	0.948	1.00	6933
Ramp	446	0.95	Level	11	0	0.948	1.00	495
UpStream	654	0.95	Level	11	0	0.948	1.00	726
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = 3764.80 (Equation 25-8 or 25-9)
P_{FD} = 0.584 using Equation (Exhibit 25-12)
V_{12} = 4253 pc/h
V_3 or V_{av34} 2680 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	6933	Exhibit 25-14	7050	No
$V_{FO} = V_F - V_R$	6438	Exhibit 25-14	7050	No
V_R	495	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4253	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 39.0 (pc/mi/ln)
LOS = E (Exhibit 25-4)

Speed Determination

D_s = 0.473 (Exhibit 25-19)
S_R= 54.1 mph (Exhibit 25-19)
S_0= 64.8 mph (Exhibit 25-19)
S = 57.8 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{down} = 3200 ft
V_D = 293 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4842	0.95	Level	11	0	0.948	1.00	5377
Ramp	1401	0.95	Level	11	0	0.948	1.00	1556
UpStream								
DownStream	293	0.95	Level	11	0	0.948	1.00	325

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2132.55 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 3165 pc/h
V_3 or V_{av34} 2212 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	6933	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4721	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 39.1 (pc/mi/ln)
LOS = E (Exhibit 25-4)

Speed Determination

M_S = 0.731 (Exibit 25-19)
S_R= 48.2 mph (Exhibit 25-19)
S_0= 58.8 mph (Exhibit 25-19)
S = 51.1 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroad, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 1401 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5135	0.95	Level	11	0	0.948	1.00	5703
Ramp	293	0.95	Level	11	0	0.948	1.00	325
UpStream								
DownStream	1401	0.95	Level	11	0	0.948	1.00	1556

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.602 using Equation (Exhibit 25-12)
V_{12} = 3565 pc/h
V_3 or V_{av34} 2138 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	5703	Exhibit 25-14	7050	No
$V_{FO} = V_F - V_R$	5378	Exhibit 25-14	7050	No
V_R	325	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3565	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 33.1 (pc/mi/ln)
LOS = D (Exhibit 25-4)

Speed Determination

D_s = 0.457 (Exhibit 25-19)
S_R= 54.5 mph (Exhibit 25-19)
S_0= 66.9 mph (Exhibit 25-19)
S = 58.5 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroad, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 633 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6849	0.95	Level	11	0	0.948	1.00	7606
Ramp	406	0.95	Level	11	0	0.948	1.00	451
UpStream								
DownStream	633	0.95	Level	11	0	0.948	1.00	703

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.549 using Equation (Exhibit 25-12)
V_{12} = 4380 pc/h
V_3 or V_{av34} 3226 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4906 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7606	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7155	Exhibit 25-14	7050	Yes
V_R	451	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4380	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$
D_R = 32.9 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.469 (Exhibit 25-19)
S_R= 54.2 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.5 mph (Exhibit 25-15)

FREEWAY WEAVING WORKSHEET

General Information

Analyst	IC
Agency/Company	Urban Crossroads, Inc.
Date Performed	7/20/2011
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	E+P

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.25
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.32
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5706	0.95	11	0	1.5	1.2	0.948	1.00	6336
V_{o2}	0	0.95	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	1314	0.95	11	0	1.5	1.2	0.948	1.00	1459
V_{w2}	633	0.95	11	0	1.5	1.2	0.948	1.00	702
V_w				2161	V_{nw}				6336
V									8497

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.75	0.48		
Weaving and non-weaving speeds, Si (mi/h)	46.43	52.13		

Number of lanes required for unconstrained operation, Nw 0.82
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	50.55
Weaving segment density, D (pc/mi/ln)	56.03
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	6799
Capacity as a 15-minute flow rate, c (veh/h)	6445
Capacity as a full-hour volume, c_h (veh/h)	6123

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 1370 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5706	0.95	Level	11	0	0.948	1.00	6337
Ramp	762	0.95	Level	11	0	0.948	1.00	846
UpStream	1370	0.95	Level	11	0	0.948	1.00	1521
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1142.96 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 3731 pc/h
V_3 or V_{av34} 2606 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7183	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4577	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 38.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.672 (Exibit 25-19)
S_R= 49.5 mph (Exhibit 25-19)
S_0= 56.6 mph (Exhibit 25-19)
S = 51.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 206 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5914	0.95	Level	11	0	0.948	1.00	6568
Ramp	280	0.95	Level	11	0	0.948	1.00	311
UpStream	206	0.95	Level	11	0	0.948	1.00	229
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1166.71 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 3903 pc/h
V_3 or V_{av34} 2665 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	6879	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4214	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 34.4 (pc/mi/ln)
LOS = D (Exhibit 25-4)

Speed Determination

M_S = 0.543 (Exibit 25-19)
S_R= 52.5 mph (Exhibit 25-19)
S_0= 56.3 mph (Exhibit 25-19)
S = 53.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroad, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp: ☑ Yes ☑ On ☐ No ☐ Off

L_{up} = 3200 ft

V_u = 280 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6120	0.95	Level	11	0	0.948	1.00	6796
Ramp	206	0.95	Level	11	0	0.948	1.00	229
UpStream	280	0.95	Level	11	0	0.948	1.00	311
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = 1481.63 (Equation 25-8 or 25-9)

P_{FD} = 0.580 using Equation (Exhibit 25-12)

V_{12} = 4035 pc/h

V_3 or V_{av34} 2761 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = 4096 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	6796	Exhibit 25-14	7050	No
$V_{FO} = V_F - V_R$	6567	Exhibit 25-14	7050	No
V_R	229	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4035	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 37.7 (pc/mi/ln)

LOS = E (Exhibit 25-4)

Speed Determination

D_s = 0.449 (Exhibit 25-19)

S_R= 54.7 mph (Exhibit 25-19)

S_0= 64.7 mph (Exhibit 25-19)

S = 58.3 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{down} = 3200 ft
V_D = 639 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4908	0.95	Level	11	0	0.948	1.00	5450
Ramp	1212	0.95	Level	11	0	0.948	1.00	1346
UpStream								
DownStream	639	0.95	Level	11	0	0.948	1.00	710

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 4658.79 (Equation 25-2 or 25-3)
P_{FM} = 0.607 using Equation (Exhibit 25-5)
V_{12} = 3308 pc/h
V_3 or V_{av34} 2142 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	6796	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4654	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 38.6 (pc/mi/ln)
LOS = E (Exhibit 25-4)

Speed Determination

M_S = 0.703 (Exibit 25-19)
S_R= 48.8 mph (Exhibit 25-19)
S_0= 59.1 mph (Exhibit 25-19)
S = 51.7 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	IC	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroad, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	7/20/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 1212 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5547	0.95	Level	11	0	0.948	1.00	6160
Ramp	639	0.95	Level	11	0	0.948	1.00	710
UpStream								
DownStream	1212	0.95	Level	11	0	0.948	1.00	1346

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.573 using Equation (Exhibit 25-12)
V_{12} = 3835 pc/h
V_3 or V_{av34} 2325 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	6160	Exhibit 25-14	7050	No
$V_{FO} = V_F - V_R$	5450	Exhibit 25-14	7050	No
V_R	710	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3835	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 35.4 (pc/mi/ln)
LOS = E (Exhibit 25-4)

Speed Determination

D_s = 0.492 (Exhibit 25-19)
S_R= 53.7 mph (Exhibit 25-19)
S_0= 66.1 mph (Exhibit 25-19)
S = 57.8 mph (Exhibit 25-15)