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Traffic Study

Regusci Winery, Major Modification to Use Permit P16-00307
& Request for Exception to Road and Street Standards
Planning Commission Hearing Date, November 15, 2017

Focused Traffic Analysis for the Proposed:

Regusci Vineyards Winery Use Modification Project

County of Napa

Prepared for:

The County of Napa

At the Request of:

Regusci Vineyards

Draft Report

June, 2017

Prepared by:

omni · means
ENGINEERING SOLUTIONS

FOCUSED TRAFFIC ANALYSIS
PROPOSED REGUSCI VINEYARDS WINERY USE MODIFICATION PROJECT

Prepared For:
COUNTY OF NAPA
At the request of:
Regusci Vineyards

Prepared By:
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Draft Report
JUNE, 2017

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDIX

1. Introduction

The following report provides a focused traffic analysis for the proposed Regusci Vineyards Winery Use Modification project located at 5584 Silverado Trail in Napa County— (see Figure 1 for Project Vicinity Map). This traffic analysis is based on discussions with your planning consultant (Mr. George Monteverdi) about the proposed project characteristics as well as correspondence from Napa County Public Works staff (Mr. Rick Marshall) and Planning staff (Ms. Dana Ayers) related to the overall traffic scope/analysis. The methodologies for analyzing the potential impacts of proposed project uses are consistent with the Use Permit Modification (Supplemental Winery Uses) from Napa County Planning, Building, and Environmental Services.[1] The methodologies focus on both daily and peak hour trip generation associated with winery production, employment, and visitation levels. Proposed marketing plans and/or special events are also included in overall analyses of trip generation characteristics. Finally, the County has recently adopted revised transportation significance criteria established in the memorandum by Fehr and Peers.[2] Some of the key issues evaluated in this study include the following:

- Existing and future weekday PM peak hour and weekend (Saturday) mid-day peak hour operations at the Yountville Crossroad/Silverado Trail, Regusci Vineyards Winery Driveway/Silverado Trail, and Oak Knoll Avenue/Silverado Trail intersections;
- Near-Term (2020) traffic conditions reflecting other approved/pending projects in the study area encompassing Napa County and the City of Napa;
- Increase in proposed project trip generation relative to existing conditions from proposed project use modifications including production, visitation, employment, and marketing events compared to existing use permit conditions;
- Project site access at the winery's Silverado Trail driveway and circulation of vehicles within the winery areas;
- Cumulative year 2030 (no project) conditions along Silverado Trail based on the Napa County General Plan Update EIR.

The following sections outline existing and future conditions with and without the net increase in traffic from proposed Regusci Vineyards Winery Use modification project. Where necessary, measures have been recommended to ensure acceptable traffic flow, circulation, and/or fair share mitigation consistent with significance thresholds outlined in the Fehr and Peers memorandum.

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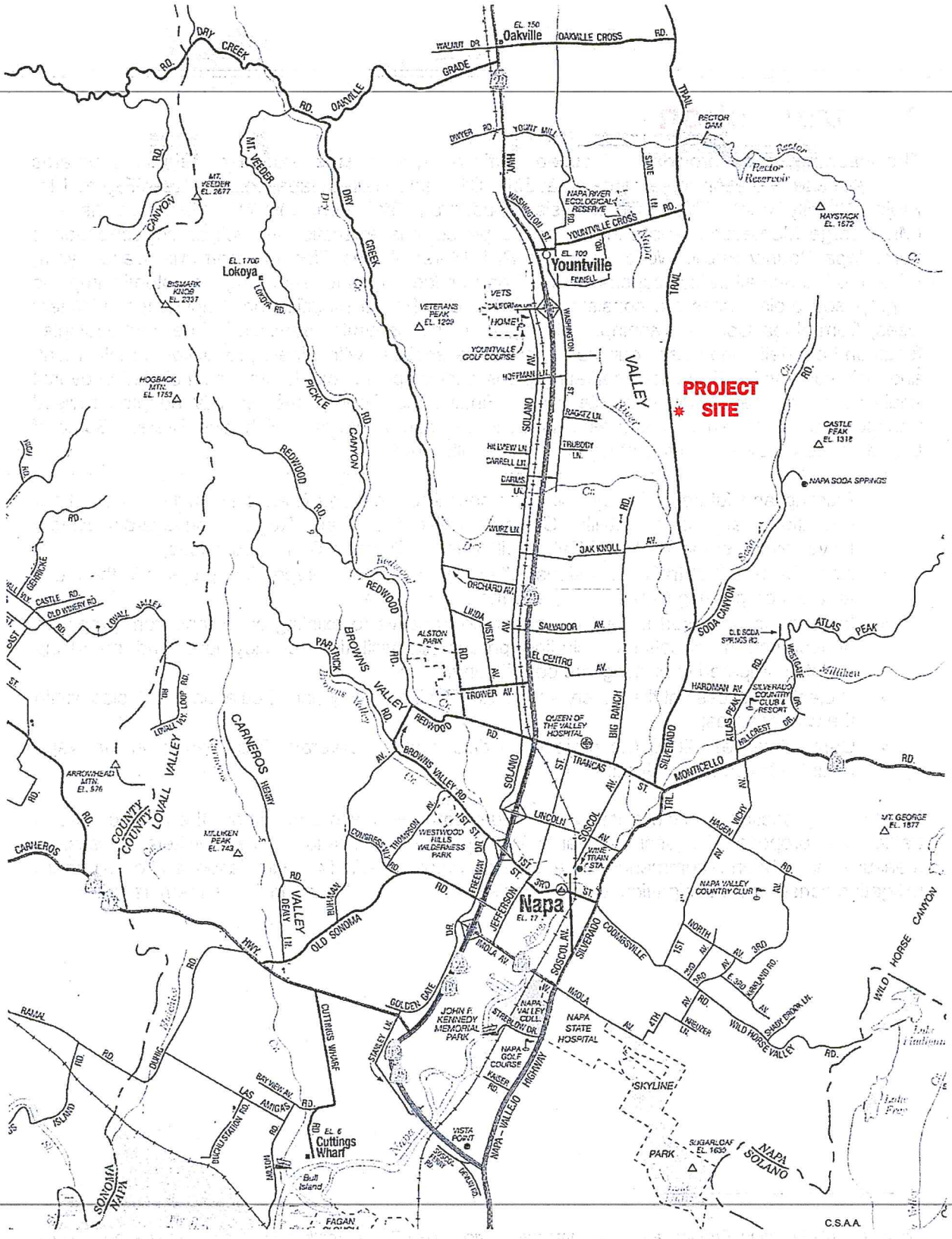
[1] *Napa County Planning, Building, and Environmental Services, Use Permit Application (Supplemental Application for Winery Uses, Revised June 11, 2015.*

[2] *Fehr & Peers, Guidelines for Interpretation of General Plan Circulation Policies on Significance Criteria, December 1, 2015.*



Project Vicinity Map

North

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figure 1

2. Existing Conditions

Proposed Project Site

The Regusci Vineyards Winery is located at 5584 Silverado Trail north of the City of Napa approximately midway between Oak Knoll and Yountville (located to the west via SR-29). Yountville Crossroad and Oak Knoll Avenue provide east-west access to Silverado Trail to/from Yountville and SR-29. A brief description of each roadway follows:

Roadways

State Route 29 extends in a north-south direction between City of Napa and Town of Yountville in the project study area. In this area, SR-29 is classified as a four-lane rural throughway (arterial) based on the Napa County General Plan. SR-29 provides access north to Yountville, Oakville, Rutherford, St. Helena, and beyond. To the south, the highway provides access to Napa, American Canyon and Vallejo. In the immediate project site area SR-29 has two travel lanes in each direction separated by wide grass median. The speed limit on SR-29 is 60 mph in the project area.

Yountville Crossroad extends between Yount Mill Road in Yountville to Silverado Trail in an east-west direction. A two-lane roadway, Yountville Crossroad provides one of many east-west crossings of the Napa Valley between SR-29 (proper) and Silverado Trail. Extending east from Yountville, the roadway has a speed limit of 35 mph with Class II bike lanes that extend for its entire length. Continuing east past Stag's View Lane and the Town's limit, the speed limit has recently been increased to 55 mph in the unincorporated areas until State Lane where speeds are again reduced to 45 mph to Silverado Trail. Yountville Crossroad provides access primarily to residential areas adjacent to Yountville and agricultural/vineyard areas for most of its length.

Oak Knoll Avenue extends between SR-29 and Silverado Trail south of the proposed project site. Like Yountville Crossroad, Oak Knoll Avenue is a two-lane roadway with speed limits of 45-55 mph. However, there are no Class II bike lanes on the roadway and posted signs indicate "Share the Road." Approximately 1.2 miles east of SR-29, Oak Knoll Avenue intersects Big Ranch Road prior to Silverado Trail. At this t-type intersection, Oak Knoll Avenue is off-set about 230 feet to the north before extending another 0.8 miles to Silverado Trail. Oak Knoll Avenue provides access to agricultural/vineyard areas.

Silverado Trail provides direct access to the proposed project site extending in a north-south direction between the Cities of Napa and Calistoga. In addition to SR-29, Silverado Trail makes up the primary north-south route through the Napa Valley. In the project study area, Silverado Trail has two travel lanes and Class II bike lanes. The speed limit on Silverado Trail is 55 mph in the vicinity of project site.

Existing Volumes

In order to identify existing peak hour operating conditions, existing peak period traffic counts were conducted at the Regusci Vineyards Winery (RVW) driveway and major outlying Silverado Trail

intersections north and south of the driveway.[3] [4] Vehicle counts were conducted during a weekday PM commute period and a Saturday peak afternoon period at the following intersections:

1. Yountville Crossroad/Silverado Trail — Stop-control (Yountville Crossroad)
2. Regusci Vineyards Driveway/Silverado Trail — Stop-control (RVW Driveway)
3. Oak Knoll Avenue/Silverado Trail — Stop-control (Oak Knoll Ave.)

Peak period vehicle counts were conducted on a weekday late afternoon (4:00-6:00 p.m.) and Saturday afternoon (1:00-4:00 p.m.). The resultant "peak hour" of traffic flow on Silverado Trail occurs during 4:30-5:30 p.m. (Wednesday) and 1:45-2:45 p.m. (Saturday). Peak period counts were conducted during the non harvest/crush season (early January) and do not fully reflect peak traffic conditions on Silverado Trail. Therefore, peak hour volumes on Silverado Trail were increased by 15% at all study intersections based on Napa County historical ADT data for Silverado Trail.

Existing weekday PM peak hour and weekend mid-day peak hour intersection volumes have been shown in Figure 2.

Roadway Volumes

New average daily traffic (ADT) counts were conducted along Silverado Trail just south of Regusci Winery main access driveway. As recorded, average daily traffic on the roadway is currently 12,425 vehicles. Again, these traffic counts were conducted during the month of January when ADT volumes do not reflect peak month activity. Therefore, a comparison of peak month activity and non-peak month activity was evaluated for Silverado Trail based on Napa County historical volume data for County roadways. The ADT comparison indicates peak month volumes are 15 percent higher than during non- peak month activity. Consequently, ADT on Silverado Trail, Yountville Crossroad, and Oak Knoll Avenue was increased by 15 percent to reflect peak month activity. Based on Napa County's designation of Silverado Trail as a two-lane rural highway, an ADT of 14,290 reflects operations of LOS E.[5] Yountville Crossroad is currently carrying 3,455 ADT adjacent to (west of) Silverado Trail reflecting an LOS of B. Finally, Oak Knoll Avenue carries approximately 4,165 ADT west of Silverado Trail. Based on the County's two-lane collector designation these capacities would reflect LOS B operations. It is noted that County's roadway capacity/LOS criteria is based on the County's Baseline Data Report and is directly associated with the County's General Plan Update. The roadway capacity/LOS criteria in the document define capacities for rural arterials and collector streets found in the Napa Valley and overall County network and are based on the Florida Department of Transportation (FDOT) and Fehr and Peers research. Based on more recent research conducted as part of the 2010 Highway Capacity Manual and FDOT, a two-lane undivided roadway would have a capacity of 16,200 ADT (LOS D). Therefore, ADT volumes of 14,290 on Silverado Trail more closely relate to roadway LOS of B based on updated capacity models and research (see Appendices for Roadway LOS Table).[6]

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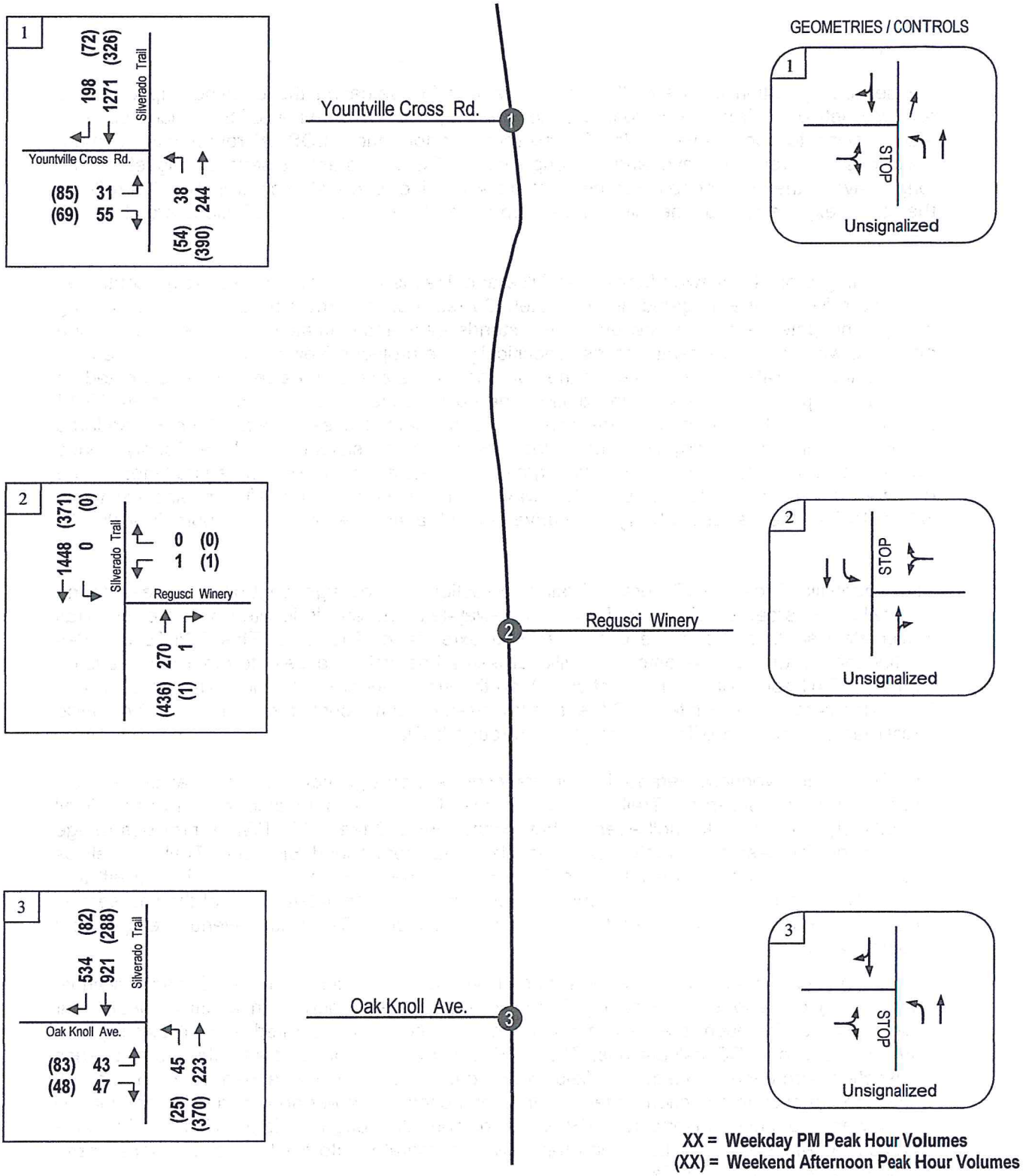
[3] *Baymetrics Traffic Resources, Weekday peak period (4:00-6:00 p.m.) and Weekend (Saturday) peak period (1:00-4:00 p.m) vehicle turning movement counts at the Yountville Crossroad, Regusci Vineyards Winery Driveway, and Oak Knoll Avenue intersections at Silverado Trail, January 14 & 17, 2017.*

[4] *Baymetrics Traffic Resources, Average daily traffic (ADT) counts on Silverado Trail south of Regusci Vineyards Winery driveway, January 14-17 & 25, 2017.*

[5] *Napa County Baseline Data Report, Transportation and Circulation, Table 11-1, Napa County Roadway Segment Daily LOS Volume Thresholds, 2005.*

[6] *Florida Department of Transportation (FDOT), 2012 Quality/Level of Service Handbook Tables, Table 2, Areas over 5,000 not in Urbanized Areas.*



Existing Weekday PM and (Weekend) Peak Hour Volumes

North

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figure 2

Existing Intersection Methodology/Description

Intersection operation is one of the primary factors in evaluating the carrying capacity of a roadway network. Traffic conditions are measured by Level of Service (LOS), which applies a letter ranking to successive levels of intersection performance. LOS 'A' represents optimum conditions with free-flow travel and no congestion. LOS 'F' represents severe congestion with long delays at the approaches. For intersections with minor street stop control, the LOS reflects the delays experienced by the minor street approach. Level of service definitions are shown in Table 1.

The existing project driveway location at Silverado Trail is a minor-street, stop-sign controlled one-lane driveway that is gated approximately 60 feet from the main roadway. After passing through the gated entrance, the driveway extends east approximately 2,250 feet to provide access to winery and residential areas. Specifically, the project driveway divides at this eastern point; winery operations are located on the north half of the site with residential areas located on the southern portion of the site. In addition, the paved driveway width is approximately 13-14 feet from Silverado Trail east to the winery and residential uses. Napa County standards require a minimum driveway width of 18-feet. However, consistent with Napa County Roads and Street standards, a large 10-foot wide gravel shoulder extends along the entire length of the driveway to provide for turn-outs for two-way traffic. A southbound left-turn lane exists on Silverado Trail the Regusci Winery main driveway with a storage capacity of approximately 150 feet.

The Yountville Crossroad/Silverado Trail intersection is stop-sign controlled for eastbound Yountville Crossroad at Silverado Trail. A two-way-left-turn lane is located on Silverado Trail immediately south of Yountville Crossroad that extends for 290 feet. This TWLTL provides northbound left-turn access onto Yountville Crossroad as well as access to other driveways on Silverado Trail south of the intersection. A northbound refuge/acceleration lane on Silverado Trail extends for approximately 100 feet to allow eastbound motorists turning left from Yountville Crossroad onto Silverado Trail to merge into through-traffic.

The Oak Knoll Avenue/Silverado Trail intersection is stop-sign controlled for eastbound Oak Knoll Avenue at Silverado Trail. A two-way-left-turn lane is located on Silverado Trail immediately north of Oak Knoll Avenue that extends for 350 feet. This TWLTL provides refuge acceleration for eastbound motorists turning left onto northbound Silverado Trail as well as access to other driveways on Silverado Trail north of the intersection. A northbound left-turn lane on Silverado Trail extends for approximately 125 feet immediately south of the intersection that allows motorists turning left from Silverado Trail onto Oak Knoll Avenue refuge from through-traffic.

Intersection levels-of-service have been based on the most recent Highway Capacity Manual (*HCM 2010*) operations methodology for unsignalized intersections. In addition, peak hour factors (PHF's) for each intersection approach have been incorporated into all existing and future intersection LOS calculations. The PHF is a measure of the traffic flow rate at each intersection approach. Based on field count data, these PHF's ranged from .50 to .98 dependent on each intersection. Intersection approaches with lower approach volumes typically have lower (and more conservative) PHF's. In addition, all through-traffic on Silverado Trail was adjusted to reflect 5% truck traffic and has been incorporated into the LOS calculations based on the most recent Caltrans data.

TABLE 1
INTERSECTION LEVEL-OF-SERVICE DEFINITIONS

Level of Service	Type of Flow	Delay	Maneuverability	Stopped Delay/Vehicle (sec) Signalized/ Roundabouts	Stopped Delay/Vehicle (sec) Unsignalized/ All-Way Stop
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	< 10.0	< 10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 and < 20.0	>10.0 and < 15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	>20.0 and < 35.0	>15.0 and < 25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35.0 and < 55.0	>25.0 and < 35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55.0 and < 80.0	>35.0 and < 50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	> 80.0	> 50.0

References: 2010 Highway Capacity Manual

Existing Intersection Operations

Existing weekday PM peak and weekend mid-day peak hour existing (no project) level-of-service has been shown in Table 2. As calculated, the Yountville Crossroad/Silverado Trail intersection is operating at LOS D (29.6 seconds) during the weekday PM peak hour and LOS B (11.4 seconds) during the weekend mid-day peak hour. The Regusci Winery Driveway/Silverado Trail intersection is operating at LOS D (28.1 seconds) during the weekday PM peak hour for the outbound driveway turning movements onto Silverado Trail. During the weekend mid-day peak hour, the driveway operates at LOS B (13.2 seconds). Finally, the Oak Knoll Avenue/Silverado Trail intersection is operating at LOS E (39.1 seconds) during the weekday PM peak hour and LOS B (14.5 seconds) during the weekend mid-day peak hour. Calculated intersection LOS applies to the minor street stop-sign controlled movements at Silverado Trail. It is noted that the more major crossroad intersections of Yountville Crossroad and Oak Knoll Avenue can experience major delays for minor street controlled traffic due to existing traffic components on Silverado Trail. Specifically, these factors on Silverado Trail include higher vehicle speeds, higher traffic volumes, and the lack of "gaps" in north-south traffic to allow safe access onto Silverado Trail. These conditions are very pronounced during the weekday PM peak hour period when commute traffic is leaving the Napa Valley in a predominantly southbound direction. There is a very high southbound right-turn movement (+500 vehicles) from southbound Silverado Trail onto Oak Knoll Avenue during the PM peak hour (in addition to high southbound through-traffic). These southbound movements on Silverado Trail cause long delays for stop-sign controlled eastbound left and right-turn movements from Oak Knoll Avenue and combine to cause longer vehicle delays for minor street stop-sign controlled traffic at Silverado Trail.

TABLE 2
EXISTING AND NEAR-TERM (NO PROJECT) CONDITIONS: INTERSECTION LEVELS-OF-SERVICE
WEEKDAY PM PEAK AND WEEKEND MID-DAY PEAK HOUR[1, 2]

			Wkdy. PM LOS/Delay		Wknd. Mid-Day LOS/Delay	
	Intersection	Control Type	Existing (No Project)	Near-Term (No Project)	Existing (No Project)	Near-Term (No Project)
1	Yountville Crossroad/Silverado Trail	Stop	D 29.6	D 32.1	B 11.4	B 13.1
2	Regusci Driveway/Silverado Trail	Stop	D 28.1	D 29.5	B 13.2	B 13.4
	Oak Knoll Ave./Silverado Trail	Stop	E 39.1	E 43.6	B 14.5	C 16.6

(1) Based on Highway Capacity Manual (HCM) 2010, Operations methodology for stop-sign controlled (unsignalized) intersections using Synchro-Simtraffic software. Intersection calculation yields an LOS and vehicle delay in seconds. Stated LOS refers to the minor street (stop-sign) controlled movement.
(2) Existing conditions represent the CEQA basis for measuring project impacts and already contain proposed use permit visitation, proposed employment, current winery production, and some marketing activities associated with Regusci Vineyards Winery operations.

Signal Warrant Evaluation

Based on the California Manual on Uniform Traffic Control Devices (CAMUTCD) peak hour signal warrant criteria, the two major crossroad unsignalized study intersections were evaluated for signalization.[7] The peak hour warrant(s) are one of several standards to help determine if installation of a traffic signal is appropriate. Qualifying for signalization using the peak hour warrants does not necessarily mean a signal should be installed. The decision to install a traffic signal should be based on further studies utilizing additional warrants as presented in the California

[7] *California Manual on Uniform Traffic Control Devices (CAMUTCD), Chapter 4C, Peak hour signal warrant (#3), 2012.*

MUTCD. At this time, the Yountville Crossroad/Silverado Trail and Oak Knoll Avenue/Silverado Trail intersections would qualify for signalization under the peak hour warrant (the warrant graphs are provided in the Appendix). Driveway volumes at Regusci Winery are too low for warrant satisfaction.

3. Near-Term (No Project) Conditions

Near-Term Methodology

Both near-term (year 2020-no project) and cumulative (year 2030) volume projections for SR-29 were reviewed from the Napa Valley Transportation Authority's traffic volume forecasts found in the Napa County General Plan Update EIR.[8] The forecasted increase in volume-to-capacity (v/c) ratio from Year 2003 to Year 2030 on Silverado Trail (adjacent to Oak Knoll Avenue) was applied to the Year 2003 peak hour two-way volumes (1,212 vehicles). This yielded a future volume of 2,020 weekday PM peak hour vehicles on Silverado Trail in the Year 2030. This would equate to an increase in traffic volumes of approximately 66% over the 27-year period (2.4% per year) to the Year 2030 on Silverado Trail. Similarly, the County's GPU EIR project's a 17% increase on Yountville Crossroad (0.63% per year) and no increases in future traffic volumes on Oak Knoll Avenue.

In addition to Napa County General Plan Update EIR traffic projections, a recent transportation study conducted for the adjacent Beau Vigne Winery located south of Regusci Winery was reviewed for adjacent development projects and future traffic projections in the study area.[9] Local approved/pending projects in the immediate study area have been included in overall traffic growth at the request of Napa County Public Works staff.[10] Specifically, ongoing development projects occurring within Napa County include the following:

- **Refuge Winery** – 3150 Silverado Trail, approximately 3.5 miles south of the project site; new winery with an annual production of 50,000 gallons; six full-time employees and four part-time employees; average of 124 visitors per day; average of 125 guests at special events;
- **Taylor Winery** – 5991 Silverado Trail, approximately 1.4 miles north of the project site; new winery with an annual production of 15,000 gallons; one full-time employee and one part-time employee; average of 17 visitors per day; average of 30 guests at special events;
- **Reynolds Winery** – 3720 Silverado Trail, approximately 3.4 miles south of the project site; use permit update to produce 20,000 additional gallons annually; 10 additional employees; average of 30 additional visitors per day; average of 125 guests at special events;
- **Grassi Family Winery** – 1044 Soda Canyon Road, approximately 3.6 miles south of the project site, use permit update to produce 25,000 gallons annually; 10 employees; average of 12 visitors per day; average of 60 guests at special events;

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[8] *Dowling Associates, Napa County General Plan Update, Technical Memorandum for Traffic and Circulation Supporting the Findings and Recommendations, February 9, 2008.*
[9] *W-Trans, Focused Traffic Impact Study for the Beau Vigne Winery, County of Napa, September 28, 2015.*
[10] *Ms. Dana Ayers, Associate Planner, County of Napa, personal communication related to County development projects, January 26, 2017.*

- **Baldacci Family Winery** – 6236 Silverado Trail, approximately 2 miles north of the project site; use permit update to produce 20,000 additional gallons annually; 10 additional employees; average of 100 additional visitors per day; average of 50 guests at special events;
- **Ellman Family Winery** – 3286 Silverado Trail, approximately 3.2 miles south of the project site, use permit update to produce 30,000 gallons annually; 6 employees; average of 15 visitors per day; average of 25 guests at special events;
- **Beau Vigne Winery** – 4079 Silverado Trail, approximately 3.0 miles south of the project site, use permit update to produce 6,000 additional gallons annually; 4 employees; average of 15 visitors per day; average of 25 guests at special events;
- **Stag's Leap Winery** – 5766 Silverado Trail, approximately 0.3 miles north of the project site; use permit update to have an additional 25 employees; maximum of 250 guests at special events;
- **Corona Winery** – 3165 Silverado Trail, approximately 3.4 miles south of the project site; new winery with an annual production of 100,000 gallons; 25 employees; average of 48 visitors per day; maximum of 125 guests at special events;
- **Sam Jasper Winery**—4059 Silverado Trail, approximately 3.0 miles south of the project site, new winery with annual production of 20,000 gallons, 10 employees, average of 25 visitors per day, maximum of 50 guests at special events.

With regard to near-term (no project) conditions, a three-year horizon window to the Year 2020 has been assumed. Based on the approved/pending projects reviewed by County staff, both weekday PM peak hour and weekend mid-day peak hour traffic volumes resulting from these projects were added to the street network.

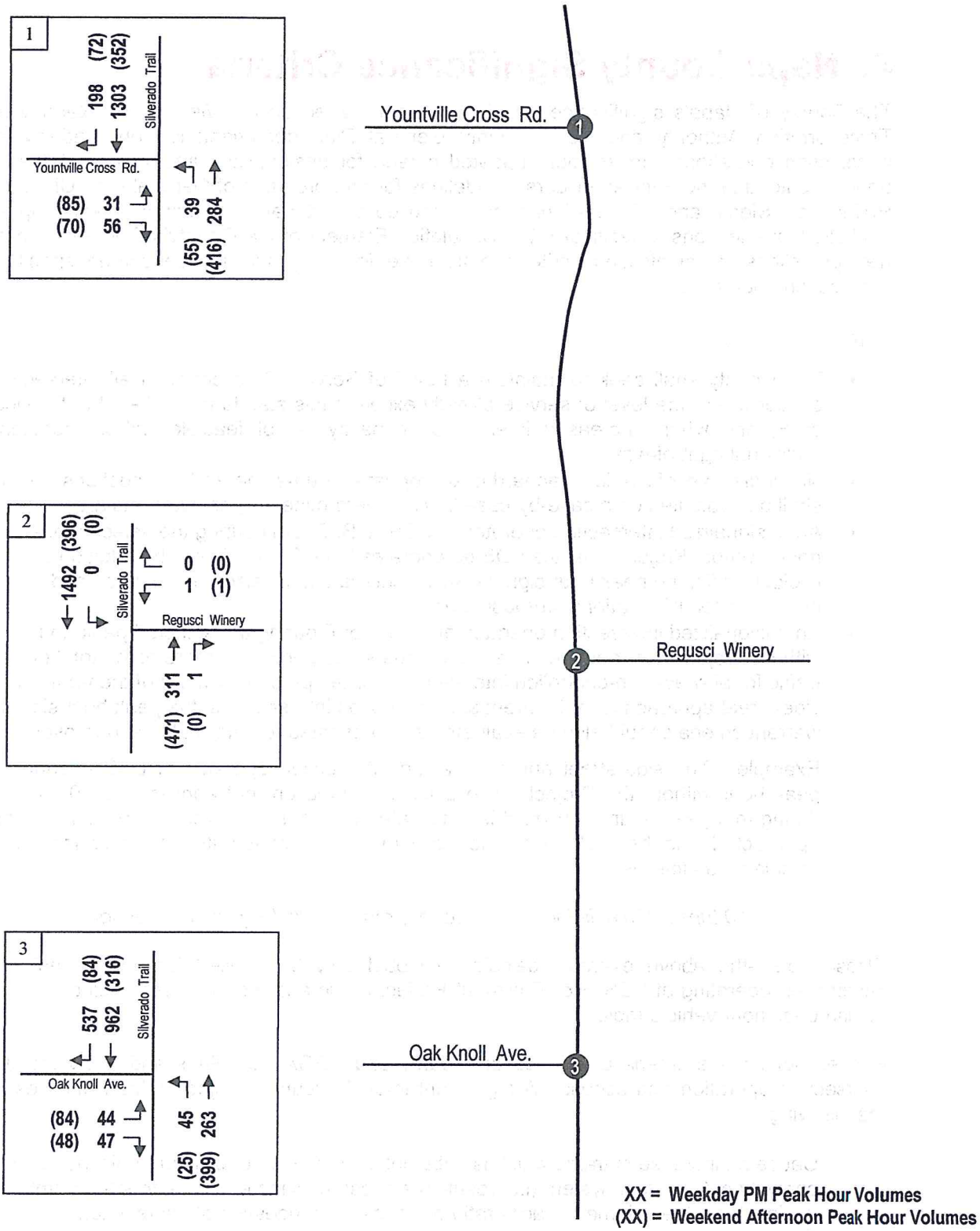
Near-term (no project) volumes for weekday PM peak hour and weekend mid-day peak hour have been shown in Figure 3.

Near-Term (No Project) Roadway/Intersection Operation

ADT on Silverado Trail would increase to 14,650 (LOS D) near the project driveway with near-term (no project) volumes. ADT on Yountville Crossroad would increase to 3,520 (LOS B) with ADT on Oak Knoll Avenue increasing to 4,265 (LOS B).

With near-term (no project) volumes, study intersection LOS has been calculated and are shown in Table 2. The Yountville Crossroad/Silverado Trail intersection would experience very slight increases in vehicle delays during the weekday PM peak hour and/or weekend mid-day peak hour. For the minor street outbound turning movements, LOS would continue to operate at LOS D (32.1 secs.) during the PM peak hour and LOS B (13.1 secs.) during the Saturday mid-day peak hour. The Regusci Winery Driveway/Silverado Trail intersection would operate at LOS D (29.5 seconds) during the weekday PM peak hour and LOS B (13.4 seconds) during the weekend mid-day peak hour. Finally, the Oak Knoll Avenue/Silverado Trail intersection would continue to operate at LOS E (43.6 secs.) during the PM peak hour and LOS C (16.6 secs.) during the Saturday mid-day peak hour. Stated LOS applies to all stop-sign controlled movements minor streets onto Silverado Trail.

Based on CAMUTCD peak hour signal warrant criteria (Warrant #3), both the Yountville Crossroad and Oak Knoll Avenue intersection at Silverado Trail would continue to meet minimum volumes criteria for signalization. The Regusci Winery Driveway intersection would not qualify for signalization with near-term (no project) volumes.



Near Term Without Project
Weekday PM and (Weekend) Peak Hour Volumes

North

omni-means

figure 3

4. Napa County Significance Criteria

The County of Napa's significance criteria has been based on a review of the Napa Valley Transportation Authority and Napa County General Plan documentation on roadway and intersection operations. In addition, updated criteria for unsignalized intersections based on adopted criteria in the Fehr and Peers "Guidelines for Interpretation of General Plan Circulation Policies on Significance Criteria" has been applied to arterials and minor street stop-sign controlled intersections. Specifically, the Circulation Element of the County's General Plan and new guidelines for significance criteria outline the following significance criteria specific to intersection operation:

Intersections

- The County shall seek to maintain a Level of Service D or better at all intersections, except where the level of service already exceeds this standard (i.e. Level of Service E or F) and where increased intersection capacity is not feasible without substantial additional right-of-way;
- No single level of service standard is appropriate for un-signalized intersections, which shall be evaluated on a case-by-case basis to determine if signal warrants are met;
- An unsignalized intersection operates at LOS A, B, C, or D during the selected peak hours without Project trips, the LOS deteriorates to LOS E or F with the addition of Project traffic, the peak hour signal warrant criteria should also be evaluated and presented for informational purposes; or
- An unsignalized intersection operates at LOS E or F during the selected peak hours without Project trips, and the project contributes one percent or more of the total entering traffic for all-way-stop-controlled intersections, or ten percent or more of the traffic on a side-street approach for side-street stop-controlled intersections; the peak hour signal warrant criteria should also be evaluated and presented for informational purposes.

  Example: The side-street approach at an intersection operates at LOS F during the peak hour without the Project. The existing volume on that approach is 200 vehicles during that peak hour. A Project is anticipated to add 10 vehicles to the stop-controlled approach during the peak hour. Therefore, the Project contribution percentage would be calculated as follows:

  10 trips / 200 existing side-street approach = 5% Project Contribution

Please note---the above example calculation would only be applied for any project study intersection operating at LOS E or F without Project traffic and the proposed project would be adding peak hour vehicle trips.

Further significance criteria are based on County and CEQA guidelines and apply mainly to intersection operation and access. A significant impact occurs if project traffic would result in the following:

- Cause an increase in traffic which is substantial in relation to existing traffic load and capacity of the street system (i.e. result in a substantial increase in either the number of vehicle trips, the volume capacity ratio on roads, or congestion at intersections);
- Exceed either individually or cumulatively, an LOS standard established by the county congestion management agency for designated roads or highways;

- Result in a change of traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment);
- Result in inadequate emergency vehicle access;
- Project site or internal circulation on the site is not adequate to accommodate pedestrians and bicycles;

5. Proposed Project Impacts

Proposed Winery Use Modifications

The proposed Regusci Vineyards Winery Use Permit Modification project would consist of both physical improvements to the project site as well as associated winery activities. Based on discussions with the project applicant, current activities at the winery related to employee staffing and visitors frequently exceed existing entitlements. Proposed entitlement changes would include up to 16 employees (weekday) and 10 employees (weekend). Tour and tasting visitation would include up to 150 guests per day (maximum-weekend) and 400 guests per week (maximum). It is noted that the 150 guests per day would only occasionally be reached by the winery in association with tours and tasting. A much more realistic (or average) visitation number would be 80 guests per day and this would typically occur during a weekend period (Saturday or Sunday) and not on a weekday. The winery expects to average 50 guests during the weekday periods. There would be a net increase in winery production from 25,000 gallons to 50,000 gallon per year. In addition, the winery has included a marketing plan with up to 16 events per year.

Proposed project components can be described as follows:

Project Components (Winery Operations):

- Production Gallons: 50,000 (annually)
- Employees Weekday: 12 full-time, 4 part-time
  Weekend: 6 full-time, 4 part-time
- Visitors: Weekday: 50 visitors
  Weekend: 150 visitors
- Trucks: Weekday: 2 trucks per day
  Weekend: 2 trucks per day

Daily operations for the proposed Regusci Vineyards Winery project would involve an on-site winery operation with a maximum annual production of 50,000 gallons. All fruit would be processed on-site during the year with the majority occurring during the harvest/crush season. An average of 50 weekday visitors is expected increasing to an average of 80 daily visitors on a weekend (with a maximum 150 guests Saturday or Sunday). Visitor hours would be limited between 10:00 a.m. – 6:00 p.m. and would be by appointment only. It is noted that there is an existing single-family residence (occupied) on the site. Vehicle trips associated with this residence have been included in existing daily and peak hour counts conducted for proposed project analysis.

The proposed project's marketing plan can be described as follows:[11]

Project Components (Marketing):

- Ten (10) events annually: maximum of 50 guests;
- Five (5) events annually: maximum of 150 guests;
- One (1) event annually: maximum of 200 guests.

Project Trip Generation/Distribution

The Regusci Vineyards Winery total net increase in weekday and weekend peak hour and daily traffic volumes have been calculated and are shown in Table 3. Daily trip generation has been based on employee peaking factors and auto occupancy rates for visitors using recent winery research conducted by the Napa County Planning, Building, and Environmental Services Department.[12] Based on maximum employee, visitor/guest, and production data the proposed project would be expected to generate 85 weekday daily trips with 32 PM peak hour trips (8 in, 24 out). During a typical weekend (Saturday), the project would be expected to generate a maximum of 133 daily trips with 34 mid-day (afternoon) peak hour trips (17 in, 17 out).

During the approximate six-week harvest crush season, the proposed project is expected to generate a maximum of 142 Saturday daily trips. Based on the largest marketing event attendance of 200 persons (once per year), there would total generation of 157 event trips (unless shuttle buses/TDM are used).

To determine traffic conditions with the proposed project, the calculated project trips were added to existing volumes. Based on observed turning percentages at the Regusci Vineyards Winery driveway, the weekday PM peak hour project trips were distributed 35% to/from the north and 65% to/from the south on Silverado Trail. Saturday mid-day peak hour project trip distribution was distributed with 50% to/from the north and 50% to/from the south on Silverado Trail.

Existing plus project and near-term plus project volumes have been shown in Figure 4 and 5.

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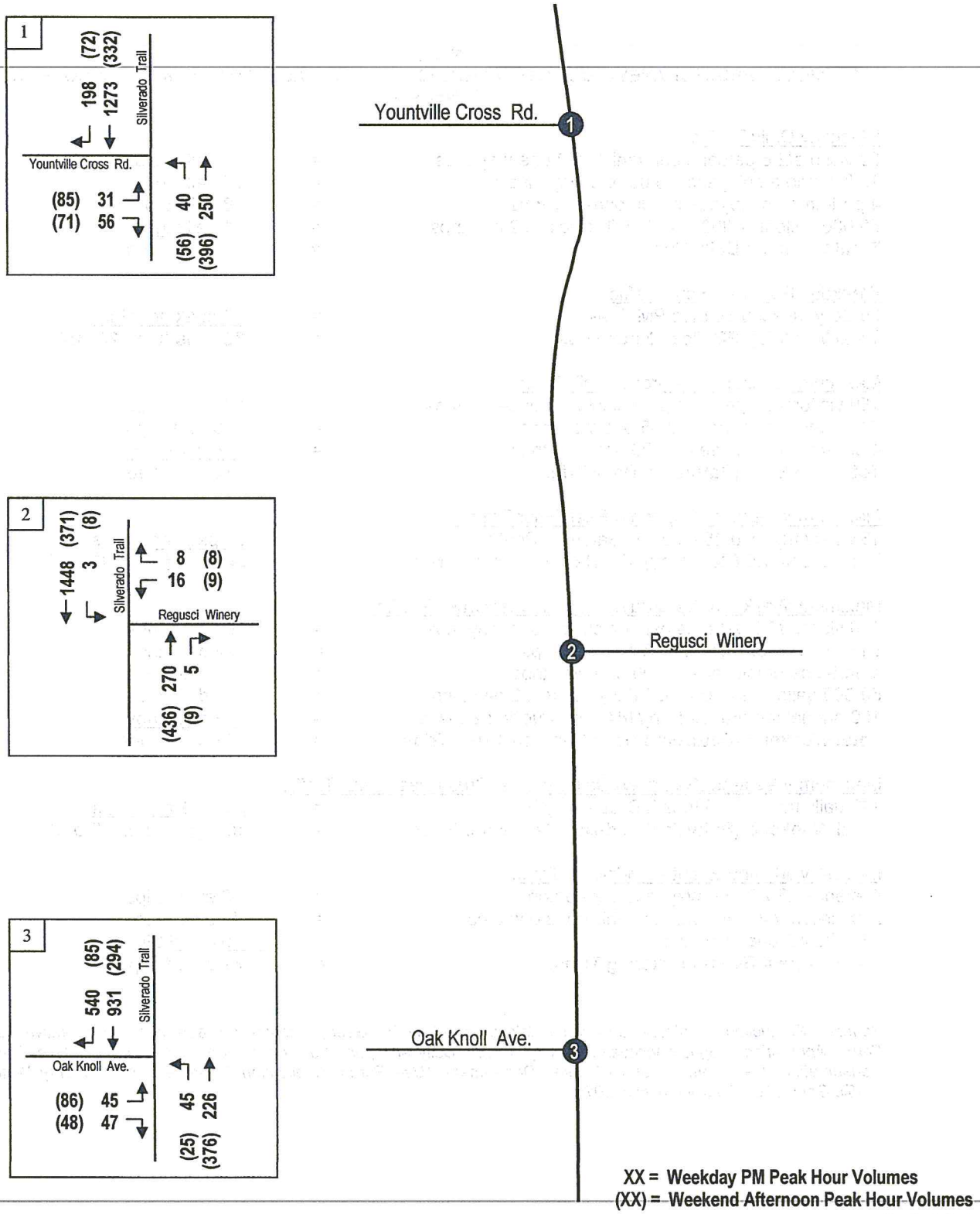
[11] *Use Permit Modification Application, Project Description, Regusci Vineyards Winery, 5584 Silverado Trail, Napa County, 2016.*

[12] *County of Napa, Conservation, Development, and Planning Department, "Use Permit Application Package," Napa County Winery Traffic Generation Characteristics, 2012.*

TABLE 3
PROPOSED REGUSCI VINEYARDS WINERY PROJECT:NET INCREASE IN DAILY AND PEAK HOUR TRIP GENERATION

Weekday Daily Traffic:		
50 visitors/2.6 persons per vehicle x 2 one-way trips	=	39 daily trips
12 full-time employees x 3.05 one-way trips	=	37 daily trips
4 part-time employees x 1.90 one-way trips	=	8 daily trips
50,000 gallons/1,000 x .009 daily trucks x 2 o-w trips	=	1 daily trips
Total Weekday Daily Trips	=	**85 daily trips**
Weekday PM Peak Hour Traffic:		
85 daily trips x 0.38 trips PM Peak:	=	32 peak hour trips
Total Weekday PM Peak Hour Trips	=	**32 trips (8 in, 24 out)**
Maximum Weekend (Saturday) Daily Traffic:		
150 visitors/2.8 persons per vehicle x 2 one-way trips	=	107 daily trips
6 full-time employees x 3.05 one-way trips	=	18 daily trips
4 part-time employees x 1.90 one-way trips	=	8 daily trips
Total Weekend (Saturday) Daily Trips	=	**133 daily trips**
Maximum Weekend (Saturday) Peak Hour Traffic:		
133 daily trips x 0.25 trips MD Saturday Peak:	=	34 peak hour trips
Total Weekend (Saturday) Mid-Day Peak Hour Trips	=	**34 trips (17 in, 17 out)**
Maximum Weekend (Saturday) Daily Harvest/Crush Traffic:		
150 visitors/2.8 persons per vehicle x 2 one-way trips	=	107 daily trips
8 full time employees x 3.05 one-way trips	=	24 daily trips
4 part-time employees x 1.90 one-way trips	=	8 daily trips
50,000 gallons/1,000 x .009 daily trucks x 2 o-w trips	=	1 daily trips
150 annual ton grapes (o-h)/144 daily trucks x 2 o-w trips	=	2 daily trips
Total Weekend (Saturday) Daily Harvest/Crush Trips	=	**142 daily trips**
Maximum Weekend (Saturday) Daily Harvest/Crush Peak Hour Traffic:		
142 daily trips x 0.25 trips MD Saturday Peak:	=	36 peak hour trips
Total Weekend (Saturday) Mid-Day Peak Hour Trips	=	**36 trips (18 in, 18 out)**
Largest Marketing Event – Additional Traffic		
4 event staff x 2 one-way trips per person	=	8 event trips
200 visitors / 2.8 visitors per vehicle x 2 o-w trips	=	143 event trips
3 trucks x 2 one-way trips	=	6 event trips
Total Largest Event Marketing Trips:	=	**157 event trips**

Source: Production, employee, and visitor data provided by Mr. George Monteverdi (applicant representative), Use Permit Application, Regusci Vineyards Winery, 2016. Daily and peak hour calculations based on County of Napa, Conservation, Development, and Planning Department, "Use Permit Application Package," Napa County Winery Traffic Generation Characteristics, 2015

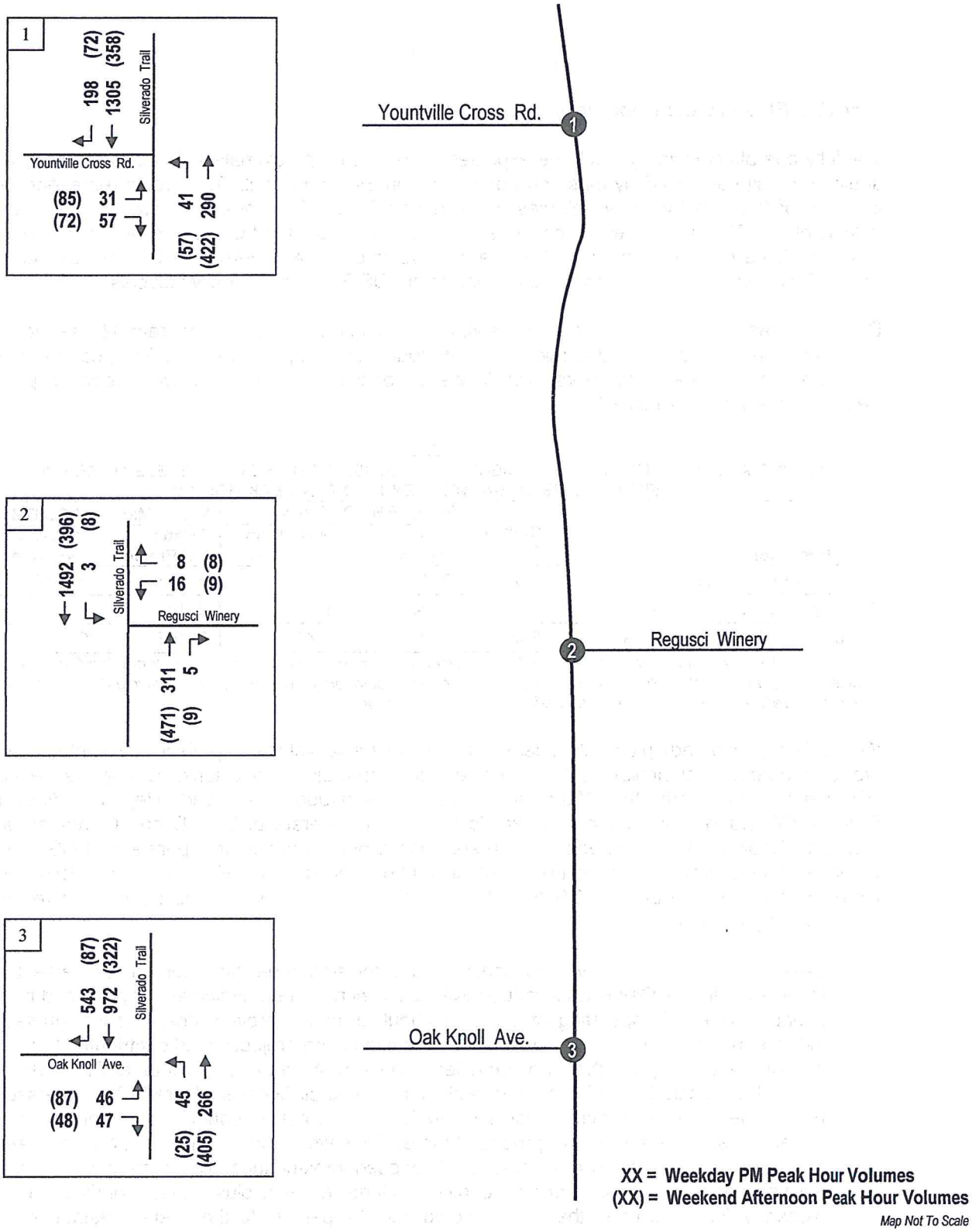


Existing + Project
Weekday PM and (Weekend) Peak Hour Volumes

North

omni-means

figure 4



Near Term + Project
Weekday PM and (Weekend) Peak Hour Volumes

North

omni-means

figure 5

Project Effects on Roadway/Intersection Operation

Existing Plus Project Conditions

The fully operational winery would be expected to generate approximately 55 additional daily trips south of the site and 30 daily trips north of the site on Silverado Trail. This would represent a net increase of 0.6% to the daily volumes on Silverado Trail. The combined existing plus project volume of 14,375 daily trips would continue to operate equivalent to LOS 'D'. Yountville Crossroad would continue to operate at LOS B with a daily volume of 3,470 vehicles with proposed project traffic. Oak Knoll Road would continue to operate at LOS B with 4,195 daily vehicles.

During the peak winery activity periods, the winery would be expected to generate 32 weekday PM peak hour trips and 34 Saturday mid-day peak hour project trips. Weekday PM peak hour and weekend mid-day peak hour intersection levels of service were evaluated with proposed project traffic and are shown in Table 4.

TABLE 4
EXISTING AND NEAR-TERM WITH PROJECT CONDITIONS: INTERSECTION LEVELS-OF-SERVICE WEEKDAY PM PEAK AND WEEKEND MID-DAY PEAK HOUR[1, 2]

			Wkdy. PM LOS/Delay		Wknd. Mid-Day LOS/Delay	
	Intersection	Control Type	Existing (W/ Project)	Near-Term (W/ Project)	Existing (W/ Project)	Near-Term (W/ Project)
1	Yountville Crossroad/Silverado Trail	Stop	D 30.1	D 32.5	B 11.4	B 13.2
2	Regusci Driveway/Silverado Trail	Stop	C 24.4	D 25.7	B 12.6	B 13.0
3	Oak Knoll Ave./Silverado Trail	Stop	E 40.7	E 45.7	B 14.8	C 15.5

(1) Based on Highway Capacity Manual (HCM) 2010, Operations methodology for stop-sign controlled (unsignalized) intersections using Synchro-Simtraffic software. Intersection calculation yields an LOS and vehicle delay in seconds. Stated LOS refers to the minor street (stop-sign) controlled movement.

With existing (counted) plus fully operational winery traffic volumes, project study intersections would be operating at similar LOS as under existing (no project) conditions. During the weekday PM peak hour, both the Yountville Crossroad/Silverado Trail and Regusci Vineyards Driveway/Silverado Trail intersections would continue to operate at LOS D and C, respectively. The Oak Knoll Avenue/Silverado Trail intersection would continue to operate at LOS E with proposed project traffic. During the weekend mid-day peak hour, all three study intersections would continue to operate at LOS B or C with slight increases in vehicle delay as a result of proposed project traffic.

Based on updated County significance criteria for side-street stop controlled intersections; the intersection of Oak Knoll Avenue/Silverado Trail has been evaluated for proposed project impacts since it is operating at LOS E without proposed project trips. County guidelines indicate that a significant impact would be identified if the project would contribute 10 percent or more vehicle trips to the stop-controlled approach of Oak Knoll Avenue at Silverado Trail during the selected peak hours. Currently, the Oak Knoll Avenue/Silverado Trail intersection meets the peak hour signal warrant criteria under existing conditions without proposed project trips. (The addition of proposed project trips would not change its status of meeting the peak hour signal warrant criteria). Proposed project trips would merely add to this existing peak hour signal warrant condition. Under existing plus project conditions for the weekday PM peak hour, the project would add 2.2 percent to the overall eastbound peak hour approach volumes on Oak Knoll Avenue at Silverado Trail (2 project trips / 90 existing volumes = 2.2%) and this is identified as ***less-than-significant*** based on County criteria.

The Oak Knoll Avenue/Silverado Trail intersection meets the peak hour signal warrant criteria under existing conditions. County guidelines indicate potential mitigation may include adding a signal if conditions are appropriate, geometric modifications to the intersection configuration, changes to the Project to reduce its peak hour trip generation, or converting an intersection to a roundabout per Policy CIR-13.5.

Near-Term plus Project Conditions

With near-term plus project conditions, daily traffic volumes on Silverado Trail would increase to 14,735 ADT. The combined near-term plus project volume of 14,735 daily trips would continue to operate equivalent to LOS 'D'. Yountville Crossroad would continue to operate at LOS B with a daily volume of 3,535 vehicles with proposed project traffic. Oak Knoll Avenue would continue to operate at LOS B with 4,365 daily vehicles.

The intersections of Yountville Crossroad/Silverado Trail and the Regusci Vineyards Winery Driveway/Silverado Trail would continue to operate at acceptable levels (LOS D) during both the weekday PM peak hour and weekend mid-day peak hour periods. The Oak Knoll Avenue/Silverado Trail intersection would continue to operate at LOS E during the weekday PM peak hour.

As under existing plus project conditions, near-term plus project traffic would add to existing peak hour signal warrant satisfaction at the Yountville Crossroad and Oak Knoll Avenue intersections at Silverado Trail.

6. Site Access/Design Parameters

Sight Distance

Vehicle sight distance at the existing Regusci Vineyards Winery Driveway/Silverado Trail intersection was evaluated. The required vehicle visibility or "corner sight distance" is a function of travel speeds on Silverado Trail. Caltrans design standards indicate that for appropriate corner sight distance, "a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the cross road and the driver of an approaching vehicle in the right lane of the main highway". Caltrans design guidelines also indicate that the minimum corner sight distance "shall be equal to the stopping sight distance" where possible.

New radar speed surveys of Silverado Trail were conducted for the roadway in the project area. [13] The "critical" vehicle speed (the speed at which 85% of all surveyed vehicles travel at or below) along Silverado Trail was measured at 59 mph at the project driveway. The posted speed limit in the project driveway area is 55 mph. Caltrans' design standards indicate that these vehicle speeds require a stopping sight distance of 570-580 feet both north and south of the driveway measured along the travel lanes of Silverado Trail.[14] Based on field measurements, sight distance from the Regusci Vineyards Winery driveway to the north on Silverado Trail is well in excess of 800 feet. Sight distance from the existing driveway to the south is in excess of 1,000 feet. Therefore, the sight distance recommendations would be met for the speed limit and measured vehicle speeds

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[13] *Omni Means Engineers & Planners, Radar vehicle speed surveys, Silverado Trail, February 10, 2017.*
[14] *Caltrans, Highway Design Manual, Table 405.1A, Corner (Stopping) Sight Distance, March 7, 2014..*

Left-Turn Lane/Right-Turn Lane Warrants

No left-turn lane warrant checks would be necessary with proposed use modification uses. As noted, a dedicated southbound left-turn lane on Silverado Trail currently serves the Regusci Vineyards project driveway providing a 200-foot taper/left-turn lane.

The projected right turn volumes at the site driveway are well below minimum thresholds at which right turn lane would be required (right turn lane warrant graphs are included in the Appendix).[15]

Project Access and Circulation

The existing Regusci Vineyards Winery project driveway access to/from Silverado Trail would be improved from existing conditions to County standards (see Project Site Plan—Figure 6). The main project driveway providing access to winery-related uses north of the main residential areas would be paved to a width of 18-feet to minimum County standards from Silverado Trail to the winery parking areas. The vehicle circulation area in front of the main winery buildings would allow access for emergency vehicles (fire trucks) and parking areas west of the winery facilities.

The Napa Countywide Bicycle Plan has been completed and adopted by the Napa Valley Transportation Authority (NVTA) and the County.[16] The plan encourages new developments to incorporate bicycle friendly design. Silverado Trail has 10-foot (approximately) Class II bikes in both directions. It is very likely some visitors may utilize bicycles to access the proposed project. The project would provide bicycle racks for visitors to the proposed winery.

Marketing Events

As noted in the project application, in addition to normal tours and tastings the winery proposes to host 16 marketing events that would range between 50-200 guests. These marketing events would include 10 events with 50 guests, five (5) events with150 guests, and one (1) event with 200 guests. Based on standard County auto occupancy rates, the largest annual event of 200 guests would be expected to generate approximately 157 trips (79 in, 78 out) including visitors, winery staff, and delivery trucks (unless shuttle buses/TDM are used). These events are typically of sufficient duration in length that the inbound and outbound trips occur in separate hours, thus the number of trips on the street network at one time are half of the total volumes. These events are usually held outside of typical peak traffic periods (during the middle of the day or later than 6:00 p.m.) and therefore generally do not impact peak hour operations and no other visitation or events would occur during the annual events.

> As a proposed project requirement, marketing events should not start/end during the weekday PM peak hour period (4:30-5:30 p.m.) nor weekend mid-day peak hour period (1:45-2:45 p.m.). In addition, the winery should suspend visitation related to tours and tastings on the days when the winery hosts large marketing events (150 guests or larger) that are held during the afternoon period. These measures would reduce any traffic impacts related to large marketing events to ***less-than-significant*** levels.

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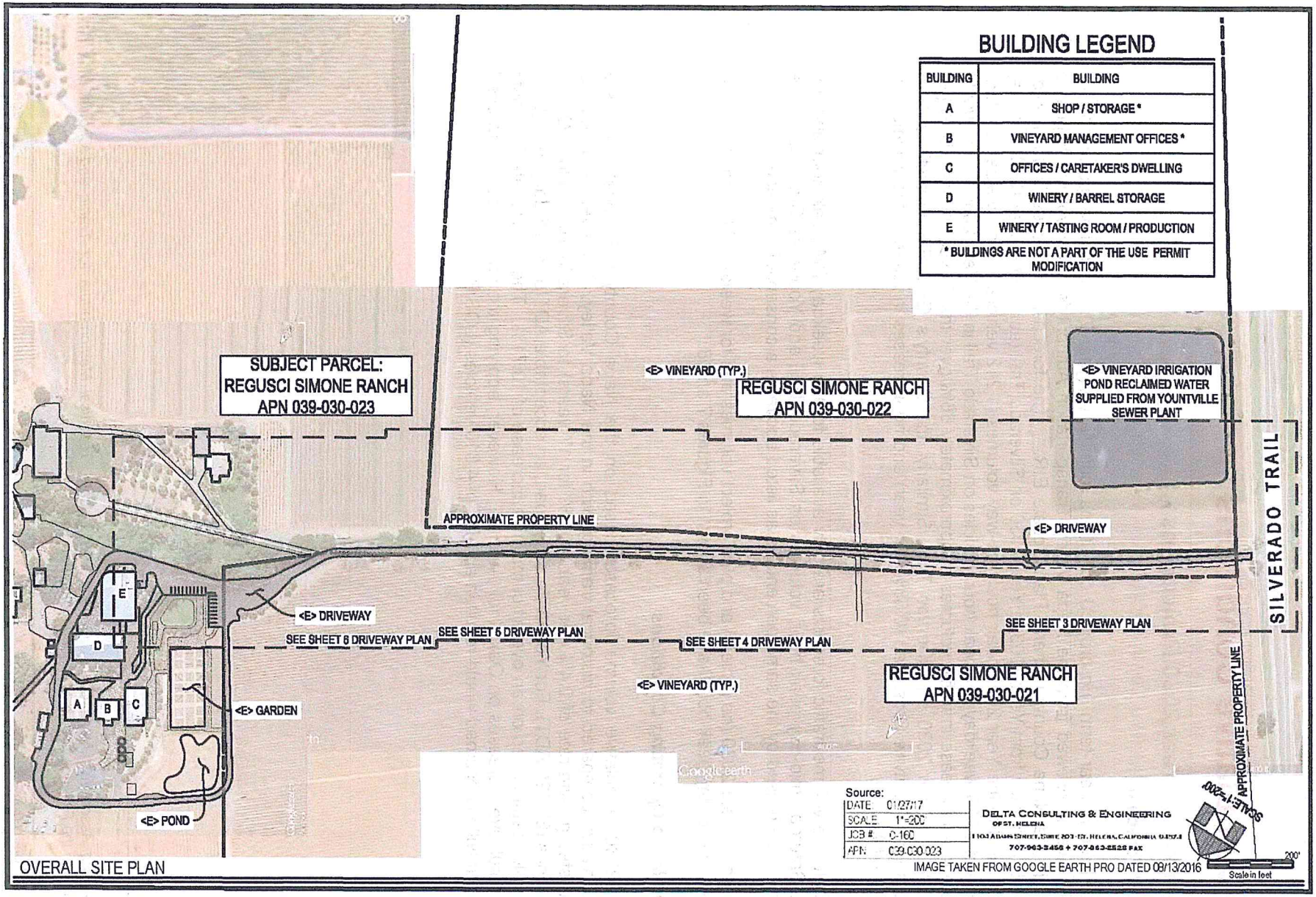
[15] *Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide," November, 1985.*

[16] *Napa County, Countywide Bicycle Plan (2012), Planning Area-North Valley, May 2012.*



Project Site Plan

North

omni-means

figure 6

7. Cumulative Conditions

Cumulative Year 2030 Projections

Model Forecast

As outlined in near-term (no project) conditions, cumulative (year 2030) volume projections for SR-29 were reviewed from the Napa Valley Transportation Authority's traffic volume forecasts found in the Napa County General Plan Update EIR.[17] The forecasted increase in volume-to-capacity (v/c) ratio from Year 2003 to Year 2030 on Silverado Trail (adjacent to Oak Knoll Avenue) was applied to the Year 2003 peak hour two-way volumes (1,212 vehicles). This yielded a future volume of 2,020 weekday PM peak hour vehicles on Silverado Trail in the Year 2030. This would equate to an increase in traffic volumes of approximately 66% over the 27-year period (2.4% per year) to the Year 2030 on Silverado Trail. Similarly, the County's GPU EIR project's a 17% increase on Yountville Crossroad (0.63% per year) and no increases in future traffic volumes on Oak Knoll Avenue.

Since future volume traffic forecasts are only available for the weekday PM peak hour and not for a Saturday mid-day peak hour, volumes on Silverado Trail and Yountville Crossroad were uniformly increased by the same percentage as listed above as a conservative measure.

Cumulative year 2030 (no project) and plus project volumes and for weekday PM peak hour and weekend mid-day peak hour have been shown in Figures 7 and 8.

Cumulative Operating Conditions

Year 2030 cumulative volume forecasts based on the Napa County GP Update are very conservative compared to historical traffic growth in the Napa Valley. However, applying the forecasted growth rate of 2.4% per year (40.8% for 17 years) to Silverado Trail yields LOS 'F' conditions (20,120 ADT). For Yountville Crossroad, an acceptable ADT of 3,825 daily trips (LOS B) would result based on an overall cumulative increase of 10.71%. The GP Update forecasts no cumulative increases on Oak Knoll Avenue. However, applying the same growth rate used for Yountville Crossroad would result in an ADT of 4,610 vehicles (LOS B).

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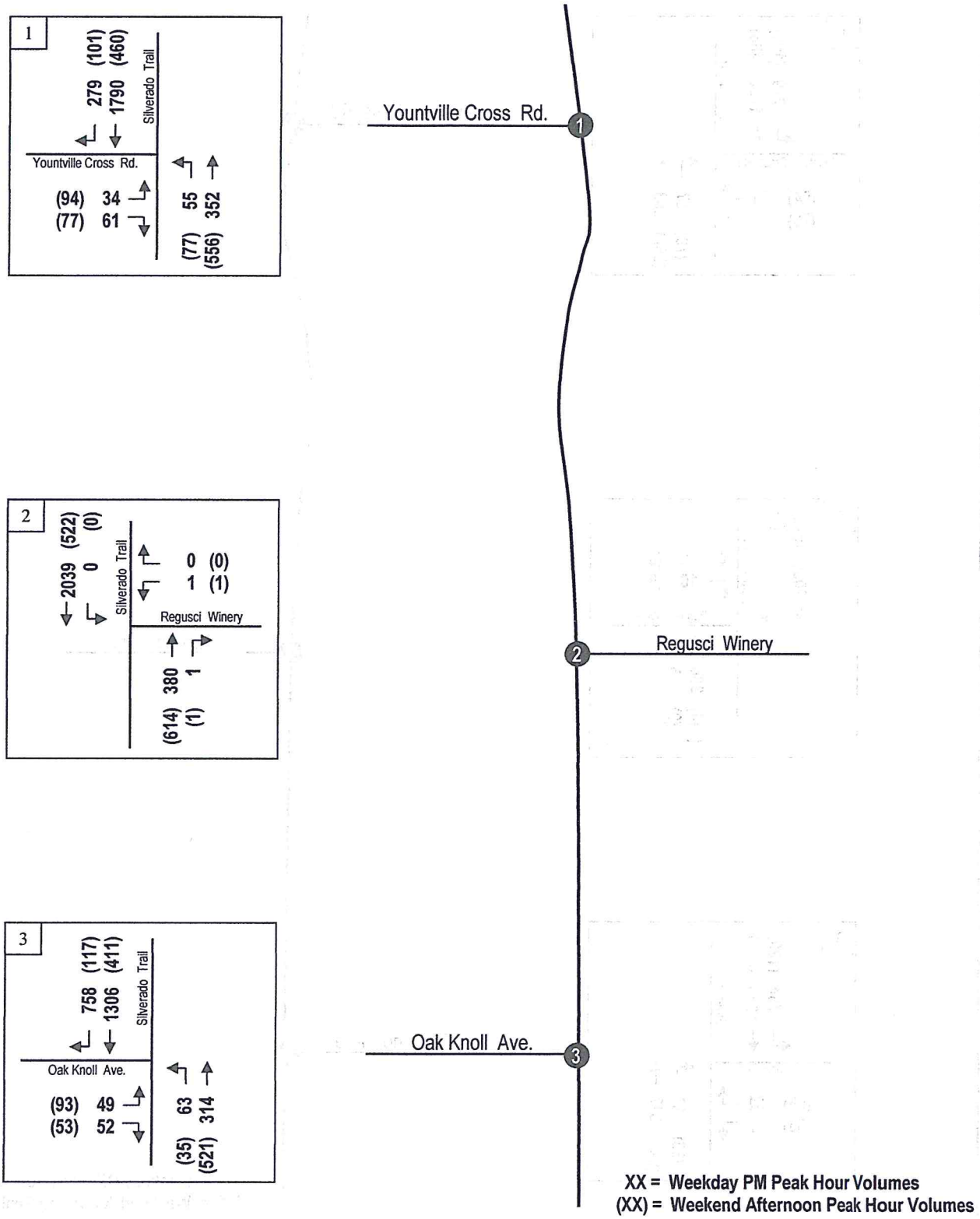
[17] *Dowling Associates, Napa County General Plan Update, Technical Memorandum for Traffic and Circulation Supporting the Findings and Recommendations, February 9, 2007.*

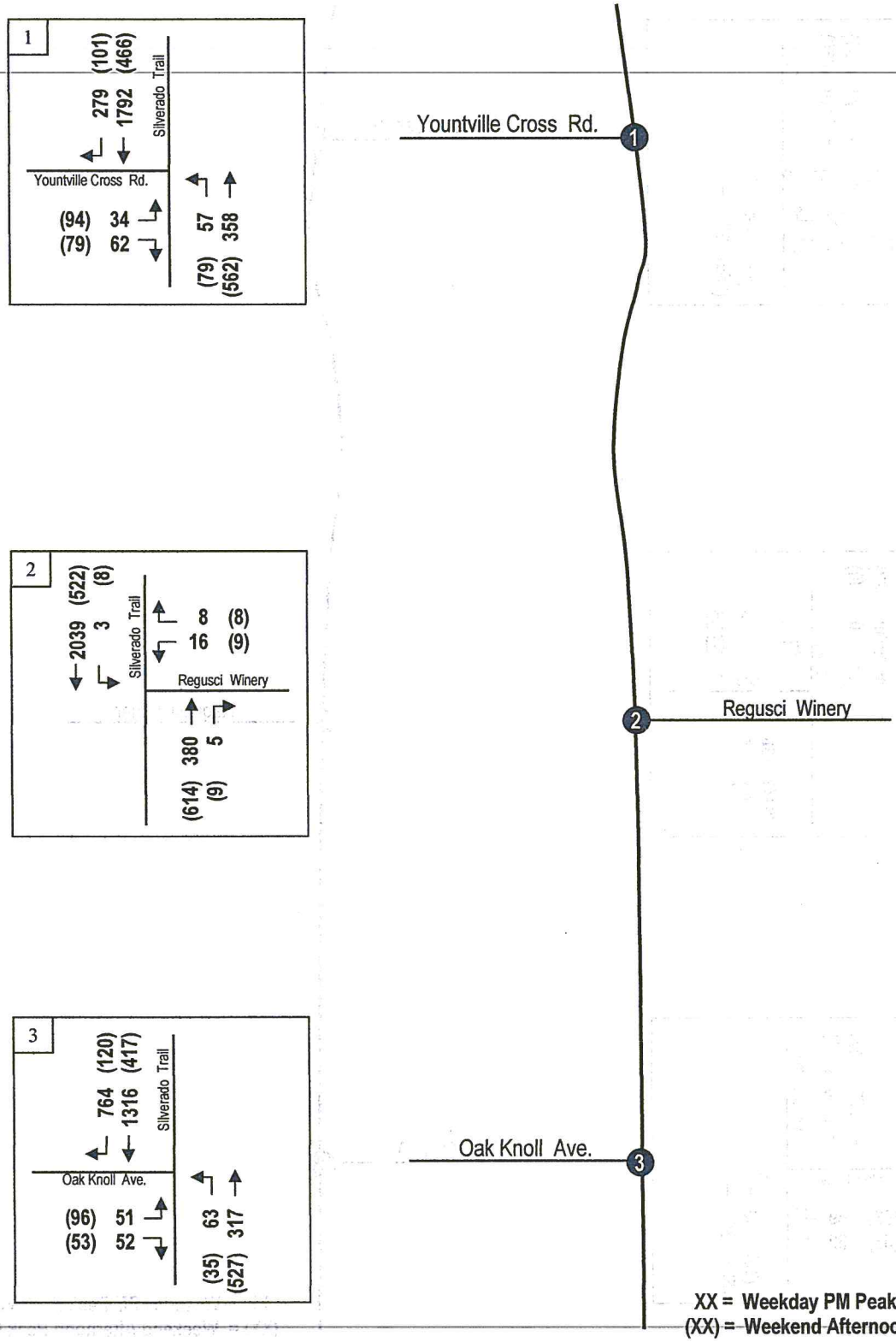


Year 2030 Cumulative Without Project
Weekday PM and (Weekend) Peak Hour Volumes

North

omni-means

figure 7



Year 2030 Cumulative + Project
Weekday PM and (Weekend) Peak Hour Volumes

North

omni-means

figure 8

Table 5 shows projected weekday PM peak hour and weekend mid-day peak hour intersection operation under cumulative year 2030 (no project) and with project conditions. As calculated, the large increase in growth projected from the Napa County GP update would cause all three study intersections to operate at LOS E or F during the weekday PM peak hour under Year 2030 (no project) conditions. During the weekend mid-day peak hour, all three intersections would be operating at acceptable levels (LOS B-C) under the same conditions.

Under Year 2030 plus project conditions, the addition of project trips would add slightly to vehicle delays for all three intersections operating at unacceptable levels (LOS E-F) during the weekday PM peak hour period.

Based on updated County significance criteria for arterial segment operation, the segment of Silverado Trail at the Regusci Vineyards Winery driveway has been evaluated for proposed project impacts since it would be operating at LOS F under cumulative conditions without proposed project trips (based on daily traffic volumes). Under cumulative conditions, County guidelines indicate that a significant impact would be found if the proposed project contributes five percent or more to the total growth in cumulative traffic. The proposed project's contribution to daily segment volumes has been calculated as follows:

Project Contribution % = 85 weekday daily trips / (20,120 ADT cumulative segment - 14,290 ADT existing segment = 5,830 net ADT cumulative segment increase) = 0.014 or 1.4% County significance guidelines indicate a ***less-than-significant*** project impact based on less than five percent being added to the net increase in daily cumulative segment volumes on Silverado Trail.

TABLE 5
CUMULATIVE YEAR 2030 (NO PROJECT) AND PLUS PROJECT CONDITIONS: INTERSECTION LEVEL OF SERVICE; WEEKDAY PM PEAK AND WEEKEND MID-DAY PEAK HOUR[1, 2]

	Intersection	Control Type	Wkdy. PM LOS/Delay		Wknd. Mid-Day LOS/Delay	
			Yr. 2030 (No Project)	Yr. 2030 (W/ Project)	Yr. 2030 (No Project)	Near-Term (W/ Project)
1	Yountville Crossroad/Silverado Trail	Stop	F 275.4	F 280.2	C 15.5	C 19.5
2	Regusci Driveway/Silverado Trail	Stop	F 53.1	E 49.7	C 15.8	C 15.0
3	Oak Knoll Ave./Silverado Trail	Stop	F 198.2	F 214.9	C 19.7	C 20.2

(1) Based on Highway Capacity Manual (HCM) 2010, Operations methodology for stop-sign controlled (unsignalized) intersections using Synchro-Simtraffic software. Intersection calculation yields an LOS and vehicle delay in seconds. Stated LOS refers to the minor street (stop-sign) controlled movement.

Using the updated County significance criteria for side-street stop controlled intersections; the intersections of Yountville Crossroad/Silverado Trail and Oak Knoll Avenue/Silverado Trail have been evaluated for proposed project impacts since they are operating at LOS F under Year 2030 cumulative plus project conditions. County guidelines indicate that a significant impact would be identified if the project would contribute five percent or more vehicle trips to the net increase in cumulative volumes at the intersection during the weekday PM peak hours. Under Year 2030 cumulative plus project conditions for the weekday PM peak hour, the project would contribute less than five percent to the net increase in cumulative volumes at the Yountville Crossroad/Silverado Trail intersection (11 project trips / 756 cumulative volumes = 1.4%). Similarly, the proposed project would contribute less than five percent at the Oak Knoll Avenue/Silverado Trail intersection (21 project trips / 769

cumulative volume = 2.7%). These findings are identified as a ***less-than-significant*** based on County criteria.

The Oak Knoll Avenue/Silverado Trail intersection currently meets the peak hour signal warrant under existing (no project) conditions. As per the County's policy, potential mitigation may include a signal if conditions are appropriate or converting the intersection to a roundabout per Policy CIR-13.5. Additional improvements to the street network are anticipated and have been included in the General Plan's Improved 2030 Network model. As noted, the County has also adopted several measures identified in the General Plan to reduce vehicle trips through public transit and Transportation Demand Management (TDM) strategies: "The project should support programs to reduce single occupant vehicle use and encourage alternative travel modes."

- In keeping with the above policy, the winery project provides bicycle racks for visitors who may arrive by bike. The project should also promote the use of public transportation and carpooling of employees (by adjusting work schedules, etc.) to facilitate the use of other transportation modes. The use of existing Napa County shuttle, limousine, or hire-car by guests could help to reduce project trips at the Oak Knoll Avenue/Silverado Trail intersection.

8. Summary and Conclusions

Daily Roadway Operations

The proposed use permit components associated with the Regusci Vineyards Winery project upon completion would generate up to 85-133 daily trips during the weekday and weekend periods (respectively). The project's daily traffic contribution would represent 0.6 percent of the existing ADT volumes on Silverado Trail which would operate at LOS D conditions (14,375 ADT) with proposed project traffic. Both Yountville Crossroad and Oak Knoll Avenue would continue to operate at acceptable levels (LOS B) with proposed project traffic. The same project contribution and roadway LOS conditions on Yountville Crossroad and Oak Knoll Avenue would be true under near-term plus project conditions.

Peak Hour Intersection Operations

During the PM peak hour winery activity periods the winery would generate 32 weekday PM peak hour trips. During the Saturday mid-day peak hour, the project would generate 34 total trips.

With PM peak hour and mid-day peak hour project trips, the Yountville Crossroad/Silverado Trail and Regusci Winery Driveway/Silverado Trail intersections would operate at acceptable conditions (LOS D or better) under both existing and near-term conditions. The intersection of Oak Knoll Avenue/Silverado Trail is currently operating at LOS E during the weekday PM peak hour under existing conditions. With proposed project traffic, the intersection would continue to operate at LOS E.

County guidelines indicate that a significant impact would be identified if the project would contribute 10 percent or more vehicle trips to the stop-controlled approach of Oak Knoll Avenue at Silverado Trail during the selected peak hours. Currently, the Oak Knoll Avenue/Silverado Trail intersection meets the peak hour signal warrant criteria under existing conditions without proposed project trips. Proposed project trips would merely add to this existing peak hour signal warrant condition. Under existing plus project conditions for the weekday PM peak hour, the project would add 2.2 percent to the overall eastbound peak

hour approach volumes on Oak Knoll Avenue at Silverado Trail (2 project trips / 90 existing approach volumes = 2.2%) and this is identified as ***less-than-significant*** based on County criteria. The same project contribution (two percent or less) would be true under near-term plus project conditions.

Warrant and Vehicle Sight Distance

No left-turn lane warrant check at the project driveway is necessary. An existing southbound left-turn lane on Silverado Trail at the Regusci Vineyard Winery driveway currently provides approximately 200 feet of taper/left-turn lane storage. The proposed project's northbound right-turn volumes are below the minimum thresholds for which a right-turn lane would be warranted.

Vehicle sight distance at the proposed project's driveway would be adequate. New radar speed surveys were conducted on Silverado Trail (in both directions) at the driveway location. As recorded, the 85th percentile or "critical speed" was measured at 59 mph (speed limit 55 mph). Caltrans would require a stopping sight-distance of 570-580 feet based on the recorded vehicle speeds. Based on field measurements, sight distance both north and south of the project driveway exceeds +800 feet in both directions.

Vehicle Circulation/Access

The existing Regusci Vineyards Winery project driveway access to/from Silverado Trail would be improved from existing conditions to County standards. The main project driveway providing access to winery-related uses north of the main residential areas would be paved to a width of 20-feet to minimum County standards from Silverado Trail to the winery parking areas. The vehicle circulation area in front of the main winery buildings would allow access for emergency vehicles (fire trucks) and parking areas west of the winery facilities.

The Napa Countywide Bicycle Plan has been completed and adopted by the Napa Valley Transportation Authority (NVTA) and the County.[18] The plan encourages new developments to incorporate bicycle friendly design. Silverado Trail has 10-foot (approximately) Class II bikes in both directions. It is very likely some visitors may utilize bicycles to access the proposed project. The project would provide bicycle racks for visitors to the proposed winery.

Marketing Events

In addition to normal tours and tastings, the winery proposes to host 16 marketing events that would range between 50-200 guests. These marketing events would include 10 events with 50 guests, five (5) events with150 guests, and one (1) event with 200 guests. Based on standard County auto occupancy rates, the largest annual event of 200 guests would be expected to generate approximately 157 trips (79 in, 78 out) including visitors, at one time are half of the total volume (unless shuttle buses/TDM are used). These events are usually held outside of typical peak traffic periods (during the middle of the day or later than 6:00 p.m.) and therefore generally do not impact peak hour operations and no other visitation or events would occur during the annual events.

- As a proposed project requirement, marketing events should not start/end during the weekday PM peak hour period (4:30-5:30 p.m.) nor weekend mid-day peak hour period

[18] *Napa County, Countywide Bicycle Plan (2012), Planning Area-North Valley, May 2012.*

(1:45-2:45 p.m.). In addition, the winery should suspend visitation related to tours and tastings on the days when the winery hosts large marketing events (150 guests or larger) that are held during the afternoon period. These measures would reduce any traffic impacts related to large marketing events to ***less-than-significant*** levels.

Cumulative Year 2030 Conditions

Under Year 2030 cumulative (no project) conditions, projected growth in traffic volumes on Silverado Trail based on the Napa County General Plan Update would result in Silverado Trail operating at LOS F (20,120 ADT). Both Yountville Crossroad and Oak Knoll Avenue would operate at acceptable conditions (LOS B) with Year 2030 plus project traffic.

Based on updated County significance criteria for arterial segment operation, the segment of Silverado Trail at the Regusci Vineyards Winery driveway has been evaluated for proposed project impacts since it would be operating at LOS F under cumulative conditions without proposed project trips (based on daily traffic volumes). Under cumulative conditions, County guidelines indicate that a significant impact would be found if the proposed project contributes five percent or more to the total growth in cumulative traffic. The proposed project's contribution to daily segment volumes has been calculated as follows:

Project Contribution % = 85 weekday daily trips / (20,120 ADT cumulative segment - 14,290 ADT existing segment = 5,830 net ADT cumulative segment increase) = 0.014 or 1.4% County significance guidelines indicate a ***less-than-significant*** project impact based on less than five percent being added to the net increase in daily cumulative segment volumes on Silverado Trail.

With regard to study intersection operation; all three locations would be operating at unacceptable levels (LOS E-F) during the weekday PM peak hour. During the Saturday mid-day peak hour, all three intersections would operate at acceptable levels.

Using the updated County significance criteria for side-street stop controlled intersections; the intersections of Yountville Crossroad/Silverado Trail and Oak Knoll Avenue/Silverado Trail have been evaluated for proposed project impacts since they are operating at LOS F under Year 2030 cumulative plus project conditions. County guidelines indicate that a significant impact would be identified if the project would contribute five percent or more vehicle trips to the net increase in cumulative volumes at the intersection during the weekday PM peak hours. Under Year 2030 cumulative plus project conditions for the weekday PM peak hour, the project would contribute less than five percent to the net increase in cumulative volumes at the Yountville Crossroad/Silverado Trail intersection (11 project trips / 756 cumulative volumes = 1.4%). Similarly, the proposed project would contribute less than five percent at the Oak Knoll Avenue/Silverado Trail intersection (21 project trips / 769 cumulative volume = 2.7%). These findings are identified as a ***less-than-significant*** based on County criteria.

The Oak Knoll Avenue/Silverado Trail intersection currently meets the peak hour signal warrant under existing (no project) conditions. As per the County's policy, potential mitigation may include a signal if conditions are appropriate or converting the intersection to a roundabout per Policy CIR-13.5. Additional improvements to the street network are anticipated and have been included in the General Plan's Improved 2030 Network model. As noted, the County has also adopted several measures identified in the General Plan to reduce vehicle trips through public

transit and Transportation Demand Management (TDM) strategies: "The project should support programs to reduce single occupant vehicle use and encourage alternative travel modes."

- In keeping with the policy, the winery project provides bicycle racks for visitors who may arrive by bike. The project should also promote the use of public transportation and carpooling of employees (by adjusting work schedules, etc.) to facilitate the use of other transportation modes. The use of existing Napa County shuttle, limousine, or hire-car by guests could help to reduce project trips at the Oak Knoll Avenue/Silverado Trail intersection.

TECHNICAL APPENDICES:

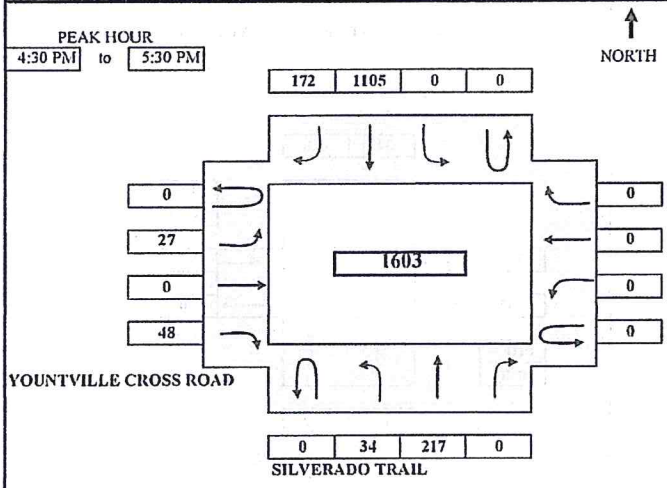
- Weekday PM and Weekend Mid-Day Peak Hour Intersection Counts
- Vehicle Speed Survey Sheets
- Weekday PM and Weekend Mid-Day Intersection LOS Calculation Sheets
- Right-Turn Guideline Diagram
- Roadway LOS Capacity Table (FDOT)

B.A.Y.M.E.T.R.I.C.S.

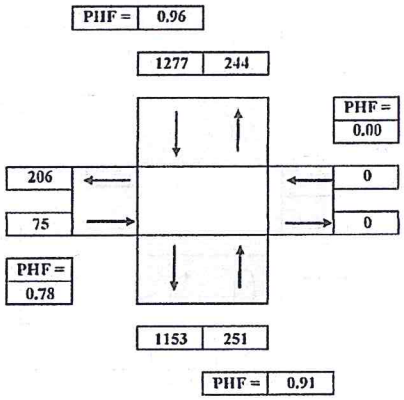
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN NAPA VALLEY	SURVEY DATE:	1/17/2017	DAY:	TUESDAY
N-S APPROACH:	SILVERADO TRAIL	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	YOUNTVILLE CROSS ROAD	JURISDICTION:	NAPA VALLEY	FILE:	3701003-1PM

PEAK HOUR 4:30 PM to 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		16	57				229	28		6		18					354
4:15 PM	to	4:30 PM		23	121				484	59		13		33					733
4:30 PM	to	4:45 PM		33	167				739	96		18		52					1105
4:45 PM	to	5:00 PM		40	219				1032	134		25		64					1514
5:00 PM	to	5:15 PM		48	280				1303	189		31		73					1924
5:15 PM	to	5:30 PM		57	338				1589	231		40		81					2336
5:30 PM	to	5:45 PM		62	382				1804	268		43		87					2646
5:45 PM	to	6:00 PM		65	432				1978	291		48		94					2908
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	16	57	0	0	0	229	28	0	6	0	18	0	0	0	0	354
4:15 PM	to	4:30 PM	0	7	64	0	0	0	255	31	0	7	0	15	0	0	0	0	379
4:30 PM	to	4:45 PM	0	10	46	0	0	0	255	37	0	5	0	19	0	0	0	0	372
4:45 PM	to	5:00 PM	0	7	52	0	0	0	293	38	0	7	0	12	0	0	0	0	409
5:00 PM	to	5:15 PM	0	8	61	0	0	0	271	55	0	6	0	9	0	0	0	0	410
5:15 PM	to	5:30 PM	0	9	58	0	0	0	286	42	0	9	0	8	0	0	0	0	412
5:30 PM	to	5:45 PM	0	5	44	0	0	0	215	37	0	3	0	6	0	0	0	0	310
5:45 PM	to	6:00 PM	0	3	50	0	0	0	174	23	0	5	0	7	0	0	0	0	262
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	40	219	0	0	0	1032	134	0	25	0	64	0	0	0	0	1514
4:15 PM	to	5:15 PM	0	32	223	0	0	0	1074	161	0	25	0	55	0	0	0	0	1570
4:30 PM	to	5:30 PM	0	34	217	0	0	0	1105	172	0	27	0	48	0	0	0	0	1603
4:45 PM	to	5:45 PM	0	29	215	0	0	0	1065	172	0	25	0	35	0	0	0	0	1541
5:00 PM	to	6:00 PM	0	25	213	0	0	0	946	157	0	23	0	30	0	0	0	0	1394

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	34	217	0	0	0	1105	172	0	27	0	48	0	0	0	0	1603
PHF BY MOVEMENT	0.00	0.85	0.89	0.00	0.00	0.00	0.94	0.78	0.00	0.75	0.00	0.63	0.00	0.00	0.00	0.00	OVERALL
PHF BY APPROACH	0.91				0.96				0.78				0.00				0.97
BICYCLE	0				1				0				0				1
PEDESTRIAN	0				0				0				0				0
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	0				0				0				0				0

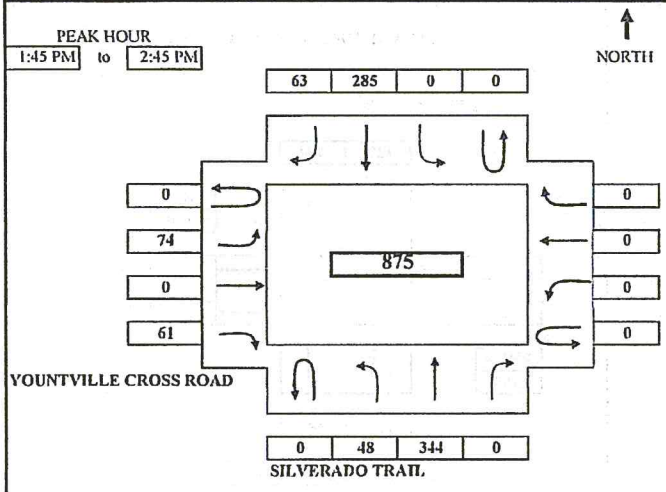
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

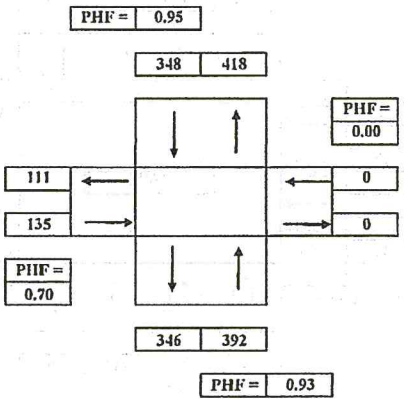
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN NAPA VALLEY	SURVEY DATE:	1/14/2017	DAY:	SATURSDAY
N-S APPROACH:	SILVERADO TRAIL	SURVEY TIME:	1:00 PM	TO	3:00 PM
E-W APPROACH:	YOUNTVILLE CROSS ROAD	JURISDICTION:	NAPA VALLEY	FILE:	3701003-1SAT

PEAK HOUR 1:45 PM to 2:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
1:00 PM	to	1:15 PM		11	78				34	17		26		6					172
1:15 PM	to	1:30 PM		25	158				89	31		52		19					374
1:30 PM	to	1:45 PM		43	244				145	46		67		31					576
1:45 PM	to	2:00 PM		56	336				218	65		95		51					821
2:00 PM	to	2:15 PM		61	415				297	77		101		68					1022
2:15 PM	to	2:30 PM		81	493				361	96		123		79					1233
2:30 PM	to	2:45 PM		91	588				430	109		141		92					1451
2:45 PM	to	3:00 PM		102	670				499	130		153		105					1659
TOTAL BY PERIOD																			
1:00 PM	to	1:15 PM	0	11	78	0	0	0	34	17	0	26	0	6	0	0	0	0	172
1:15 PM	to	1:30 PM	0	14	80	0	0	0	55	14	0	25	0	13	0	0	0	0	202
1:30 PM	to	1:45 PM	0	18	86	0	0	0	56	15	0	15	0	12	0	0	0	0	202
1:45 PM	to	2:00 PM	0	13	92	0	0	0	73	19	0	28	0	20	0	0	0	0	245
2:00 PM	to	2:15 PM	0	8	79	0	0	0	79	12	0	6	0	17	0	0	0	0	201
2:15 PM	to	2:30 PM	0	17	78	0	0	0	64	19	0	22	0	11	0	0	0	0	211
2:30 PM	to	2:45 PM	0	10	95	0	0	0	69	13	0	18	0	13	0	0	0	0	218
2:45 PM	to	3:00 PM	0	11	82	0	0	0	69	21	0	12	0	13	0	0	0	0	208
HOURLY TOTALS																			
1:00 PM	to	2:00 PM	0	56	336	0	0	0	218	65	0	95	0	51	0	0	0	0	821
1:15 PM	to	2:15 PM	0	53	337	0	0	0	263	60	0	75	0	62	0	0	0	0	850
1:30 PM	to	2:30 PM	0	56	335	0	0	0	272	65	0	71	0	60	0	0	0	0	859
1:45 PM	to	2:45 PM	0	48	344	0	0	0	285	63	0	74	0	61	0	0	0	0	875
2:00 PM	to	3:00 PM	0	46	334	0	0	0	281	65	0	58	0	54	0	0	0	0	838

PEAK HOUR SUMMARY

1:45 PM to 2:45 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	48	344	0	0	0	285	63	0	74	0	61	0	0	0	0	875
PHF BY MOVEMENT	0.00	0.71	0.91	0.00	0.00	0.00	0.90	0.83	0.00	0.66	0.00	0.76	0.00	0.00	0.00	0.00	OVERALL
PHF BY APPROACH	0.93				0.95				0.70				0.00				0.89
BICYCLE	16				8				3				0				27
PEDESTRIAN	0				0				0				0				0
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	0				0				0				0				0

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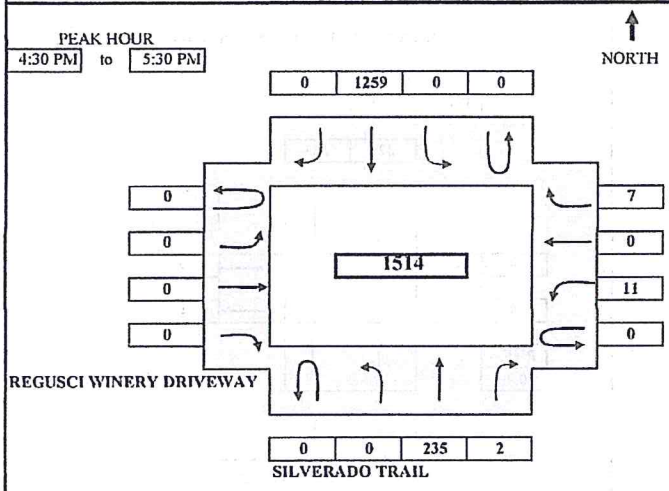
B.A.Y.M.E.T.R.I.C.S.

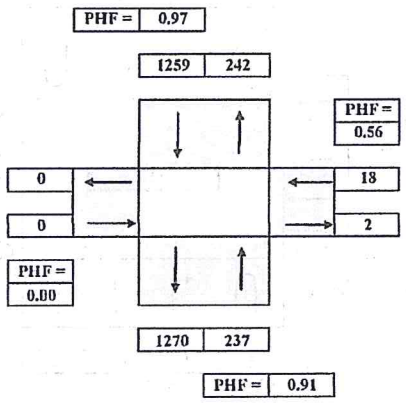
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN NAPA VALLEY	**SURVEY DATE:**	1/17/2017	**DAY:**	TUESDAY
N-S APPROACH:	SILVERADO TRAIL	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	REGUSCI WINERY DRIVEWAY	**JURISDICTION:**	NAPA VALLEY	**FILE:**	3701003-2PM

PEAK HOUR 4:30 PM to 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM			68	1		1	235							1		1	307
4:15 PM	to	4:30 PM			127	2		1	524							7		2	663
4:30 PM	to	4:45 PM			172	3		1	830							15		2	1023
4:45 PM	to	5:00 PM			235	3		1	1153							16		3	1411
5:00 PM	to	5:15 PM			297	4		1	1479							18		8	1807
5:15 PM	to	5:30 PM			362	4		1	1783							18		9	2177
5:30 PM	to	5:45 PM			409	4		1	2013							19		9	2455
5:45 PM	to	6:00 PM			460	4		1	2229							20		9	2723
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	68	1	0	1	235	0	0	0	0	0	0	1	0	1	307
4:15 PM	to	4:30 PM	0	0	59	1	0	0	289	0	0	0	0	0	0	6	0	1	356
4:30 PM	to	4:45 PM	0	0	45	1	0	0	306	0	0	0	0	0	0	8	0	0	360
4:45 PM	to	5:00 PM	0	0	63	0	0	0	323	0	0	0	0	0	0	1	0	1	388
5:00 PM	to	5:15 PM	0	0	62	1	0	0	326	0	0	0	0	0	0	2	0	5	396
5:15 PM	to	5:30 PM	0	0	65	0	0	0	304	0	0	0	0	0	0	0	0	1	370
5:30 PM	to	5:45 PM	0	0	47	0	0	0	230	0	0	0	0	0	0	1	0	0	278
5:45 PM	to	6:00 PM	0	0	51	0	0	0	216	0	0	0	0	0	0	1	0	0	268
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	235	3	0	1	1153	0	0	0	0	0	0	16	0	3	1411
4:15 PM	to	5:15 PM	0	0	229	3	0	0	1244	0	0	0	0	0	0	17	0	7	1500
4:30 PM	to	5:30 PM	0	0	235	2	0	0	1259	0	0	0	0	0	0	11	0	7	1514
4:45 PM	to	5:45 PM	0	0	237	1	0	0	1183	0	0	0	0	0	0	4	0	7	1432
5:00 PM	to	6:00 PM	0	0	225	1	0	0	1076	0	0	0	0	0	0	4	0	6	1312

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	0	235	2	0	0	1259	0	0	0	0	0	0	11	0	7	1514
PHF BY MOVEMENT	0.00	0.00	0.90	0.50	0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.35	OVERALL
PHF BY APPROACH	0.91				0.97				0.00				0.56				0.96
BICYCLE	0				0				0				0				0
PEDESTRIAN	0				0				0				0				0
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	0				0				0				0				0

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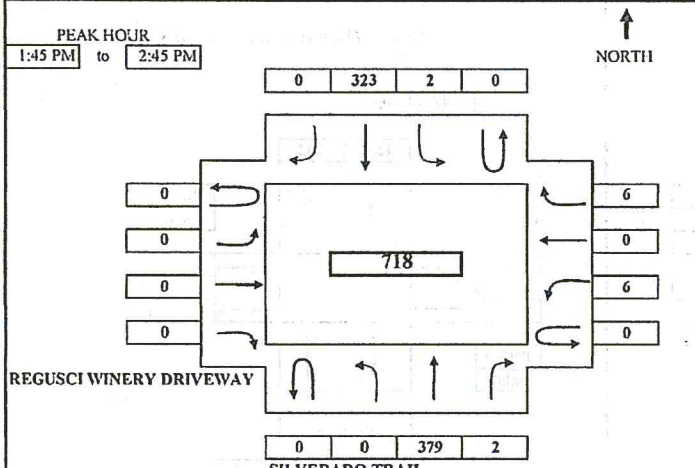
B.A.Y.M.E.T.R.I.C.S.

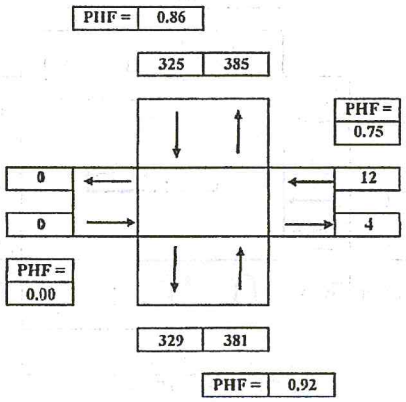
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN NAPA VALLEY	SURVEY DATE:	1/14/2017	DAY:	SATURSDAY
N-S APPROACH:	SILVERADO TRAIL	SURVEY TIME:	1:00 PM	TO	3:00 PM
E-W APPROACH:	REGUSCI WINERY DRIVEWAY	JURISDICTION:	NAPA VALLEY	FILE:	3701003-2SAT

PEAK HOUR
1:45 PM to 2:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
1:00 PM	to	1:15 PM			97	3		0	61							1		0	162
1:15 PM	to	1:30 PM			192	4		1	114							1		1	313
1:30 PM	to	1:45 PM			288	8		1	175							3		2	477
1:45 PM	to	2:00 PM			385	9		1	265							3		3	666
2:00 PM	to	2:15 PM			471	10		2	358							4		6	851
2:15 PM	to	2:30 PM			563	10		2	418							5		8	1006
2:30 PM	to	2:45 PM			667	10		3	498							9		8	1195
2:45 PM	to	3:00 PM			755	12		5	572							9		12	1365
TOTAL BY PERIOD																			
1:00 PM	to	1:15 PM	0	0	97	3	0	0	61	0	0	0	0	0	0	1	0	0	162
1:15 PM	to	1:30 PM	0	0	95	1	0	1	53	0	0	0	0	0	0	0	0	1	151
1:30 PM	to	1:45 PM	0	0	96	4	0	0	61	0	0	0	0	0	0	2	0	1	164
1:45 PM	to	2:00 PM	0	0	97	1	0	0	90	0	0	0	0	0	0	0	0	1	189
2:00 PM	to	2:15 PM	0	0	86	1	0	1	93	0	0	0	0	0	0	1	0	3	185
2:15 PM	to	2:30 PM	0	0	92	0	0	0	60	0	0	0	0	0	0	1	0	2	155
2:30 PM	to	2:45 PM	0	0	104	0	0	1	80	0	0	0	0	0	0	4	0	0	189
2:45 PM	to	3:00 PM	0	0	88	2	0	2	74	0	0	0	0	0	0	0	0	4	170
HOURLY TOTALS																			
1:00 PM	to	2:00 PM	0	0	385	9	0	1	265	0	0	0	0	0	0	3	0	3	666
1:15 PM	to	2:15 PM	0	0	374	7	0	2	297	0	0	0	0	0	0	3	0	6	689
1:30 PM	to	2:30 PM	0	0	371	6	0	1	304	0	0	0	0	0	0	4	0	7	693
1:45 PM	to	2:45 PM	0	0	379	2	0	2	323	0	0	0	0	0	0	6	0	6	718
2:00 PM	to	3:00 PM	0	0	370	3	0	4	307	0	0	0	0	0	0	6	0	9	699

PEAK HOUR SUMMARY

1:45 PM to 2:45 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	0	379	2	0	2	323	0	0	0	0	0	0	6	0	6	718
PHF BY MOVEMENT	0.00	0.00	0.91	0.50	0.00	0.50	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.50	OVERALL
PHF BY APPROACH	0.92				0.86				0.00				0.75				0.95
BICYCLE	16				3				0				0				19
PEDESTRIAN	0				0				0				0				0
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	0				0				0				0				0

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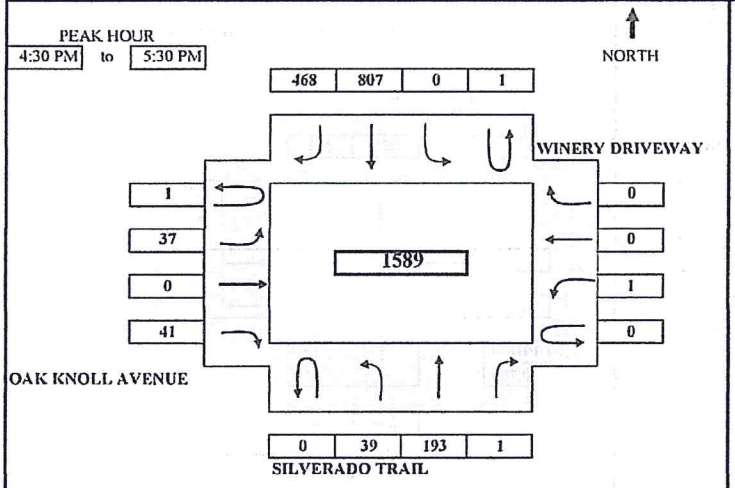
B.A.Y.M.E.T.R.I.C.S.

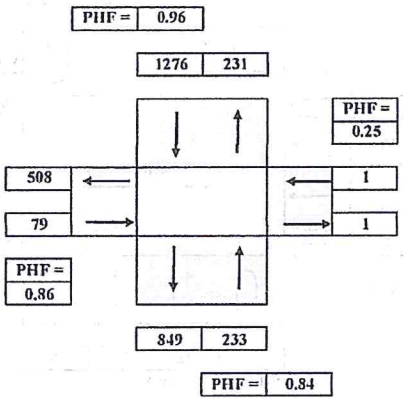
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN NAPA VALLEY	**SURVEY DATE:**	1/17/2017	**DAY:**	TUESDAY
N-S APPROACH:	SILVERADO TRAIL	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	OAK KNOLL AVENUE	**JURISDICTION:**	NAPA VALLEY	**FILE:**	3701003-3PM

PEAK HOUR 4:30 PM to 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM		9	61	0	0	0	170	84	0	9	0	8		1	0	0	342
4:15 PM	4:30 PM		13	113	0	0	0	368	193	0	17	0	18		1	0	0	723
4:30 PM	4:45 PM		21	153	1	1	0	561	301	1	22	0	27		1	0	0	1089
4:45 PM	5:00 PM		28	201	1	1	0	776	419	1	36	0	34		1	0	0	1498
5:00 PM	5:15 PM		42	256	1	1	0	984	544	1	47	0	46		1	0	0	1923
5:15 PM	5:30 PM		52	306	1	1	0	1175	661	1	54	0	59		2	0	0	2312
5:30 PM	5:45 PM		59	349	1	1	1	1345	753	1	64	0	67		2	0	1	2644
5:45 PM	6:00 PM		63	393	2	1	1	1481	838	1	74	0	75		2	1	1	2933
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	9	61	0	0	0	170	84	0	9	0	8	0	1	0	0	342
4:15 PM	4:30 PM	0	4	52	0	0	0	198	109	0	8	0	10	0	0	0	0	381
4:30 PM	4:45 PM	0	8	40	1	1	0	193	108	1	5	0	9	0	0	0	0	366
4:45 PM	5:00 PM	0	7	48	0	0	0	215	118	0	14	0	7	0	0	0	0	409
5:00 PM	5:15 PM	0	14	55	0	0	0	208	125	0	11	0	12	0	0	0	0	425
5:15 PM	5:30 PM	0	10	50	0	0	0	191	117	0	7	0	13	0	1	0	0	389
5:30 PM	5:45 PM	0	7	43	0	0	1	170	92	0	10	0	8	0	0	0	1	332
5:45 PM	6:00 PM	0	4	44	1	0	0	136	85	0	10	0	8	0	0	1	0	289
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	28	201	1	1	0	776	419	1	36	0	34	0	1	0	0	1498
4:15 PM	5:15 PM	0	33	195	1	1	0	814	460	1	38	0	38	0	0	0	0	1581
4:30 PM	5:30 PM	0	39	193	1	1	0	807	468	1	37	0	41	0	1	0	0	1589
4:45 PM	5:45 PM	0	38	196	0	0	1	784	452	0	42	0	40	0	1	0	1	1555
5:00 PM	6:00 PM	0	35	192	1	0	1	705	419	0	38	0	41	0	1	1	1	1435

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	39	193	1	1	0	807	468	1	37	0	41	0	1	0	0	1589
PHF BY MOVEMENT	0.00	0.70	0.88	0.25	0.25	0.00	0.94	0.94	0.25	0.66	0.00	0.79	0.00	0.25	0.00	0.00	OVERALL
PHF BY APPROACH		0.84				0.96				0.86				0.25			0.93
BICYCLE		1				0				0				0			1
PEDESTRIAN		0				0				0				0			0
		N-LEG				S-LEG				E-LEG				W-LEG			
PEDESTRIAN BY LEG:		0				0				0				0			0

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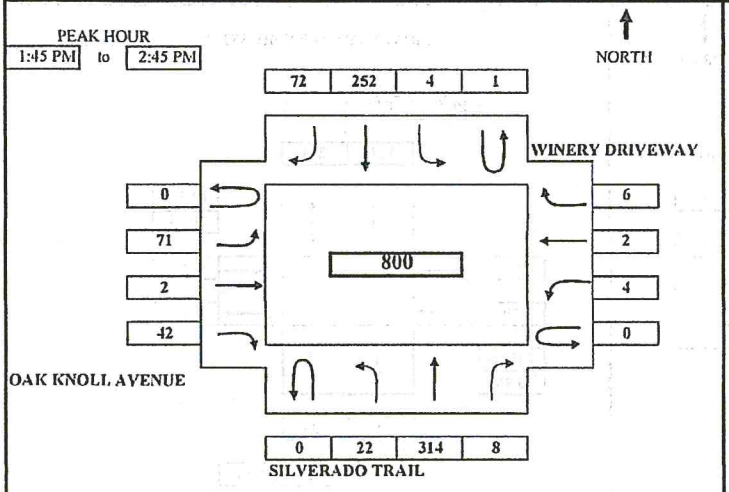
B.A.Y.M.E.T.R.I.C.S.

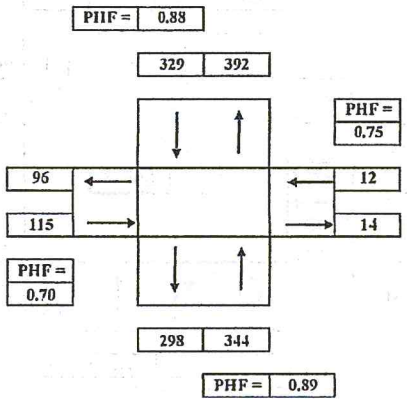
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN NAPA VALLEY	SURVEY DATE:	1/14/2017	DAY:	SATURSDAY
N-S APPROACH:	SILVERADO TRAIL	SURVEY TIME:	1:00 PM	TO	3:00 PM
E-W APPROACH:	OAK KNOLL AVENUE	JURISDICTION:	NAPA VALLEY	FILE:	3701003-3SAT

PEAK HOUR 1:45 PM to 2:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
1:00 PM	1:15 PM		9	83	1	0	1	54	16		33	1	11		0	0	0	209
1:15 PM	1:30 PM		14	152	5	0	1	91	33		54	1	18		0	1	0	370
1:30 PM	1:45 PM		25	240	6	0	1	145	47		73	1	31		0	1	0	570
1:45 PM	2:00 PM		32	327	9	0	2	213	60		85	1	40		1	2	1	773
2:00 PM	2:15 PM		39	392	11	0	4	281	84		100	1	45		2	3	3	965
2:15 PM	2:30 PM		43	474	14	0	5	334	101		125	2	60		3	3	5	1169
2:30 PM	2:45 PM		47	554	14	1	5	397	119		144	3	73		4	3	6	1370
2:45 PM	3:00 PM		53	619	16	1	5	449	133		163	4	88		4	3	7	1545
TOTAL BY PERIOD																		
1:00 PM	1:15 PM	0	9	83	1	0	1	54	16	0	33	1	11	0	0	0	0	209
1:15 PM	1:30 PM	0	5	69	4	0	0	37	17	0	21	0	7	0	0	1	0	161
1:30 PM	1:45 PM	0	11	88	1	0	0	54	14	0	19	0	13	0	0	0	0	200
1:45 PM	2:00 PM	0	7	87	3	0	1	68	13	0	12	0	9	0	1	1	1	203
2:00 PM	2:15 PM	0	7	65	2	0	2	68	24	0	15	0	5	0	1	1	2	192
2:15 PM	2:30 PM	0	4	82	3	0	1	53	17	0	25	1	15	0	1	0	2	204
2:30 PM	2:45 PM	0	4	80	0	1	0	63	18	0	19	1	13	0	1	0	1	201
2:45 PM	3:00 PM	0	6	65	2	0	0	52	14	0	19	1	15	0	0	0	1	175
HOURLY TOTALS																		
1:00 PM	2:00 PM	0	32	327	9	0	2	213	60	0	85	1	40	0	1	2	1	773
1:15 PM	2:15 PM	0	30	309	10	0	3	227	68	0	67	0	34	0	2	3	3	756
1:30 PM	2:30 PM	0	29	322	9	0	4	243	68	0	71	1	42	0	3	2	5	799
1:45 PM	2:45 PM	0	22	314	8	1	4	252	72	0	71	2	42	0	4	2	6	800
2:00 PM	3:00 PM	0	21	292	7	1	3	236	73	0	78	3	48	0	3	1	6	772

PEAK HOUR SUMMARY

1:45 PM to 2:45 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	22	314	8	1	4	252	72	0	71	2	42	0	4	2	6	800
PHF BY MOVEMENT	0.00	0.79	0.90	0.67	0.25	0.50	0.93	0.75	0.00	0.71	0.50	0.70	0.00	1.00	0.50	0.75	OVERALL
PHF BY APPROACH	0.89				0.88				0.70				0.75				0.98
BICYCLE	9				5				7				0				21
PEDESTRIAN	0				0				0				0				0
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	0				0				0				0				0

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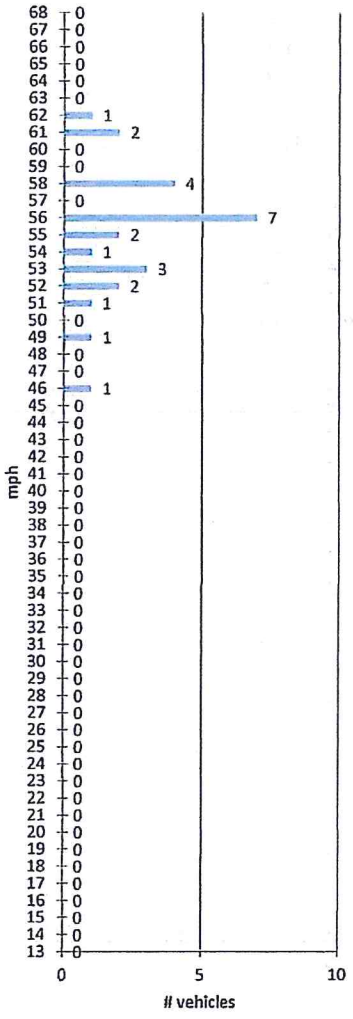
RADAR SPEED SURVEY SUMMARY

Road: Silverado Trail
Location: approaching Regusci Winery
Concord, CA
Speed Limit: 55 mph

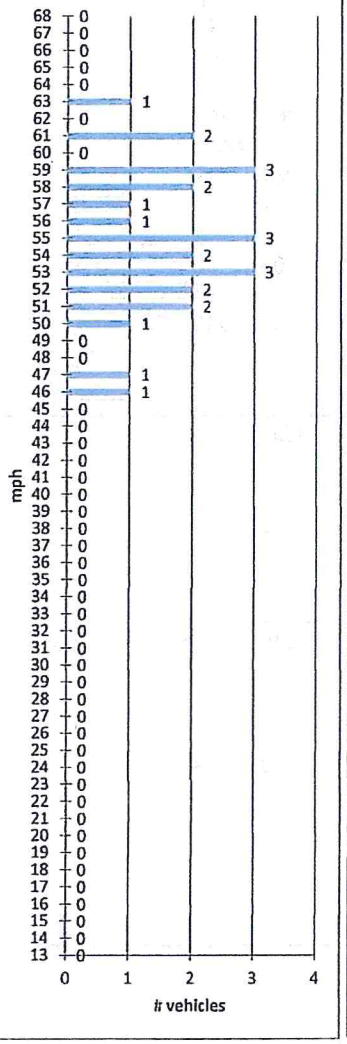
Date: 2/10/17
Time: 6:30-7:00 pm
Weather: Clear

Northbound Speeds



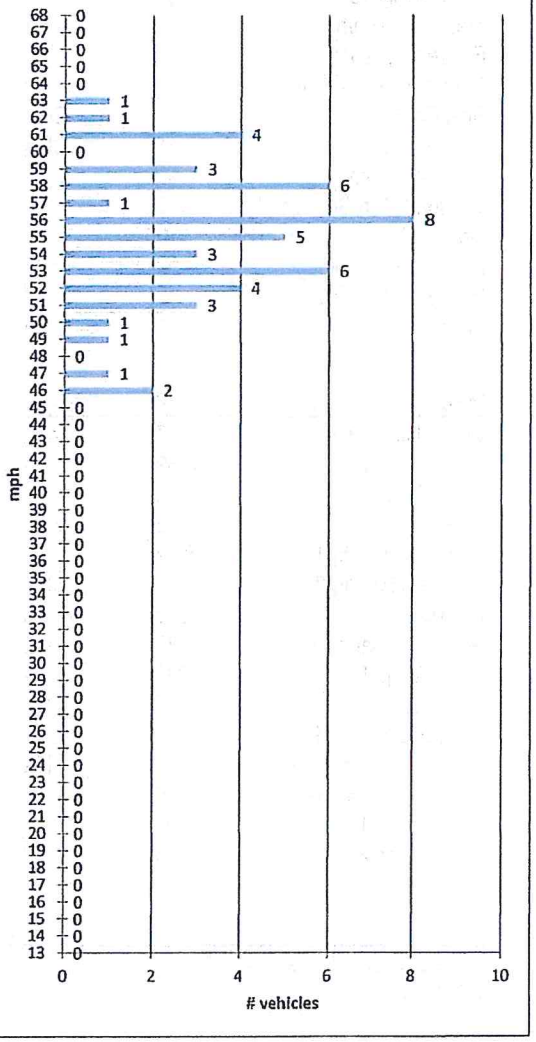
No. of Surveys =	25
Average Speed =	55.2
50th Percentile =	56.0
85th Percentile =	**58.0**
90th Percentile =	59.8
95th Percentile =	61.0
Pace Speed =	34-43
% in Pace =	71
Vehicles in Pace =	71
Sample Variance =	13.61
Stndrd. Deviation =	3.69
Range 1*S =	0.76
Range 2*S =	0.96
Range 3*S =	1.00

Southbound Speeds



No. of Surveys =	25
Average Speed =	54.9
50th Percentile =	55.0
85th Percentile =	**59.0**
90th Percentile =	60.2
95th Percentile =	61.0
Pace Speed =	35-44
% in Pace =	86
Vehicles in Pace =	86
Sample Variance =	18.36
Stndrd. Deviation =	4.99
Range 1*S =	0.8
Range 2*S =	1
Range 3*S =	1

Both Direction Speeds



No. of Surveys =	50
Average Speed =	55.1
50th Percentile =	55.0
85th Percentile =	**59.0**
90th Percentile =	61.0
95th Percentile =	61.0
Pace Speed =	34-43
% in Pace =	78
Vehicles in Pace =	156
Sample Variance =	15.69
Stndrd. Deviation =	3.96
Range 1*S =	0.72
Range 2*S =	0.92
Range 3*S =	1

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	55	38	244	1271	198
Future Vol, veh/h	31	55	38	244	1271	198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	60	41	265	1382	215

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1837	1489	1597	0	-	0
Stage 1	1489	-	-	-	-	-
Stage 2	348	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	83	152	410	-	-	-
Stage 1	206	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	75	152	410	-	-	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	206	-	-	-	-	-
Stage 2	644	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.6	2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	410	-	238	-	-
HCM Lane V/C Ratio	0.101	-	0.393	-	-
HCM Control Delay (s)	14.8	-	29.6	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.3	-	1.8	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	270	1	0	1448
Future Vol, veh/h	1	0	270	1	0	1448
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	293	1	0	1574

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1868	294	0	0	295	0
Stage 1	294	-	-	-	-	-
Stage 2	1574	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	80	745	-	-	1266	-
Stage 1	756	-	-	-	-	-
Stage 2	187	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	80	745	-	-	1266	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	187	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	157	1266	-
HCM Lane V/C Ratio	-	-	0.007	-	-
HCM Control Delay (s)	-	-	28.1	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	43	47	45	223	921	534
Future Vol, veh/h	43	47	45	223	921	534
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	51	49	242	1001	580

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1631	1291	1582	0	-	0
Stage 1	1291	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	112	199	416	-	-	-
Stage 1	258	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	199	416	-	-	-
Mov Cap-2 Maneuver	202	-	-	-	-	-
Stage 1	258	-	-	-	-	-
Stage 2	636	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	39.1	2.5	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	416	-	200	-	-
HCM Lane V/C Ratio	0.118	-	0.489	-	-
HCM Control Delay (s)	14.8	-	39.1	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0.4	-	2.4	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	69	54	390	327	72
Future Vol, veh/h	85	69	54	390	327	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	75	59	424	355	78

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	936	395	434	0	-	0
Stage 1	395	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	294	654	1126	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	279	654	1126	-	-	-
Mov Cap-2 Maneuver	403	-	-	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	552	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1126	-	730	-	-
HCM Lane V/C Ratio	0.052	-	0.229	-	-
HCM Control Delay (s)	8.4	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	436	1	0	371
Future Vol, veh/h	1	0	436	1	0	371
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	474	1	0	403

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	877	474	0	0	475	0
Stage 1	474	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	319	590	-	-	1087	-
Stage 1	626	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	319	590	-	-	1087	-
Mov Cap-2 Maneuver	442	-	-	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	675	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	442	1087	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Control Delay (s)	-	-	13.2	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	83	48	25	370	288	82
Future Vol, veh/h	83	48	25	370	288	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	52	27	402	313	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	815	358	402	0	-	0
Stage 1	358	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	347	686	1157	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	339	686	1157	-	-	-
Mov Cap-2 Maneuver	456	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	623	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.5	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1157	-	520	-	-
HCM Lane V/C Ratio	0.023	-	0.274	-	-
HCM Control Delay (s)	8.2	-	14.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	56	39	284	1303	198
Future Vol, veh/h	31	56	39	284	1303	198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	61	42	309	1416	215

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1917	1524	1632	0	-	0
Stage 1	1524	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	74	145	398	-	-	-
Stage 1	198	-	-	-	-	-
Stage 2	682	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	66	145	398	-	-	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	198	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.1	1.8	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	398	-	225	-	-
HCM Lane V/C Ratio	0.107	-	0.42	-	-
HCM Control Delay (s)	15.1	-	32.1	-	-
HCM Lane LOS	C	-	D	-	-
HCM 95th %tile Q(veh)	0.4	-	1.9	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	311	1	0	1492
Future Vol, veh/h	1	0	311	1	0	1492
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	338	1	0	1622

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1961	339	0	0	339	0
Stage 1	339	-	-	-	-	-
Stage 2	1622	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	70	703	-	-	1220	-
Stage 1	722	-	-	-	-	-
Stage 2	177	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	70	703	-	-	1220	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	177	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29.5	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	148	1220	-
HCM Lane V/C Ratio	-	-	0.007	-	-
HCM Control Delay (s)	-	-	29.5	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	47	45	263	962	537
Future Vol, veh/h	44	47	45	263	962	537
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	51	49	286	1046	584

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1722	1338	1629	0	-	0
Stage 1	1338	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	98	187	399	-	-	-
Stage 1	245	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	86	187	399	-	-	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	245	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	43.6	2.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	399	- 188	-	-
HCM Lane V/C Ratio	0.123	- 0.526	-	-
HCM Control Delay (s)	15.3	- 43.6	-	-
HCM Lane LOS	C	- E	-	-
HCM 95th %tile Q(veh)	0.4	- 2.7	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	70	55	416	352	72
Future Vol, veh/h	85	70	55	416	352	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	76	60	452	383	78

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	994	422	461	0	-	0
Stage 1	422	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Critical Hdwy	7.12	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	224	632	1100	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	215	632	1100	-	-	-
Mov Cap-2 Maneuver	335	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	477	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1100	-	611	-	-
HCM Lane V/C Ratio	0.054	-	0.276	-	-
HCM Control Delay (s)	8.5	-	13.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	471	0	0	396
Future Vol, veh/h	1	0	471	0	0	396
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	512	0	0	430

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	942	512	0	0	512	0
Stage 1	512	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	292	562	-	-	1053	-
Stage 1	602	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	292	562	-	-	1053	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	656	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	419	1053	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s)	-	-	13.6	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	84	48	25	399	316	84
Future Vol, veh/h	84	48	25	399	316	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	52	27	434	343	91

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	877	389	435	0	-	0
Stage 1	389	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	7.12	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	269	659	1125	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	264	659	1125	-	-	-
Mov Cap-2 Maneuver	385	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	548	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.6	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1125	-	454	-	-
HCM Lane V/C Ratio	0.024	-	0.316	-	-
HCM Control Delay (s)	8.3	-	16.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	57	42	256	1275	198
Future Vol, veh/h	31	57	42	256	1275	198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	62	46	278	1386	215

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1863	1493	1601	0	-	0
Stage 1	1493	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	80	151	409	-	-	-
Stage 1	205	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	71	151	409	-	-	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	205	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.8	2.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	409	-	233	-	-
HCM Lane V/C Ratio	0.112	-	0.411	-	-
HCM Control Delay (s)	14.9	-	30.8	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.4	-	1.9	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	16	270	10	6	1448
Future Vol, veh/h	30	16	270	10	6	1448
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	17	293	11	7	1574

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1886	299	0	0	304	0
Stage 1	299	-	-	-	-	-
Stage 2	1587	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	78	741	-	-	1257	-
Stage 1	752	-	-	-	-	-
Stage 2	185	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	78	741	-	-	1257	-
Mov Cap-2 Maneuver	155	-	-	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	184	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.9	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	214	1257	-
HCM Lane V/C Ratio	-	-	0.234	0.005	-
HCM Control Delay (s)	-	-	26.9	7.9	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	46	47	45	230	940	545
Future Vol, veh/h	46	47	45	230	940	545
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	51	49	250	1022	592

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1666	1318	1614	0	-	0
Stage 1	1318	-	-	-	-	-
Stage 2	348	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	106	192	404	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	93	192	404	-	-	-
Mov Cap-2 Maneuver	196	-	-	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	628	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	42.1	2.5	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	404	-	194	-	-
HCM Lane V/C Ratio	0.121	-	0.521	-	-
HCM Control Delay (s)	15.1	-	42.1	-	-
HCM Lane LOS	C	-	E	-	-
HCM 95th %tile Q(veh)	0.4	-	2.7	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	72	57	400	336	72
Future Vol, veh/h	85	72	57	400	336	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	78	62	435	365	78

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	963	404	443	0	-	0
Stage 1	404	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Critical Hdwy	7.12	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	235	647	1117	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	513	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	225	647	1117	-	-	-
Mov Cap-2 Maneuver	344	-	-	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	485	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1117	-	635	-	-
HCM Lane V/C Ratio	0.055	-	0.269	-	-
HCM Control Delay (s)	8.4	-	12.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	13	471	14	13	396
Future Vol, veh/h	13	13	471	14	13	396
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	14	512	15	14	430

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	979	520	0	0	527	0
Stage 1	520	-	-	-	-	-
Stage 2	459	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	277	556	-	-	1040	-
Stage 1	597	-	-	-	-	-
Stage 2	636	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	273	556	-	-	1040	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	627	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	468	1040	-
HCM Lane V/C Ratio	-	-	0.06	0.014	-
HCM Control Delay (s)	-	-	13.2	8.5	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	86	48	25	380	298	85
Future Vol, veh/h	86	48	25	380	298	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	52	27	413	324	92

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	837	370	416	0	-	0
Stage 1	370	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	337	676	1143	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	329	676	1143	-	-	-
Mov Cap-2 Maneuver	448	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	616	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1143	-	510	-	-
HCM Lane V/C Ratio	0.024	-	0.286	-	-
HCM Control Delay (s)	8.2	-	14.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	58	43	296	1307	198
Future Vol, veh/h	31	58	43	296	1307	198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	63	47	322	1421	215

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1943	1528	1636	0	-	0
Stage 1	1528	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	71	144	396	-	-	-
Stage 1	197	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	63	144	396	-	-	-
Mov Cap-2 Maneuver	155	-	-	-	-	-
Stage 1	197	-	-	-	-	-
Stage 2	587	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.4	1.9	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	396	-	221	-	-
HCM Lane V/C Ratio	0.118	-	0.438	-	-
HCM Control Delay (s)	15.3	-	33.4	-	-
HCM Lane LOS	C	-	D	-	-
HCM 95th %tile Q(veh)	0.4	-	2.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	16	311	10	6	1492
Future Vol, veh/h	30	16	311	10	6	1492
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	17	338	11	7	1622

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1978	343	0	0	349	0
Stage 1	343	-	-	-	-	-
Stage 2	1635	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	68	700	-	-	1210	-
Stage 1	719	-	-	-	-	-
Stage 2	175	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	68	700	-	-	1210	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	174	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.9	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	200	1210	-
HCM Lane V/C Ratio	-	-	0.25	0.005	-
HCM Control Delay (s)	-	-	28.9	8	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	1	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	47	45	270	981	548
Future Vol, veh/h	47	47	45	270	981	548
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	51	49	293	1066	596

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1755	1364	1662	0	-	0
Stage 1	1364	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	94	181	387	-	-	-
Stage 1	238	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	82	181	387	-	-	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	238	-	-	-	-	-
Stage 2	597	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	47.5	2.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	387	-	182	-	-
HCM Lane V/C Ratio	0.126	-	0.561	-	-
HCM Control Delay (s)	15.6	-	47.5	-	-
HCM Lane LOS	C	-	E	-	-
HCM 95th %tile Q(veh)	0.4	-	3	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	73	58	425	362	72
Future Vol, veh/h	85	73	58	425	362	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	79	63	462	393	78

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1021	433	472	0	-	0
Stage 1	433	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	262	623	1090	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	247	623	1090	-	-	-
Mov Cap-2 Maneuver	376	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	523	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1090	-	699	-	-
HCM Lane V/C Ratio	0.058	-	0.246	-	-
HCM Control Delay (s)	8.5	-	11.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	13	471	14	13	369
Future Vol, veh/h	13	13	471	14	13	369
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	14	512	15	14	401

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	949	520	0	0	527	0
Stage 1	520	-	-	-	-	-
Stage 2	429	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	289	556	-	-	1040	-
Stage 1	597	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	285	556	-	-	1040	-
Mov Cap-2 Maneuver	413	-	-	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	648	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	474	1040	-
HCM Lane V/C Ratio	-	-	0.06	0.014	-
HCM Control Delay (s)	-	-	13.1	8.5	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	87	48	25	409	326	87
Future Vol, veh/h	87	48	25	409	326	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	95	52	27	445	354	95

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	901	402	449	0	-	0
Stage 1	402	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	309	648	1111	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	301	648	1111	-	-	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	595	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1111	-	484	-	-
HCM Lane V/C Ratio	0.024	-	0.303	-	-
HCM Control Delay (s)	8.3	-	15.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Intersection	
Int Delay, s/veh	10.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	61	55	352	1790	279
Future Vol, veh/h	34	61	55	352	1790	279
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	66	60	383	1946	303

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2599	2097	2249	0	-	0
Stage 1	2097	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 27	~ 65	229	-	-	-
Stage 1	102	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 20	~ 65	229	-	-	-
Mov Cap-2 Maneuver	81	-	-	-	-	-
Stage 1	102	-	-	-	-	-
Stage 2	449	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	275.4	3.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	229	- 82	-	-
HCM Lane V/C Ratio	0.261	- 1.259	-	-
HCM Control Delay (s)	26.2	- 275.4	-	-
HCM Lane LOS	D	- F	-	-
HCM 95th %tile Q(veh)	1	- 7.7	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	7	380	2	0	2039
Future Vol, veh/h	11	7	380	2	0	2039
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	8	413	2	0	2216

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2630	414	0	0	415	0
Stage 1	414	-	-	-	-	-
Stage 2	2216	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	26	638	-	-	1144	-
Stage 1	667	-	-	-	-	-
Stage 2	89	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	26	638	-	-	1144	-
Mov Cap-2 Maneuver	76	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	89	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	42.2	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	116	1144	-
HCM Lane V/C Ratio	-	-	0.169	-	-
HCM Control Delay (s)	-	-	42.2	0	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	52	63	314	1306	758
Future Vol, veh/h	49	52	63	314	1306	758
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	57	68	341	1420	824

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2310	1832	2243	0	-	0
Stage 1	1832	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 42	95	230	-	-	-
Stage 1	139	-	-	-	-	-
Stage 2	624	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 30	95	230	-	-	-
Mov Cap-2 Maneuver	106	-	-	-	-	-
Stage 1	139	-	-	-	-	-
Stage 2	440	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	198.2	4.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	230	-	100	-	-
HCM Lane V/C Ratio	0.298	-	1.098	-	-
HCM Control Delay (s)	27.2	-	198.2	-	-
HCM Lane LOS	D	-	F	-	-
HCM 95th %tile Q(veh)	1.2	-	7.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	94	77	77	556	460	101
Future Vol, veh/h	94	77	77	556	460	101
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	102	84	84	604	500	110

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1327	555	610	0	-	0
Stage 1	555	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	171	531	969	-	-	-
Stage 1	575	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	156	531	969	-	-	-
Mov Cap-2 Maneuver	289	-	-	-	-	-
Stage 1	575	-	-	-	-	-
Stage 2	416	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	969	-	526	-	-
HCM Lane V/C Ratio	0.086	-	0.353	-	-
HCM Control Delay (s)	9.1	-	15.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.6	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	6	614	2	2	522
Future Vol, veh/h	6	6	614	2	2	522
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	7	667	2	2	567

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1240	668	0	0	670	0
Stage 1	668	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	193	458	-	-	920	-
Stage 1	510	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	193	458	-	-	920	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	510	-	-	-	-	-
Stage 2	564	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	385	920	-
HCM Lane V/C Ratio	-	-	0.034	0.002	-
HCM Control Delay (s)	-	-	14.7	8.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	93	53	35	521	411	117
Future Vol, veh/h	93	53	35	521	411	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	58	38	566	447	127

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1152	510	574	0	-	0
Stage 1	510	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	219	563	999	-	-	-
Stage 1	603	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	211	563	999	-	-	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	603	-	-	-	-	-
Stage 2	504	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.7	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	999	-	402	-	-
HCM Lane V/C Ratio	0.038	-	0.395	-	-
HCM Control Delay (s)	8.7	-	19.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.8	-	-

Intersection	
Int Delay, s/veh	11.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	63	59	364	1794	279
Future Vol, veh/h	34	63	59	364	1794	279
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	68	64	396	1950	303

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2626	2102	2253	0	-	0
Stage 1	2102	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 26	~ 65	228	-	-	-
Stage 1	102	-	-	-	-	-
Stage 2	594	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 19	~ 65	228	-	-	-
Mov Cap-2 Maneuver	80	-	-	-	-	-
Stage 1	102	-	-	-	-	-
Stage 2	427	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	285.1	3.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	228	-	82	-	-
HCM Lane V/C Ratio	0.281	-	1.286	-	-
HCM Control Delay (s)	26.9	-	285.1	-	-
HCM Lane LOS	D	-	F	-	-
HCM 95th %tile Q(veh)	1.1	-	7.9	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	16	380	10	6	2039
Future Vol, veh/h	30	16	380	10	6	2039
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	17	413	11	7	2216

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2647	418	0	0	424	0
Stage 1	418	-	-	-	-	-
Stage 2	2229	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 26	635	-	-	1135	-
Stage 1	664	-	-	-	-	-
Stage 2	88	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 26	635	-	-	1135	-
Mov Cap-2 Maneuver	75	-	-	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	87	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	64.3	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	108	1135	-
HCM Lane V/C Ratio	-	-	0.463	0.006	-
HCM Control Delay (s)	-	-	64.3	8.2	-
HCM Lane LOS	-	-	F	A	-
HCM 95th %tile Q(veh)	-	-	2	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	18.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	52	52	63	321	1325	769
Future Vol, veh/h	52	52	63	321	1325	769
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	57	68	349	1440	836

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2344	1858	2276	0	-	0
Stage 1	1858	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Critical Hdwy	7.12	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 25	91	223	-	-	-
Stage 1	94	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 19	91	223	-	-	-
Mov Cap-2 Maneuver	~ 55	-	-	-	-	-
Stage 1	65	-	-	-	-	-
Stage 2	391	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 443.9	4.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	223	- 69	-	-
HCM Lane V/C Ratio	0.307	- 1.638	-	-
HCM Control Delay (s)	28.1	-$ 443.9	-	-
HCM Lane LOS	D	- F	-	-
HCM 95th %tile Q(veh)	1.2	- 9.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	94	80	80	566	470	101
Future Vol, veh/h	94	80	80	566	470	101
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	-	230	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	102	87	87	615	511	110

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1355	566	621	0	-	0
Stage 1	566	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Critical Hdwy	7.12	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	127	524	960	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	118	524	960	-	-	-
Mov Cap-2 Maneuver	234	-	-	-	-	-
Stage 1	463	-	-	-	-	-
Stage 2	349	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.6	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	960	-	433	-	-
HCM Lane V/C Ratio	0.091	-	0.437	-	-
HCM Control Delay (s)	9.1	-	19.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	13	614	14	13	522
Future Vol, veh/h	13	13	614	14	13	522
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	14	667	15	14	567

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1271	675	0	0	683	0
Stage 1	675	-	-	-	-	-
Stage 2	596	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	185	454	-	-	910	-
Stage 1	506	-	-	-	-	-
Stage 2	550	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	182	454	-	-	910	-
Mov Cap-2 Maneuver	322	-	-	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.3	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	377	910	-
HCM Lane V/C Ratio	-	-	0.075	0.016	-
HCM Control Delay (s)	-	-	15.3	9	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	2.6

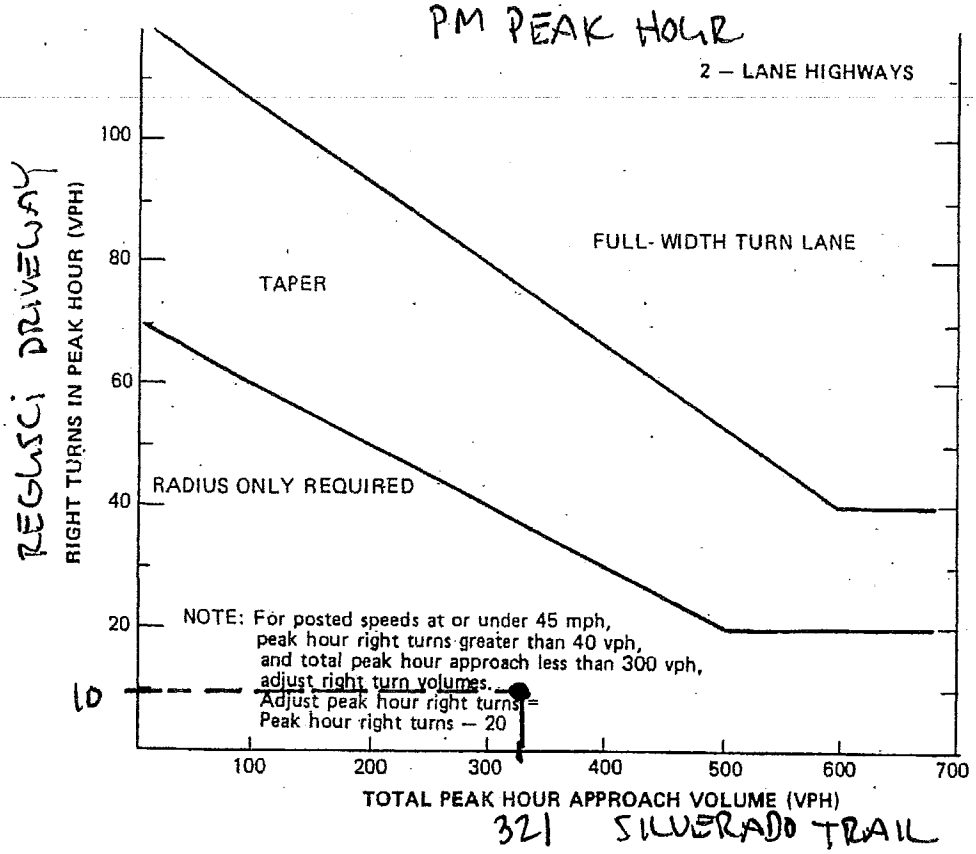
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	96	53	35	531	421	120
Future Vol, veh/h	96	53	35	531	421	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	104	58	38	577	458	130

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1176	523	588	0	-	0
Stage 1	523	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	211	554	987	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	203	554	987	-	-	-
Mov Cap-2 Maneuver	339	-	-	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	498	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.4	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	987	-	393	-	-
HCM Lane V/C Ratio	0.039	-	0.412	-	-
HCM Control Delay (s)	8.8	-	20.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	2	-	-

NEAR-TERM + PROJECT CONDITIONS
PM PEAK HOUR



REGLSCI DRIVEWAY

10

321 SILVERADO TRAIL

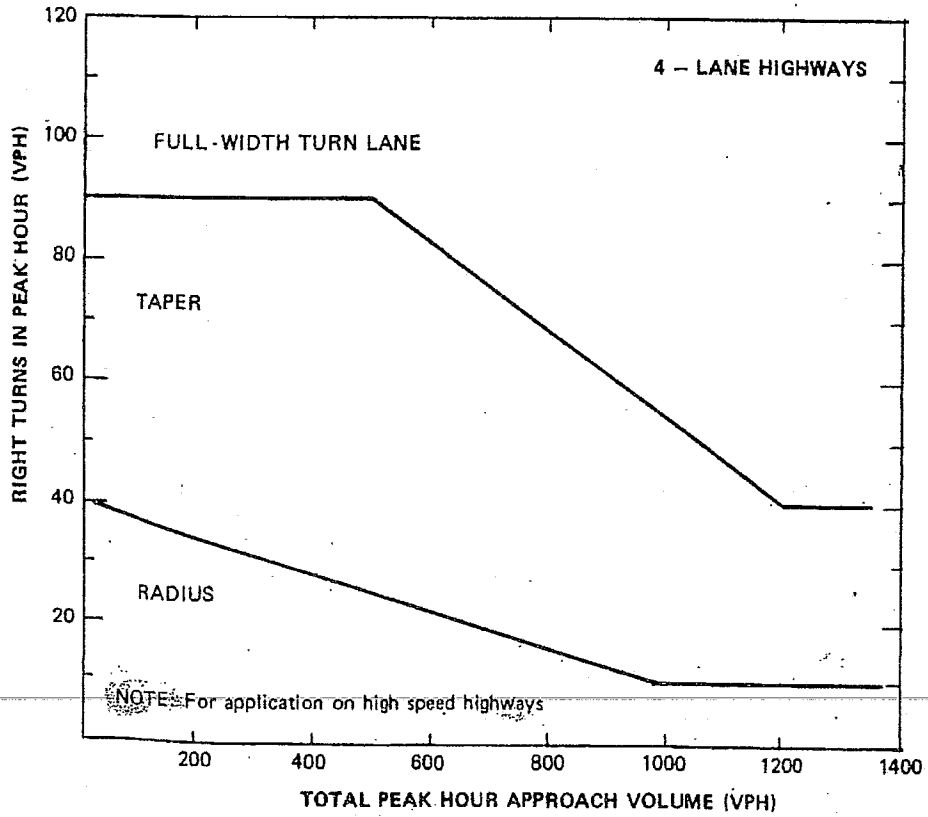
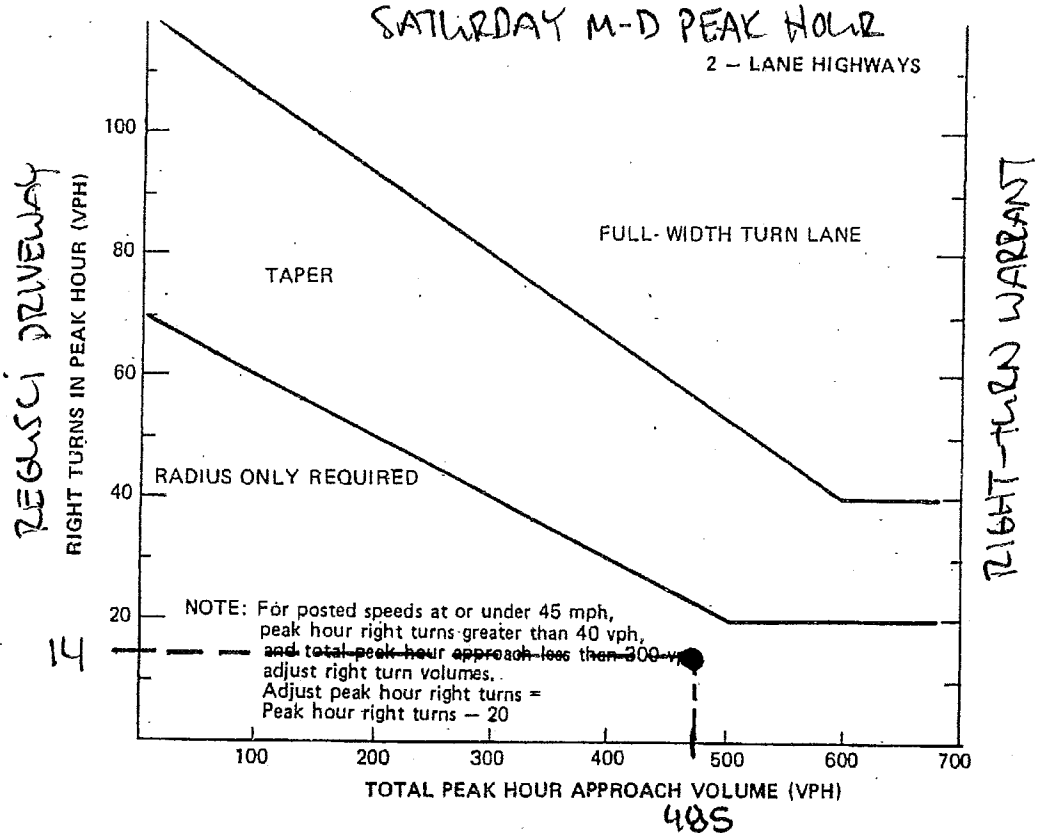


Figure 4-23. Traffic volume guidelines for design of right-turn lanes. (Source: Ref. *4-11*)

NEAR-TERM + PROJECT CONDITIONS
SATURDAY M-D PEAK HOUR



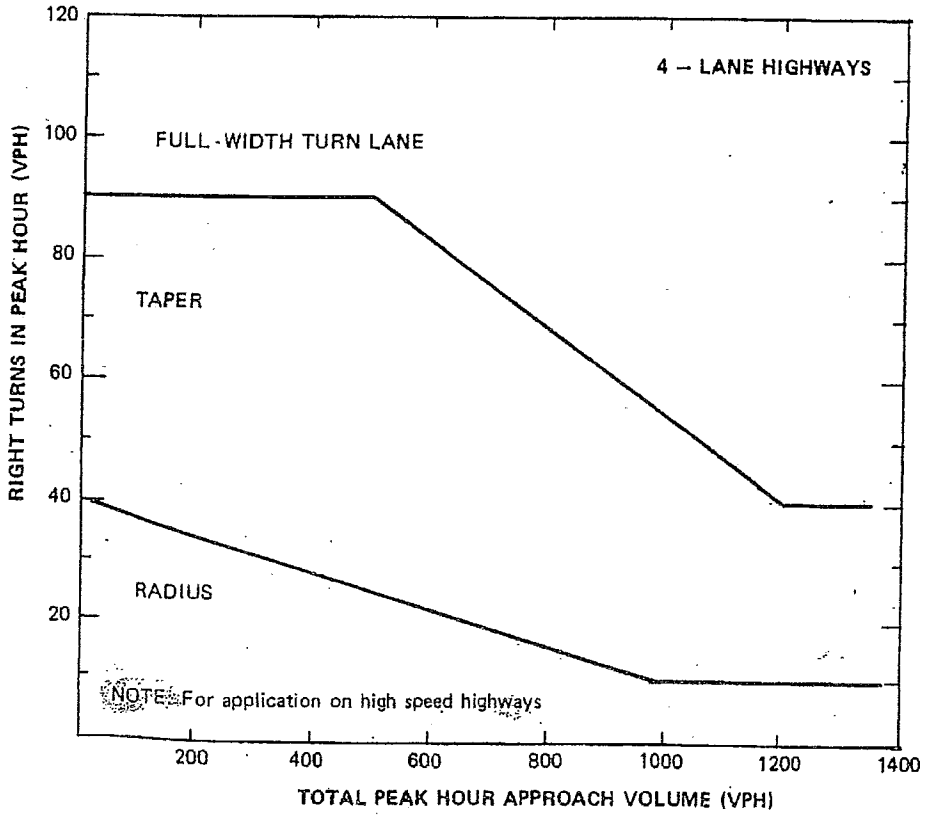


Figure 4-23. Traffic volume guidelines for design of right-turn lanes. (Source: Ref. 4-11)

TABLE 2

Generalized **Annual Average Daily** Volumes for Florida's **Transitioning Areas** and **Areas Over 5,000 Not In Urbanized Areas**[1]

12/18/12

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	14,400	16,200	**
4	Divided	*	34,000	35,500	**
6	Divided	*	52,100	53,500	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	6,500	13,300	14,200
4	Divided	*	9,900	28,800	31,600
6	Divided	*	16,000	44,900	47,600

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
2	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding two-directional volumes in this table by 0.6

BICYCLE MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	2,600	6,100	19,500
50-84%	1,900	5,500	18,400	>19,500
85-100%	7,500	19,500	>19,500	**

PEDESTRIAN MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	2,800	9,400
50-84%	*	1,600	8,600	15,600
85-100%	3,800	10,500	17,100	>19,500

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
4	44,100	57,600	68,900	71,700
6	65,100	85,600	102,200	111,000
8	85,100	113,700	135,200	150,000
10	106,200	141,700	168,800	189,000

Freeway Adjustments

Auxiliary Lanes Present in Both Directions	Ramp Metering
+ 20,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
2	Undivided	9,200	17,300	24,400	33,300
4	Divided	35,300	49,600	62,900	69,600
6	Divided	52,800	74,500	94,300	104,500

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
2	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1] Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Planning Office
www.dot.state.fl.us/planning/systems/sm/los/default.shtm

TABLE 2
(continued)

Generalized **Annual Average Daily** Volumes for Florida's **Transitioning** and **Areas Over 5,000 Not In Urbanized Areas**

12/18/12

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (t,uo)	t	t	t	t	t	t	t	t	t
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n	n	n						
Median (n, nr, r)		n	r	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	8	5	5	1.8	2	2	2	2	2
Number of basic segments	4								
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.555	0.550	0.550	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)		1,700	2,100	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Local adjustment factor	0.85	0.97	0.95						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane %ffs	Multilane Density	Class I ats	Class II ats	Score	Score	Buses/hr.
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed ats = Average travel speed

Memorandum

To:	Napa County Planning, Building,& Environmental	**Date:**	September 27, 2017
Attn:	Ms. Dana Ayers, Planner	**Project:**	Proposed Regusci Winery
From:	Peter Galloway		Use Modification Project
Re:	Regusci Driveway/Silverado Trail	**Job No.:**	35-5644-01 (11145087)
	Intersection Level-of-Service	**File No.:**	C268MEM001.DOCX
CC:	Mr. George Monteverdi, Planning Consultant		

Hi Dana,

This memorandum is a follow-up to our conversation and emails last week related to the calculated Level-of-Service (LOS) for the Regusci Driveway/Silverado Trail intersection for all "no project" scenarios under existing, near-term, and cumulative conditions. Based on the most recent draft traffic analysis prepared for the proposed project (*Omni-Means/GHD, June, 2017*); when proposed project traffic was added to the subject intersection overall LOS improved when compared to all "no project" conditions. This result of improved intersection LOS is not typical when additional trips are added to a "baseline" or existing condition. The following sections provide a brief explanation for this a-typical result as well as revised LOS calculations for the Regusci Driveway/Silverado Trail intersection that provide a more uniform comparison of "no project" and "with project" conditions for all analyzed scenarios.

HCM 2010 LOS Methodology for Stop-Sign Controlled Intersections

The Regusci Driveway/Silverado Trail intersection is one of many stop-sign controlled, minor street (driveway) intersections on Silverado Trail. The Regusci driveway is a single-lane approach (westbound) at Silverado Trail with a shared right/left-turn lane. Silverado Trail has a shared through/right-turn lane in the northbound direction and a separate left-turn lane and through-lane in the southbound direction. All turning movements from Silverado Trail into the Regusci Driveway are uncontrolled.

The Highway Capacity Manual (HCM) 2010 methodology for a stop-sign controlled minor street intersection primarily focuses on the stop-sign controlled movements but also provides delay for turning movements from the main street. As an example, under existing "no project" conditions the LOS for the Regusci Driveway/Silverado Trail intersection was calculated to be LOS D (28.1 seconds of delay) for the outbound (left-turn) movement from the Regusci driveway onto Silverado Trail. A key factor in this LOS calculation was that the Regusci driveway's westbound approach always had one (1) left-turn movement and zero (0) right-turn movements. These volumes for the westbound stop-sign controlled driveway approach were consistent for all "no project" conditions. This is noted because the calculated LOS and vehicle delay of D (28.1 seconds of delay) only reflects the delay for left-turn movement(s) from the driveway onto Silverado Trail. With the Regusci driveway having shared left and right-turn movements onto

Silverado Trail, the HCM methodology also provides capacity for right-turn movements. However, since all “no project” scenarios for the Regusci driveway westbound approach always contained one (1) left-turn and zero (0) right-turn movements; vehicle delay for the right-turn movements were never factored into the overall calculation. The HCM LOS calculation assumes a higher combined capacity for a shared left and right-turn lane when there are both left and right-turn movements using the approach.

When proposed project trips were added to the westbound Regusci driveway approach at Silverado Trail, it resulted in both left *and* right-turn movements based on the overall distribution of project trips. Thus, the HCM calculation assumed a higher capacity for shared left and right-turn movements at the driveway that resulted in an improved overall intersection LOS as compared to all “no project” LOS calculations that contained only left-turn movements.

To correct this intersection LOS discrepancy at the Regusci Driveway/Silverado Trail intersection between “no project” and “with project” conditions, an additional right-turn movement was added to all “no project” LOS calculations for the intersection. By adding one (1) right-turn movement to the westbound Regusci driveway approach the HCM LOS calculation included the same proportional capacities for the shared left and right-turn movements (dependent on volumes) as all “with project” LOS calculations (see “No Project” LOS calculations for existing, near-term, and cumulative conditions—attached).

Revised Level of Service Tables for Project Analysis Scenarios

The revised Regusci Driveway/Silverado Trial intersection LOS for all “no project” analysis scenarios are shown in Table 2 (Existing and Near-Term “No Project” Conditions) and Table 5 (Cumulative Year 2030 “No Project” And Plus Project Conditions) taken directly from the draft traffic analysis conducted for the proposed project. As shown in Table 2 for Existing and Near-Term (no project) conditions, LOS for the Regusci Driveway/Silverado Trail would improve under all “no project” conditions (particularly for the weekday PM peak hour conditions). Our conclusions related to proposed project impacts would not change from the draft traffic analysis. Under cumulative “no project” and “with project” conditions, intersection LOS would change from LOS D (31.9 seconds) to LOS E (49.7 seconds) during the weekday PM peak hour for the outbound Regusci driveway left and right-turn movements. This change is intersection LOS would be considered a significant impact. However, all uncontrolled vehicle turning movements from Silverado Trail would continue to operate at LOS A and there would be ample vehicle storage for outbound turning movements on the Regusci driveway. In addition, the Regusci Driveway/Silverado Trail intersection would not meet the peak hour signal warrant with cumulative plus project traffic. Therefore, no mitigation is recommended at this time.

TABLE 2
EXISTING AND NEAR-TERM (NO PROJECT) CONDITIONS: INTERSECTION LEVELS-OF-SERVICE
WEEKDAY PM PEAK AND WEEKEND MID-DAY PEAK HOUR[1, 2]

	Intersection	Control Type	Wkdy. PM LOS/Delay		Wknd. Mid-Day LOS/Delay	
			Existing (No Project)	Near-Term (No Project)	Existing (No Project)	Near-Term (No Project)
1	Yountville Crossroad/Silverado Trail	Stop	D 29.6	D 32.1	B 11.4	B 13.1
2	Regusci Driveway/Silverado Trail	Stop	C 19.0	B 13.6	B 12.2	B 12.5
	Oak Knoll Ave./Silverado Trail	Stop	E 39.1	E 43.6	B 14.5	C 16.6

(1) Based on Highway Capacity Manual (HCM) 2010, Operations methodology for stop-sign controlled (unsignalized) intersections using Synchro-Simtraffic software. Intersection calculation yields an LOS and vehicle delay in seconds. Stated LOS refers to the minor street (stop-sign) controlled movement.

TABLE 5
CUMULATIVE YEAR 2030 (NO PROJECT) AND PLUS PROJECT CONDITIONS:
INTERSECTION LEVEL OF SERVICE; WEEKDAY PM PEAK AND WEEKEND MID-DAY PEAK HOUR[1, 2]

	Intersection	Control Type	Wkdy. PM LOS/Delay		Wknd. Mid-Day LOS/Delay	
			Yr. 2030 (No Project)	Yr. 2030 (W/ Project)	Yr. 2030 (No Project)	Near-Term (W/ Project)
1	Yountville Crossroad/Silverado Trail	Stop	F 275.4	F 280.2	C 15.5	C 19.5
2	Regusci Driveway/Silverado Trail	Stop	D 31.9	E 49.7	B 14.4	C 15.0
3	Oak Knoll Ave./Silverado Trail	Stop	F 198.2	F 214.9	C 19.7	C 20.2

(1) Based on Highway Capacity Manual (HCM) 2010, Operations methodology for stop-sign controlled (unsignalized) intersections using Synchro-Simtraffic software. Intersection calculation yields an LOS and vehicle delay in seconds. Stated LOS refers to the minor street (stop-sign) controlled movement.

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	270	1	0	1448
Future Vol, veh/h	1	1	270	1	0	1448
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	293	1	0	1574

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1868	294	0	0	295	0
Stage 1	294	-	-	-	-	-
Stage 2	1574	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	80	745	-	-	1266	-
Stage 1	756	-	-	-	-	-
Stage 2	187	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	80	745	-	-	1266	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	187	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	259	1266	-
HCM Lane V/C Ratio	-	-	0.008	-	-
HCM Control Delay (s)	-	-	19	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	436	1	0	371
Future Vol, veh/h	1	1	436	1	0	371
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	474	1	0	403

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	877	474	0	0	475	0
Stage 1	474	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	319	590	-	-	1087	-
Stage 1	626	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	319	590	-	-	1087	-
Mov Cap-2 Maneuver	442	-	-	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	675	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	505	1087	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s)	-	-	12.2	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	471	0	0	396
Future Vol, veh/h	1	0	471	0	0	396
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	512	0	0	430

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	942	512	0	0	512	0
Stage 1	512	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	292	562	-	-	1053	-
Stage 1	602	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	292	562	-	-	1053	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	656	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	419	1053	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s)	-	-	13.6	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	471	0	0	396
Future Vol, veh/h	1	1	471	0	0	396
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	512	0	0	430

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	942	512	0	0	512	0
Stage 1	512	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	292	562	-	-	1053	-
Stage 1	602	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	292	562	-	-	1053	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	656	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	480	1053	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	12.5	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	380	1	0	2039
Future Vol, veh/h	1	1	380	1	0	2039
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	413	1	0	2216

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2630	414	0	0	414	0
Stage 1	414	-	-	-	-	-
Stage 2	2216	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	26	638	-	-	1145	-
Stage 1	667	-	-	-	-	-
Stage 2	89	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	26	638	-	-	1145	-
Mov Cap-2 Maneuver	76	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	89	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.9	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	136	1145	-
HCM Lane V/C Ratio	-	-	0.016	-	-
HCM Control Delay (s)	-	-	31.9	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	614	1	0	522
Future Vol, veh/h	1	1	614	1	0	522
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	667	1	0	567

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1235	668	0	0	668	0
Stage 1	668	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	195	458	-	-	922	-
Stage 1	510	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	195	458	-	-	922	-
Mov Cap-2 Maneuver	334	-	-	-	-	-
Stage 1	510	-	-	-	-	-
Stage 2	568	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	386	922	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	-	-	14.4	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-