

**Appendix E:
Traffic**

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Traffic Impact Study for Beyer Ranch Subdivision

in the

County of Alameda

Draft Report

May 6, 2014

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Introduction

Introduction

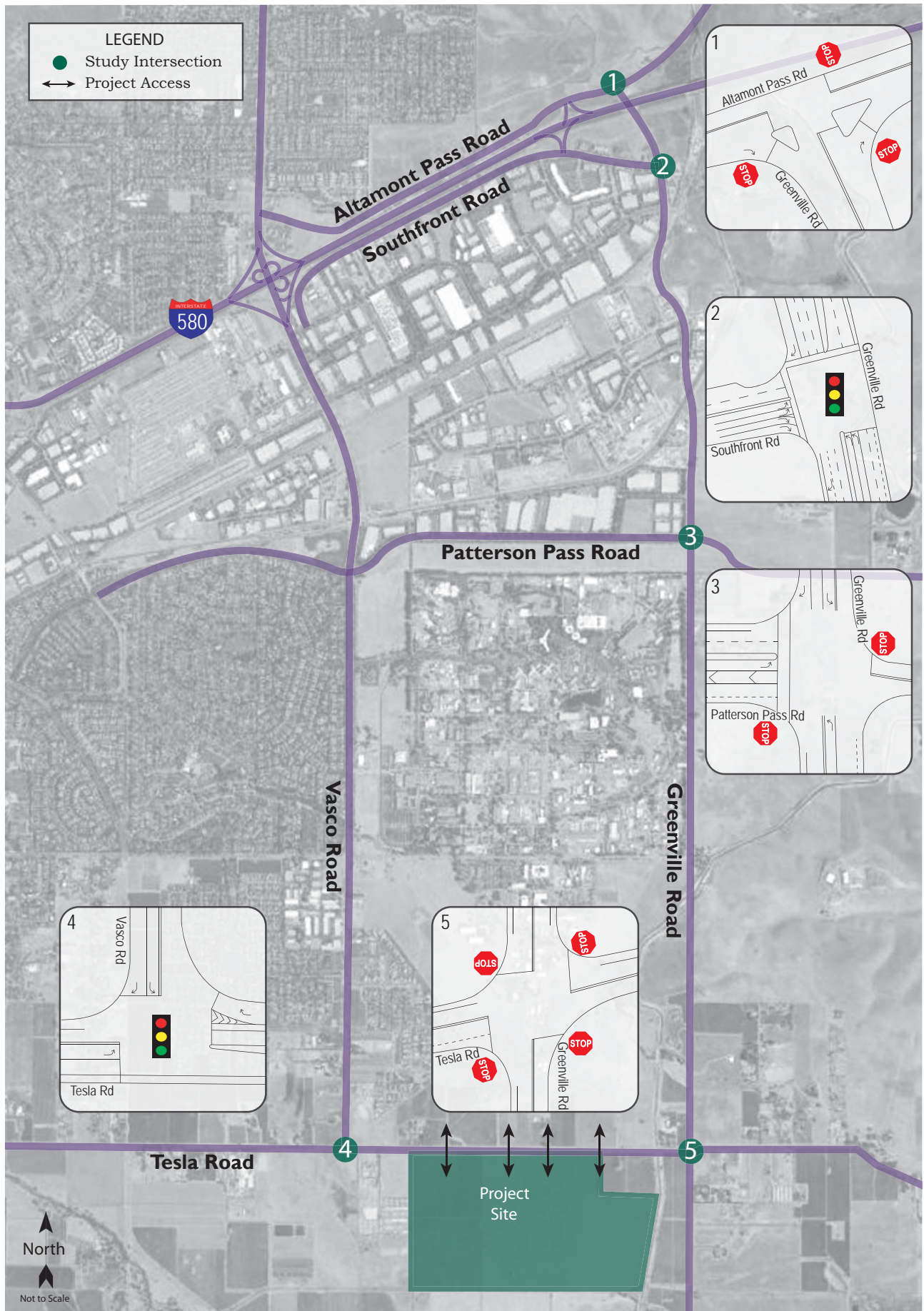
This report presents an analysis of the potential traffic impacts that would be associated with development of a proposed Beyer Ranch Subdivision to be located in an unincorporated area southeast of Livermore in Alameda County. The traffic study was completed in accordance with the criteria established by the County of Alameda, and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide the County of Alameda staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required in order to mitigate these impacts to a level of insignificance as defined by the County of Alameda General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments.

Project Profile

The Beyer Ranch Subdivision consists of the conversion of land currently zoned for Large Parcel Agriculture to allow creation and development of twelve 20-acre lots. Six lots are to be designated for wineries and the other six lots are to be designated for Vineyard Estate residential with a two-acre building envelope. The project site is located at Tesla Road near Greenville Road in unincorporated Alameda County, southeast of the City of Livermore, as shown in Figure 1.



Traffic Impact Study for Beyer Ranch Subdivision
Figure I – Study Area and Lane Configurations

Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the following intersections:

1. Greenville Road/Altamont Pass Road (unsignalized)
2. Greenville Road/Southfront Road
3. Greenville Road/Patterson Pass Road (unsignalized)
4. Vasco Road/Tesla Road
5. Greenville Road/Tesla Road (unsignalized)

Operating conditions during the typical weekday p.m. and weekend midday peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The weekday p.m. peak hour occurs between 4:00 and 6:00 p.m., while the weekend midday peak occurs between 12:00 noon and 2:00 p.m. on weekend days.

Study Intersections

Greenville Road/Altamont Pass Road is an all-way stop-controlled tee intersection with channelized right turns on the west and south legs. Limit lines are marked on the channelized right-turn movements to mark the point where vehicles stop for pedestrians crossing the south leg of the intersection.

Greenville Road/Southfront Road is a signalized tee intersection with protected left-turn phasing for all approaches. There are marked crosswalks on the north and west legs of the intersection and pedestrian signal push buttons at each approach.

Greenville Road/Patterson Pass Road is an unsignalized intersection with stop-sign control on the Patterson Pass Road approaches only. There is a marked pedestrian crossing on the west leg of the intersection.

Vasco Road/Tesla Road is a signalized tee intersection with protected left-turn phasing on all approaches and a right-turn overlap on the southbound approach. Pedestrian-actuated signals are present for the north and west legs of the intersection. There are no crosswalks striped at the intersection.

Greenville Road/Tesla Road is a four-legged, all-way stop-controlled intersection. There are no pedestrian crosswalks at the intersection.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports. The most current five-year period available is July 2007 through June 2012.

As presented in Table 1, the calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in *2010 Collision Data on California State Highways*, California Department of Transportation. The calculated collision rates for all study

intersections, with the exception of Greenville Road/Patterson Pass Road, was lower than the statewide average for similar facilities.

**Table I
Collision Rates at the Study Intersections**

Study Intersection	Number of Collisions (2007-2012)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. Greenville Rd/Altamont Pass Rd	3	0.08	0.36
2. Greenville Rd/South Front Rd	4	0.12	0.21
3. Greenville Rd/Patterson Pass Rd	6	0.27	0.26
4. Vasco Rd/Tesla Rd	12	0.22	0.24
5. Greenville Rd/Tesla Rd	0	0.00	0.60

Note: c/mve = collisions per million vehicles entering; **Bold** text indicates rates higher than the statewide average for similar intersections

In reviewing the collision records for Greenville Road/Patterson Pass Road it was noted that the majority of recorded collisions were broadside collisions involving westbound through vehicles and southbound through vehicles. These types of collisions are typically associated with high traffic volumes on the main street, resulting in vehicles on side-streets crossing the intersection despite the lack of an adequate gap in traffic to allow a safe crossing. There were five broadside crashes during 2007, which would meet the safety criterion indicating need for a traffic signal. This appears to be an anomaly, however, as there were two such crashes in 2008, but none in 2009, 2010, 2011, or the first half of 2012.

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2000. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for the intersections with side-street stop controls, or those which are unsignalized and have one or two approaches stop controlled, were analyzed using the “Two-Way Stop-Controlled” intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The study intersections with stop signs on all approaches were analyzed using the “All-Way Stop-Controlled” Intersection methodology from the HCM. This methodology evaluates delay for each approach based on turning movements, opposing and conflicting traffic volumes, and the number of lanes. Average vehicle delay is computed for the intersection as a whole, and is then related to a Level of Service.

The study intersections that are currently controlled by a traffic signal, or may be in the future, were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using optimized signal timing.

The ranges of delay associated with the various levels of service are indicated in Table 2.

**Table 2
Intersection Level of Service Criteria**

LOS	Two-Way Stop-Controlled	All-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Upon stopping, drivers are immediately able to proceed.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach, and wait for vehicle to clear from one or more approaches prior to entering the intersection.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 50 seconds. Drivers enter long queues on all approaches.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual*, Transportation Research Board, 2000

Traffic Operation Standards

The County of Alameda’s adopted Level of Service (LOS) Standard for the county’s East County Area is contained in *East County Area Plan (2000)*. Policy 193 states that the County shall ensure that, on intercity arterials significantly affected by a project, traffic operation does not exceed LOS D on major arterial segments within unincorporated areas. New developments would be required to pay for roadway improvements necessary to mitigate the exceedance of traffic Level of Service standards.

Although the County’s standard does not specify criteria for intersections, for the purposes of this study a minimum operation of LOS D for the overall operation of signalized and all-way stop-controlled intersections was applied.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the weekday p.m. and weekend midday peak periods. This condition does not include project-generated traffic volumes. Volume data was collected on typical days in March 2014, while local schools were in session.

Intersection Levels of Service

Under existing conditions, the signalized study intersections are operating acceptably. However, the unsignalized study intersections of Greenville Road at Altamont Pass Road, Patterson Pass Road, and Tesla Road, are all currently operating at LOS E or F either overall or on at least one approach. It is worth noting that these unsignalized intersections also serve eastbound traffic that would otherwise use Interstate 580 (I-580) during periods of congestion, and that all are operating acceptably during the weekend midday peak. The existing traffic volumes are shown in Figure 2. A summary of the intersection level of service calculations is contained in Table 3, and copies of the Level of Service calculations are provided in Appendix A. Measures to achieve acceptable operation are discussed in the “Mitigation Measures” section.

Table 3
Existing Peak Hour Levels of Service

Study Intersection Approach	Existing Conditions			
	Weekday PM		Weekend Midday	
	Delay	LOS	Delay	LOS
1. Greenville Rd/Altamont Pass Rd	**	F	8.0	A
2. Greenville Rd/Southfront Rd	18.2	B	21.1	C
3. Greenville Rd/Patterson Pass Rd	12.1	B	2.7	A
<i>Eastbound Approach</i>	51.6	E	7.9	A
<i>Westbound Approach</i>	22.8	C	10.2	B
4. Vasco Rd/Tesla Rd	13.5	B	16.5	B
5. Greenville Rd/Tesla Rd	46.6	E	8.6	A

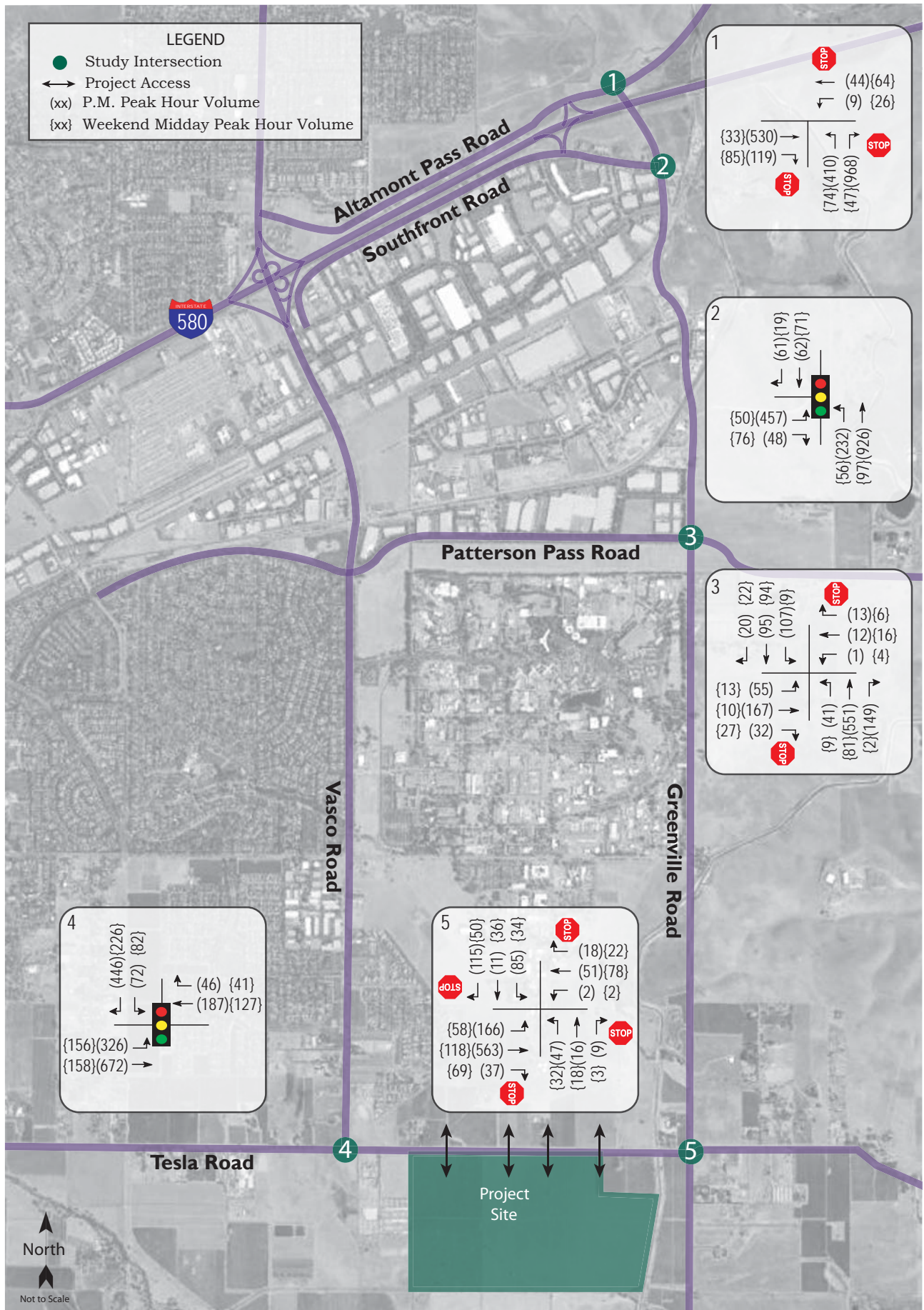
Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation

Project Description

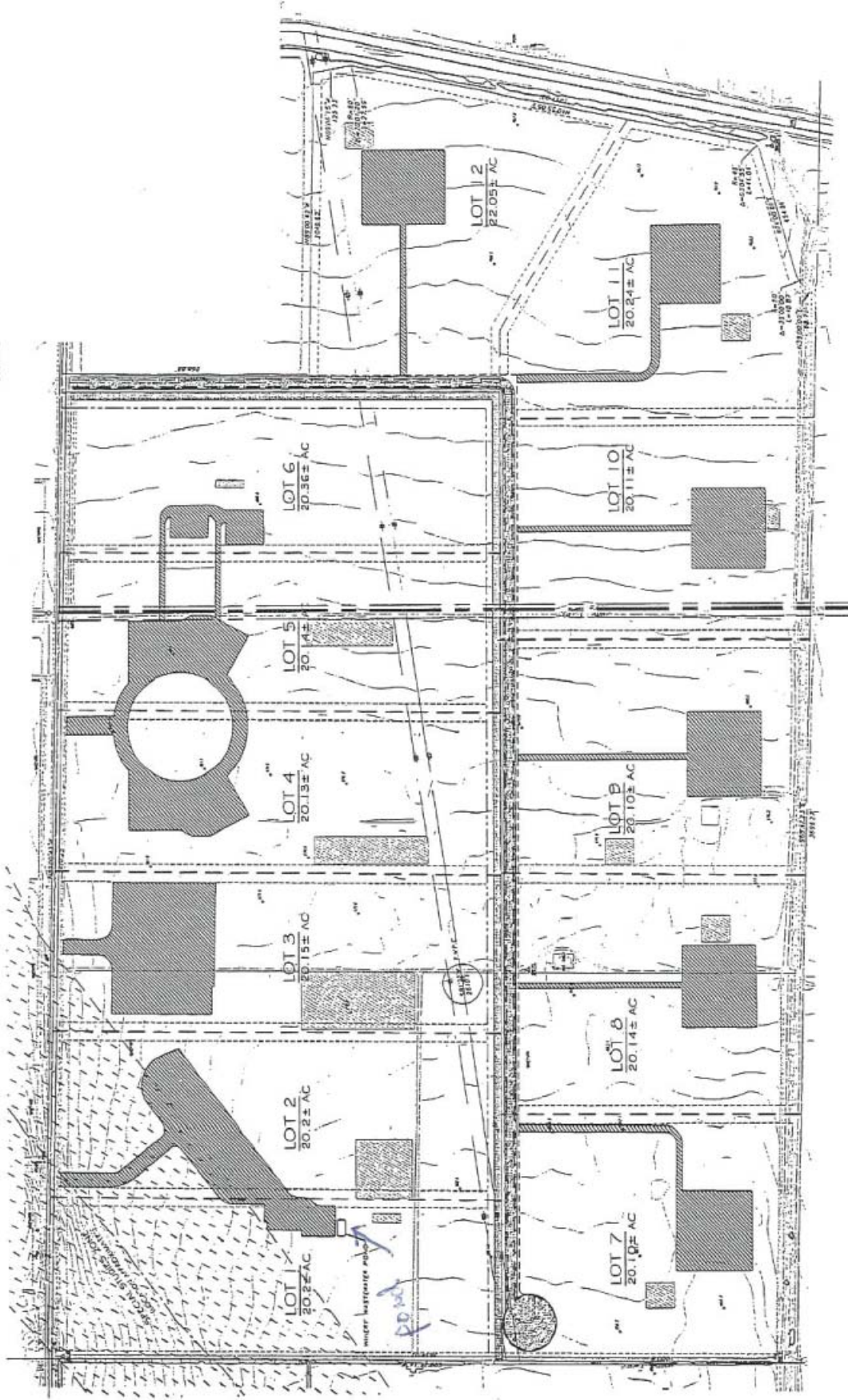
The project is a proposed 12-lot subdivision on an existing vacant site located on Tesla Road. Custom crush winemaking facilities would be provided on Lots 1 and 6. Wineries with tasting rooms would be developed on Lots 2 through 5 and a winery with tasting room and hospitality center would be developed on Lot 3. In addition, six single-family homes are planned at Lots 7 through 12. The proposed project site plan is shown in Figure 3.

Trip Generation

The anticipated trip generation for a proposed project is typically estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012. The trip generation potential of the residential portion of the project was developed using the published standard rates for “Single Family Detached Housing” (ITE LU #210). However, the publication contains no such information for a winery.



Traffic Impact Study for Beyer Ranch Subdivision
Figure 2 – Existing Traffic Volumes



Winery Trip Generation

At the time of the analysis, details of the proposed winery operations were not available. Therefore, winery trip generation projections were developed based on a review of the site plan and project description, discussions with the project applicant and experience preparing numerous transportation impact studies for wineries throughout the Bay Area.

Lots 1 and 6 – Custom Crush Facilities

Lots 1 and 6 would be developed as a custom crush facility. This would not be a winery in and of itself, but instead will provide wine production services to individuals who want to produce a small amount of wine. Based on information provided in the project description, it was assumed that each site would employ four people. The custom crush facilities would not be open to the public, but there is a potential for clients to visit the site, therefore, it was assumed that there would be approximately five visitors daily.

Lots 2, 4 and 5 – Winery with Tasting Room

Lots 2, 4 and 5 would be developed as small boutique wineries, each producing in the range of 5,000 to 10,000 cases per year. It is expected that each of the tasting room would host up to 50 visitors on a weekday and 150 visitors on a weekend day. It is expected that each of the wineries would employ four people. Limited events may occur on each of the sites, likely resulting in no more than five events per winery per year, with no more than 100 people per event. Due to the limited nature of these events, these events were not included in the analysis of typical daily operations.

Lot 3 – Winery Hospitality Center

Lot 3 would operate as a winery hospitality center. It is understood that the winery on this lot would operate similarly to the other proposed winery lots; however, there would be an additional hospitality center that would host events throughout the year. It is expected that the tasting room would host 40 visitors on a weekday and 125 visitors on a weekend day. Furthermore, the hospitality center would host up to 150 events per year, with an average attendance of 125 guests per event. It is expected that the site would employ four people during non-event conditions, but would increase to ten employees during events. Since these events would occur on a regular basis, event traffic was accounted for in typical daily operations. Based on discussions with the applicant, it was assumed that events would start in the evening, typically around 5:00 or 6:00 p.m., therefore, on weekdays all guests would arrive during the p.m. peak hour, but would leave the event during an off-peak period. Similarly, it was assumed that an event would begin during the weekend midday peak hour with all guests arriving during the peak, but would leave the event during an off-peak period.

Winery Trip Generation Assumptions

Based on an average vehicle occupancy of 2.5 visitors per vehicle, 160 daily trips are expected due to tasting. Data collected by W-Trans at a Sonoma County Winery was used to develop factors for winery tasting room trips made during both the p.m. and weekend midday peak hour. These winery driveway counts, which were collected one week every month for a year, indicate that 10 percent of the daily generated winery trips occur during the p.m. peak hour and 13 percent during the weekend midday peak.

Employees were assumed to generate three trip-ends per day. Half of all winery employees were assumed to arrive during the a.m. peak hour, and all were assumed to depart during the p.m. peak hour. One trip per employee was assumed during the weekend midday peak hour.

In addition, trucks would be expected to access the project site for deliveries and other services. At the time of analysis, details were not available about the proposed winery operations. However, based on experience with completing studies for comparably sized wineries and professional judgment, truck traffic would typically be less than one truck per day on average. Therefore, to provide a conservative analysis, it was assumed that one truck would visit each winery site daily, for a total of two truck trips per day. These trucks would be expected to arrive outside of the peak hour of traffic.

It is likely that some traffic associated with the wineries would potentially visit several of the winery lots. For example, a UPS delivery truck may complete deliveries at multiple lots during one trip. Or a winery tasting room visitor may choose to visit more than one of the wineries at the site. These linked trips would potentially reduce the overall number of trips generated at study intersections. However, for the sake of providing a conservative analysis, it was assumed that each of these trips represent new trips on the adjacent transportation network.

Total Trip Generation

The expected trip generation potential for the proposed project is indicated in Table 4 for a typical weekday, and in Table 5 for a typical weekend. The proposed project is expected to generate an average of 401 trips per weekday, including 17 trips during the a.m. peak hour, 95 during the p.m. peak hour. During a typical weekend, the proposed project would be expected to generate an average of 731 trips per day, of which 157 trips would occur during the weekend midday peak hour.

Trip generation projections for the a.m. peak hour are provided for reference purposes only. Due to the relatively low number of trips that would be generated during the a.m. peak hour compared to the weekday p.m. and weekend midday peak hours, and at the direction of County staff, no additional operational analysis was conducted for the a.m. peak hour.

**Table 4
Weekday Trip Generation Summary**

Land Use	Units	Weekday Daily		AM Peak Hour*				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Lot 1											
Employees	4	3.0	12	0.5	2	2	0	1.0	4	0	4
Visitors	5	0.8	4		0	0	0		0	0	0
Lot 2											
Employees	4	3.0	12	0.5	2	2	0	1.0	4	0	4
Visitors	50	0.8	40		0	0	0		4	1	3
Lot 3											
Employees	4	3.0	12	0.5	2	2	0	1.0	4	0	4
Visitors	40	0.8	32		0	0	0		3	1	2
Event Staff	10	2.0	20		0	0	0		0	0	0
Event Attendees	125	0.8	100		0	0	0		50	50	0
Lot 4											
Employees	4	3.0	12	0.5	2	2	0	1.0	4	0	4
Visitors	50	0.8	40		0	0	0		4	1	3
Lot 5											
Employees	4	3.0	12	0.5	2	2	0	1.0	4	0	4
Visitors	50	0.8	40		0	0	0		4	1	3
Lot 6											
Employees	4	3.0	12	0.5	2	2	0	1.0	4	0	4
Visitors	5	0.8	4		0	0	0		0	0	0
Lots 1-6 Trucks	6	2	12		0	0	0		0	0	0
Lots 7-12											
Single Family Residence	6 du	9.52	57	0.75	5	1	4	1.00	6	4	2
Total			401		17	13	4		95	58	37

Note: du = dwelling unit

* = a.m. rates shown for information only – no analysis was conducted due to the relatively low number of a.m. peak hour trips

**Table 5
Weekend Trip Generation Summary**

Land Use	Units	Weekend Daily		Weekend Midday Peak Hour			
		Rate	Trips	Rate	Trips	In	Out
Lot 1							
Employees	4	3.0	12	1.0	4	2	2
Visitors	5	0.8	4		1	1	0
Lot 2							
Employees	4	3.0	12	1.00	4	2	2
Visitors	150	0.8	120		20	10	10
Lot 3							
Employees	4	3.0	12	1.00	4	2	2
Visitors	125	0.8	100		16	8	8
Event Staff	10	2.0	20		0	0	0
Event Attendees	125	0.8	100		50	50	0
Lot 4							
Employees	4	3.0	12	1.00	4	2	2
Visitors	150	0.8	120		20	10	10
Lot 5							
Employees	4	3.0	12	1.00	4	2	2
Visitors	150	0.8	120		20	10	10
Lot 6							
Employees	4	3.0	12	1.0	4	2	2
Visitors	5	0.8	4		1	1	0
Lots 1-6 Trucks	6	2	12		0	0	0
Lots 7-12							
Single Family Residence	6 du	9.91	59	0.76	5	3	2
Total			731		157	105	52

Note: du = dwelling unit.

Trip Distribution

The pattern used to allocate new project trips to the street network was based on a review of existing traffic volumes in addition to an understanding of the nearby land uses and street network. The applied distribution assumptions and resulting trips are shown in Table 6.

**Table 6
Trip Distribution Assumptions**

Route	Percent	Daily Trips	AM Trips	PM Trips	Weekend Trips	Weekend MD Trips
To/From I-580 West	60%	241	10	57	439	94
To/From I-580	10%	40	2	10	73	16
To/From Patterson Pass East	10%	40	1	9	73	15
To/From Tesla Road West	10%	40	2	10	73	16
To/From Tesla Road East	10%	40	2	9	73	16
TOTAL	100%	401	17	95	731	157

Note: MD = midday

Existing plus Project Conditions

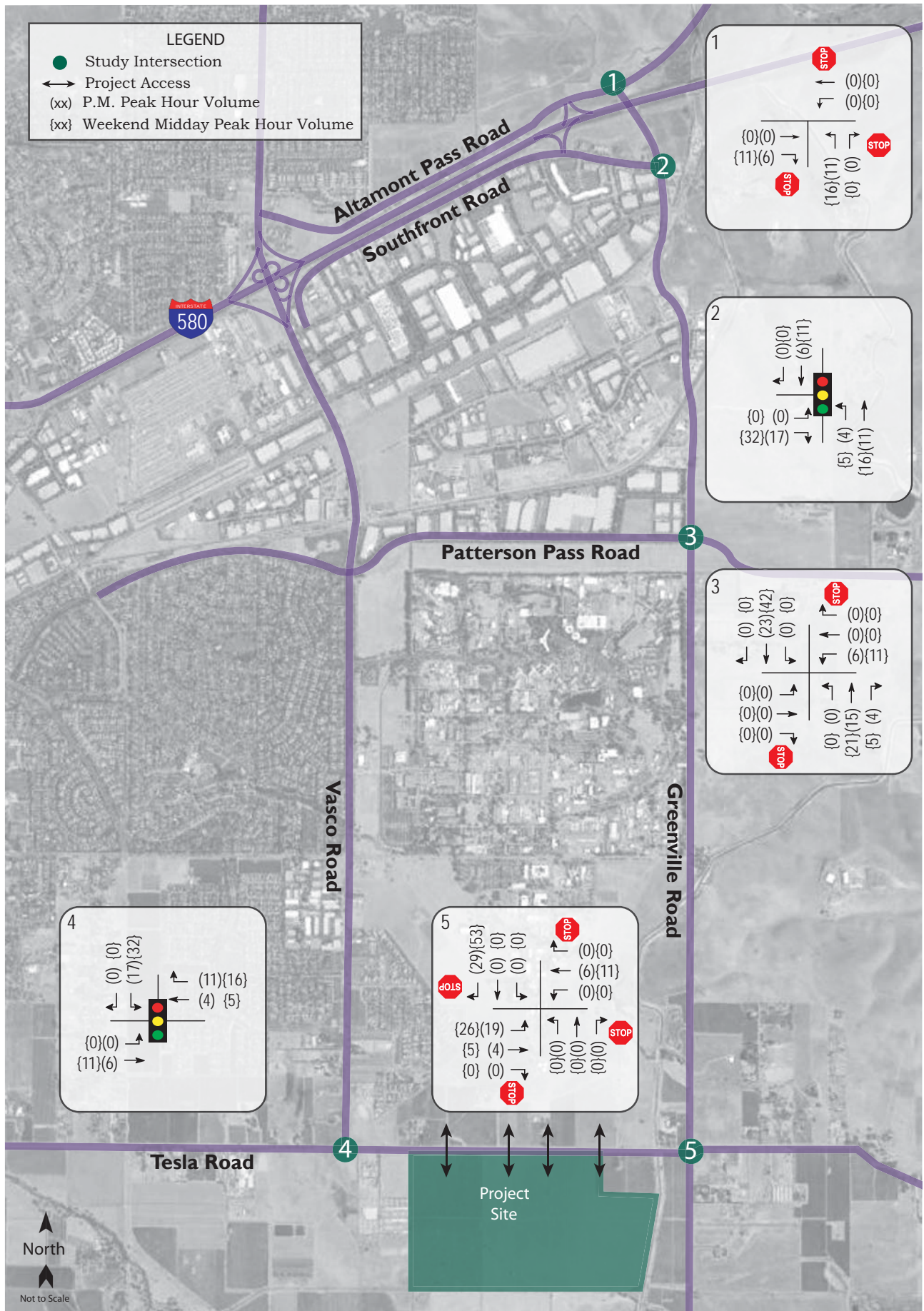
Upon the addition of project-related traffic to the Existing volumes, the study intersections are expected to operate at similar levels of service compared to Existing Conditions, with the exception of Greenville Road/Patterson Pass Road and Greenville Road/Tesla Road. Greenville Road/Patterson Pass Road would be expected to operate at LOS F on both the eastbound and westbound approaches during the weekday p.m. peak, though still acceptably on the weekend. Greenville Road/Tesla Road is expected to operate at LOS F with the addition of project-related traffic, again only on weekdays. These results are summarized in Table 7. Project traffic volumes are shown in Figure 4.

**Table 7
Existing and Existing plus Project Peak Hour Intersection Levels of Service**

Study Intersection Approach	Existing Conditions				Existing plus Project			
	Weekday PM		Weekend MD		Weekday PM		Weekend MD	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Greenville Rd/Altamont Pass Rd	**	F	8.0	A	**	F	8.1	A
2. Greenville Rd/Southfront Rd	18.2	B	21.1	C	18.2	B	21.4	C
3. Greenville Rd/Patterson Pass Rd	12.1	B	2.7	A	15.7	C	2.5	A
<i>Eastbound Approach</i>	51.6	E	7.9	A	64.2	F	8.1	A
<i>Westbound Approach</i>	22.8	C	10.2	B	80.5	F	10.9	B
4. Vasco Rd/Tesla Road	13.5	B	16.5	B	13.9	B	17.7	B
5. Greenville Rd/Tesla Rd	46.6	E	8.6	A	57.2	F	9.1	A

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation

It should be noted that with the addition of project-related traffic volumes, average delay would decrease at the intersection of Greenville Road/Patterson Pass Road during the weekend midday peak hour. While this is counter-intuitive, this condition occurs when a project adds trips to movements that are currently underutilized or have delays that are below the intersection average, resulting in a better



Traffic Impact Study for Bayer Ranch Subdivision
Figure 4 – Project Traffic Volumes

balance between approaches and lower overall average delay. The project adds traffic predominantly to the northbound and southbound through movements at Greenville Road/Patterson Pass Road, movements which have an average delay that is lower than the average for the intersection as a whole, resulting in a slight reduction in the overall average delay. The conclusion could incorrectly be drawn that the project actually improves operation based on this data alone; however, it is more appropriate to conclude that the project trips are expected to make use of excess capacity, so drivers will experience little, if any, change in conditions as a result of the project.

Finding: The side-street approaches to Greenville Road/Patterson Pass Road would be expected to operate at LOS F upon the addition of project-generated traffic, but the overall intersection level of service would be LOS C during the weekday p.m. peak hour with the addition of project-generated traffic.

Finding: The intersection of Greenville Road/Tesla Road would degrade from LOS E to LOS F during the weekday p.m. peak hour upon the addition of project-generated traffic.

Recommendations: See “Mitigation Measures.”

Cumulative (Long-Term) Conditions

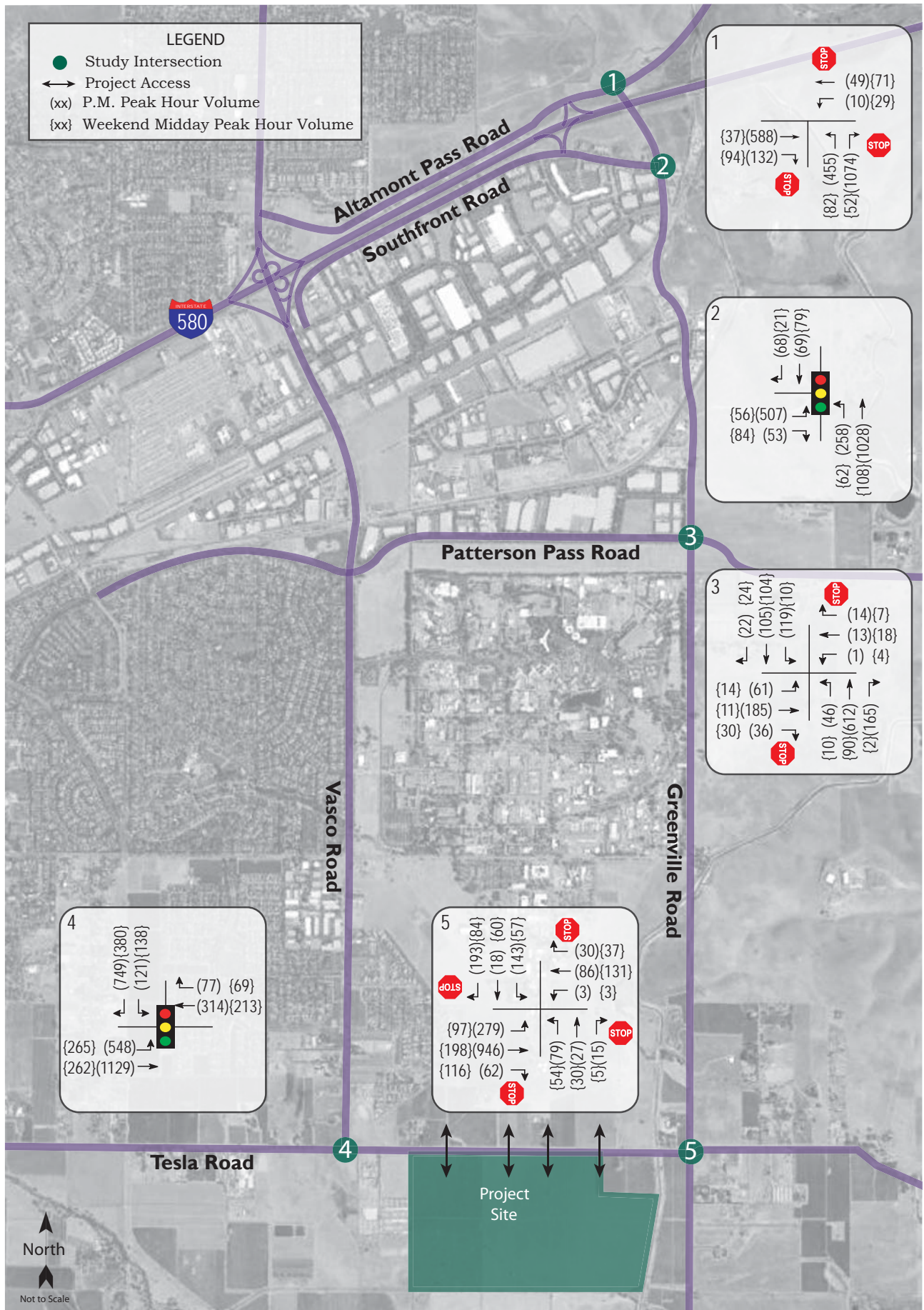
Cumulative traffic volumes were developed based on a comparison of roadway segment counts conducted by the County in 2006 and 2011, and roadway segment counts conducted in March 2014. Based on the comparison of roadway segment counts, a growth rate was determined and applied to the study intersections for a long-term horizon year of 2035. In locations where roadway segment volumes decreased during the time period surveyed, a base 0.5 percent growth per year was assumed for analysis purposes.

Under the anticipated Cumulative volumes, the signalized study intersections are expected to continue to operate acceptably. The unsignalized study intersections are projected to operate at LOS F under the Cumulative No Project conditions. Cumulative operating conditions are summarized in Table 8 and Cumulative volumes are shown in Figure 5. Improvements needed to achieve acceptable operation are discussed in the “Mitigation Measures” chapter.

Table 8
Cumulative (Long-Term) Peak Hour Levels of Service

Study Intersection Approach	Cumulative Conditions			
	Weekday PM		Weekend Midday	
	Delay	LOS	Delay	LOS
1. Greenville Rd/Altamont Pass Rd	**	F	8.1	A
2. Greenville Rd/Southfront Rd	18.6	B	21.1	C
3. Greenville Rd/Patterson Pass Rd	**	F	2.7	A
<i>Eastbound Approach</i>	**	F	7.9	A
<i>Westbound Approach</i>	**	F	10.4	B
4. Vasco Rd/Tesla Rd	19.3	B	17.9	B
5. Greenville Rd/Tesla Rd	**	F	11.6	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements



Traffic Impact Study for Beyer Ranch Subdivision
Figure 5 – Cumulative Traffic Volumes

Cumulative (Long-Term) plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Cumulative volumes, the study intersections are expected to operate at similar levels of service as Cumulative No Project conditions. The Cumulative plus Project operating conditions are summarized in Table 9.

Table 9
Cumulative and Cumulative plus Project Peak Hour Intersection Levels of Service

Study Intersection Approach	Cumulative Conditions				Cumulative plus Project			
	Weekday PM		Weekend MD		Weekday PM		Weekend MD	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Greenville Rd/Altamont Pass Rd	**	F	8.1	A	**	F	8.3	A
2. Greenville Rd/Southfront Rd	18.6	B	21.1	C	18.6	B	21.4	C
3. Greenville Rd/Patterson Pass Rd	**	F	2.7	A	**	F	2.6	A
<i>Eastbound Approach</i>	**	F	7.9	A	**	F	8.2	A
<i>Westbound Approach</i>	**	F	10.4	B	**	F	11.1	B
4. Vasco Rd/Tesla Rd	19.3	B	17.9	B	19.6	B	18.5	B
5. Greenville Rd/Tesla Rd	**	F	11.6	B	**	F	13.0	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation

Finding: All study intersections would continue operating at the same levels of service with or without the proposed project.

Recommendations: See "Mitigation Measures."

Queuing

In the study area, queues were observed during the p.m. peak hour at the all-way stop-controlled intersections of Greenville Road/Altamont Pass Road and Greenville Road/Tesla Road. In both locations, the majority of vehicles in the queue was travelling eastbound and was assumed to be using these routes as an alternative to I-580. Based on field observations, queues at the other study intersections were minor, did not adversely affect traffic operation, and were contained within the storage capacities available.

Greenville Road/Altamont Pass Road

At Greenville Road/Altamont Pass Road, the northbound queue was estimated in the field to be 800 feet, or approximately 40 vehicles per lane. This queue consists primarily of northbound right-turning vehicles. The available storage between Greenville Road/Altamont Pass Road and Greenville Road/Southfront Road is approximately 2,400 feet, with two northbound lanes for the majority of the road segment. The proposed project would contribute 11 vehicle trips to the northbound approach during the p.m. peak hour, or less than one-percent of the near-term traffic volume after the project, if built, is implemented.

Greenville Road/Tesla Road

At Greenville Road/Tesla Road, the eastbound queue was estimated in the field to be approximately 4,300 feet long, or approximately 172 vehicles. This queue consists primarily of eastbound through traffic. The available storage between Greenville Road/Tesla Road and Vasco Road/Tesla Road is approximately 6,400 feet, with one eastbound lane for the entire road segment. The proposed project would contribute 23 vehicle trips to the eastbound approach during the p.m. peak hour, or approximately three-percent of the near-term traffic volume after the project, if built, is implemented.

Access and Circulation

Site Access

Access to the proposed project would be via four driveways on Tesla Road. As shown in the site plan in Figure 4, the winemaking and wine tasting room facilities would be accessed via three shared driveways. Access to the single family residences would be via a separate driveway located at the eastern edge of the site.

Sight Distance

At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross through the intersection, turn left or right, without requiring the through traffic to radically alter their speed. Sight distance should be measured from a 3.5-foot height at the location of the driver on the minor road to a 4.25-foot object height in the center of the approaching lane of the major road. The setback for the driver on the crossroad shall be a minimum of 15 feet, measured from the edge of the traveled way.

Sight distance along Tesla Road at the project driveway was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distances for minor street approaches that are either a private road or a driveway are based on stopping sight distance. The approach travel speeds are used as the basis for determining the recommended sight distance. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a side street or driveway is evaluated based on stopping sight distance criterion and the approach speed on the major street.

Sight distance at the proposed driveway was field measured. The stopping sight distance criterion for private street intersections was applied for evaluation purposes. Based on a design speed of 50 mph, the minimum stopping sight distance needed is 430 feet. The available sight distance at the proposed driveway locations is in excess of 500 feet in both directions.

Alternative Modes of Transportation

Some of the proposed project's employees, residents and visitors may choose to use alternative modes of transportation to access the site. However, with the exception of bicycle facilities, there is limited infrastructure supporting alternative modes of transportation in the vicinity of the project site, as discussed below.

Pedestrian

There are no dedicated pedestrian facilities such as sidewalks or crosswalks in the vicinity of the project site. This is consistent with the rural character of the area.

Transit

Wheels, the fixed route bus transit service provided in the vicinity of the project site, is operated by the Livermore Amador Valley Transit Authority. The nearest bus stop is located at the Lawrence Livermore National Laboratory/Sandia Transit Hub, located near the intersection of Vasco Road and East Avenue, approximately two miles from the project site. Due to the distance from the project site to the nearest transit service, transit does not represent a viable mode chose for to/from the site. The lack of near-by transit services is consistent with the rural, low-density nature of the land uses in the vicinity of the project site.

Bicycle

The *Highway Design Manual*, California Department of Transportation (Caltrans), 2012, classifies bikeways into three categories:

- *Class I Multi-Use Path*: a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- *Class II Bike Lane*: a striped and signed lane for one-way bike travel on a street or highway.
- *Class III Bike Route*: signing only for shared use with motor vehicles within the same travel lane on a street or highway.

Currently, class II bicycle lanes are provided along the project frontage on Tesla Road, west of Greenville Road. Additionally, class II bicycle lanes are provided along Greenville Road north of Tesla Road.

The *Alameda County Bicycle and Pedestrian Master Plan for Unincorporated Areas*, April 2012, identifies a proposed extension of the Tesla Road bicycle lanes east of Greenville Road. Also proposed is an off-road, multi-use path that would run along the canal located to the east of the project site. Since this multi-use path would be located adjacent to the project site, any improvements to the project's frontage would need to be designed and constructed in a manner that does not impact the future installation of the path.

These existing and proposed routes, along with shared use of streets where dedicated bicycle facilities are not available, would provide access to the project site.

Parking

The County of Alameda’s Municipal Code stipulates the County’s parking requirements for new developments. The County requires two parking spaces for each single family residence. However, the County does not include requirements for wineries.

Based on data collected by W-Trans at a Sonoma County Winery, the maximum parking accumulation at a winery tasting room would be expected to occur during the weekend midday, where a maximum of 12 percent of total daily visitors were present at the tasting room. The peak weekend parking demand for each of the six winery lots would occur on a weekend, when the highest number of tasting room visitors would arrive on-site. In addition to accommodating tasting room visitors, the adequate parking is necessary at Lot 3 to accommodate event-related parking demand. Also, each winery employee would require one parking space.

Occasional special events may occur at the wineries on Lots 2, 4 and 5. However, as discussed in the Trip Generation section, these events would be infrequent and would not represent typical daily operations. Based on a typical occupancy of 2.5 visitors per vehicles, the recommended minimum of eight visitor parking spaces at each of these wineries would accommodate up to 20 special event guests. Therefore, it would be necessary for these wineries to develop plans to accommodate overflow parking during events that would host more than 20 guests. Typically, overflow winery event parking is provided adjacent to vineyards, on undeveloped portions on the winery, or on adjacent properties through the establishment of an event parking agreement with adjacent businesses.

As indicated in Table 10, the peak parking demand expected for the winery portion of the proposed project is 106 spaces, with 60 spaces required for Lot 3, 12 spaces required for tasting room visitors at each of Lots 2, 4, and 5, and five spaces required for each of Lots 1 and 6 for other winemaking facilities.

**Table 10
Parking Analysis for Winery Portion of Project**

Lot	Weekend Visitor Trips	Daily Visitor Vehicles	Peak Visitor Parking Demand	Employees	Total Parking Demand
Lot 1	4	2	1	4	5
Lot 2	120	60	8	4	12
Lot 3*	100*	50*	50*	10*	60
Lot 4	120	60	8	4	12
Lot 5	120	60	8	4	12
Lot 6	4	2	1	4	5
TOTAL	468	234	76	30	106

Note: * Peak parking demand calculated from information on events, the peak parking demand for Lot 3

Recommendation: Provide at least 106 parking spaces for winery operations, spaced out across the six winery lots, as shown in Table 10. Provide two spaces for each single family residence. This would satisfy the expected parking demand and the County’s parking requirements respectively.

Recommendation: Wineries located on Lots 2, 4 and 5 would need to develop an overflow parking plan for events.

Mitigation Measures

Traffic Signal Warrants

The peak-hour traffic signal warrant published in the California Manual on Uniform Traffic Control Devices (CA-MUTCD), was evaluated for each of the unsignalized intersections, and was determined to be currently satisfied for all three intersections during the p.m. peak hour. The p.m. peak hour warrants would continue to be satisfied with the addition of project generated traffic. A copy of the peak-hour traffic signal warrant calculations is included in Appendix B. Satisfaction of the peak hour traffic signal warrant does not in and of itself indicate that an intersection should be signalized. However, it is one of the tools used to determine if it would be beneficial to install a traffic signal at an intersection.

Unsignalized Intersections on Greenville Road

Under Existing conditions the unsignalized intersections on Greenville Road at Altamont Pass Road, Patterson Pass Road, and Tesla Road, are operating at LOS E or worse.

Acceptable intersection operation at Greenville Road/Patterson Pass Road and Greenville Road/Tesla Road under Existing and also Cumulative conditions could be achieved with the installation of a traffic signal along with widening the approaches to these intersections to accommodate additional turn lanes. At the intersection of Altamont Pass Road at Greenville Road the east leg of the intersection on Altamont Pass Road would also need to be widened to accommodate a dedicated receiving lane for northbound right turns from Greenville Road. Installation of a traffic signal would result in acceptable operations at these intersections and would be consistent with the fact that peak hour volumes satisfy the traffic signal warrant. A summary of the Existing and Existing plus Project operating conditions with the improvements stated above is provided in Table 11. Intersection operation under Cumulative and Cumulative plus Project volumes with the improvements outlined above is indicated in Table 12.

**Table 11
Existing and Existing plus Project Peak Hour Intersection Levels of Service with
Recommended Improvements**

Study Intersection	Existing Conditions				Existing plus Project			
	Weekday PM		Weekend MD		Weekday PM		Weekend MD	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Greenville Rd/Altamont Pass Rd	20.3	C	16.0	B	20.5	C	18.8	B
3. Greenville Rd/Patterson Pass Rd	21.9	C	16.0	B	21.7	C	14.3	B
5. Greenville Rd/Tesla Rd	18.2	B	19.9	B	19.2	B	21.5	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Table 12
Cumulative and Cumulative plus Project Peak Hour Intersection Levels of Service with Recommended Improvements

Study Intersection Approach	Cumulative Conditions				Cumulative plus Project			
	Weekday PM		Weekend MD		Weekday PM		Weekend MD	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Greenville Rd/Altamont Pass Rd	21.6	C	18.6	B	21.8	C	18.9	B
3. Greenville Rd/Patterson Pass Rd	23.4	C	16.1	B	23.4	C	14.5	B
5. Greenville Rd/Tesla Rd	28.8	C	21.1	C	30.9	C	22.4	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; ** = delay greater than 120 seconds; **Bold** text = deficient operation; Shaded cells = conditions with recommended improvements

Finding: With the installation of traffic signals at the unsignalized study intersections on Greenville Road and minor widening to accommodate additional turn lanes at the intersections, all study intersections are expected to operate acceptably under all study scenarios. It is worth noting that the proposed project would contribute between 0.8-percent and 5.0-percent of the increase in traffic at these intersections. Also, the project would be required to pay traffic impact fees, as discussed below.

Recommendation: The proposed project should pay traffic impact fees that can be used to address projected deficient operations at unsignalized intersections.

Traffic Impact Mitigation Fees

Cumulative Traffic Impact Mitigation Fees

The County of Alameda's General Ordinance Code establishes a Cumulative Traffic Impact Mitigation Fee (CTIM) for new developments. Section 15.44.010, *Findings and Purpose*, of the General Ordinance Code states:

The County has completed a background study that identifies the total cumulative traffic impact of project new development and the method for determining each individual development's share of that traffic impact. The purpose of the traffic impact mitigation fee is to implement the findings of the background study, thereby assuring that each new development bears the burden of its individual, incremental share of those roadway improvements needed to offset the cumulative traffic impacts caused by all new development. The revenue generated from this fee shall be allocated to roadway capital improvement projects that are designed to mitigate such cumulative traffic impacts.

The County's General Ordinance Code defines the CTIM fee amount to be \$1,674 per single-family residence, and \$3.66/gross square foot for winery retail sales and tasting facilities. Based on the site plans available, it is estimated that approximately 20,000 square feet of winery facilities are proposed for each of Lots 1-6. Therefore, the expected CTIM fee for the proposed project would be \$449,244.

Tri-Valley Transportation Development Fee for Traffic Mitigation

In addition to the CTIM, the County of Alameda's General Ordinance Code Section 15.48 establishes the Tri-Valley Transportation Development (TVTD) Fee for new developments in the Tri-Valley development area. The cities and counties in the Tri-Valley Area have identified, through the Tri-Valley Transportation Plan, the impact of projected Tri-Valley Area new development and certain regional transportation improvement projects that will mitigate these traffic impacts. Because the Plan identified new impacts not identified in the background study for the CTIM, the TVTD fees are in addition to the CTIM fees described earlier.

The County's General Ordinance Code defines the TVTD fee amount to be \$1,711 per single-family residence, and \$685 per the average of a.m. and p.m. peak hour trip for other uses not otherwise defined in the Code, such as winery facilities. The expected TVTD fee amount for the proposed project would be \$45,201.

Total Traffic Impact Mitigation Fees

The proposed project would be subject to the CTIM fees and TVTD fees totally to \$494,445. The Traffic Mitigation Fee calculations are summarized in Table 13.

**Table 13
Traffic Mitigation Fee Calculations**

Portion of Project	Size	Average AM/PM Peak Hour Trips	CTIM Fee	TVTD Fee	Total
Winery Facilities	120 ksf	51	\$3,660/ksf	\$685/trip*	\$474,135
Residences	6 du	5	\$1,674/du	\$1,711/du	\$20,310
TOTAL			\$449,244	\$45,201	\$494,445

Note: du = dwelling unit; ksf = 1,000 square feet; * average of a.m. and p.m. peak hour trips

Conclusion and Recommendations

Conclusions

- The proposed project is expected to generate an average of 401 vehicle trips during the weekday, which includes 17 new a.m. peak hour trips and 95 new p.m. peak hour trips. The proposed project is also expected to generate an average of 731 vehicle trips on a weekend day, which includes 157 new weekend midday peak hour trips.
- Under existing conditions, the unsignalized study intersections on Greenville Road at Altamont Pass Road, Patterson Pass Road, and Tesla Road, are currently operating unacceptably at LOS E or worse. The signalized study intersections are currently operating acceptably at LOS C or better.
- Upon the addition of project-related traffic to existing traffic conditions, the side-street approaches to Greenville Road/Patterson Pass Road would operate at LOS F, although overall the intersection would operate at LOS C or better. Upon the addition of project-related traffic to existing traffic, the intersection of Greenville Road/Tesla Road would be expected to degrade from LOS E to LOS F. All other study intersections would be expected to operate at similar levels of service with or without the proposed project.
- In 2035, the unsignalized study intersections are expected to operate unacceptably with or without the addition of project-generated trips. The signalized study intersections are expected to operate acceptably.
- Traffic volumes at the intersections of Greenville Road/Altamont Pass Road, Greenville Road/Patterson Pass Road, and Greenville Road/Tesla Road satisfy peak hour volume traffic signal warrants under Existing conditions.
- Field observations of queues at the intersections of Greenville Road/Altamont Pass Road and Greenville Road/Tesla Road indicated that queues. The proposed project would add less than one-percent to volumes at the intersection of Greenville Road/Altamont Pass Road, and five-percent to volumes at the intersection of Greenville Road/Tesla Road. Based on field observations, queuing at the other study intersections was negligible and was accommodated by the available storage capacity at each intersection.
- Sight distance along Tesla Road at the four proposed driveways is adequate.
- There is no dedicated pedestrian infrastructure in the vicinity of the project site, nor is there nearby transit service. This is consistent with the rural character of the area.
- Class II bicycle lanes are provided on Tesla Road along the project frontage, which are planned to be extended to continue east of Greenville Road. Additionally, there are plans for a regional multi-use path that would go along the canal east of the project site.
- The peak parking demand for the winery portion of the proposed project would be 106 parking spaces. Of the total parking demand, 30 spaces would be used by employees and the remainder would be used by guests.

Recommendations

- The proposed project should pay traffic impact fees that can be used to address projected deficient operations at unsignalized intersections.

- At least 106 parking spaces should be provided for winery operations, spaced out across the six winery lots. Two spaces should be provided at each single family residence. This would satisfy the expected parking demand and the County's parking requirements respectively.
- The planned multi-use canal path would be located adjacent to the project site. Therefore, any improvements to the project's frontage would need to be designed and constructed in a manner that does not impact the future installation of the path.
- Additional overflow parking would need to be provided when a special event exceeding 20 guests is held at wineries to be located on Lots 2, 4 and 5.

DRAFT

Study Participants and References

Study Participants

Principal in Charge:	Mark E. Spencer, PE
Traffic Engineer:	Tony Henderson, PE, PTOE
Transportation Engineer:	Sam Lam, PE
Technician/Graphics:	Deborah J. Mizell
Editing/Formatting:	Angela McCoy
Quality Control Review:	Dalene J. Whitlock, PE, PTOE

References

2010 Collision Data on California State Highways, California Department of Transportation, 2010
Alameda County Bicycle and Pedestrian Master Plan for Unincorporated Areas, County of Alameda, 2012
Alameda County General Ordinance Code, Municipal Code Corporation, 2013
East County Area Plan, County of Alameda, 2000
Highway Capacity Manual, Transportation Research Board, 2000
Highway Design Manual, 6th Edition, California Department of Transportation, 2012
Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 2007-2011
Trip Generation Manual, 9th Edition, Institute of Transportation Engineers, 2012

ALX016

Appendix A

Intersection Level of Service Calculations

DRAFT

PM Peak Hour - Existing Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)
Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap.(X): 1.579
Loss Time (sec): 0 Average Delay (sec/veh): 158.7
Optimal Cycle: 0 Level of Service: F

Street Name: Greenville Rd Altamont Pass Rd
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 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:30 - 5:30 pm
Base Vol: 410 0 968 0 0 0 530 119 9 44 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 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 410 0 968 0 0 0 530 119 9 44 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 1.00 1.00 1.00 1.00 1.00 1.00
PHF 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 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 410 0 968 0 0 0 530 119 9 44 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 410 0 968 0 0 0 530 119 9 44 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 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 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume: 410 0 968 0 0 0 530 119 9 44 0

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 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 1.00 0.17 0.83 0.00
Final Sat.: 510 0 613 0 0 0 0 511 563 84 410 0

Capacity Analysis Module:
Vol/Sat: 0.80 xxxxx 1.58 xxxxx xxxxx xxxxx 1.04 0.21 0.11 0.11 xxxxx
Crit Moves: ****
Delay/Veh: 32.6 0.0 283.5 0.0 0.0 0.0 0.0 76.2 10.7 11.2 11.2 0.0
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: 32.6 0.0 283.5 0.0 0.0 0.0 0.0 76.2 10.7 11.2 11.2 0.0
LOS by Move: D * F * * * * F * B * B *
ApproachDel: 208.9 xxxxxx 64.2 11.2
Delay Adj: 1.00 xxxxxx 1.00
ApprAdjDel: 208.9 xxxxxx 64.2 11.2
LOS by Appr: F * * * * F * B *
AllWayAVSQ: 3.2 0.0 46.8 0.0 0.0 0.0 0.0 9.4 0.3 0.1 0.1 0.1

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

Weekend MD Peak Hour - Existing Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)
Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap.(X): 0.122
Loss Time (sec): 0 Average Delay (sec/veh): 8.0
Optimal Cycle: 0 Level of Service: A

Street Name: Greenville Rd Altamont Pass Rd
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 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 12:00 - 1:00 pm
Base Vol: 74 0 47 0 0 0 33 85 26 64 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 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 74 0 47 0 0 0 33 85 26 64 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 1.00 1.00 1.00 1.00 1.00 1.00
PHF 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 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 74 0 47 0 0 0 33 85 26 64 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 74 0 47 0 0 0 33 85 26 64 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 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 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume: 74 0 47 0 0 0 33 85 26 64 0

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 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 1.00 0.29 0.71 0.00
Final Sat.: 642 0 815 0 0 0 0 722 842 213 525 0

Capacity Analysis Module:
Vol/Sat: 0.12 xxxxx 0.06 xxxxx xxxxx xxxxx 0.05 0.10 0.12 0.12 xxxxx
Crit Moves: ****
Delay/Veh: 8.8 0.0 7.2 0.0 0.0 0.0 0.0 7.8 7.3 8.4 8.4 0.0
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: 8.8 0.0 7.2 0.0 0.0 0.0 0.0 7.8 7.3 8.4 8.4 0.0
LOS by Move: A * A * * * * A * A * A *
ApproachDel: 8.2 xxxxxx 7.5 8.4
Delay Adj: 1.00 xxxxxx 1.00
ApprAdjDel: 8.2 xxxxxx 7.5 8.4
LOS by Appr: A * * * * A * A *
AllWayAVSQ: 0.1 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1

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

Weekend MD Existing plus PrWed Mar 26, 2014 13:54:24 Page 2-1
 Weekend MD Peak Hour - Existing plus Project Conditions
 Traffic Impact Study for Beyer Ranch Subdivision
 County of Alameda

Trip Generation Report

Forecast for pm

Zone #	Subzone	Amount	Units	Rate		Trips		Total % Of Trips Total
				In	Out	In	Out	
1	1.00 Winery+Houses	57.00	38.00	57	38	95	100.0	
	Zone 1 Subtotal	57.00	38.00	57	38	95	100.0	

TOTAL		57.00	38.00	57	38	95	100.0	

Trip Generation Report

Forecast for md

Zone #	Subzone	Amount	Units	Rate		Trips		Total % Of Trips Total
				In	Out	In	Out	
1	1.00 Winery+Houses	106.00	52.00	106	52	158	100.0	
	Zone 1 Subtotal	106.00	52.00	106	52	158	100.0	

TOTAL		106.00	52.00	106	52	158	100.0	

PM Peak Hour - Existing plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap.(X): 1.581
Loss Time (sec): 0 Average Delay (sec/veh): 158.8
Optimal Cycle: 0 Level Of Service: F

Street Name: Greenville Rd Altamont Pass Rd
Approach: North 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 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:30 - 5:30 pm

Base Vol: 410 0 968 0 0 530 119 9 44 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 410 0 968 0 0 530 119 9 44 0
Added Vol: 11 0 0 0 0 0 0 6 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 421 0 968 0 0 530 125 9 44 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 421 0 968 0 0 530 125 9 44 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 421 0 968 0 0 530 125 9 44 0
PCE Adj: 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
FinalVolume: 421 0 968 0 0 530 125 9 44 0

Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 1.00 0.17 0.83 0.00
Final Sat.: 510 0 612 0 0 0 0 510 561 84 410 0

Capacity Analysis Module:
Vol/Sat: 0.83 xxxxx 1.58 xxxxx xxxxx xxxxx 1.04 0.22 0.11 0.11 xxxxx

Crit Moves: *****
Delay/Veh: 35.1 0.0 284.5 0.0 0.0 0.0 0.0 77.0 10.9 11.2 11.2 0.0
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 35.1 0.0 284.5 0.0 0.0 0.0 0.0 77.0 10.9 11.2 11.2 0.0
LOS by Move: E * * * * * F * * * * * F * * * * *
ApproachDel: 208.9 F xxxxxx 64.4 11.2
Delay Adj: 1.00 xxxxxx 1.00
ApprAdjDel: 208.9 xxxxxx 64.4 11.2
LOS by Appr: F * * * * * F * * * * *
AllWayAV95: 3.6 0.0 46.9 0.0 0.0 0.0 0.0 9.5 0.3 0.1 0.1 0.1

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

Weekend MD Peak Hour - Existing plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap.(X): 0.141
Loss Time (sec): 0 Average Delay (sec/veh): 8.1
Optimal Cycle: 0 Level Of Service: A

Street Name: Greenville Rd Altamont Pass Rd
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 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 12:00 - 1:00 pm

Base Vol: 74 0 47 0 0 0 0 33 85 26 64 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 74 0 47 0 0 0 0 33 85 26 64 0
Added Vol: 16 0 0 0 0 0 0 0 0 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 90 0 47 0 0 0 0 33 96 26 64 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 90 0 47 0 0 0 0 33 96 26 64 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 90 0 47 0 0 0 0 33 96 26 64 0
PCE Adj: 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
FinalVolume: 90 0 47 0 0 0 0 33 96 26 64 0

Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 1.00 0.29 0.71 0.00
Final Sat.: 638 0 810 0 0 0 0 714 831 210 517 0

Capacity Analysis Module:
Vol/Sat: 0.14 xxxxx 0.06 xxxxx xxxxx xxxxx 0.05 0.12 0.12 0.12 xxxxx

Crit Moves: *****
Delay/Veh: 9.0 0.0 7.2 0.0 0.0 0.0 0.0 7.9 7.5 8.5 8.5 0.0
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 9.0 0.0 7.2 0.0 0.0 0.0 0.0 7.9 7.5 8.5 8.5 0.0
LOS by Move: A * * * * * A * * * * * A * * * * *
ApproachDel: 8.4 xxxxxx 7.6 8.5
Delay Adj: 1.00 xxxxxx 1.00
ApprAdjDel: 8.4 xxxxxx 7.6 8.5
LOS by Appr: A * * * * * A * * * * *
AllWayAV95: 0.2 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1

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

PM Peak Hour - Existing plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

Intersection #3 Greenville Rd/Patterson Pass Rd
Average Delay (sec/veh): 15.7 Worst Case Level of Service: F [80.5]
Street Name: Greenville Rd Patterson Pass Rd
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: 1 0 0 1 0 1 0 1 1 0 0 1 0 0 0 1 0 0
Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm
Base Vol: 41 551 149 107 95 20 55 167 32 1 12 13
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: 41 551 149 107 95 20 55 167 32 1 12 13
Added Vol: 0 15 4 0 23 0 0 0 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 41 566 153 107 118 20 55 167 32 7 12 13
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: 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 Volume: 41 566 153 107 118 20 55 167 32 7 12 13
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
FinalVolume: 41 566 153 107 118 20 55 167 32 7 12 13

Critical Gap Module:

Critical Gp: 4.1 xxxxx xxxxxx 7.1 6.5 6.2 7.1 6.5 6.2
FollowUpTim: 2.2 xxxxx xxxxxx 3.5 4.0 3.3 3.5 4.0 3.3

Capacity Module:

Conflict Vol: 138 xxxxx xxxxxx 719 xxxxx xxxxxx 1069 1133 118 1166 1077 643
Potent Cap.: 1458 xxxxx xxxxxx 892 xxxxx xxxxxx 201 205 939 172 221 477
Move Cap.: 1458 xxxxx xxxxxx 892 xxxxx xxxxxx 165 175 939 22 189 477
Volume/Cap: 0.03 xxxxx xxxxxx 0.12 xxxxx xxxxxx 0.33 0.95 0.03 0.32 0.06 0.03

Level of Service Module:

2Way95thD: 0.1 xxxxx xxxxxx 0.4 xxxxx xxxxxx 1.4 xxxxx xxxxxx xxxxx xxxxx xxxxxx
Control Del: 7.5 xxxxx xxxxxx 9.6 xxxxx xxxxxx 37.2 xxxxx xxxxxx xxxxx xxxxx xxxxxx
LOS by Move: A * * * * * A * * * * * E * * * * *
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap.: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 78 xxxxxx
SharedQueue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 1.6 xxxxxx
Shrd Condel: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 71.7 xxxxxx 80.5 xxxxxx
Shared LOS: * * * * * * * * * * * F * * * * * F * * * * *
ApproachDel: xxxxxx xxxxxx 64.2 80.5
ApproachLOS: * * * * * F * * * * * F * * * * *

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

Weekend MD Peak Hour - Existing plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

Intersection #3 Greenville Rd/Patterson Pass Rd
Average Delay (sec/veh): 2.5 Worst Case Level of Service: B [10.9]
Street Name: Greenville Rd Patterson Pass Rd
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: 1 0 0 1 0 1 0 1 1 0 0 1 0 0 1 0 0
Volume Module: >> Count Date: 8 Mar 2014 << 11:00 - 12:00 pm
Base Vol: 9 81 2 9 94 22 13 10 27 4 16 6
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: 9 81 2 9 94 22 13 10 27 4 16 6
Added Vol: 0 21 5 0 42 0 0 0 0 0 11 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 9 102 7 9 136 22 13 10 27 15 16 6
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: 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 Volume: 9 102 7 9 136 22 13 10 27 15 16 6
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
FinalVolume: 9 102 7 9 136 22 13 10 27 15 16 6

Critical Gap Module:

Critical Gp: 4.1 xxxxx xxxxxx 4.1 xxxxx xxxxxx 7.1 6.5 6.2 7.1 6.5 6.2
FollowUpTim: 2.2 xxxxx xxxxxx 2.2 xxxxx xxxxxx 3.5 4.0 3.3 3.5 4.0 3.3

Capacity Module:

Conflict Vol: 158 xxxxx xxxxxx 109 xxxxx xxxxxx 289 281 136 307 300 106
Potent Cap.: 1434 xxxxx xxxxxx 1494 xxxxx xxxxxx 668 631 918 649 616 954
Move Cap.: 1434 xxxxx xxxxxx 1494 xxxxx xxxxxx 644 623 918 617 609 954
Volume/Cap: 0.01 xxxxx xxxxxx 0.01 xxxxx xxxxxx 0.02 0.02 0.03 0.02 0.03 0.01

Level of Service Module:

2Way95thD: 0.0 xxxxx xxxxxx 0.0 xxxxx xxxxxx 0.1 xxxxx xxxxxx xxxxx xxxxx xxxxxx
Control Del: 7.5 xxxxx xxxxxx 7.4 xxxxx xxxxxx 10.7 xxxxx xxxxxx xxxxx xxxxx xxxxxx
LOS by Move: A * * * * * A * * * * * B * * * * *
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap.: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 1700 xxxxx 650 xxxxxx
SharedQueue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 0.1 xxxxxx 0.2 xxxxxx
Shrd Condel: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 7.2 xxxxxx 10.9 xxxxxx
Shared LOS: * * * * * * * * * * * A * * * * * A * * * * *
ApproachDel: xxxxxx xxxxxx 8.1 10.9
ApproachLOS: * * * * * A * * * * * B * * * * *

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

PM Peak Hour - Existing plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

Intersection #4 Vasco Rd/Tesla Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.498
Loss Time (sec): 9 Average Delay (sec/veh): 13.9
Optimal Cycle: 34 Level of Service: B

Street Name: Vasco Rd Tesla Rd
Approach: North Bound South Bound East Bound West Bound

Table with 12 columns: Movement, L, T, R, L, T, R, L, T, R, L, T, R. Rows include Control (Protected, Include, Protected, Include), Rights (Protected, Include), Min. Green (0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 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), and Lanes (0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0).

Volume Module: >> Count Date: 11 Mar 2014 << 4:30 - 5:30 pm

Table with 12 columns: Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, FinalVolume. Rows include Sat/Lane (1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900), 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, 1.00, 1.00), Lanes (0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00), and Final Sat. (0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00).

Capacity Analysis Module:
Vol/Sat: 0.00 0.00 0.00 0.05 0.00 0.28 0.18 0.36 0.00 0.00 0.10 0.04

Table with 12 columns: Crit Moves, Green/Cycle, Volume/Cap, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, HCM2K95thQ. Rows include Vol/Sat (0.00, 0.00, 0.00, 0.05, 0.00, 0.28, 0.18, 0.36, 0.00, 0.00, 0.10, 0.04), Crit Moves (0.00, 0.00, 0.00, 0.19, 0.00, 0.65, 0.46, 0.72, 0.00, 0.00, 0.26, 0.26), Green/Cycle (0.00, 0.00, 0.00, 0.25, 0.00, 0.42, 0.39, 0.50, 0.00, 0.00, 0.39, 0.14), Volume/Cap (0.0, 0.0, 0.0, 34.6, 0.0, 8.6, 18.1, 6.6, 0.0, 0.0, 31.3, 28.9), Delay/Veh (1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00), User DelAdj (0.0, 0.0, 0.0, 34.6, 0.0, 8.6, 18.1, 6.6, 0.0, 0.0, 31.3, 28.9), AdjDel/Veh (A, A, A, C, A, A, B, A, A, A, C, C), LOS by Move (0, 0, 0, 5, 0, 13, 13, 17, 0, 0, 10, 3), HCM2K95thQ (0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0).

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

Weekend MD Peak Hour - Existing plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

Intersection #4 Vasco Rd/Tesla Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.241
Loss Time (sec): 9 Average Delay (sec/veh): 17.7
Optimal Cycle: 24 Level of Service: B

Street Name: Vasco Rd Tesla Rd
Approach: North Bound South Bound East Bound West Bound

Table with 12 columns: Movement, L, T, R, L, T, R, L, T, R, L, T, R. Rows include Control (Protected, Include, Protected, Include), Rights (Protected, Include), Min. Green (0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 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), and Lanes (0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0).

Volume Module: >> Count Date: 8 Mar 2014 << 11:30 - 12:30 pm

Table with 12 columns: Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Reduced Vol, PCE Adj, MLF Adj, FinalVolume. Rows include Sat/Lane (1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900, 1900), 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, 1.00, 1.00), Lanes (0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00), and Final Sat. (0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00).

Capacity Analysis Module:
Vol/Sat: 0.00 0.00 0.00 0.06 0.00 0.14 0.09 0.09 0.00 0.00 0.07 0.04

Table with 12 columns: Crit Moves, Green/Cycle, Volume/Cap, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, HCM2K95thQ. Rows include Vol/Sat (0.00, 0.00, 0.00, 0.06, 0.00, 0.14, 0.09, 0.09, 0.00, 0.00, 0.07, 0.04), Crit Moves (0.00, 0.00, 0.00, 0.26, 0.00, 0.62, 0.36, 0.65, 0.00, 0.00, 0.29, 0.29), Green/Cycle (0.00, 0.00, 0.00, 0.24, 0.00, 0.23, 0.24, 0.14, 0.00, 0.00, 0.24, 0.15), Volume/Cap (0.0, 0.0, 0.0, 29.3, 0.0, 8.4, 22.7, 6.9, 0.0, 0.0, 27.4, 26.6), Delay/Veh (1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00), User DelAdj (0.0, 0.0, 0.0, 29.3, 0.0, 8.4, 22.7, 6.9, 0.0, 0.0, 27.4, 26.6), AdjDel/Veh (A, A, A, C, A, A, A, A, A, A, C, C), LOS by Move (0, 0, 0, 6, 0, 6, 7, 4, 0, 0, 6, 3), HCM2K95thQ (0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0).

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

PM Peak Hour - Cumulative Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)
Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap.(X): 1.760
Loss Time (sec): 0 Average Delay (sec/veh): 209.1
Optimal Cycle: 0 Level of Service: F

Street Name: Greenville Rd Altamont Pass Rd
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 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:30 - 5:30 pm

Base Vol: 410 0 968 0 0 530 119 9 44 0
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 455 0 1074 0 0 588 132 10 49 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 455 0 1074 0 0 588 132 10 49 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 455 0 1074 0 0 588 132 10 49 0
PCE Adj: 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
FinalVolume: 455 0 1074 0 0 588 132 10 49 0

Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 1.00 1.00 0.83 0.00
Final Sat.: 508 0 611 0 0 0 505 556 84 41.0 0

Capacity Analysis Module:
Vol/Sat: 0.90 xxxxx 1.76 xxxxx xxxxx xxxxx 1.16 0.24 0.12 0.12 xxxxx

Crit Moves: ****
Delay/Veh: 44.6 0.0 363.7 0.0 0.0 0.0 118 11.1 11.3 11.3 0.0
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 44.6 0.0 363.7 0.0 0.0 0.0 118 11.1 11.3 11.3 0.0
LOS by Move: E * F * * * * F B B *
ApproachDel: 268.8 xxxxxx 98.5 11.3
Delay Adj: 1.00 xxxxxx 1.00
ApprAdjDel: 268.8 xxxxxx 98.5 11.3
LOS by Appr: F * * * * F B

AllWayAVSQ: 4.9 0.0 60.2 0.0 0.0 0.0 15.2 0.3 0.1 0.1 0.1

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

Weekend MD Peak Hour - Cumulative Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)
Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap.(X): 0.137
Loss Time (sec): 0 Average Delay (sec/veh): 8.1
Optimal Cycle: 0 Level of Service: A

Street Name: Greenville Rd Altamont Pass Rd
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 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 12:00 - 1:00 pm

Base Vol: 74 0 47 0 0 33 85 26 64 0
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 82 0 52 0 0 37 94 29 71 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 82 0 52 0 0 37 94 29 71 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 82 0 52 0 0 37 94 29 71 0
PCE Adj: 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
FinalVolume: 82 0 52 0 0 37 94 29 71 0

Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 1.00 1.00 0.71 0.00
Final Sat.: 634 0 803 0 0 0 714 831 211 518 0

Capacity Analysis Module:
Vol/Sat: 0.13 xxxxx 0.06 xxxxx xxxxx xxxxx 0.05 0.11 0.14 0.14 xxxxx

Crit Moves: ****
Delay/Veh: 9.0 0.0 7.3 0.0 0.0 0.0 7.9 7.4 8.6 8.6 0.0
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 9.0 0.0 7.3 0.0 0.0 0.0 7.9 7.4 8.6 8.6 0.0
LOS by Move: A * A * * * * A A A *
ApproachDel: 8.3 xxxxxx 7.6 8.6
Delay Adj: 1.00 xxxxxx 1.00
ApprAdjDel: 8.3 xxxxxx 7.6 8.6
LOS by Appr: A * * * * A A

AllWayAVSQ: 0.1 0.0 0.1 0.0 0.0 0.0 0.1 0.1 0.2 0.2 0.2

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

Level of Service Computation Report
 2000 HCM Operations Method (Base Volume Alternative)
 Intersection #2 Greenville Rd/Southfront Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.472
 Loss Time (sec): 9 Average Delay (sec/veh): 18.6
 Optimal Cycle: 33 Level of Service: B

Street Name: Greenville Rd Southfront Rd
 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 Protected
 Rights: Include Include Include Include Include
 Min. Green: 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 4.0 4.0 4.0 4.0 4.0 4.0 4.0
 Lanes: 2 0 2 0 0 0 3 0 1 2 0 0 0 2 0 0 0 0 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:30 - 5:30 pm
 Base Vol: 232 926 0 62 61 457 0 48 0 0 0 0
 Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
 Initial Bse: 258 1028 0 69 68 507 0 53 0 0 0 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: 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 Volume: 258 1028 0 69 68 507 0 53 0 0 0 0
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 Reduced Vol: 258 1028 0 69 68 507 0 53 0 0 0 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
 MUF 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: 258 1028 0 69 68 507 0 53 0 0 0 0

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.92 0.95 1.00 1.00 0.91 0.83 0.92 1.00 0.75 1.00 1.00 1.00
 Lanes: 2.00 2.00 0.00 0.00 3.00 1.00 2.00 0.00 2.00 0.00 0.00 0.00
 Final Sat.: 3502 3610 0 0 5187 1574 3502 0 2839 0 0 0

Capacity Analysis Module:
 Vol/Sat: 0.07 0.28 0.00 0.00 0.01 0.04 0.14 0.00 0.02 0.00 0.00 0.00
 Crit Moves: ****
 Green/Cycle: 0.38 0.60 0.00 0.00 0.22 0.22 0.31 0.00 0.31 0.00 0.00 0.00
 Volume/Cap: 0.19 0.47 0.00 0.00 0.06 0.19 0.47 0.00 0.06 0.00 0.00 0.00
 Delay/Veh: 20.8 11.2 0.0 0.0 30.6 31.8 28.4 0.0 24.5 0.0 0.0 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: 20.8 11.2 0.0 0.0 30.6 31.8 28.4 0.0 24.5 0.0 0.0 0.0
 LOS by Move: C B A A C C C A C A A A
 HCM2k95thQ: 5 17 0 0 1 4 13 0 1 0 0 0

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

Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

Level of Service Computation Report
 2000 HCM Operations Method (Base Volume Alternative)
 Intersection #2 Greenville Rd/Southfront Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.069
 Loss Time (sec): 9 Average Delay (sec/veh): 21.1
 Optimal Cycle: 20 Level of Service: C

Street Name: Greenville Rd Southfront Rd
 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 Protected
 Rights: Include Include Include Include Include
 Min. Green: 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 4.0 4.0 4.0 4.0 4.0 4.0
 Lanes: 2 0 2 0 0 0 3 0 1 2 0 0 0 2 0 0 0 0 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 11:00 - 12:00 pm
 Base Vol: 56 97 0 71 19 50 0 76 0 0 0 0
 Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
 Initial Bse: 62 108 0 79 21 56 0 84 0 0 0 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: 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 Volume: 62 108 0 79 21 56 0 84 0 0 0 0
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 Reduced Vol: 62 108 0 79 21 56 0 84 0 0 0 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
 MUF 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: 62 108 0 79 21 56 0 84 0 0 0 0

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.92 0.95 1.00 1.00 0.91 0.67 0.92 1.00 0.75 1.00 1.00 1.00
 Lanes: 2.00 2.00 0.00 0.00 3.00 1.00 2.00 0.00 2.00 0.00 0.00 0.00
 Final Sat.: 3502 3610 0 0 5187 1280 3502 0 2842 0 0 0

Capacity Analysis Module:
 Vol/Sat: 0.02 0.03 0.00 0.00 0.00 0.02 0.02 0.00 0.00 0.03 0.00 0.00
 Crit Moves: ****
 Green/Cycle: 0.26 0.48 0.00 0.00 0.22 0.22 0.43 0.00 0.43 0.00 0.00 0.00
 Volume/Cap: 0.07 0.06 0.00 0.00 0.07 0.07 0.04 0.00 0.07 0.00 0.00 0.00
 Delay/Veh: 28.1 14.0 0.0 0.0 30.9 31.0 16.4 0.0 16.7 0.0 0.0 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: 28.1 14.0 0.0 0.0 30.9 31.0 16.4 0.0 16.7 0.0 0.0 0.0
 LOS by Move: C B A A C C B A C B A A A A
 HCM2k95thQ: 2 2 0 0 1 1 1 0 2 0 0 0

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

Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour - Cumulative Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report

2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Greenville Rd/Patterson Pass Rd
Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name: Greenville Rd Patterson Pass Rd
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: 1 0 0 1 0 1 0 1 1 0 0 1 0 0 0 1 0 0
Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm
Base Vol: 41 551 149 107 95 20 55 167 32 1 12 13
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 46 612 165 119 105 22 61 185 36 1 13 14
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 1.00 1.00 1.00 1.00 1.00 1.00
PHF 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 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 46 612 165 119 105 22 61 185 36 1 13 14
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
FinalVolume: 46 612 165 119 105 22 61 185 36 1 13 14

Critical Gap Module:

Critical Gap: 4.1 xxxxx xxxxxx 7.1 6.5 6.2 7.1 6.5 6.2
FollowUpTim: 2.2 xxxxx xxxxxx 3.5 4.0 3.3 3.5 4.0 3.3

Capacity Module:

Conflict Vol: 128 xxxxx xxxxxx 777 xxxxx xxxxxx 1142 1211 105 1250 1151 694
Potent Cap.: 1471 xxxxx xxxxxx 848 xxxxx xxxxxx 179 184 954 151 200 446
Move Cap.: 1471 xxxxx xxxxxx 848 xxxxx xxxxxx 142 153 954 0 166 446
Volume/Cap: 0.03 xxxxx xxxxxx 0.14 xxxxx xxxxxx 0.43 1.21 0.04 xxxxx 0.08 0.03

Level of Service Module:

2Way95thQ: 0.1 xxxxx xxxxxx 0.5 xxxxx xxxxxx 1.9 xxxxx xxxxxx xxxxx xxxxx xxxxxx
Control Del: 7.5 xxxxx xxxxxx 9.9 xxxxx xxxxxx 48.2 xxxxx xxxxxx xxxxx xxxxx xxxxxx
LOS by Move: A * * * * * A * * * * * E * * * * *
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap.: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 192 xxxxx 0 xxxxxx
SharedQueue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 11.1 xxxxx xxxxx xxxxxx
Shrd ConDel: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 162.3 xxxxx xxxxx xxxxxx
Shared LOS: * * * * * * * * * * * * * * * F * * * * *
ApproachDel: xxxxxx 137.6 xxxxxx
ApproachLOS: * * * * * F

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

Weekend MD Peak Hour - Cumulative Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report

2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Greenville Rd/Patterson Pass Rd
Average Delay (sec/veh): 2.7 Worst Case Level Of Service: B[10.4]

Street Name: Greenville Rd Patterson Pass Rd
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: 1 0 0 1 0 1 0 1 1 0 0 1 0 0 1 0 0 1 0 0
Volume Module: >> Count Date: 8 Mar 2014 << 11:00 - 12:00 pm
Base Vol: 9 81 2 9 94 22 13 10 27 4 16 6
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 10 90 2 10 104 24 14 11 30 4 18 7
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 1.00 1.00 1.00 1.00 1.00 1.00
PHF 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 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 10 90 2 10 104 24 14 11 30 4 18 7
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
FinalVolume: 10 90 2 10 104 24 14 11 30 4 18 7

Critical Gap Module:

Critical Gap: 4.1 xxxxx xxxxxx 4.1 xxxxx xxxxxx 7.1 6.5 6.2 7.1 6.5 6.2
FollowUpTim: 2.2 xxxxx xxxxxx 2.2 xxxxx xxxxxx 3.5 4.0 3.3 3.5 4.0 3.3

Capacity Module:

Conflict Vol: 129 xxxxx xxxxxx 92 xxxxx xxxxxx 248 236 104 268 260 91
Potent Cap.: 1469 xxxxx xxxxxx 1515 xxxxx xxxxxx 710 668 956 689 648 972
Move Cap.: 1469 xxxxx xxxxxx 1515 xxxxx xxxxxx 683 659 956 652 640 972
Volume/Cap: 0.01 xxxxx xxxxxx 0.01 xxxxx xxxxxx 0.02 0.02 0.03 0.01 0.03 0.01

Level of Service Module:

2Way95thQ: 0.0 xxxxx xxxxxx 0.0 xxxxx xxxxxx 0.1 xxxxx xxxxxx xxxxx xxxxx xxxxxx
Control Del: 7.5 xxxxx xxxxxx 7.4 xxxxx xxxxxx 10.4 xxxxx xxxxxx xxxxx xxxxx xxxxxx
LOS by Move: A * * * * * A * * * * * B * * * * *
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap.: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 1770 xxxxx 697 xxxxxx
SharedQueue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 0.1 xxxxx 0.1 xxxxxx
Shrd ConDel: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 7.1 xxxxx 10.4 xxxxxx
Shared LOS: * * * * * * * * * * * * * * * A * * * * *
ApproachDel: xxxxxx 7.9 xxxxxx
ApproachLOS: * * * * * A

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

PM Peak Hour - Cumulative plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 1.762
Loss Time (sec): 0 Average Delay (sec/veh): 209.4
Optimal Cycle: 0 Level of Service: F

Street Name: Greenville Rd Altamont Pass Rd
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 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 1 0 1 0 1 0 0 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:30 - 5:30 pm

Base Vol: 410 0 968 0 0 530 119 9 44 0
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 455 0 1074 0 0 0 0 588 132 10 49 0
Added Vol: 11 0 0 0 0 0 0 0 6 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 466 0 1074 0 0 0 0 588 138 10 49 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 466 0 1074 0 0 0 0 588 138 10 49 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 466 0 1074 0 0 0 0 588 138 10 49 0
PCE Adj: 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
FinalVolume: 466 0 1074 0 0 0 0 588 138 10 49 0

Saturation Flow Module:

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.17 0.83 0.00
Final Sat.: 508 0 610 0 0 0 0 504 554 84 410 0

Capacity Analysis Module:

Vol/Sat: 0.92 xxxxx 1.76 xxxxx xxxxx xxxxx 1.17 0.25 0.12 0.12 xxxxx
Crit Moves: ****
Delay/Veh: 48.5 0.0 364.8 0.0 0.0 0.0 119 11.2 11.3 11.3 0.0
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 48.5 0.0 364.8 0.0 0.0 0.0 119 11.2 11.3 11.3 0.0
LOS by Move: E * * * * * F * * * * *
ApproachDel: 269.1 xxxxxx 98.7 11.3
Delay Adj: 1.00 xxxxxx 1.00
ApprAdjDel: 269.1 xxxxxx 98.7 11.3
LOS by Appr: F * * * * *
AllWayAV95: 5.5 0.0 60.3 0.0 0.0 0.0 15.3 0.3 0.1 0.1 0.1

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

Weekend MD Peak Hour - Cumulative plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.155
Loss Time (sec): 0 Average Delay (sec/veh): 8.3
Optimal Cycle: 0 Level of Service: A

Street Name: Greenville Rd Altamont Pass Rd
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 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 12:00 - 1:00 pm

Base Vol: 74 0 47 0 0 0 0 33 85 26 64 0
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 82 0 52 0 0 0 0 37 94 29 71 0
Added Vol: 16 0 0 0 0 0 0 0 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 98 0 52 0 0 0 0 37 105 29 71 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 98 0 52 0 0 0 0 37 105 29 71 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 98 0 52 0 0 0 0 37 105 29 71 0
PCE Adj: 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
FinalVolume: 98 0 52 0 0 0 0 37 105 29 71 0

Saturation Flow Module:

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.29 0.71 0.00
Final Sat.: 631 0 797 0 0 0 0 706 821 208 511 0

Capacity Analysis Module:

Vol/Sat: 0.16 xxxxx 0.07 xxxxx xxxxx xxxxx 0.05 0.13 0.14 0.14 xxxxx
Crit Moves: ****
Delay/Veh: 9.2 0.0 7.3 0.0 0.0 0.0 7.9 7.6 8.6 8.6 0.0
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 9.2 0.0 7.3 0.0 0.0 0.0 7.9 7.6 8.6 8.6 0.0
LOS by Move: A * * * * * A * * * * *
ApproachDel: 8.6 xxxxxx 7.7 8.6
Delay Adj: 1.00 xxxxxx 1.00
ApprAdjDel: 8.6 xxxxxx 7.7
LOS by Appr: A * * * * *
AllWayAV95: 0.2 0.0 0.1 0.0 0.0 0.0 0.1 0.1 0.2 0.2 0.2

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

PM Peak Hour - Cumulative plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)
Intersection #5 Greenville Rd/Tesla Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 2.072
Loss Time (sec): 0 Average Delay (sec/veh): 344.1
Optimal Cycle: 0 Level of Service: F

Street Name: Greenville Rd Tesla Rd
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 0 0 0 0

Lanes: 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm

Base Vol: 47 16 9 85 11 115 166 563 37 2 51 18
Growth Adj: 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68
Initial Bse: 79 27 15 143 18 193 279 946 62 3 86 30
Added Vol: 0 0 0 0 0 29 19 4 0 0 6 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 79 27 15 143 18 222 298 950 62 3 92 30
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: 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 Volume: 79 27 15 143 18 222 298 950 62 3 92 30
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 79 27 15 143 18 222 298 950 62 3 92 30
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: 79 27 15 143 18 222 298 950 62 3 92 30

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: 0.65 0.22 0.13 0.37 0.05 0.58 0.23 0.72 0.05 0.03 0.73 0.24
Final Sat.: 324 110 62 219 28 341 144 459 30 14 384 127

Capacity Analysis Module:

Vol/Sat: 0.24 0.24 0.24 0.65 0.65 0.65 2.07 2.07 2.07 0.24 0.24 0.24
Crit Moves: ****
Delay/Veh: 12.0 12.0 12.0 19.3 19.3 19.3 501.7 502 501.7 11.3 11.3 11.3
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: 12.0 12.0 12.0 19.3 19.3 19.3 501.7 502 501.7 11.3 11.3 11.3
LOS by Move: B B B C C C F F F B B B
ApproachDel: 12.0 19.3 501.7 11.3
Delay Adj: 1.00 1.00 1.00 1.00
ApprAdjDel: 12.0 19.3 501.7 11.3
LOS by Appr: B B C F
AllWayAVSQ: 0.3 0.3 0.3 1.7 1.7 1.7 86.6 86.6 86.6 0.3 0.3 0.3

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

Weekend MD Peak Hour - Cumulative plus Project Conditions
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)
Intersection #5 Greenville Rd/Tesla Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.633
Loss Time (sec): 0 Average Delay (sec/veh): 13.0
Optimal Cycle: 0 Level of Service: B

Street Name: Greenville Rd Tesla Rd
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 0 0 0 0

Lanes: 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 11:15 - 12:15 pm

Base Vol: 32 18 3 34 36 50 58 118 69 2 78 22
Growth Adj: 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68
Initial Bse: 54 30 5 57 60 84 97 198 116 3 131 37
Added Vol: 0 0 0 0 0 0 0 53 26 5 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 54 30 5 57 60 137 123 203 116 3 142 37
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: 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 Volume: 54 30 5 57 60 137 123 203 116 3 142 37
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 54 30 5 57 60 137 123 203 116 3 142 37
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: 54 30 5 57 60 137 123 203 116 3 142 37

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: 0.60 0.34 0.06 0.22 0.24 0.54 0.28 0.46 0.26 0.02 0.78 0.20
Final Sat.: 323 182 30 141 149 338 195 321 183 12 490 128

Capacity Analysis Module:

Vol/Sat: 0.17 0.17 0.17 0.41 0.41 0.41 0.63 0.63 0.63 0.29 0.29 0.29
Crit Moves: ****
Delay/Veh: 10.0 10.0 10.0 11.5 11.5 11.5 15.6 15.6 15.6 10.3 10.3 10.3
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: 10.0 10.0 10.0 11.5 11.5 11.5 15.6 15.6 15.6 10.3 10.3 10.3
LOS by Move: A A A B B B C C C B B B
ApproachDel: 10.0 11.5 15.6 10.3
Delay Adj: 1.00 1.00 1.00 1.00
ApprAdjDel: 10.0 11.5 15.6 10.3
LOS by Appr: A B B C
AllWayAVSQ: 0.2 0.2 0.2 0.6 0.6 0.6 1.5 1.5 1.5 0.3 0.3 0.3

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

PM Peak Hour - Existing with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.562
Loss Time (sec): 38 Average Delay (sec/veh): 20.3
Optimal Cycle: 38 Level of Service: C

Street Name: Greenville Rd Altamont Pass Rd
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 Protected
Rights: Ignore Include Include Include
Min. Green: 0

Y+R: 4.0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 1 0 1 1 0 1 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:30 - 5:30 pm

Base Vol: 410 0 968 0 0 0 0 530 119 9 44 0

Growth Adj: 1.00

Initial Bse: 410 0 968 0 0 0 0 530 119 9 44 0

User Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 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: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 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 Volume: 410 0 0 0 0 0 0 530 119 9 44 0

Reduce Vol: 0

Reduced Vol: 410 0 0 0 0 0 0 530 119 9 44 0

PCE Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MUF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 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: 410 0 0 0 0 0 0 530 119 9 44 0

Saturation Flow Module:
Sat/Lane: 1900

Adjustment: 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 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 0.00 1.00 0.00 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Sat.: 1805 0 1900 0 0 0 0 1900 1615 1805 1900 0

Capacity Analysis Module:
Vol/Sat: 0.23 0.00 0.00 0.00 0.00 0.00 0.00 0.28 0.07 0.00 0.02 0.00

Crit Moves: ***
Green/Cycle: 0.40 0.00 0.00 0.00 0.00 0.00 0.00 0.50 0.50 0.01 0.51 0.00
Volume/Cap: 0.56 0.00 0.00 0.00 0.00 0.00 0.00 0.56 0.15 0.56 0.05 0.00
Delay/Veh: 23.9 0.0 0.0 0.0 0.0 0.0 0.0 18.3 13.8 87.7 12.5 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: 23.9 0.0 0.0 0.0 0.0 0.0 0.0 18.3 13.8 87.7 12.5 0.0
LOS by Move: C A A A A A A B B F B A
HCM2k95thQ: 18 0 0 0 0 0 0 21 4 2 1 0

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

Weekend MD Peak Hour - Existing with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Greenville Rd/Altamont Pass Rd

Cycle (sec): 100 Critical Vol./Cap. (X): 0.119
Loss Time (sec): 9 Average Delay (sec/veh): 18.6
Optimal Cycle: 21 Level of Service: B

Street Name: Greenville Rd Altamont Pass Rd
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 Protected
Rights: Ignore Include Include Include
Min. Green: 0

Y+R: 4.0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 12:00 - 1:00 pm

Base Vol: 74 0 47 0 0 0 0 0 0 33 85 26 64 0

Growth Adj: 1.00

Initial Bse: 74 0 47 0 0 0 0 0 0 33 85 26 64 0

User Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 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: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 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 Volume: 74 0 0 0 0 0 0 0 0 33 85 26 64 0

Reduce Vol: 0

Reduced Vol: 74 0 0 0 0 0 0 0 0 33 85 26 64 0

PCE Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MUF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 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: 74 0 0 0 0 0 0 0 0 33 85 26 64 0

Saturation Flow Module:
Sat/Lane: 1900

Adjustment: 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 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 0.00 1.00 0.00 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Sat.: 1805 0 1900 0 0 0 0 1900 1615 1805 1900 0

Capacity Analysis Module:
Vol/Sat: 0.04 0.00 0.00 0.00 0.00 0.00 0.00 0.02 0.05 0.01 0.03 0.00

Crit Moves: ***
Green/Cycle: 0.35 0.00 0.00 0.00 0.00 0.00 0.00 0.44 0.44 0.12 0.56 0.00
Volume/Cap: 0.12 0.00 0.00 0.00 0.00 0.00 0.00 0.04 0.12 0.12 0.06 0.00
Delay/Veh: 22.4 0.0 0.0 0.0 0.0 0.0 0.0 15.8 16.4 39.4 9.8 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: 22.4 0.0 0.0 0.0 0.0 0.0 0.0 15.8 16.4 39.4 9.8 0.0
LOS by Move: C A A A A A A B B D A A
HCM2k95thQ: 3 0 0 0 0 0 0 1 3 2 2 0

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

Weekend MD Existing Fri Mar 28, 2014 09:54:35 Page 3-1
 Weekend MD Peak Hour - Existing with Improvements
 Traffic Impact Study for Beyer Ranch Subdivision
 County of Alameda

Level of Service Computation Report
 2000 HCM Operations Method (Base Volume Alternative)
 Intersection #3 Greenville Rd/Patterson Pass Rd
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.601
 Loss Time (sec): 9 Average Delay (sec/veh): 21.9
 Optimal Cycle: 41 Level of Service: C
 Street Name: Greenville Rd Patterson Pass Rd
 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 Permitted Permitted
 Rights: Include Include Include Include Include
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 4.0 4.0 4.0 4.0 4.0 4.0
 Lanes: 1 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm
 Base Vol: 41 551 149 107 95 20 55 167 32 1 12 13
 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 1.00
 Initial Bse: 41 551 149 107 95 20 55 167 32 1 12 13
 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 1.00
 PHF 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 1.00
 PHF Volume: 41 551 149 107 95 20 55 167 32 1 12 13
 Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Reduced Vol: 41 551 149 107 95 20 55 167 32 1 12 13
 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 1.00
 MUF 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 1.00
 FinalVolume: 41 551 149 107 95 20 55 167 32 1 12 13

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.95 0.97 0.97 0.95 1.00 0.85 0.78 0.98 0.98 0.93 0.93 0.93
 Lanes: 1.00 0.79 0.21 1.00 1.00 1.00 1.00 0.84 0.16 0.04 0.46 0.50
 Final Sat.: 1805 1448 391 1805 1900 1615 1476 1556 298 68 812 879

Capacity Analysis Module:
 Vol/Sat: 0.02 0.38 0.38 0.06 0.05 0.01 0.04 0.11 0.11 0.01 0.01 0.01
 Crit Moves: ****

Green/Cycle: 0.23 0.63 0.63 0.10 0.50 0.50 0.18 0.18 0.18 0.18 0.18 0.18
 Volume/Cap: 0.10 0.60 0.60 0.60 0.10 0.02 0.21 0.60 0.60 0.08 0.08 0.08
 Delay/Veh: 30.6 11.8 11.8 48.8 13.0 12.5 35.4 40.9 40.9 34.4 34.4 34.4
 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: 30.6 11.8 11.8 48.8 13.0 12.5 35.4 40.9 40.9 34.4 34.4 34.4
 LOS by Move: C B B D B B D D D C C C
 HCM2k95thQ: 2 23 23 6 3 1 3 12 12 1 1 1
 Note: Queue reported is the number of cars per lane.

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

 Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

Weekend MD Existing Fri Mar 28, 2014 09:54:35 Page 3-1
 Weekend MD Peak Hour - Existing with Improvements
 Traffic Impact Study for Beyer Ranch Subdivision
 County of Alameda

Level of Service Computation Report
 2000 HCM Operations Method (Base Volume Alternative)
 Intersection #3 Greenville Rd/Patterson Pass Rd
 Cycle (sec): 100 Critical Vol./Cap.(X): 0.084
 Loss Time (sec): 9 Average Delay (sec/veh): 16.0
 Optimal Cycle: 20 Level of Service: B
 Street Name: Greenville Rd Patterson Pass Rd
 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 Permitted Permitted
 Rights: Include Include Include Include Include
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 4.0 4.0 4.0 4.0 4.0 4.0
 Lanes: 1 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0

Volume Module: >> Count Date: 8 Mar 2014 << 11:00 - 12:00 pm
 Base Vol: 9 81 2 9 94 22 13 10 27 4 16 6
 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: 9 81 2 9 94 22 13 10 27 4 16 6
 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: 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 Volume: 9 81 2 9 94 22 13 10 27 4 16 6
 Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Reduced Vol: 9 81 2 9 94 22 13 10 27 4 16 6
 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
 MUF 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: 9 81 2 9 94 22 13 10 27 4 16 6

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.95 1.00 1.00 0.95 1.00 0.85 0.88 0.89 0.89 0.95 0.95 0.95
 Lanes: 1.00 0.98 0.02 1.00 1.00 1.00 1.00 0.27 0.73 0.15 0.62 0.23
 Final Sat.: 1805 1847 46 1805 1900 1615 1666 458 1235 277 1108 416

Capacity Analysis Module:
 Vol/Sat: 0.00 0.04 0.04 0.00 0.05 0.01 0.01 0.02 0.02 0.01 0.01 0.01
 Crit Moves: ****

Green/Cycle: 0.06 0.58 0.58 0.07 0.59 0.59 0.26 0.26 0.26 0.26 0.26 0.26
 Volume/Cap: 0.08 0.08 0.08 0.08 0.08 0.02 0.03 0.08 0.08 0.06 0.06 0.06
 Delay/Veh: 44.8 9.1 9.1 44.1 8.9 8.5 27.6 28.0 28.0 27.8 27.8 27.8
 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: 44.8 9.1 9.1 44.1 8.9 8.5 27.6 28.0 28.0 27.8 27.8 27.8
 LOS by Move: D A A D A A C C C C C C C C
 HCM2k95thQ: 1 2 2 1 2 1 2 1 2 1 1 1
 Note: Queue reported is the number of cars per lane.

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

 Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour - Existing with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Weekend MD Peak Hour - Existing with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 Greenville Rd/Tesla Rd

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 Greenville Rd/Tesla Rd

Cycle (sec): 100 Critical Vol./Cap.(X): 0.507
Loss Time (sec): 9 Average Delay (sec/veh): 18.2
Optimal Cycle: 35 Level of Service: B

Cycle (sec): 100 Critical Vol./Cap.(X): 0.195
Loss Time (sec): 9 Average Delay (sec/veh): 19.9
Optimal Cycle: 23 Level of Service: B

Street Name: Greenville Rd Tesla Rd
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Street Name: Greenville Rd Tesla Rd
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Protected
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Control: Permitted Protected Protected Protected
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 4.0 4.0 4.0 4.0 4.0

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 4.0 4.0 4.0 4.0 4.0

Lanes: 0 0 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0

Lanes: 0 0 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm

Volume Module: >> Count Date: 8 Mar 2014 << 11:15 - 12:15 pm

Base Vol: 47 16 9 85 11 115 166 563 37 2 51 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: 47 16 9 85 11 115 166 563 37 2 51 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: 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 Volume: 47 16 9 85 11 115 166 563 37 2 51 18
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 47 16 9 85 11 115 166 563 37 2 51 18
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
MUF 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: 47 16 9 85 11 115 166 563 37 2 51 18

Base Vol: 32 18 3 34 36 50 58 118 69 2 78 22
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: 32 18 3 34 36 50 58 118 69 2 78 22
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: 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 Volume: 32 18 3 34 36 50 58 118 69 2 78 22
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 32 18 3 34 36 50 58 118 69 2 78 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
MUF 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: 32 18 3 34 36 50 58 118 69 2 78 22

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.75 0.75 0.75 0.79 0.79 0.79 0.95 0.99 0.99 0.95 0.96 0.96
Lanes: 0.65 0.22 0.13 0.40 0.05 0.55 1.00 0.94 0.06 1.00 0.74 0.26
Final Sat.: 933 318 179 602 78 814 1805 1767 116 1805 1350 476

Adjustment: 0.83 0.83 0.83 0.87 0.87 0.87 0.95 0.95 0.95 0.95 0.97 0.97
Lanes: 0.60 0.34 0.06 0.28 0.30 0.42 1.00 0.63 0.37 1.00 0.78 0.22
Final Sat.: 948 533 89 469 496 689 1805 1133 663 1805 1433 404

Capacity Analysis Module:
Vol/Sat: 0.05 0.05 0.05 0.14 0.14 0.14 0.09 0.32 0.32 0.00 0.04 0.04

Capacity Analysis Module:
Vol/Sat: 0.03 0.03 0.03 0.07 0.07 0.07 0.03 0.10 0.10 0.00 0.05 0.05

Crit Moves: 0.28 0.28 0.28 0.28 0.28 0.28 0.45 0.63 0.63 0.00 0.18 0.18
Green/Cycle: 0.18 0.18 0.18 0.51 0.51 0.51 0.21 0.51 0.51 0.51 0.21 0.21
Volume/Cap: 27.6 27.6 27.6 31.3 31.3 31.3 16.9 10.5 10.5 129.3 34.9 34.9
Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
User DelAdj: 27.6 27.6 27.6 31.3 31.3 31.3 16.9 10.5 10.5 129.3 34.9 34.9
AdjDel/Veh: 27.6 27.6 27.6 31.3 31.3 31.3 16.9 10.5 10.5 129.3 34.9 34.9
LOS by Move: C C C C C C B B B F C C
HCM2k95thQ: 4 4 4 10 10 10 6 19 19 1 4 4

Crit Moves: 0.37 0.37 0.37 0.37 0.37 0.37 0.20 0.53 0.53 0.01 0.34 0.34
Green/Cycle: 0.09 0.09 0.09 0.20 0.20 0.20 0.16 0.20 0.20 0.20 0.16 0.16
Volume/Cap: 20.5 20.5 20.5 21.5 21.5 21.5 33.3 12.3 12.3 58.7 23.2 23.2
Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
User DelAdj: 20.5 20.5 20.5 21.5 21.5 21.5 33.3 12.3 12.3 58.7 23.2 23.2
AdjDel/Veh: 20.5 20.5 20.5 21.5 21.5 21.5 33.3 12.3 12.3 58.7 23.2 23.2
LOS by Move: C C C C C C B B B E C C
HCM2k95thQ: 2 2 2 5 5 5 3 6 6 1 4 4

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

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

Weekend MD Existing plus PrFri Mar 28, 2014 09:54:57 Page 4-1
Weekend MD Peak Hour - Existing plus Project with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)
Intersection #3 Greenville Rd/Patterson Pass Rd
Cycle (sec): 100 Critical Vol./Cap.(X): 0.613
Loss Time (sec): 42 Average Delay (sec/veh): 21.7
Optimal Cycle: 42 Level of Service: C

Table with columns for Street Name (Greenville Rd), Approach (North Bound, South Bound, East Bound, West Bound), Movement (L-T-R), and various traffic metrics like Protected/Include, Permitted/Include, and Volume.

Table with columns for Saturation Flow Module, Sat/Lane, Adjustment, Lanes, Final Sat., Capacity Analysis Module, Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, HCM2K95thQ.

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2000 HCM Operations Method (Future Volume Alternative)
Intersection #3 Greenville Rd/Patterson Pass Rd
Cycle (sec): 100 Critical Vol./Cap.(X): 0.108
Loss Time (sec): 9 Average Delay (sec/veh): 14.3
Optimal Cycle: 21 Level of Service: B

Table with columns for Street Name (Greenville Rd), Approach (North Bound, South Bound, East Bound, West Bound), Movement (L-T-R), and various traffic metrics like Protected/Include, Permitted/Include, and Volume.

Table with columns for Saturation Flow Module, Sat/Lane, Adjustment, Lanes, Final Sat., Capacity Analysis Module, Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, HCM2K95thQ.

Table with columns for Saturation Flow Module, Sat/Lane, Adjustment, Lanes, Final Sat., Capacity Analysis Module, Vol/Sat, Crit Moves, Green/Cycle, Volume/Cap, Delay/Veh, User DelAdj, AdjDel/Veh, LOS by Move, HCM2K95thQ.

Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour - Existing plus Project with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

 Intersection #5 Greenville Rd/Tesla Rd

 Cycle (sec): 100 Critical Vol./Cap.(X): 0.528
 Loss Time (sec): 36 Average Delay (sec/veh): 19.2
 Optimal Cycle: 36 Level of Service: B

 Street Name: Greenville Rd Tesla Rd
 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	Protected	Protected
Rights:	Include	Include	Include	Include
Min. Green:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 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	4.0 4.0 4.0 4.0
Lanes:	0 0 1 0	0 0 1 0	1 0 0 1	1 0 0 1

Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm
 Base Vol: 47 16 9 85 11 115 166 563 37 2 51 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: 47 16 9 85 11 115 166 563 37 2 51 18
 Added Vol: 0 0 0 0 0 29 19 4 0 0 0 0
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 47 16 9 85 11 144 185 567 37 2 57 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: 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 Volume: 47 16 9 85 11 144 185 567 37 2 57 18
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 Reduced Vol: 47 16 9 85 11 144 185 567 37 2 57 18
 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: 47 16 9 85 11 144 185 567 37 2 57 18

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.74 0.74 0.74 0.80 0.80 0.80 0.95 0.99 0.99 0.95 0.96 0.96
 Lanes: 0.65 0.22 0.13 0.35 0.05 0.60 1.00 0.94 0.06 1.00 0.76 0.24
 Final Sat.: 919 313 176 536 69 907 1805 1768 115 1805 1392 440

Capacity Analysis Module:
 Vol/Sat: 0.05 0.05 0.05 0.16 0.16 0.16 0.10 0.32 0.32 0.00 0.04 0.04
 Crit Moves: *****
 Green/Cycle: 0.30 0.30 0.30 0.30 0.30 0.30 0.44 0.61 0.61 0.00 0.17 0.17
 Volume/Cap: 0.17 0.17 0.17 0.53 0.53 0.53 0.24 0.53 0.53 0.53 0.24 0.24
 Delay/Veh: 26.0 26.0 26.0 30.2 30.2 30.2 17.9 11.8 11.8 146.7 36.0 36.0
 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: 26.0 26.0 26.0 30.2 30.2 30.2 17.9 11.8 11.8 146.7 36.0 36.0
 LOS by Move: C C C C C C C B B B B F D D
 HCM2K95thQ: 3 3 3 12 12 12 7 20 20 1 4 4

Weekend MD Peak Hour - Existing plus Project with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

 Intersection #5 Greenville Rd/Tesla Rd

 Cycle (sec): 100 Critical Vol./Cap.(X): 0.232
 Loss Time (sec): 9 Average Delay (sec/veh): 21.5
 Optimal Cycle: 24 Level of Service: C

 Street Name: Greenville Rd Tesla Rd
 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	Protected	Protected
Rights:	Include	Include	Include	Include
Min. Green:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 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	4.0 4.0 4.0 4.0
Lanes:	0 0 1 0	0 0 1 0	1 0 0 1	1 0 0 1

Volume Module: >> Count Date: 8 Mar 2014 << 11:15 - 12:15 pm
 Base Vol: 32 18 3 34 36 50 58 118 69 2 78 22
 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: 32 18 3 34 36 50 58 118 69 2 78 22
 Added Vol: 0 0 0 0 0 0 53 26 5 0 0 0
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 32 18 3 34 36 103 84 123 69 2 89 22
 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: 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 Volume: 32 18 3 34 36 103 84 123 69 2 89 22
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 Reduced Vol: 32 18 3 34 36 103 84 123 69 2 89 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: 32 18 3 34 36 103 84 123 69 2 89 22

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.82 0.82 0.82 0.87 0.87 0.87 0.87 0.95 0.95 0.95 0.97 0.97
 Lanes: 0.60 0.34 0.06 0.20 0.21 0.59 1.00 0.64 0.36 1.00 0.80 0.20
 Final Sat.: 935 526 88 325 344 983 1805 1151 646 1805 1478 365

Capacity Analysis Module:
 Vol/Sat: 0.03 0.03 0.03 0.10 0.10 0.10 0.05 0.11 0.11 0.00 0.06 0.06
 Crit Moves: *****
 Green/Cycle: 0.45 0.45 0.45 0.45 0.45 0.45 0.20 0.45 0.45 0.00 0.26 0.26
 Volume/Cap: 0.08 0.08 0.08 0.23 0.23 0.23 0.23 0.23 0.23 0.23 0.23 0.23
 Delay/Veh: 15.7 15.7 15.7 17.0 17.0 17.0 33.9 16.8 16.8 63.3 29.5 29.5
 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: 15.7 15.7 15.7 17.0 17.0 17.0 33.9 16.8 16.8 63.3 29.5 29.5
 LOS by Move: B B B B B B B C C B B E C C
 HCM2K95thQ: 2 2 2 6 6 6 5 7 7 1 6 6

PM Peak Hour - Cumulative with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)
Intersection #1 Greenville Rd/Altamont Pass Rd
Cycle (sec): 100 Critical Vol./Cap. (X): 0.623
Loss Time (sec): 43 Average Delay (sec/veh): 21.6
Optimal Cycle: 43 Level of Service: C

Street Name: Greenville Rd Altamont Pass Rd
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 Protected
Rights: Ignore Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 4.0 4.0
Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:30 - 5:30 pm
Base Vol: 410 0 968 0 0 0 0 530 119 9 44 0
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 455 0 1074 0 0 588 132 10 49 0
User Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 455 0 0 0 0 0 588 132 10 49 0
Reduct Vol: 0 0 0 0 0 0 0 588 132 10 49 0
Reduced Vol: 455 0 0 0 0 0 0 0 588 132 10 49 0
PCE Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MUF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume: 455 0 0 0 0 0 0 588 132 10 49 0

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.95 1.00 1.00 1.00 1.00 1.00 1.00 0.85 0.95 1.00 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 1.00 1.00 1.00 0.00
Final Sat.: 1805 0 1900 0 0 0 0 1900 1615 1805 1900 0
Capacity Analysis Module:
Vol/Sat: 0.25 0.00 0.00 0.00 0.00 0.00 0.31 0.08 0.01 0.03 0.00
Crit Moves: ***
Green/Cycle: 0.40 0.00 0.00 0.00 0.00 0.00 0.50 0.50 0.01 0.51 0.00
Volume/Cap: 0.62 0.00 0.00 0.00 0.00 0.00 0.62 0.16 0.62 0.05 0.00
Delay/Veh: 25.4 0.0 0.0 0.0 0.0 0.0 19.7 13.9 107.3 12.6 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
AdjDel/Veh: 25.4 0.0 0.0 0.0 0.0 0.0 19.7 13.9 107.3 12.6 0.0
LOS by Move: C A A A A A B B B F B A
HCM2k95thQ: 20 0 0 0 0 0 0 24 4 2 2 0
Note: Queue reported is the number of cars per lane.

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

Weekend MD Peak Hour - Cumulative with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)
Intersection #1 Greenville Rd/Altamont Pass Rd
Cycle (sec): 100 Critical Vol./Cap. (X): 0.132
Loss Time (sec): 9 Average Delay (sec/veh): 18.6
Optimal Cycle: 21 Level of Service: B

Street Name: Greenville Rd Altamont Pass Rd
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 Protected
Rights: Ignore Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 4.0 4.0
Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 0 1 0 1 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 12:00 - 1:00 pm
Base Vol: 74 0 47 0 0 0 0 33 85 26 64 0
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 82 0 52 0 0 0 0 37 94 29 71 0
User Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 82 0 0 0 0 0 0 37 94 29 71 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 82 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MUF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume: 82 0 0 0 0 0 0 37 94 29 71 0

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.95 1.00 1.00 1.00 1.00 1.00 1.00 0.85 0.95 1.00 1.00
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 1.00 1.00 1.00
Final Sat.: 1805 0 1900 0 0 0 0 1900 1615 1805 1900 0
Capacity Analysis Module:
Vol/Sat: 0.05 0.00 0.00 0.00 0.00 0.00 0.02 0.06 0.02 0.04 0.00
Crit Moves: ***
Green/Cycle: 0.35 0.00 0.00 0.00 0.00 0.00 0.44 0.44 0.12 0.56 0.00
Volume/Cap: 0.13 0.00 0.00 0.00 0.00 0.00 0.04 0.13 0.13 0.07 0.00
Delay/Veh: 22.5 0.0 0.0 0.0 0.0 0.0 15.8 16.5 39.5 9.9 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
AdjDel/Veh: 22.5 0.0 0.0 0.0 0.0 0.0 15.8 16.5 39.5 9.9 0.0
LOS by Move: C A A A A A B B B D A A
HCM2k95thQ: 3 0 0 0 0 0 0 1 3 2 0
Note: Queue reported is the number of cars per lane.

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

PM Peak Hour - Cumulative with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Greenville Rd/Patterson Pass Rd
Cycle (sec): 100 Critical Vol./Cap.(X): 0.667
Loss Time (sec): 47 Average Delay (sec/veh): 23.4
Optimal Cycle: 49 Level of Service: C

Street Name: Greenville Rd East Bound West Bound
Approach: North Bound South Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 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 1 0 1 0 1 1 0 0 1 0 0 1 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm

Base Vol: 41 551 149 107 95 20 55 167 32 1 12 13
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 46 612 165 119 105 22 61 185 36 1 13 14
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: 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 Volume: 46 612 165 119 105 22 61 185 36 1 13 14
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 46 612 165 119 105 22 61 185 36 1 13 14
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
MUF 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: 46 612 165 119 105 22 61 185 36 1 13 14

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.95 0.97 0.97 0.95 1.00 0.85 0.77 0.98 0.98 0.92 0.92 0.92
Lanes: 1.00 0.79 0.21 1.00 1.00 1.00 1.00 0.84 0.16 0.04 0.46 0.50
Final Sat.: 1805 1448 391 1805 1900 1615 1459 1556 298 68 811 878

Capacity Analysis Module:
Vol/Sat: 0.03 0.42 0.42 0.07 0.06 0.01 0.04 0.12 0.12 0.02 0.02 0.02
Crit Moves: ****
Green/Cycle: 0.23 0.63 0.63 0.10 0.50 0.50 0.18 0.18 0.18 0.18 0.18 0.18
Volume/Cap: 0.11 0.67 0.67 0.67 0.11 0.03 0.23 0.67 0.67 0.09 0.09 0.09
Delay/Veh: 30.6 13.2 13.2 52.8 13.1 12.5 35.7 43.5 43.5 34.4 34.4 34.4
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: 30.6 13.2 13.2 52.8 13.1 12.5 35.7 43.5 43.5 34.4 34.4 34.4
LOS by Move: C B B B B B D D D D C C C C
HCM2k95thQ: 2 27 7 3 1 4 14 2 2 2

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

Weekend MD Peak Hour - Cumulative with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Greenville Rd/Patterson Pass Rd
Cycle (sec): 100 Critical Vol./Cap.(X): 0.093
Loss Time (sec): 9 Average Delay (sec/veh): 16.1
Optimal Cycle: 20 Level of Service: B

Street Name: Greenville Rd East Bound West Bound
Approach: North Bound South Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 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 1 0 1 0 1 1 0 0 1 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 11:00 - 12:00 pm

Base Vol: 9 81 2 9 94 22 13 10 27 4 16 6
Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
Initial Bse: 10 90 2 10 104 24 14 11 30 4 18 7
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: 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 Volume: 10 90 2 10 104 24 14 11 30 4 18 7
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 10 90 2 10 104 24 14 11 30 4 18 7
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
MUF 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: 10 90 2 10 104 24 14 11 30 4 18 7

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.95 1.00 1.00 0.95 1.00 0.85 0.87 0.89 0.89 0.95 0.95 0.95
Lanes: 1.00 0.98 0.02 1.00 1.00 1.00 1.00 0.27 0.73 0.15 0.62 0.23
Final Sat.: 1805 1847 46 1805 1900 1615 1653 458 1235 277 1107 415

Capacity Analysis Module:
Vol/Sat: 0.01 0.05 0.05 0.01 0.05 0.02 0.01 0.02 0.02 0.02 0.02 0.02
Crit Moves: ****
Green/Cycle: 0.06 0.58 0.58 0.07 0.59 0.59 0.26 0.26 0.26 0.26 0.26 0.26
Volume/Cap: 0.09 0.08 0.08 0.08 0.09 0.03 0.03 0.09 0.09 0.06 0.06 0.06
Delay/Veh: 44.9 9.2 9.2 44.1 8.9 8.5 27.6 28.1 28.1 27.8 27.8 27.8
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: 44.9 9.2 9.2 44.1 8.9 8.5 27.6 28.1 28.1 27.8 27.8 27.8
LOS by Move: D A A D A A C C C C C C C C
HCM2k95thQ: 1 2 2 1 3 1 1 2 2 1 1 1

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

PM Peak Hour - Cumulative with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 Greenville Rd/Tesla Rd

Cycle (sec): 100 Critical Vol./Cap.(X): 0.860
Loss Time (sec): 9 Average Delay (sec/veh): 28.8
Optimal Cycle: 86 Level Of Service: C

Street Name: Greenville Rd Tesla Rd
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Protected
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 4.0 4.0 4.0 4.0
Lanes: 0 0 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0 1 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm
Base Vol: 47 16 9 85 11 115 166 563 37 2 51 18
Growth Adj: 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68
Initial Bse: 79 27 15 143 18 193 279 946 62 3 86 30
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 1.00 1.00 1.00 1.00 1.00 1.00
PHF 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 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume: 79 27 15 143 18 193 279 946 62 3 86 30
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Revised Vol: 79 27 15 143 18 193 279 946 62 3 86 30
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 1.00 1.00 1.00 1.00 1.00 1.00
MUF 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 1.00 1.00 1.00 1.00 1.00 1.00
FinalVolume: 79 27 15 143 18 193 279 946 62 3 86 30

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.61 0.61 0.61 0.76 0.76 0.76 0.95 0.99 0.99 0.95 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96
Lanes: 0.65 0.22 0.13 0.40 0.05 0.55 1.00 0.94 0.06 1.00 0.74 0.26
Final Sat.: 753 256 144 582 75 787 1805 1767 116 1805 1350 476

Capacity Analysis Module:
Vol/Sat: 0.10 0.10 0.10 0.25 0.25 0.25 0.15 0.54 0.54 0.00 0.06 0.06
Crit Moves: ****
Green/Cycle: 0.29 0.29 0.29 0.29 0.29 0.29 0.44 0.62 0.62 0.00 0.18 0.18
Volume/Cap: 0.37 0.37 0.37 0.86 0.86 0.86 0.35 0.86 0.86 0.86 0.35 0.35
Delay/Veh: 29.2 29.2 29.2 50.3 50.3 50.3 18.6 22.0 22.0 391.7 36.4 36.4
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: 29.2 29.2 29.2 50.3 50.3 50.3 18.6 22.0 22.0 391.7 36.4 36.4
LOS by Move: C C C D D D B C C C F D D
HCM2k95thQ: 7 7 7 21 21 21 11 45 45 1 7 7

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

Weekend MD Peak Hour - Cumulative with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 Greenville Rd/Tesla Rd

Cycle (sec): 100 Critical Vol./Cap.(X): 0.332
Loss Time (sec): 9 Average Delay (sec/veh): 21.1
Optimal Cycle: 27 Level Of Service: C

Street Name: Greenville Rd Tesla Rd
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Protected
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 4.0 4.0 4.0 4.0
Lanes: 0 0 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0

Volume Module: >> Count Date: 8 Mar 2014 << 11:15 - 12:15 pm
Base Vol: 32 18 3 34 36 50 58 118 69 2 78 22
Growth Adj: 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68
Initial Bse: 54 30 5 57 60 84 97 198 116 3 131 37
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 1.00 1.00 1.00 1.00 1.00
PHF 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 1.00 1.00 1.00 1.00 1.00
PHF Volume: 54 30 5 57 60 84 97 198 116 3 131 37
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Revised Vol: 54 30 5 57 60 84 97 198 116 3 131 37
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 1.00 1.00 1.00 1.00 1.00
MUF 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 1.00 1.00 1.00 1.00 1.00
FinalVolume: 54 30 5 57 60 84 97 198 116 3 131 37

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.77 0.77 0.77 0.85 0.85 0.85 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
Lanes: 0.60 0.34 0.06 0.28 0.30 0.42 1.00 0.63 0.37 1.00 0.78 0.22
Final Sat.: 881 495 83 457 484 672 1805 1133 663 1805 1433 404

Capacity Analysis Module:
Vol/Sat: 0.06 0.06 0.06 0.13 0.13 0.13 0.05 0.17 0.17 0.00 0.09 0.09
Crit Moves: ****
Green/Cycle: 0.38 0.38 0.38 0.38 0.38 0.38 0.20 0.53 0.53 0.01 0.34 0.34
Volume/Cap: 0.16 0.16 0.16 0.33 0.33 0.33 0.27 0.33 0.33 0.33 0.27 0.27
Delay/Veh: 20.8 20.8 20.8 22.5 22.5 22.5 34.4 13.7 13.7 67.8 24.6 24.6
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: 20.8 20.8 20.8 22.5 22.5 22.5 34.4 13.7 13.7 67.8 24.6 24.6
LOS by Move: C C C C C C C C C B B E C
HCM2k95thQ: 4 4 4 8 8 8 5 11 11 1 8

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

PM Peak Hour - Cumulative plus Project with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)
 Intersection #1 Greenville Rd/Altamont Pass Rd
 Cycle (sec): 100 Critical Vol./Cap. (X): 0.630
 Loss Time (sec): 9 Average Delay (sec/veh): 21.8
 Optimal Cycle: 44 Level of Service: C
 Street Name: Greenville Rd Altamont Pass Rd
 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 Protected
 Rights: Ignore Include Include Include
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 4.0 4.0 4.0 4.0
 Lanes: 1 0 0 0 1 0 0 0 0 0 0 1 0 1 0 1 0 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:30 - 5:30 pm
 Base Vol: 410 0 968 0 0 0 0 0 530 119 9 44 0
 Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
 Initial Bse: 455 0 1074 0 0 0 0 588 132 10 49 0
 Added Vol: 11 0 0 0 0 0 0 0 6 0 0 0 0
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 466 0 1074 0 0 0 0 588 138 10 49 0
 User Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Volume: 466 0 0 0 0 0 0 588 138 10 49 0
 Reduced Vol: 0 0 0 0 0 0 0 0 588 138 10 49 0
 Volume Module: 466 0 0 0 0 0 0 0 588 138 10 49 0
 PCE Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 MLF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 FinalVolume: 466 0 0 0 0 0 0 588 138 10 49 0

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.95 1.00 1.00 1.00 1.00 1.00 1.00 0.85 0.95 1.00 1.00
 Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 1.00 1.00 0.00
 Final Sat.: 1805 0 1900 0 0 0 0 1900 1615 1805 1900 0

Capacity Analysis Module:
 Vol/Sat: 0.26 0.00 0.00 0.00 0.00 0.00 0.00 0.31 0.09 0.01 0.03 0.00
 Crit Moves: ****
 Green/Cycle: 0.41 0.00 0.00 0.00 0.00 0.00 0.00 0.49 0.49 0.01 0.50 0.00
 Volume/Cap: 0.63 0.00 0.00 0.00 0.00 0.00 0.63 0.17 0.63 0.05 0.00
 Delay/Veh: 25.2 0.0 0.0 0.0 0.0 0.0 20.1 14.2 110.1 12.8 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
 AdjDel/Veh: 25.2 0.0 0.0 0.0 0.0 0.0 20.1 14.2 110.1 12.8 0.0
 LOS by Move: C A A A A A C B F B A
 HCM2K95thQ: 20 0 0 0 0 0 0 24 5 2 2 0

Weekend MD Peak Hour - Cumulative plus Project with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)
 Intersection #1 Greenville Rd/Altamont Pass Rd
 Cycle (sec): 100 Critical Vol./Cap. (X): 0.149
 Loss Time (sec): 9 Average Delay (sec/veh): 18.9
 Optimal Cycle: 22 Level of Service: B
 Street Name: Greenville Rd Altamont Pass Rd
 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 Protected
 Rights: Ignore Include Include Include
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 4.0 4.0 4.0
 Lanes: 1 0 0 0 1 0 0 0 0 0 0 1 0 1 0 1 0 0

Volume Module: >> Count Date: 8 Mar 2014 << 12:00 - 1:00 pm
 Base Vol: 74 0 47 0 0 0 0 0 33 85 26 64 0
 Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
 Initial Bse: 82 0 52 0 0 0 0 0 37 94 29 71 0
 Added Vol: 16 0 0 0 0 0 0 0 0 0 0 0 0 0
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 98 0 52 0 0 0 0 0 37 105 29 71 0
 User Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Volume: 98 0 0 0 0 0 0 0 37 105 29 71 0
 Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
 Volume Module: 98 0 0 0 0 0 0 0 37 105 29 71 0
 PCE Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 MLF Adj: 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 FinalVolume: 98 0 0 0 0 0 0 0 37 105 29 71 0

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.95 1.00 1.00 1.00 1.00 1.00 1.00 0.85 0.95 1.00 1.00
 Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 1.00 1.00 0.00
 Final Sat.: 1805 0 1900 0 0 0 0 1900 1615 1805 1900 0

Capacity Analysis Module:
 Vol/Sat: 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.02 0.07 0.02 0.04 0.00
 Crit Moves: ****
 Green/Cycle: 0.36 0.00 0.00 0.00 0.00 0.00 0.00 0.44 0.44 0.11 0.55 0.00
 Volume/Cap: 0.15 0.00 0.00 0.00 0.00 0.00 0.00 0.04 0.15 0.15 0.07 0.00
 Delay/Veh: 21.4 0.0 0.0 0.0 0.0 0.0 0.0 16.1 17.0 40.9 10.8 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
 AdjDel/Veh: 21.4 0.0 0.0 0.0 0.0 0.0 0.0 16.1 17.0 40.9 10.8 0.0
 LOS by Move: C A A A A A B B B B A
 HCM2K95thQ: 4 0 0 0 0 0 0 1 4 2 2 0

PM Peak Hour - Cumulative plus Project with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Weekend MD Peak Hour - Cumulative plus Project with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

Level of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)
 Intersection #3 Greenville Rd/Patterson Pass Rd
 Cycle (sec): 100 Critical Vol./Cap. (X): 0.679
 Loss Time (sec): 49 Average Delay (sec/veh): 23.4
 Optimal Cycle: 49 Level of Service: C
 Street Name: Greenville Rd Patterson Pass Rd
 Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Protected Include	Protected Include	Protected Include	Protected Include	Permitted Include	Permitted Include
Min. Green:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 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	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 1	1 0 0 1	0 0 1 0	0 0 1 0	0 0 1 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm
 Base Vol: 41 551 149 107 95 20 55 167 32 1 12 13
 Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
 Initial Bse: 46 612 165 119 105 22 61 185 36 1 13 14
 Added Vol: 0 15 4 0 23 0 0 0 0 0 0 0
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 46 627 169 119 128 22 61 185 36 7 13 14
 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: 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 Volume: 46 627 169 119 128 22 61 185 36 7 13 14
 Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 Reduced Vol: 46 627 169 119 128 22 61 185 36 7 13 14
 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: 46 627 169 119 128 22 61 185 36 7 13 14

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.95 0.97 0.97 0.95 1.00 0.85 0.76 0.98 0.98 0.89 0.89 0.89
 Lanes: 1.00 0.79 0.21 1.00 1.00 1.00 1.00 0.84 0.16 0.20 0.38 0.42
 Final Sat.: 1805 1448 391 1805 1900 1615 1450 1556 298 343 643 696

Capacity Analysis Module:
 Vol/Sat: 0.03 0.43 0.43 0.07 0.07 0.01 0.04 0.12 0.12 0.02 0.02 0.02
 Crit Moves: ****
 Green/Cycle: 0.20 0.64 0.64 0.10 0.53 0.53 0.18 0.18 0.18 0.18 0.18 0.18
 Volume/Cap: 0.13 0.68 0.68 0.68 0.13 0.03 0.24 0.68 0.68 0.12 0.12 0.12
 Delay/Veh: 33.0 13.2 13.2 53.9 11.7 11.0 36.0 44.3 44.3 34.9 34.9 34.9
 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: 33.0 13.2 13.2 53.9 11.7 11.0 36.0 44.3 44.3 34.9 34.9 34.9
 LOS by Move: C B B B B B D D D C C C
 HCM2K95thQ: 2 27 27 7 4 1 4 14 2 2 2 2

Level of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)
 Intersection #3 Greenville Rd/Patterson Pass Rd
 Cycle (sec): 100 Critical Vol./Cap. (X): 0.117
 Loss Time (sec): 9 Average Delay (sec/veh): 14.5
 Optimal Cycle: 21 Level of Service: B
 Street Name: Greenville Rd Patterson Pass Rd
 Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Protected Include	Protected Include	Protected Include	Protected Include	Permitted Include	Permitted Include
Min. Green:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 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	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 1	1 0 0 1	0 0 1 0	0 0 1 0	0 0 1 0

Volume Module: >> Count Date: 8 Mar 2014 << 11:00 - 12:00 pm
 Base Vol: 9 81 2 9 94 22 13 10 27 4 16 6
 Growth Adj: 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.11
 Initial Bse: 10 90 2 10 104 24 14 11 30 4 18 7
 Added Vol: 0 21 5 0 42 0 0 0 0 0 0 0
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 10 111 7 10 146 24 14 11 30 15 18 7
 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: 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 Volume: 10 111 7 10 146 24 14 11 30 15 18 7
 Reduce Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 Reduced Vol: 10 111 7 10 146 24 14 11 30 15 18 7
 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: 10 111 7 10 146 24 14 11 30 15 18 7

Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.95 0.99 0.99 0.95 1.00 0.85 0.86 0.89 0.89 0.89 0.89 0.89
 Lanes: 1.00 0.94 0.06 1.00 1.00 1.00 1.00 0.27 0.73 0.39 0.44 0.17
 Final Sat.: 1805 1768 115 1805 1900 1615 1626 458 1235 656 755 283

Capacity Analysis Module:
 Vol/Sat: 0.01 0.06 0.06 0.01 0.08 0.02 0.01 0.02 0.02 0.02 0.02 0.02
 Crit Moves: ****
 Green/Cycle: 0.05 0.65 0.65 0.06 0.66 0.66 0.21 0.21 0.21 0.21 0.21 0.21
 Volume/Cap: 0.12 0.10 0.10 0.10 0.12 0.02 0.04 0.12 0.12 0.11 0.11 0.11
 Delay/Veh: 46.3 6.7 6.7 45.1 6.4 6.0 31.8 32.4 32.4 32.4 32.4 32.4
 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: 46.3 6.7 6.7 45.1 6.4 6.0 31.8 32.4 32.4 32.4 32.4 32.4
 LOS by Move: D A A A D A A C C C C C
 HCM2K95thQ: 1 3 3 1 3 1 1 2 2 2 2 2

Weekend MD Peak Hour - Cumulative plus Project with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

***** Intersection #5 Greenville Rd/Tesla Rd *****

Cycle (sec): 100 Critical Vol./Cap. (X): 0.370
Loss Time (sec): 9 Average Delay (sec/veh): 22.4
Optimal Cycle: 28 Level Of Service: C

***** Street Name: Greenville Rd Tesla Rd *****

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Protected
Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 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 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0

Volume Module: >> Count Date: 8 Mar 2014 << 11:15 - 12:15 pm

Base Vol: 32 18 3 34 36 50 58 118 69 2 78 22
Growth Adj: 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68
Initial Bse: 54 30 5 57 60 84 97 198 116 3 131 37
Added Vol: 0 0 0 0 0 53 26 5 0 0 11 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 54 30 5 57 60 137 123 203 116 3 142 37
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: 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 Volume: 54 30 5 57 60 137 123 203 116 3 142 37
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 54 30 5 57 60 137 123 203 116 3 142 37
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: 54 30 5 57 60 137 123 203 116 3 142 37

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.75 0.75 0.75 0.85 0.85 0.85 0.95 0.95 0.95 0.95 0.97 0.97
Lanes: 0.60 0.34 0.06 0.22 0.24 0.54 1.00 0.64 0.36 1.00 0.79 0.21
Final Sat.: 858 483 80 363 385 871 1805 1145 653 1805 1461 380

Capacity Analysis Module:

Vol/Sat: 0.06 0.06 0.06 0.16 0.16 0.16 0.07 0.18 0.18 0.00 0.10 0.10
Crit Moves: 0.43 0.43 0.43 0.43 0.43 0.43 0.48 0.48 0.48 0.48 0.48 0.48
Green/Cycle: 0.15 0.15 0.15 0.37 0.37 0.37 0.37 0.37 0.37 0.37 0.37 0.37
Volume/Cap: 17.7 17.7 17.7 19.9 19.9 19.9 34.9 34.9 34.9 34.9 34.9 34.9
Delay/Veh: 17.7 17.7 17.7 17.7 17.7 17.7 16.7 16.7 16.7 16.7 16.7 16.7
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: 17.7 17.7 17.7 19.9 19.9 19.9 16.7 16.7 16.7 16.7 16.7 16.7
LOS by Move: B B B B B B C B B B B B C B E C
HCM2K95thQ: 3 3 3 10 10 10 7 12 12 1 9 9

Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour - Cumulative plus Project with Improvements
Traffic Impact Study for Beyer Ranch Subdivision
County of Alameda

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

***** Intersection #5 Greenville Rd/Tesla Rd *****

Cycle (sec): 100 Critical Vol./Cap. (X): 0.881
Loss Time (sec): 9 Average Delay (sec/veh): 30.9
Optimal Cycle: 94 Level Of Service: C

***** Street Name: Greenville Rd Tesla Rd *****

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Protected Protected Protected
Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 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 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0

Volume Module: >> Count Date: 11 Mar 2014 << 4:15 - 5:15 pm

Base Vol: 47 16 9 85 11 115 166 563 37 2 51 18
Growth Adj: 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68 1.68
Initial Bse: 79 27 15 143 18 193 279 946 62 3 86 30
Added Vol: 0 0 0 0 0 29 19 4 0 0 6 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 79 27 15 143 18 222 298 950 62 3 92 30
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: 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 Volume: 79 27 15 143 18 222 298 950 62 3 92 30
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 79 27 15 143 18 222 298 950 62 3 92 30
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: 79 27 15 143 18 222 298 950 62 3 92 30

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.59 0.59 0.59 0.77 0.77 0.77 0.95 0.99 0.99 0.95 0.96 0.96
Lanes: 0.65 0.22 0.13 0.37 0.05 0.58 1.00 0.94 0.06 1.00 0.75 0.25
Final Sat.: 733 249 140 544 70 847 1805 1767 116 1805 1376 454

Capacity Analysis Module:

Vol/Sat: 0.11 0.11 0.11 0.26 0.26 0.26 0.17 0.54 0.54 0.00 0.07 0.07
Crit Moves: 0.30 0.30 0.30 0.30 0.30 0.30 0.61 0.61 0.61 0.61 0.61 0.61
Green/Cycle: 0.36 0.36 0.36 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
Volume/Cap: 28.3 28.3 28.3 51.9 51.9 51.9 24.6 24.6 24.6 24.6 24.6 24.6
Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
User DelAdj: 28.3 28.3 28.3 51.9 51.9 51.9 24.6 24.6 24.6 24.6 24.6 24.6
AdjDel/Veh: C C C C C C D D D D D D C C F D D
LOS by Move: 6 6 6 23 23 23 12 47 47 1 7 7
HCM2K95thQ: *****

Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

Appendix B

DRAFT

Traffic Signal Warrants

Signal Warrant Analysis
Warrant 3: Peak-Hour Volumes and Delay
 Greenville & Altamont Pass
 County of Alameda

Street Name	Major Street	Minor Street
	Greenville	Altamont Pass
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	45	45
Low population (<10,000)?	No	

Warrant 3: Met when either Condition A or B is met

Condition A: Met when conditions A1, A2, and A3 are met

Condition A1

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Condition A2

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Condition A3

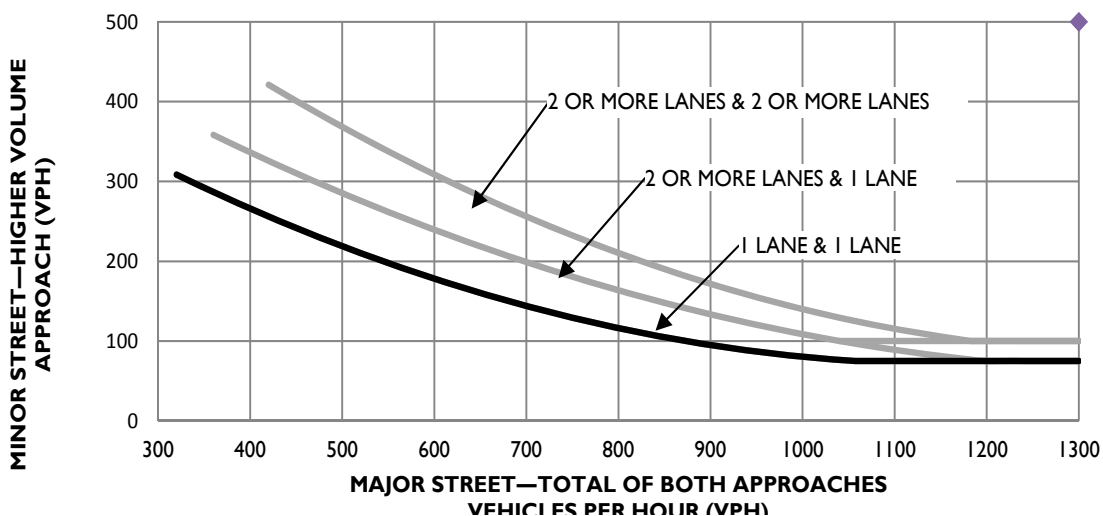
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Condition B

The plotted point falls above the curve

Met
Met
Met
Met
Met

Warrant 3, Peak Hour (70% Factor)
 (Community Less than 10,000 Population, or Above 40 MPH on Major Street)



Signal Warrant Analysis
Warrant 3: Peak-Hour Volumes and Delay
 Greenville & Patterson Pass
 County of Alameda

	<u>Major Street</u>	<u>Minor Street</u>
Street Name	Greenville	Patterson Pass
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	45	45
Low population (<10,000)?	No	

Warrant 3: Met when either Condition A or B is met

Condition A: Met when conditions A1, A2, and A3 are met

Condition A1

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Condition A2

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Condition A3

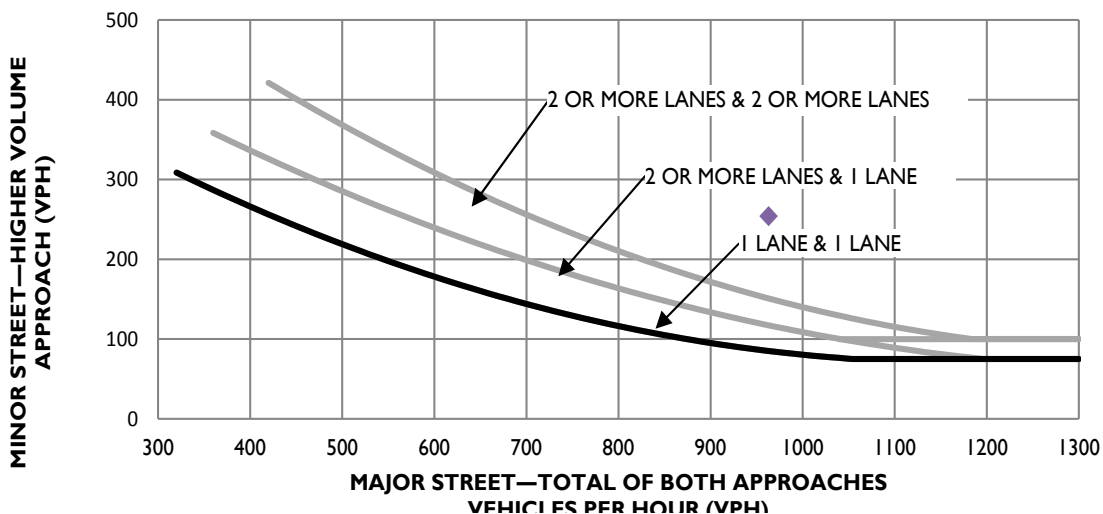
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Condition B

The plotted point falls above the curve

Met
Met
Met
Met
Met
Met

Warrant 3, Peak Hour (70% Factor)
 (Community Less than 10,000 Population, or Above 40 MPH on Major Street)



Signal Warrant Analysis
Warrant 3: Peak-Hour Volumes and Delay
 Tesla & Greenville
 County of Alameda

	<u>Major Street</u>	<u>Minor Street</u>
Street Name	Tesla	Greenville
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	50	45
Low population (<10,000)?	No	

Warrant 3: Met when either Condition A or B is met

Condition A: Met when conditions A1, A2, and A3 are met

Condition A1

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Condition A2

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes

Condition A3

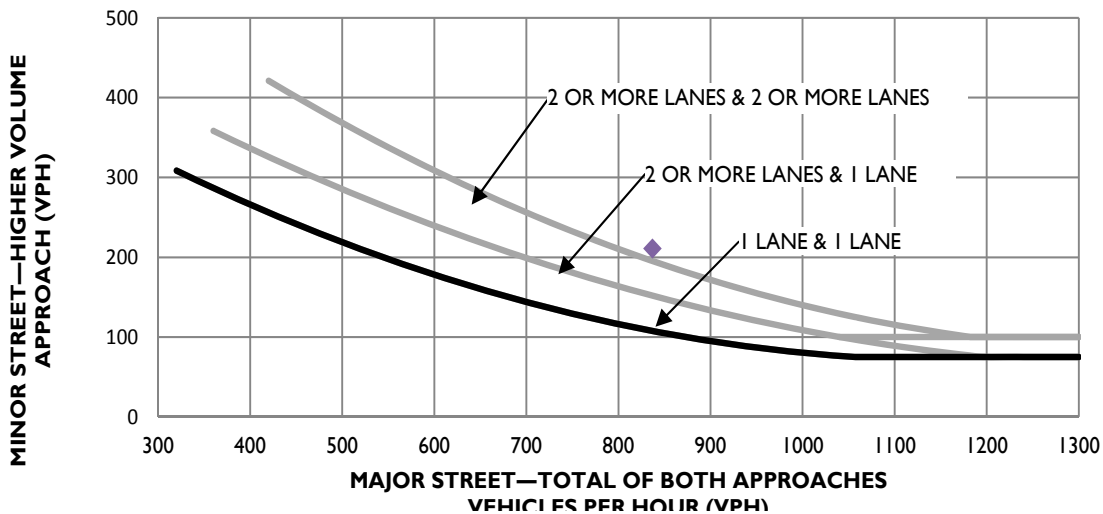
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches

Condition B

The plotted point falls above the curve

Met
Not Met
Not Met
Met
Met
Met

Warrant 3, Peak Hour (70% Factor)
 (Community Less than 10,000 Population, or Above 40 MPH on Major Street)



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