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Traffic Study

Ellman Family Winery P18-00249-UP
Planning Commission Hearing Date October 2, 2019

FINAL TRAFFIC IMPACT REPORT

ELLMAN FAMILY WINERY

November 2, 2018

Prepared for: **ELLMAN FAMILY WINERY**

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I. INTRODUCTION

This traffic report has been prepared at the request of the Napa County Public Works Department as authorized by the Ellman Family Winery applicant. It has determined if traffic from the proposed Ellman Family Winery will result in any significant impacts to the local circulation system and the need for any mitigation measures. **Figure 1** shows the winery location along the Silverado Trail corridor in the Napa Valley, while **Figure 2** presents the site plan.

II. SCOPE OF SERVICES

The scope of services for this traffic study was approved by the Napa County Public Works Department. Evaluation was conducted for harvest Friday PM commute and Saturday afternoon peak traffic conditions. Existing harvest 2017, year 2020 and year 2030 (Cumulative – General Plan Buildout) horizons were evaluated both with and without project traffic. Operating conditions along Silverado Trail at the project entrance as well as at the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road and Hardman Avenue were evaluated for all analysis scenarios based upon the County's recently approved significance criteria. In addition, the project driveway intersection with Silverado Trail was evaluated for sight line adequacy. Although a left turn lane on Silverado Trail is being provided as part of the project, additional evaluation was conducted of the benefits of beginning this lane at the Soda Canyon Road intersection and extending this lane southerly from the Ellman driveway to serve the adjacent Reynolds Winery entrance. Significant impacts, if any, were identified and measures listed, if needed, to mitigate all impacts to a less than significant level.

III. SUMMARY OF FINDINGS

A. "WITHOUT PROJECT" OPERATING CONDITIONS

1. EXISTING VOLUMES – HARVEST 2017

Analysis peak traffic hours were based upon the highest volumes surveyed along Silverado Trail adjacent to the project site found during counts for this study as well as from counts for three other studies for nearby wineries completed over the past two years. Along Silverado Trail, projected two-way volumes south of Soda Canyon Road during harvest would be expected to be higher during the Friday PM peak hour compared to the Saturday PM peak hour (about 1,610 Friday PM peak hour two-way vehicles versus about 1,410 Saturday PM peak hour vehicles). Volumes along Soda Canyon Road would also be expected to be higher during the Friday PM peak hour compared to the Saturday PM peak hour (about 180 vehicles during the Friday PM peak hour versus about 160 vehicles during the Saturday PM peak hour). The driveway serving the Ellman site had 3 vehicles during the Friday PM peak hour versus 0 vehicles during the Saturday PM peak hour.

2. YEAR 2017 HARVEST – CIRCULATION SYSTEM UNACCEPTABLE OPERATION

INTERSECTION LEVEL OF SERVICE

- **Silverado Trail @ Oak Knoll Avenue, Soda Canyon Road & Hardman Avenue**
  - Unacceptable Friday & Saturday PM peak hour operation

INTERSECTION SIGNAL WARRANT

- **Silverado Trail @ Oak Knoll Avenue, Soda Canyon Road & Hardman Avenue**
  - Volumes exceed both rural and urban peak hour signal Warrant #3 volume criteria during both the Friday and Saturday PM peak hours.

3. YEAR 2020 AND YEAR 2030 (CUMULATIVE) HARVEST – CIRCULATION SYSTEM UNACCEPTABLE OPERATION

INTERSECTION LEVEL OF SERVICE

- **Silverado Trail @ Oak Knoll Avenue, Soda Canyon Road & Hardman Avenue**
  - Unacceptable Friday & Saturday PM peak hour operation

INTERSECTION SIGNAL WARRANT

- **Silverado Trail @ Oak Knoll Avenue, Soda Canyon Road & Hardman Avenue**
  - Volumes would exceed both rural and urban peak hour signal Warrant #3 volume criteria during both the Friday and Saturday PM peak hours.

B. PROJECT IMPACTS

1. Project Trip Generation

The proposed project will result in the following trip generation during harvest Friday and Saturday PM peak traffic hours.

PROJECT TRIP GENERATION

HARVEST

FRIDAY PM PEAK HOUR* (4:15-5:15)		SATURDAY PM PEAK HOUR* (4:30-5:30)	
INBOUND TRIPS	OUTBOUND TRIPS	INBOUND TRIPS	OUTBOUND TRIPS
1	1	1	1

* Peak traffic hours along Silverado Trail.

Trips during the Friday and Saturday PM peak hours will be visitors by appointment.

2. **Year 2017 Harvest + Project Off-Cite Circulation Impacts**
The proposed project would not result in any significant off-site level of service or signal warrant impacts to the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road or Hardman Avenue. ***Less than significant.***

3. **Year 2020 Harvest + Project Off-Site Circulation Impacts**
The proposed project would not result in any significant off-site level of service or signal warrant impacts to the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road or Hardman Avenue. ***Less than significant.***

4. **Year 2030 (Cumulative) Harvest + Project Off-Site Circulation Impacts**
The proposed project would not result in any significant off-site level of service or signal warrant impacts to the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road or Hardman Avenue. ***Less than significant.***

5. **Project Driveway intersection with Silverado Trail**
The project driveway intersection with Silverado Trail would be operating at an acceptable level of service during the Friday and Saturday PM peak hours for 2017, 2020 and 2030 horizons.

6. **Left Turn Lane on Silverado Trail at Project Entrance**
The project will be providing a left turn lane on the southbound Silverado Trail approach to the project entrance. The lane will extend southerly from the Soda Canyon Road intersection and will also serve as a median refuge area (and acceleration lane) for left turns from Soda Canyon Road. In addition, applicant Ellman is working with applicant Reynolds (to the south) to extend the left turn lane farther south to serve the Reynolds entrance. Improvement plans shall be prepared by a Registered Civil Engineer in accordance with the Napa County Road & Street Standards, for approval by the Department of Public Works, Road Commissioner. Additional right-of-way shall be dedicated to the public as necessary to encompass the improvements. Improvement plans and right-of-way dedication, if needed, shall be completed prior to issuance of any permits. The left turn lane shall incorporate an acceleration lane for cars turning left from Soda Canyon Road onto Silverado Trail. ***Less than significant.***

7. **Sight Lines at Project Driveway**
Sight lines are acceptable at the project's driveway connection to Silverado Trail to see both vehicular and bicycle rider traffic. ***Less than significant.***

8. **Bicycle Rider Impacts**
The applicant is considering providing bicycle racks at the winery. ***Less than significant.***

9. **Marketing Events**
Marketing events may occur between 10:00 AM and 10:00 PM. However, guest arrival and departure times would be arranged to avoid traffic on the local circulation system between 3:00 PM and 5:30 PM. ***Less than significant.***

C. MITIGATIONS

No circulation system mitigations are required.

D. CONCLUSIONS & RECOMMENDATIONS

The project will result in no significant off-site circulation system operational impacts to the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road or Hardman Avenue. A left turn lane will be provided on the southbound Silverado Trail approach to the project entrance which will extend from the Soda Canyon Road intersection and also benefit drivers turning left from Soda Canyon Road. In addition, sight lines at the project driveway connection to Silverado Trail are acceptable. Finally, marketing event guest arrival and departure times will be arranged to avoid traffic on the local circulation system between 3:00 and 5:30 PM. No circulation-related mitigations will be required.

IV. PROJECT LOCATION & DESCRIPTION

The Ellman Family Winery will be located on the east side of Silverado Trail and be served by an existing driveway about 250 feet south of the Silverado Trail/Soda Canyon Road intersection (see the area map in **Figure 1** and the project site plan in **Figure 2**). The current driveway connection provides access to a single family residence and vineyards and will be maintained. A left turn lane will be provided on the southbound Silverado Trail approach to the winery entrance. **Figure 3** presents existing intersection geometrics and approach lanes, while **Figure 4** presents the revised geometrics and inclusion of the southbound left turn lane with project completion.

The proposed Ellman Family Winery Roadway improvements, employment, visitation and marketing events are as follows.

- 30,000 gallons per year production.
- 8 full-time and 2 part-time employees during a crush weekday.
- 6 full-time and 2 part-time employees during a crush Saturday.
- All bottling on-site.
- 70% of grapes will be grown off site. New grapes will be transported to the site in about 45 trucks spread over about 11 days.
- 11 grape outhaul truck trips/year will be eliminated.
- Tours and tasting by appointment only – 7 days per week from 10:00 AM to 6:00 PM.
  - Weekdays = 10 visitors
  - Saturdays = 15 visitors
- Bicycle racks are being considered.
- Marketing events:
  24/year, 10 visitors per event (between 10:00 AM and 6:00 PM or 6:00 PM and 10:00 PM)

1/year, 100 visitors on Saturday or Sunday(between 10:00 AM and 6:00 PM or 6:00 PM and 10:00 PM)
1/year, 200 visitors on Saturday or Sunday(between 10:00 AM and 6:00 PM or 6:00 PM and 10:00 PM)
1/year, 125 visitors on Saturday or Sunday(between 10:00 AM and 6:00 PM or 6:00 PM and 10:00 PM)

- Left turn lane: A left turn lane will be provided on the southbound Silverado Trail approach to the winery driveway. The lane will extend from the Soda Canyon Road intersection and will also serve as a refuge area for left turns from Soda Canyon Road. This lane will also be extended to the south to serve the Reynolds Winery driveway (by Reynolds Winery). Improvement plans shall be prepared by a Registered Civil Engineer in accordance with the Napa County Road & Street Standards, for approval by the Department of Public Works, Road Commissioner. Additional right-of-way shall be dedicated to the public as necessary to encompass the improvements. Improvement plans and right-of-way dedication, if needed, shall be completed prior to issuance of any permits. The left turn lane shall incorporate an acceleration lane for cars turning left from Soda Canyon Road onto Silverado Trail.

V. EXISTING CIRCULATION SYSTEM EVALUATION PROCEDURES

A. ANALYSIS LOCATIONS

At County direction, the following locations have been evaluated.

1. **Silverado Trail/Oak Knoll Avenue intersection (the Oak Knoll Avenue approach is stop sign controlled)**
2. **Silverado Trail/Soda Canyon Road intersection (the Soda Canyon Road approach is stop sign controlled)**
3. **Silverado Trail/Hardman Avenue intersection (the Hardman Avenue approach is stop sign controlled)**
4. **Silverado Trail/Project Driveway intersection**

B. ROADWAY DESCRIPTION

Silverado Trail provides subregional access to the project vicinity. It is a two-lane highway with a 55 mile per hour posted speed limit near the project site. It extends northerly from the City of Napa through the Napa Valley to its terminus at State Route 29 in the City of Calistoga. Silverado Trail has two well-paved travel lanes and wide paved shoulders that are signed and striped as Class II bicycle lanes in the project study area.

Soda Canyon Road is a two-lane collector roadway extending in a general northeasterly direction from its intersection with Silverado Trail. It ends about 7 miles from Silverado Trail.

C. VOLUMES

1. ANALYSIS SEASONS AND DAYS OF THE WEEK

At County request project traffic impacts have been evaluated during harvest conditions. Based upon year 2015 and 2016 counts from Caltrans PeMS (Performance Measurement System) count surveys along SR 29 in the Napa Valley, September has the highest weekday and weekend volumes of the year (during harvest).

In regards to the peak traffic days of the week, the Napa County Travel Behavioral Study[1] shows that the highest weekday volumes in Napa Valley occur on a Friday, with the highest weekend volumes occurring on a Saturday. In addition, historical count data from the City of Napa show that Friday has the highest volumes of any weekday, while Caltrans historical counts for SR 29 between St. Helena and Napa also show that weekday AM and PM peak hour volumes are higher on a Friday than on either a Wednesday or Thursday. Therefore, Friday and Saturday peak traffic conditions were evaluated at all analysis locations in this study.

2. COUNT RESULTS

Friday 2:30 to 6:00 PM and Saturday noon to 6:00 PM turn movement counts were conducted by Crane Transportation Group (CTG) in mid March 2017 at the Silverado Trail intersections with Soda Canyon Road, the Ellman property driveway and the Reynolds Winery driveway. Additional counts were also conducted at the end of April 2017 at the Silverado Trail intersections with Oak Knoll Avenue and Hardman Avenue. The peak hours were determined to be 4:15-5:15 on Friday and 4:30-5:30 on Saturday. Resultant March and April 2017 peak hour counts are summarized in **Appendix Figure A-1**, while count worksheets are also provided in the **Appendix**.

3. SEASONAL ADJUSTMENTS

Seasonal factors were developed using the Caltrans PeMS Friday and Saturday PM peak period count data to adjust the March and April 2017 volumes on Silverado Trail to harvest 2017 conditions. Overall, March PM peak hour volumes along Silverado Trail would be expected to increase by about 5 percent on Friday and 13 percent on Saturday to reflect harvest conditions, while the late April PM peak hour counts would be expected to increase by about 4 percent on Friday and 7 percent on Saturday. Spring volumes on Soda Canyon Road were also adjusted to reflect harvest conditions based upon counts from two recent winery studies along the roadway (Mountain Peak Winery and Grassi Winery), while Oak Knoll Avenue and Hardman Avenue spring counts were seasonally adjusted based upon the Silverado Trail factors.

Resultant 2017 harvest Friday and Saturday PM peak hour volumes are presented in **Figure 5**.

[1] Fehr & Peers, December 8, 2014.

D. INTERSECTION LEVEL OF SERVICE

1. ANALYSIS METHODOLOGY

Transportation engineers and planners commonly use a grading system called level of service (LOS) to measure and describe the operational status of the local roadway network. LOS is a description of the quality of a roadway facility's operation, ranging from LOS A (indicating free-flow traffic conditions with little or no delay) to LOS F (representing oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). Intersections, rather than roadway segments between intersections, are almost always the capacity controlling locations for any circulation system.

Signalized Intersections. For signalized intersections, the 2017 *Highway Capacity Manual* (HCM 6th Edition) analysis methodology was utilized. With this methodology, operations are defined by the level of service and average control delay per vehicle (measured in seconds) for the entire intersection. For a signalized intersection, control delay is the portion of the total delay attributed to traffic signal operation. This includes delay associated with deceleration, acceleration, stopping, and moving up in the queue. **Table 1** summarizes the relationship between delay and LOS for signalized intersections.

Unsignalized Intersections. For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, the 2017 *Highway Capacity Manual* (HCM 6th Edition) analysis methodology for unsignalized intersections was utilized. For side-street stop-controlled intersections, operations are defined by the level of service and average control delay per vehicle (measured in seconds), with delay reported for the stop sign controlled approaches or turn movements, although overall delay is also typically reported for intersections along state highways. For all-way stop-controlled intersections, operations are defined by the average control delay for the entire intersection (measured in seconds per vehicle). The delay at an unsignalized intersection incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. **Table 2** summarizes the relationship between delay and LOS for unsignalized intersections.

2. MINIMUM ACCEPTABLE OPERATION

Napa County has recently adopted new minimum acceptable operating condition standards for unsignalized intersections. Based upon the new standards, Level of Service D (LOS D) is the poorest acceptable operation for side street stop sign controlled approaches at two-way stop intersections and for all-way-stop intersections.

E. PEDESTRIAN & BICYCLE FACILITIES

There are no pedestrian walkways along Silverado Trail in the project area other than the roadway's eight-foot-wide paved shoulders. These shoulders are striped and signed as Class II bicycle lanes. During the Friday PM peak period (2:30-6:30) counts, there were a total of 2 northbound and 7 southbound bicycle riders on Silverado Trail adjacent to the Ellman site, while

during the Saturday afternoon (noon-6:00 PM) counts, there were a total of 22 northbound and 34 southbound bike riders. Please see **Appendix Figure A-2**. There were no pedestrian during either Friday or Saturday periods.

F. INTERSECTION SIGNAL WARRANTS

1. ANALYSIS METHODOLOGY

Traffic signals are used to provide an orderly flow of traffic through an intersection. Many times they are needed to offer side street traffic an opportunity to access a major road where high volumes and/or high vehicle speeds block crossing or turn movements. They do not, however, increase the capacity of an intersection (i.e., increase the overall intersection's ability to accommodate additional vehicles) and, in fact, often slightly reduce the number of total vehicles that can pass through an intersection in a given period of time. Signals can also cause an increase in traffic accidents if installed at inappropriate locations.

There are 10 possible tests for determining whether a traffic signal should be considered for installation. These tests, called "warrants", consider criteria such as actual traffic volume, pedestrian volume, presence of school children, and accident history. The intersection volume data together with the available collision histories were compared to warrants contained in the *California Manual on Uniform Traffic Control Devices, 2014, Revision 3 (2014 CMUTCD Rev. 2)*. Section 4C of the 2014 CMUTCD Rev. 3 provides guidelines, or warrants, which may indicate need for a traffic signal at an unsignalized intersection. As indicated in the 2014 CMUTCD Rev. 3, satisfaction of one or more warrants does not necessarily require immediate installation of a traffic signal. It is merely an indication that the local jurisdiction should begin monitoring conditions at that location and that a signal may ultimately be required.

Warrant 3, the peak hour volume warrant, is often used as an initial check of signalization needs since peak hour volume data is typically available and this warrant is usually the first one to be met. Warrant 3 is based on a logarithmic curve and takes only the hour with the highest volume of the day into account. For intersections in rural locations (with local area population less than 10,000 people or where the posted speed limit or 85th percentile speed on the uncontrolled intersection approaches is greater than 40 miles per hour) a 70 percent warrant is applied. The regular and 70 percent warrants are typically referred to as the urban and rural peak hour warrants. Please see **Appendix Figures A-3** and **A-4** for the warrant charts.

It should be noted that a “rural” warrant chart is utilized when the uncontrolled intersection approaches have vehicle speeds greater than 40 miles per hour or when the intersection is in a community with less than 10,000 population. The rural chart has been utilized for evaluation of the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road and Hardman Avenue since the speeds along Silverado Trail are greater than 40 miles per hour and the intersections are in rural settings.

G. TRANSIT FACILITIES

There is no scheduled transit service along Silverado Trail.

H. PLANNED IMPROVEMENTS

There are no planned and funded County circulation system capacity improvements at any intersection evaluated in this study.[2] However, a left turn lane will be provided along Silverado trail starting just south of the Ellman entrance as part of the recently approved Reynolds Winery use permit modification.

VI. FUTURE HORIZON TRAFFIC VOLUME PROJECTIONS

Traffic analysis has been conducted for harvest 2017, year 2020 and cumulative (year 2030) horizons at County request. The 2030 horizon reflects the County General Plan Buildout year, while 2020 reflects a near term horizon the year the proposed winery should be at full production. Traffic modeling for the General Plan shows about a 14 percent growth in two-way weekday PM peak hour traffic along Silverado Trail in the project area between 2017 and 2030. Projecting straight line traffic growth for analysis purposes, this translates into about a 3.2 percent growth in two-way PM peak hour traffic along Silverado Trail from 2017 to 2020.

No reliable traffic modeling projections were available for Soda Canyon Road, Hardman Avenue or Oak Knoll Avenue. Therefore, County staff provided information about four wineries that are approved or proposed along Soda Canyon Road and one along Atlas Peak Road and have been assumed constructed and in full operation by 2020. The list of four projects and their expected Friday and Saturday PM peak hour harvest trip generation are provided in **Table 3**. In addition to traffic from these specific developments, a 1 percent per year growth rate was also projected for Soda Canyon Road traffic. These developments and growth rate result in about a 27 percent growth in weekday PM peak hour harvest traffic along Soda Canyon Road near Silverado Trail from 2017 to 2030. For analysis purposes in addition to specific project traffic background volumes along both Hardman and Oak Knoll avenues were increased by 2 percent per year.

County general plan traffic modeling projections were also not available for Saturday PM peak hour conditions along any analysis roadway. Therefore, volumes on Silverado Trail, Hardman Avenue and Oak Knoll Avenue were uniformly increased by the PM percentages detailed above for weekday PM peak hour conditions, while volumes along Soda Canyon Road were increased based upon the specific generation of the four new projects along the road.

[2] Mr. Michael Hawkins, P.E., Napa County Public Works Department, January 2018.

Resultant year 2020 harvest "Without Project" PM peak hour volumes are presented in **Figure 6** for Friday and Saturday conditions, while cumulative (year 2030) harvest "Without Project" PM peak hour volumes are presented in **Figure 7** for Friday and Saturday conditions.

VII. OFF-SITE HARVEST CIRCULATION SYSTEM OPERATION – WITHOUT PROJECT

1. EXISTING (2017) HARVEST OPERATING CONDITIONS (WITHOUT PROJECT)

A. INTERSECTION LEVEL OF SERVICE – see Table 4

1. SILVERADO TRAIL/OAK KNOLL AVENUE

a) Friday PM Peak Hour

Unacceptable Oak Knoll Avenue stop sign controlled operation: LOS F

b) Saturday PM Peak Hour

Unacceptable Oak Knoll Avenue stop sign controlled operation: LOS E

2. SILVERADO TRAIL/SODA CANYON ROAD

a) Friday PM Peak Hour

Unacceptable Soda Canyon Road stop sign controlled operation: LOS F

b) Saturday PM Peak Hour

Unacceptable Soda Canyon Road stop sign controlled operation: LOS F

3. SILVERADO TRAIL/HARDMAN AVENUE

a) Friday PM Peak Hour

Unacceptable Hardman Avenue stop sign controlled operation: LOS E

b) Saturday PM Peak Hour

Unacceptable Hardman Avenue stop sign controlled operation: LOS E

4. SILVERADO TRAIL/SITE DRIVEWAY

a) Friday PM Peak Hour

Acceptable Driveway stop sign controlled operation: LOS C

b) Saturday PM Peak Hour

No traffic on driveway

B. INTERSECTION SIGNAL WARRANT #3 EVALUATION – see Table 5

1. SILVERADO TRAIL/OAK KNOLL AVENUE

a) Friday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

b) Saturday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

2. SILVERADO TRAIL/SODA CANYON ROAD

a) Friday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

b) Saturday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

3. SILVERADO TRAIL/HARDMAN AVENUE

a) Friday PM Peak Hour

Volumes exceed Caltrans rural peak hour signal warrant criteria.

b) Saturday PM Peak Hour

Volumes exceed Caltrans rural peak hour signal warrant criteria.

2. YEAR 2020 OPERATING CONDITIONS (WITHOUT PROJECT)

A. INTERSECTION LEVEL OF SERVICE – Table 4

1. SILVERADO TRAIL/OAK KNOLL AVENUE

a) Friday PM Peak Hour

Unacceptable Oak Knoll Avenue stop sign controlled operation: LOS F

b) Saturday PM Peak Hour

Unacceptable Oak Knoll Avenue stop sign controlled operation: LOS E

2. SILVERADO TRAIL/SODA CANYON ROAD

a) Friday PM Peak Hour

Unacceptable Soda Canyon Road stop sign controlled operation: LOS F

b) Saturday PM Peak Hour

Unacceptable Soda Canyon Road stop sign controlled operation: LOS F

3. SILVERADO TRAIL/HARDMAN AVENUE

a) Friday PM Peak Hour

Unacceptable Hardman Avenue stop sign controlled operation: LOS F

b) Saturday PM Peak Hour

Unacceptable Hardman Avenue stop sign controlled operation: LOS F

4. SILVERADO TRAIL/SITE DRIVEWAY

a) Friday PM Peak Hour

Acceptable Driveway stop sign controlled operation: LOS D

b) Saturday PM Peak Hour

No traffic on driveway

B. INTERSECTION SIGNAL WARRANT #3 EVALUATION – see Table 5

1. SILVERADO TRAIL/OAK KNOLL AVENUE

a) Friday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

b) Saturday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

2. SILVERADO TRAIL/SODA CANYON ROAD

a) Friday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

b) Saturday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

3. SILVERADO TRAIL/HARDMAN AVENUE

a) Friday PM Peak Hour

Volumes exceed Caltrans rural peak hour signal warrant criteria.

b) Saturday PM Peak Hour

Volumes exceed Caltrans rural peak hour signal warrant criteria.

3. CUMULATIVE (YEAR 2030) OPERATING CONDITIONS (WITHOUT PROJECT)

A. INTERSECTION LEVEL OF SERVICE – Table 4

1. SILVERADO TRAIL/OAK KNOLL AVENUE

a) Friday PM Peak Hour

Unacceptable Oak Knoll Avenue stop sign controlled operation: LOS F

b) Saturday PM Peak Hour

Unacceptable Oak Knoll Avenue stop sign controlled operation: LOS F

2. SILVERADO TRAIL/SODA CANYON ROAD

a) Friday PM Peak Hour

Unacceptable Soda Canyon Road stop sign controlled operation: LOS F

b) Saturday PM Peak Hour

Unacceptable Soda Canyon Road stop sign controlled operation: LOS F

3. SILVERADO TRAIL/HARDMAN AVENUE

a) Friday PM Peak Hour

Unacceptable Hardman Avenue stop sign controlled operation: LOS F

b) Saturday PM Peak Hour

Unacceptable Hardman Avenue stop sign controlled operation: LOS F

4. SILVERADO TRAIL/SITE DRIVEWAY

a) Friday PM Peak Hour

Acceptable Driveway stop sign controlled operation: LOS D

b) Saturday PM Peak Hour

No traffic on driveway

B. INTERSECTION SIGNAL WARRANT #3 EVALUATION – see Table 5

1. SILVERADO TRAIL/OAK KNOLL AVENUE

a) Friday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

b) Saturday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

2. SILVERADO TRAIL/SODA CANYON ROAD

a) Friday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

b) Saturday PM Peak Hour

Volumes exceed Caltrans rural and urban peak hour signal warrant criteria.

3. SILVERADO TRAIL/HARDMAN AVENUE

a) Friday PM Peak Hour

Volumes exceed Caltrans rural peak hour signal warrant criteria.

b) Saturday PM Peak Hour

Volumes exceed Caltrans rural peak hour signal warrant criteria.

VIII. PROJECT IMPACT EVALUATION SIGNIFICANCE CRITERIA

A. SIGNIFICANCE CRITERIA

1. COUNTY OF NAPA

The following criteria have been developed for traffic impact analyses in Napa County.

EXISTING + PROJECT CONDITIONS

A. ARTERIAL SEGMENTS

A project would cause a significant impact requiring mitigation if:

1. An arterial segment operates at LOS A, B, C or D during the selected peak hours without project trips, and deteriorates to LOS E or F with the addition of project trips, or
2. An arterial segment operates at LOS E or F during the selected peak hours without project trips, and the addition of project trips increases the total segment volume by one percent or more.

For the second criteria, the following equation should be used if the arterial operates at LOS E or F without the project:

Project Contribution % = Project Trips ÷ Existing Volumes

B. SIGNALIZED INTERSECTIONS

A project would cause a significant impact requiring mitigation if:

1. A signalized intersection operates at LOS A, B, C or D during the selected peak hours without project trips, and deteriorates to LOS E or F with the addition of project trips, or
2. A signalized intersection operates at LOS E or F during the selected peak hours without project trips, and the addition of project trips increases the total entering volume by one percent or more.

For the second criteria, the following equation should be used if the signalized intersection operates at LOS E or F without the project:

Project Contribution % = Project Trips ÷ Existing Volumes

Maintaining LOS D or better at all signalized intersections would sometimes require expanding the physical footprint of an intersection. In some locations around the County,

expanding physical transportation infrastructure could be in direct conflict with the County's goals of preserving the area's rural character, improving safety, and sustaining the agricultural industry, making these potential improvements infeasible. The County's Circulation Element lists intersections that are slated for improvement or expansion in unincorporated Napa County.[3]

Transportation studies should individually consider the feasibility of potential mitigation measures with respect to right-of-way acquisition, regardless of the intersection's place in the Circulation Element's identified improvement lists, and present potential alternative mitigation measures that do not require right-of-way acquisition. County staff would then review that information and make the decision about the feasibility of the identified potential mitigations.

For intersections that cannot be improved without substantial additional right-of-way according to both the Circulation Element and the individual transportation impact study, and where other mitigations such as updating signal timing, signal phasing and operations, and/or signing and striping improvements do not improve the LOS, LOS E or F will be considered acceptable and the one percent threshold would not apply. Analysis of signalized intersection LOS should still be presented for informational purposes, and there should still be an evaluation of effects on safety and local access, per Policy CIR-18.

C. UNSIGNALIZED INTERSECTIONS (ALL WAY STOP AND SIDE STREET STOP SIGN CONTROLLED)

LOS for all way stop controlled intersections is defined as an average of the delay at all approaches. LOS for side street stop controlled intersections is defined by the delay and LOS for the worst case approach. The recommended interpretation of Policy CIR-16 regarding unsignalized intersection significance criteria is as follows:

1. 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, and the peak hour traffic signal warrant criteria should also be evaluated and presented for information purposes, or
2. 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 10 percent or more of the traffic on a side street approach for side street stop controlled intersections; the peak hour traffic signal warrant criteria should also be evaluated and presented for informational purposes.

[3] According to the Circulation Element dated June 8, 2008, the following intersections can be altered or expanded as a mitigation measure: SR-12/Airport Boulevard/SR-29, SR-221/SR-12/Highway 29, and several intersections along SR-29 and SR-128 north of Napa. The significance criteria shown above should apply to facilities where appropriate based upon the most recent Circulation Element chapter of the General Plan.

All Way Stop Controlled Intersections
For the second criteria at an all way stop controlled intersection, the following equation should be used if the all way stop controlled intersection operates at LOS E or F without the project.

Project Contribution % = Project Trips ÷ Existing Volumes

Side Street Stop Controlled Intersections
For the second criteria at a side street stop controlled intersection, the following equation should be used if the side street stop controlled intersection operates at LOS E or F without the project.

Project Contribution % = Project Trips ÷ Existing Volumes

Both of those volumes are for the stop controlled approaches only. Each stop controlled approach that operates at LOS E or F should be analyzed individually.

CUMULATIVE+ PROJECT CONDITIONS

A. ARTERIAL SEGMENTS, SIGNALIZED INTERSECTIONS AND UNSIGNALIZED INTERSECTIONS

A project would cause a significant cumulative impact requiring mitigation if:

1. The overall amount of expected traffic growth causes conditions to deteriorate such that any of the significance criteria described above for existing conditions are met, and
2. The project's contribution to a significant cumulative impact would be equal to or greater than five percent of the growth in traffic from existing conditions.

A project's contribution to a cumulative condition would be calculated as the project's percentage contribution to the total growth in traffic from existing conditions.

Project Contribution % = Project Trips ÷ (Cumulative Volumes - Existing Volumes)

- If projected daily volumes on the project driveway in combination with volumes on the roadway providing access to the project driveway meet County warrant criteria for provision of a left turn lane on the approach to the project entrance.

- If sight lines at project access driveways do not meet Caltrans stopping sight distance criteria based upon prevailing vehicle speeds.

IX. PROJECT TRIP GENERATION & DISTRIBUTION

A. TRIP GENERATION

Friday PM peak hour and Saturday afternoon peak hour harvest trip generation projections were developed with the assistance of the project applicant and their representative for all components of the proposed Ellman Family Winery (see worksheets in the **Appendix**). Results are presented on an hourly basis in **Tables 6** and **7** for harvest Friday and Saturday conditions, respectively. A summary of peak hour trips associated with the winery is presented in **Table 8**. During the harvest Friday PM peak traffic hour there would be a projected 1 new inbound and 1 new outbound vehicle. During the harvest Saturday PM peak traffic hour, there would also be a projected 1 new inbound and 1 new outbound vehicle. All traffic during these peak hours would be associated with visitation. The hourly distribution projections of visitor traffic during a harvest Friday and Saturday are presented in **Appendix Figure A-5**.

On a daily basis the existing house on the property would be expected to be generating 10 two-way trips (based upon Institute of Transportation Engineers *Trip Generation Manual*, 10th Edition, 2017) trip rates. On a typical weekday the proposed project would be expected to be producing an additional 36 daily two-way trips, while on a crush Saturday the proposed project would be expected to be producing an additional 36 daily two-way trips.

B. TRIP DISTRIBUTION

Project traffic was distributed to Silverado Trail in a pattern reflective of existing vehicle distribution patterns at the project driveway and at the Soda Canyon Road intersection. The vast majority of project traffic would be expected to be traveling to/from south of the site.

The harvest Friday and Saturday project traffic increments expected on Silverado Trail during the times of ambient peak traffic flows through the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road and Hardman Avenue are presented in **Figure 8**. Friday and Saturday Existing "With Project" PM peak hour volumes are presented in **Figure 9**; Friday and Saturday year 2020 "With Project" PM peak hour volumes are presented in **Figure 10**, and Friday and Saturday Cumulative (year 2030) "With Project" PM peak hour volumes are presented in **Figure 11**.

C. PLANNED ROADWAY IMPROVEMENTS

There are no capacity increasing roadway improvements planned by the County on the local roadway network serving the project site other than the previously detailed left turn lane on the southbound Silverado Trail approach to the Reynolds Winery just south of the Ellman site.[4]

[4] Michael Hawkins, Napa County Public Works Department, January 2018.

X. PROJECT IMPACTS

A. EXISTING (YEAR 2017) HARVEST WITH PROJECT CONDITIONS

1. SUMMARY

Project traffic would not result in any significant level of service impacts at the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road or Hardman Avenue. ***Less than Significant***.

2. INTERSECTION LEVEL OF SERVICE – see Table 4

a) SILVERADO TRAIL/OAK KNOLL AVENUE

The Silverado Trail/Oak Knoll Avenue intersection would already have unacceptable "Without Project" stop sign controlled approach operation during both the Friday and Saturday PM peak hours. However, the project would not be expected to add traffic to the intersection during either the Friday PM or Saturday PM peak hours. Even with 1 vehicle added, the percent increase passing through the intersection would be well under 1% and the percent traffic added to the Oak Knoll Avenue stop sign controlled intersection approach would be well under 10%. ***Less than Significant.***

b) SILVERADO TRAIL/SODA CANYON ROAD

The Silverado Trail/Soda Canyon Road intersection would already have unacceptable "Without Project" stop sign controlled approach operation during both the Friday and Saturday PM peak hours. However, the project would not be expected to add traffic to the intersection during either the Friday PM or Saturday PM peak hours. Even with 1 vehicle added, the percent increase passing through the intersection would be well under 1% and the percent traffic added to the Soda Canyon Road stop sign controlled intersection approach would be well under 10%. ***Less than Significant.***

c) SILVERADO TRAIL/HARDMAN AVENUE

The Silverado Trail/Hardman Avenue intersection would already have unacceptable "Without Project" stop sign controlled approach operation during both the Friday and Saturday PM peak hours. However, the project would only increase volumes entering the intersection by 0.1% during the Friday PM peak hour and by 0.1% during the Saturday PM peak hour, which would be less than the minimum 1 percent traffic added significance criteria limit. During the Friday and Saturday PM peak hours when there would be 1 expected inbound trip to the Winery, if it were added to the Hardman Avenue approach to Silverado Trail the increase in traffic to the stop sign controlled intersection approach on either day would be less than 2%, well under the County criteria limit of 10%. ***Less than Significant.***

d) SILVERADO TRAIL/PROJECT DRIVEWAY

The Silverado Trail/Project Driveway intersection would be operating at an acceptable LOS C during both the Friday and Saturday PM peak traffic hours. ***Less than Significant.***

3. INTERSECTION SIGNAL WARRANT – see Table 5

a) SILVERADO TRAIL/OAK KNOLL AVENUE

The Silverado Trail/Oak Knoll Avenue intersection would already have without project Friday and Saturday PM peak hour volumes exceeding Caltrans rural and urban peak hour Warrant #3 criteria levels. However, the project would not be expected to add traffic to the intersection during either the Friday or Saturday PM peak hours. Even with 1 vehicle added, the percent increase would be well under 1%. ***Less than Significant.***

b) SILVERADO TRAIL/SODA CANYON ROAD

The Silverado Trail/Soda Canyon Road intersection would already have without project Friday and Saturday PM peak hour volumes exceeding Caltrans rural and urban peak hour Warrant #3 criteria levels. However, the project would not be expected to add traffic to the intersection during either the Friday or Saturday PM peak hours. Even with 1 vehicle added, the percent increase would be well under 1%. ***Less than Significant.***

c) SILVERADO TRAIL/HARDMAN AVENUE

The Silverado Trail/Hardman Avenue intersection would already have without project Friday and Saturday PM peak hour volumes exceeding Caltrans rural and urban peak hour Warrant #3 criteria levels. However, the project would only increase volumes entering the intersection by 0.1% during the Friday PM peak hour and by 0.1% during the Saturday PM peak hour, which would be less than the minimum 1 percent traffic added significance criteria limit. ***Less than Significant.***

B. YEAR 2020 WITH PROJECT HARVEST CONDITIONS

1. SUMMARY

Project traffic would not result in any significant level of service impacts at the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road or Hardman Avenue. ***Less than Significant***.

2. INTERSECTION LEVEL OF SERVICE – see Table 4

a) SILVERADO TRAIL/OAK KNOLL AVENUE

The Silverado Trail/Oak Knoll Avenue intersection would already have unacceptable "Without Project" stop sign controlled approach operation during both the Friday and Saturday PM peak hours. However, the project would not be expected to add traffic to the intersection during either the Friday PM or Saturday PM peak hours. Even with 1 vehicle added, the percent increase passing through the intersection would be well under 1% and the percent traffic added to the Oak Knoll Avenue stop sign controlled intersection approach would be well under 10%. ***Less than Significant.***

b) SILVERADO TRAIL/SODA CANYON ROAD

The Silverado Trail/Soda Canyon Road intersection would already have unacceptable "Without Project" stop sign controlled approach operation during both the Friday and Saturday PM peak hours. However, the project would not be expected to add traffic to the intersection during either the Friday PM or Saturday PM peak hours. Even with 1 vehicle added, the percent increase passing through the intersection would be well under 1% and the percent traffic added to the Soda Canyon Road stop sign controlled intersection approach would be well under 10%. ***Less than Significant.***

c) SILVERADO TRAIL/HARDMAN AVENUE

The Silverado Trail/Hardman Avenue intersection would already have unacceptable "Without Project" stop sign controlled approach operation during both the Friday and Saturday PM peak hours. However, the project would only increase volumes entering the intersection by 0.1% during the Friday PM peak hour and by 0.1% during the Saturday PM peak hour, which would be less than the minimum 1 percent traffic added significance criteria limit. During the Friday and Saturday PM peak hours when there would be 1 expected inbound trip to the Winery, if it were added to the Hardman Avenue approach to Silverado Trail the increase in traffic to the stop sign controlled intersection approach on either day would be less than 2%, well under the County criteria limit of 10%. ***Less than Significant.***

d) SILVERADO TRAIL/PROJECT DRIVEWAY

The Silverado Trail/Project Driveway intersection would be operating at an acceptable LOS C during both the Friday and Saturday PM peak traffic hours. ***Less than Significant.***

3. INTERSECTION SIGNAL WARRANT – see Table 5

a) SILVERADO TRAIL/OAK KNOLL AVENUE

The Silverado Trail/Oak Knoll Avenue intersection would already have without project Friday and Saturday PM peak hour volumes exceeding Caltrans rural and urban peak hour Warrant #3 criteria levels. However, the project would not be expected to add traffic to the intersection

during either the Friday or Saturday PM peak hours. Even with 1 vehicle added, the percent increase would be well under 1%. ***Less than Significant.***

b) SILVERADO TRAIL/SODA CANYON ROAD

The Silverado Trail/Soda Canyon Road intersection would already have unacceptable without project Friday and Saturday PM peak hour volumes exceeding Caltrans rural and urban peak hour Warrant #3 criteria levels. However, the project would not be expected to add traffic to the intersection during either the Friday or Saturday PM peak hours. Even with 1 vehicle added, the percent increase would be well under 1%. ***Less than Significant.***

c) SILVERADO TRAIL/HARDMAN AVENUE

The Silverado Trail/Hardman Avenue intersection would already have without project Friday and Saturday PM peak hour volumes exceeding Caltrans rural and urban peak hour Warrant #3 criteria levels. However, the project would only increase volumes entering the intersection by 0.1% during the Friday PM peak hour and by 0.1% during the Saturday PM peak hour, which would be less than the minimum 1 percent traffic added significance criteria limit. ***Less than Significant.***

C. CUMULATIVE (YEAR 2030) WITH PROJECT HARVEST CONDITIONS

1. SUMMARY

Project traffic would not result in any significant level of service impacts at the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road or Hardman Avenue. ***Less than Significant***.

2. INTERSECTION LEVEL OF SERVICE – see Table 4

a) SILVERADO TRAIL/OAK KNOLL AVENUE

The Silverado Trail/Oak Knoll Avenue intersection would already have unacceptable "Without Project" stop sign controlled approach operation during both the Friday and Saturday PM peak hours. However, the project would not be expected to add traffic to the intersection during either the Friday PM or Saturday PM peak hours. Even with 1 vehicle added, the percent increase in traffic growth from existing to cumulative conditions would be less than 5 % of total traffic passing through the intersection or traffic on the stop sign controlled intersection approach. ***Less than Significant.***

b) SILVERADO TRAIL/SODA CANYON ROAD

The Silverado Trail/Soda Canyon Road intersection would already have unacceptable "Without Project" stop sign controlled approach operation during both the Friday and Saturday PM peak

hours. However, the project would not be expected to add traffic to the intersection during either the Friday PM or Saturday PM peak hours. Even with 1 vehicle added, the percent increase in traffic growth from existing to cumulative conditions would be less than 5 % of total traffic passing through the intersection or traffic on the stop sign controlled intersection approach. ***Less than Significant.***

c) SILVERADO TRAIL/HARDMAN AVENUE

The Silverado Trail/Hardman Avenue intersection would already have unacceptable "Without Project" stop sign controlled approach operation during both the Friday and Saturday PM peak hours. However, the project would only increase the growth in traffic from existing to cumulative conditions entering the intersection by 0.9% during the Friday PM peak hour and by 0.9% during the Saturday PM peak hour, which would be less than the minimum 5 percent traffic added significance criteria limit. In addition, if the one inbound project vehicle during either the Friday or Saturday PM peak hours were on the Hardman Avenue approach to Silverado Trail the increase would also be less than the minimum 5 % traffic added significance criteria limit. ***Less than Significant.***

d) SILVERADO TRAIL/PROJECT DRIVEWAY

The Silverado Trail/Project Driveway intersection would be operating at an acceptable LOS C during both the Friday and Saturday PM peak traffic hours. ***Less than Significant.***

3. INTERSECTION SIGNAL WARRANT – see Table 5

a) SILVERADO TRAIL/OAK KNOLL AVENUE

The Silverado Trail/Oak Knoll Avenue intersection would already have without project Friday and Saturday PM peak hour volumes exceeding Caltrans rural and urban peak hour Warrant #3 criteria levels. However, the project would not be expected to add traffic to the intersection during either the Friday or Saturday PM peak hours. Even with 1 vehicle added, the percent increase in the growth in traffic between 2017 and 2030 would be well under 1%. ***Less than Significant.***

b) SILVERADO TRAIL/SODA CANYON ROAD

The Silverado Trail/Soda Canyon Road intersection would already have without project Friday and Saturday PM peak hour volumes exceeding Caltrans rural and urban peak hour Warrant #3 criteria levels. However, the project would not be expected to add traffic to the intersection during either the Friday or Saturday PM peak hours. Even with 1 vehicle added, the percent increase would be well under 1%. ***Less than Significant.***

c) SILVERADO TRAIL/HARDMAN AVENUE

The Silverado Trail/Hardman Avenue intersection would already have without project Friday and Saturday PM peak hour volumes exceeding Caltrans rural and urban peak hour Warrant #3

criteria levels. However, the project would only increase the growth in volumes between existing and cumulative condition volumes entering the intersection by 0.9% during both the Friday and Saturday PM peak hours, which would be less than the minimum 5 percent traffic added significance criteria limit. ***Less than Significant.***

XI. PROJECT ACCESS IMPACTS

A. SIGHT LINE ADEQUACY AT PROJECT DRIVEWAY TO SEE VEHICLES ON SILVERADO TRAIL

Project Driveway Connection to Silverado Trail

Sight lines for drivers turning from the project driveway to see Silverado Trail traffic are about 850 feet to the north and more than 1,000 feet to the south. The posted speed limit is 55 miles per hour, while a few vehicles were observed by Crane Transportation Group to be traveling as high as 65 miles per hour. Corner sight line criteria at a private driveway connection to a public road are based upon minimum stopping sight distance. Shown below are Caltrans minimum stopping sight distance 2014 Highway Design Manual criteria.[5]

SPEED (MPH)	MINIMUM STOPPING SIGHT DISTANCE
55	500
60	580
65	660

Caltrans stopping sight criteria.

Based upon available sight lines and observed vehicle speeds along Silverado Trail at the project entrance, sight lines are acceptable. ***Less than Significant.***

B. BICYCLE RIDER IMPACTS

Sight lines for drivers exiting the Ellman site would also be acceptable to see bicycle riders in the northbound Class II lane adjacent to the project site, as bike riders would be traveling at much slower speeds than vehicles along Silverado Trail. In addition, the applicant is considering provision of bike racks at the winery. ***Less than significant.***

[5] Caltrans *Highway Design Manual*, 2014.

XII. LEFT TURN LANE WARRANT EVALUATION

A left turn lane will be provided by the project on the Silverado Trail southbound approach to the winery driveway. It will extend from the Soda Canyon Road intersection and also provide the beneficial function of serving as a median refuge area (and acceleration lane) for left turns from Soda Canyon Road. In addition, the Ellman Winery left turn lane will be continued southerly to serve as a left turn lane for the Reynolds Family Winery. The Reynolds Winery left turn lane is part of their recently approved use permit modification. When extended to the Reynolds entrance, this full-width turn lane will also serve as a refuge area for left turns from the Ellman driveway. Improvement plans shall be prepared by a Registered Civil Engineer in accordance with the Napa County Road & Street Standards, for approval by the Department of Public Works, Road Commissioner. Additional right-of-way shall be dedicated to the public as necessary to encompass the improvements. Improvement plans and right-of-way dedication, if needed, shall be completed prior to issuance of any permits. The left turn lane shall incorporate an acceleration lane for cars turning left from Soda Canyon Road onto Silverado Trail. ***Less than Significant.***

XIII. MARKETING EVENTS

Table 9 presents details of the number of guests, employees and hired event staffing that would likely be present for the project's 27 proposed marketing events.

- 24 events with 10 guests (4 guest vehicles) – any day of the week
- 1 event with 100 guests (36 guest vehicles) – Saturday or Sunday
- 1 event with 200 guests (72 guest vehicles) – Saturday or Sunday
- 1 event with 125 guests (45 guest vehicles) – Saturday or Sunday

All events will occur between 10:00 AM and 6:00 PM or from 6:00 to 10:00 PM. However, guest arrival and departure times will be arranged to avoid traffic on the local circulation system between 3:00 and 5:30 PM. ***Less than Significant.***

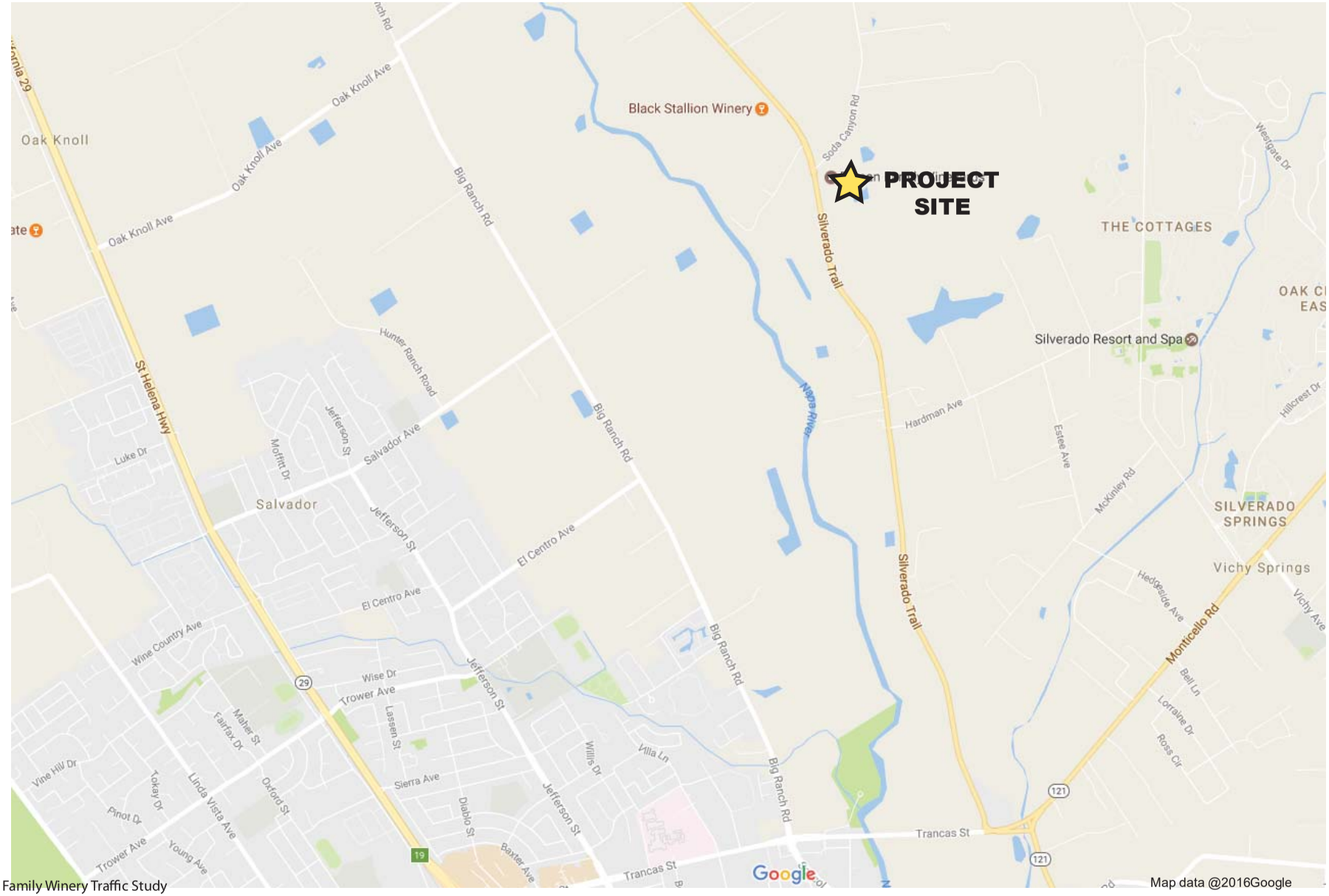
XIV. MITIGATION MEASURES

No circulation system mitigations are required.

XV. CONCLUSIONS & RECOMMENDATIONS

The project will result in no significant off-site circulation system operational impacts to the Silverado Trail intersections with Oak Knoll Avenue, Soda Canyon Road or Hardman Avenue. A left turn lane will be provided on the southbound Silverado Trail approach to the project entrance which will extend from the Soda Canyon Road intersection and also benefit drivers turning left from Soda Canyon Road. In addition, sight lines at the project driveway connection to Silverado Trail are acceptable. Finally, marketing event guest arrival and departure times will be arranged to avoid traffic on the local circulation system between 3:00 and 5:30 PM. No circulation-related mitigations will be required.

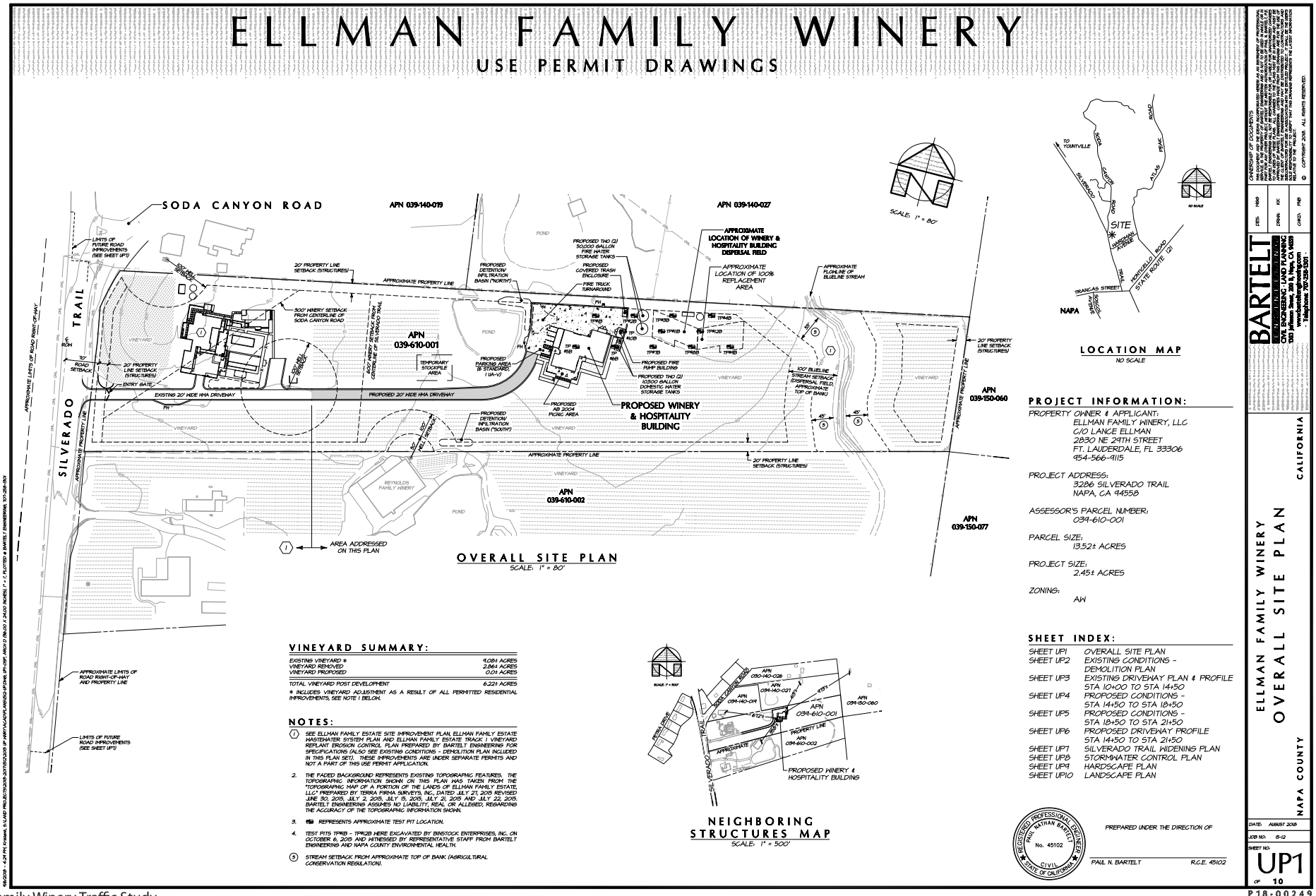
Figures



Ellman Family Winery Traffic Study

CRANE TRANSPORTATION GROUP

Figure 1
Area Map



Ellman Family Winery Traffic Study

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Figure 2

Site Plan

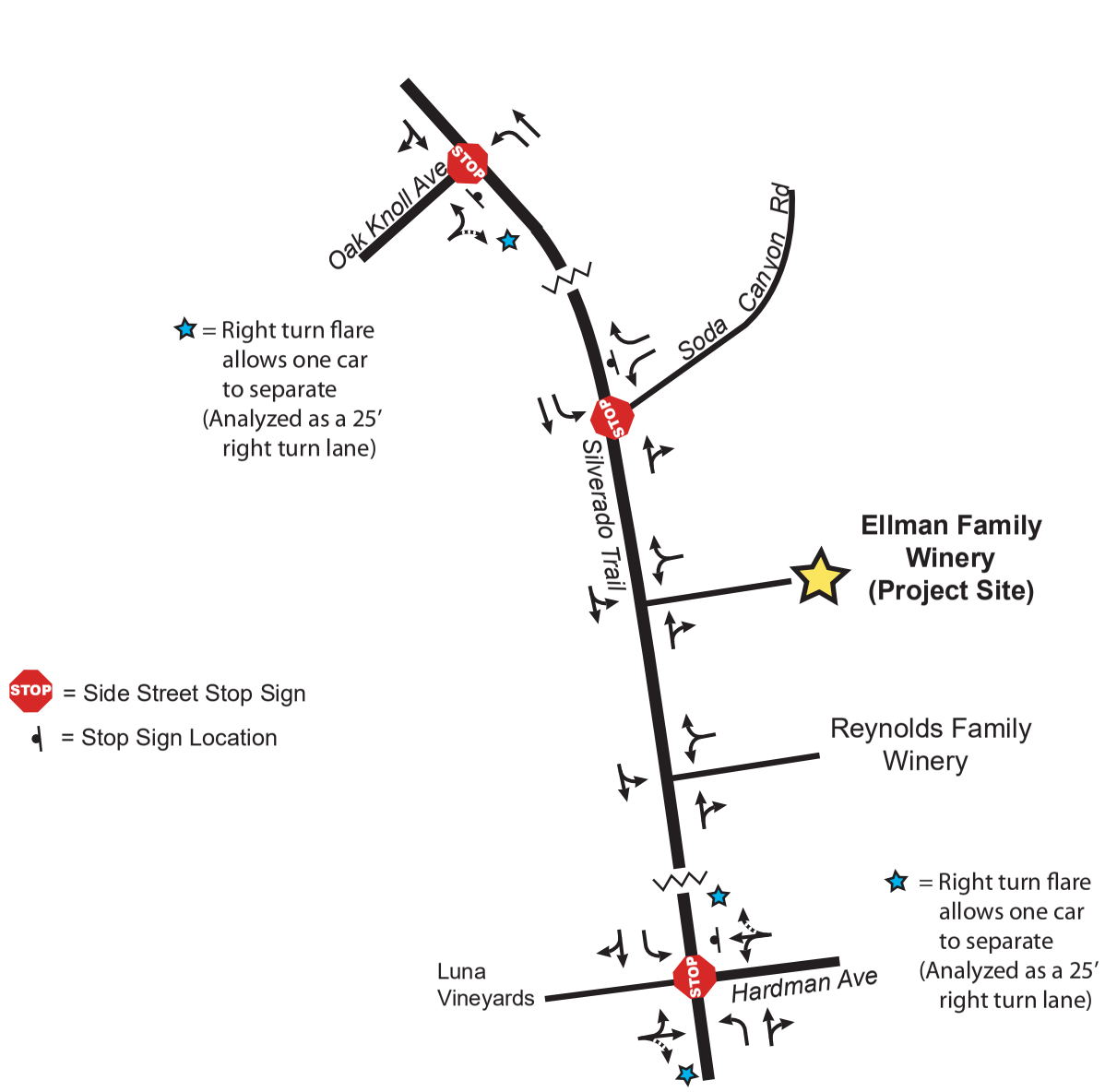

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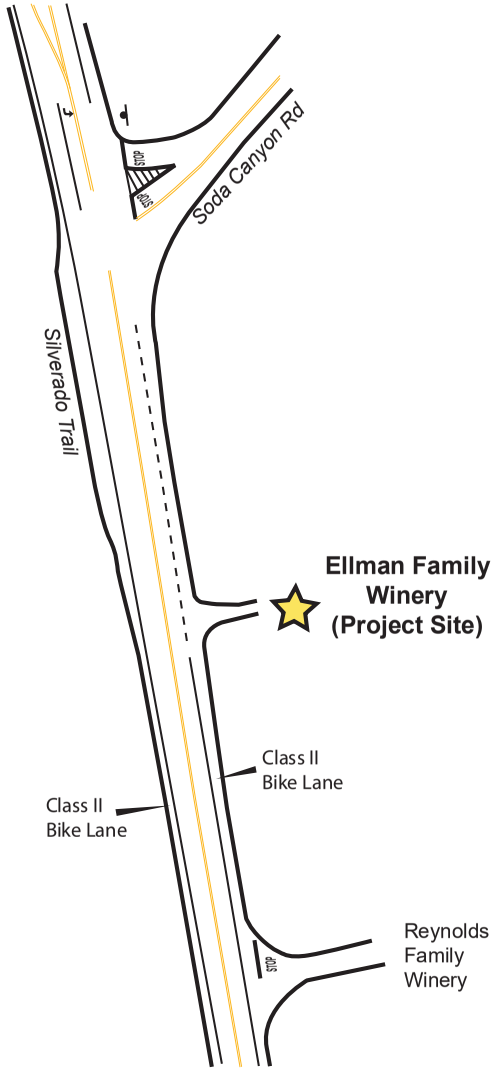
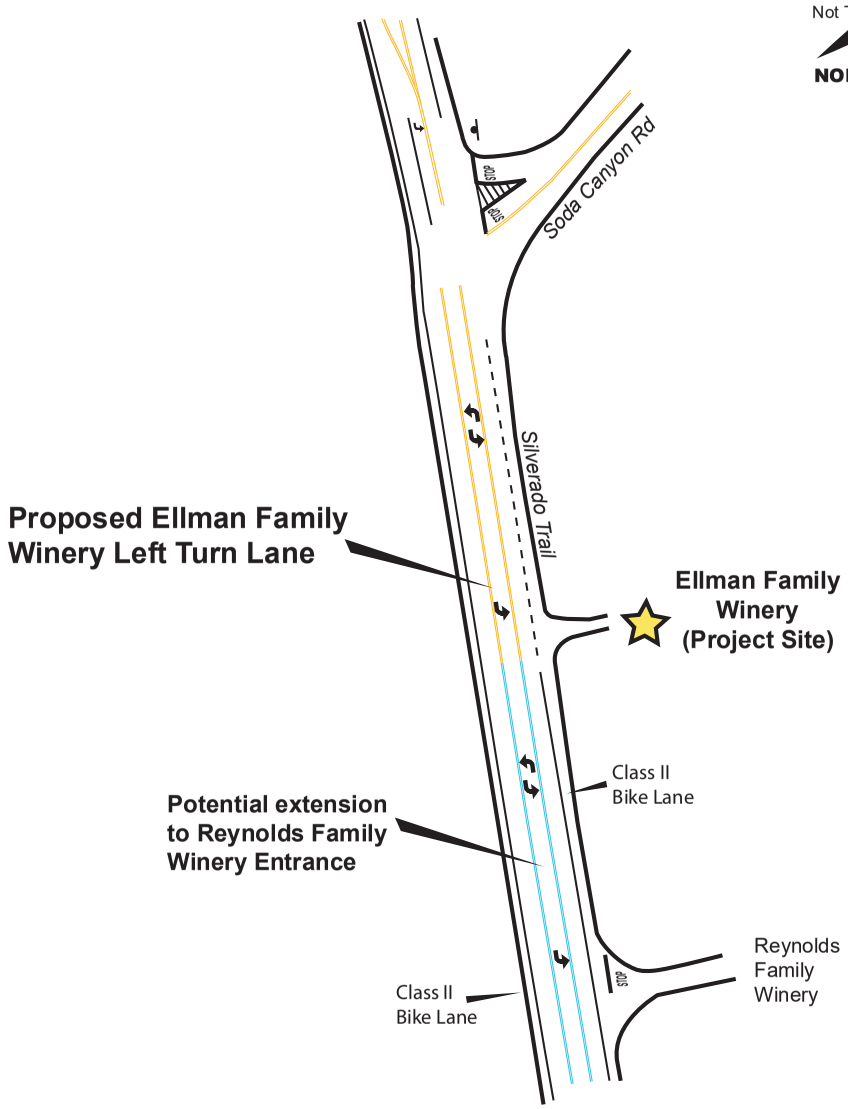
Figure 3

Lane Geometrics and Intersection Control



Existing Lane Geometrics



Proposed Left Turn Lane
Lane Geometrics

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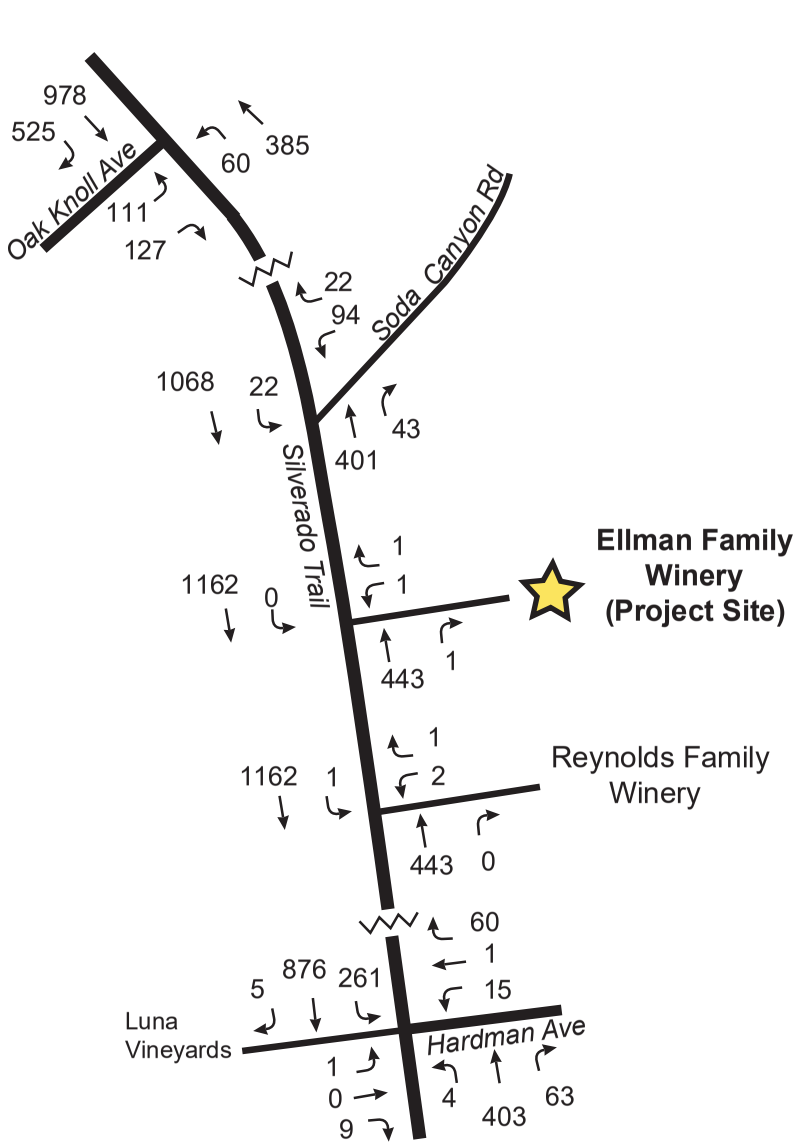
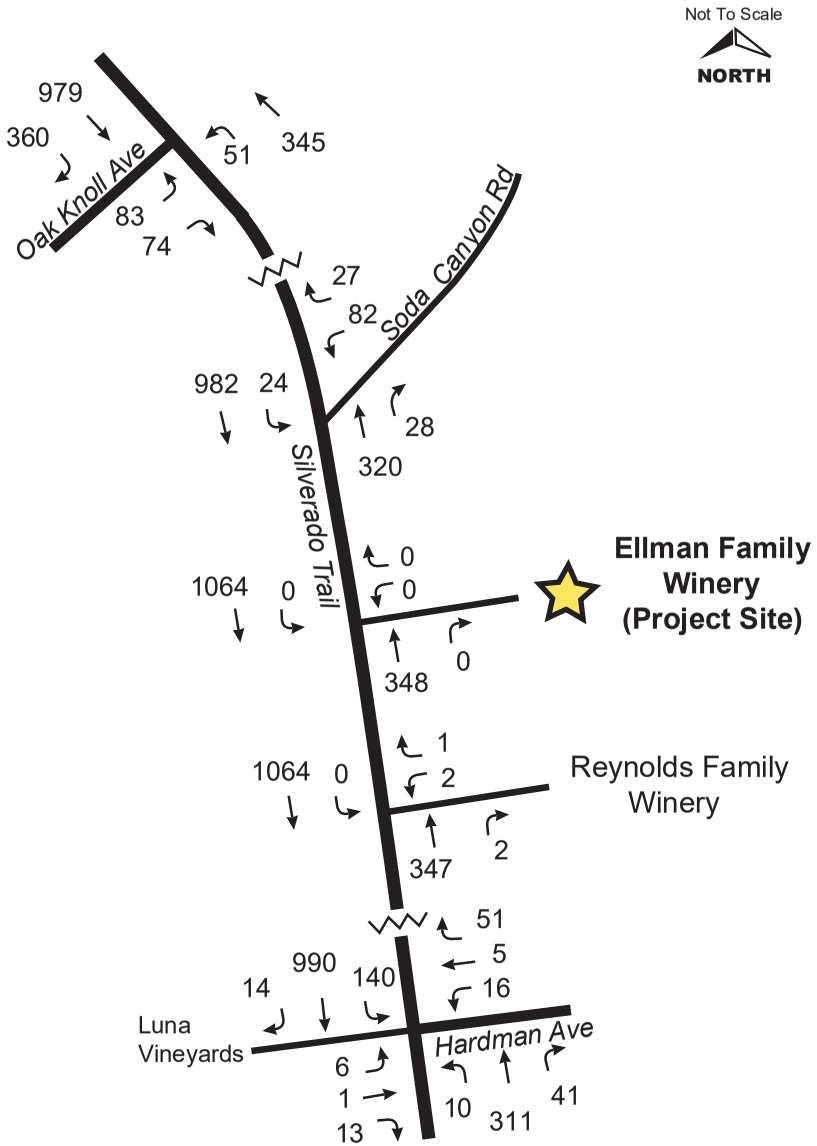
Figure 4

Proposed Left Turn Lane on Southbound Silverado Trail Approach to Ellman Family Winery



Friday
4:15-5:15 PM



Saturday
4:30-5:30 PM

Ellman Family Winery Traffic Study

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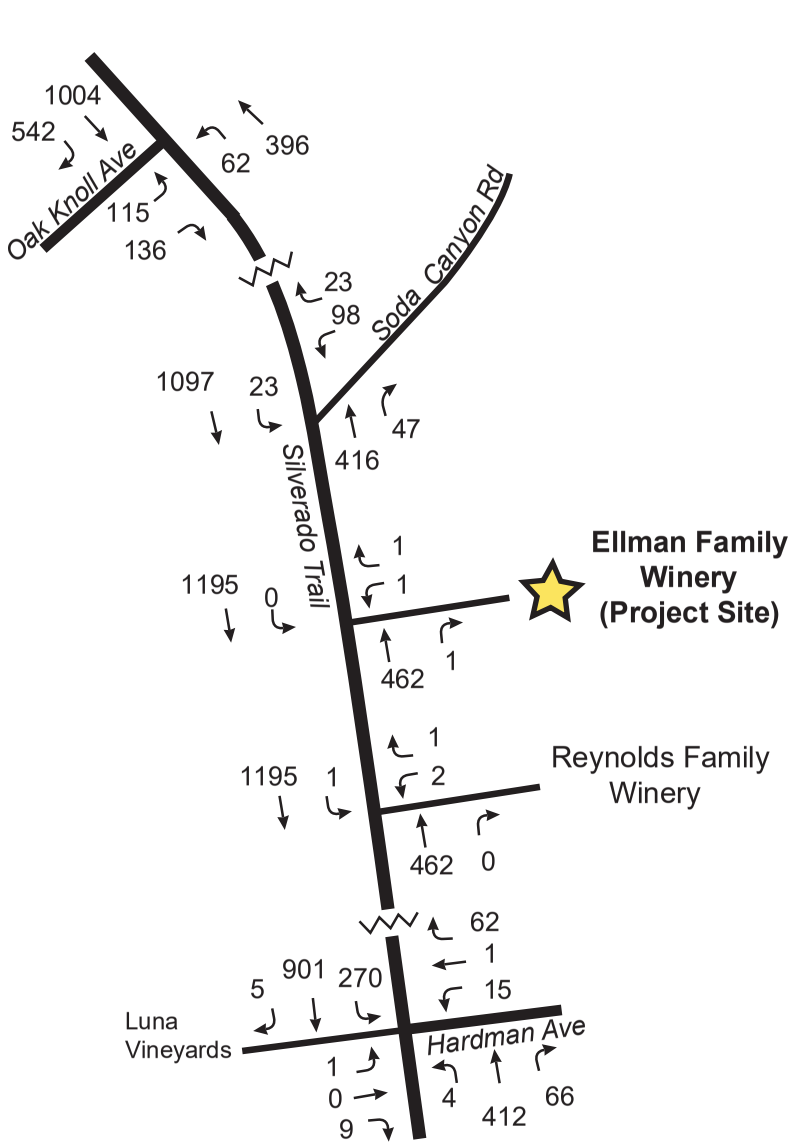
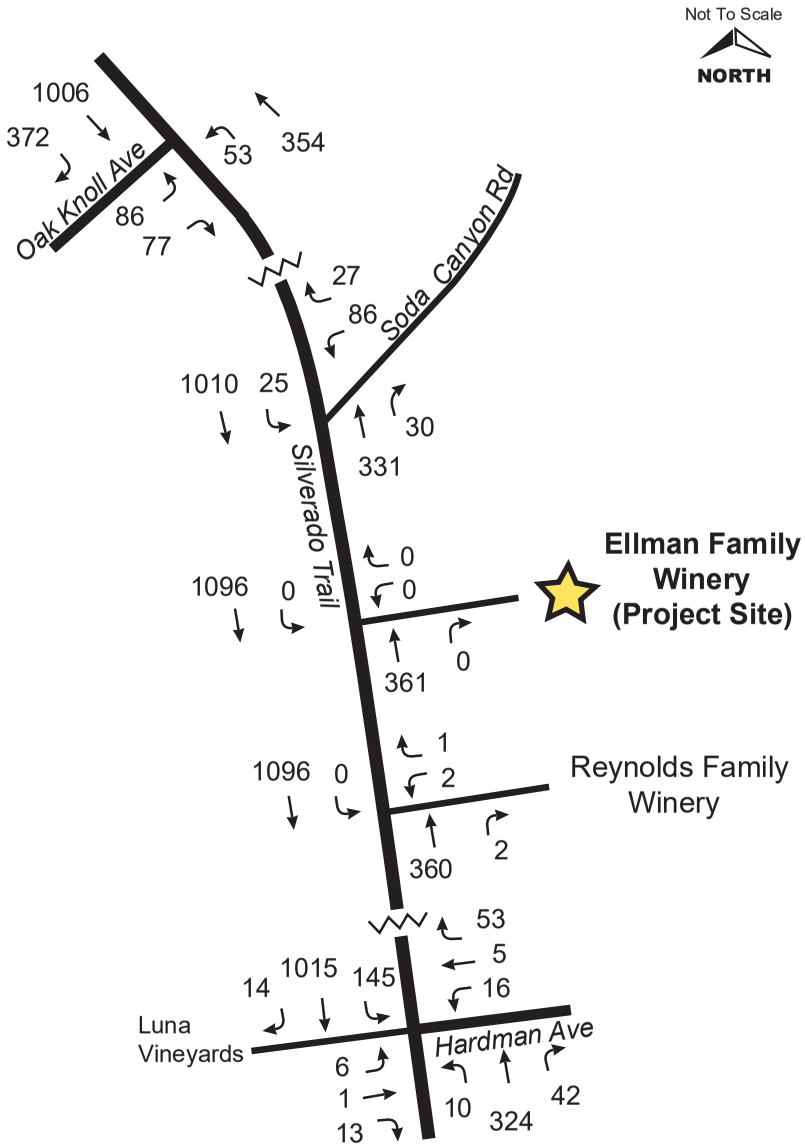
Figure 5
Existing (2017) Harvest (without Project)
Friday & and Saturday PM Peak Hour Volumes



Friday
4:15-5:15 PM



Saturday
4:30-5:30 PM

Ellman Family Winery Traffic Study

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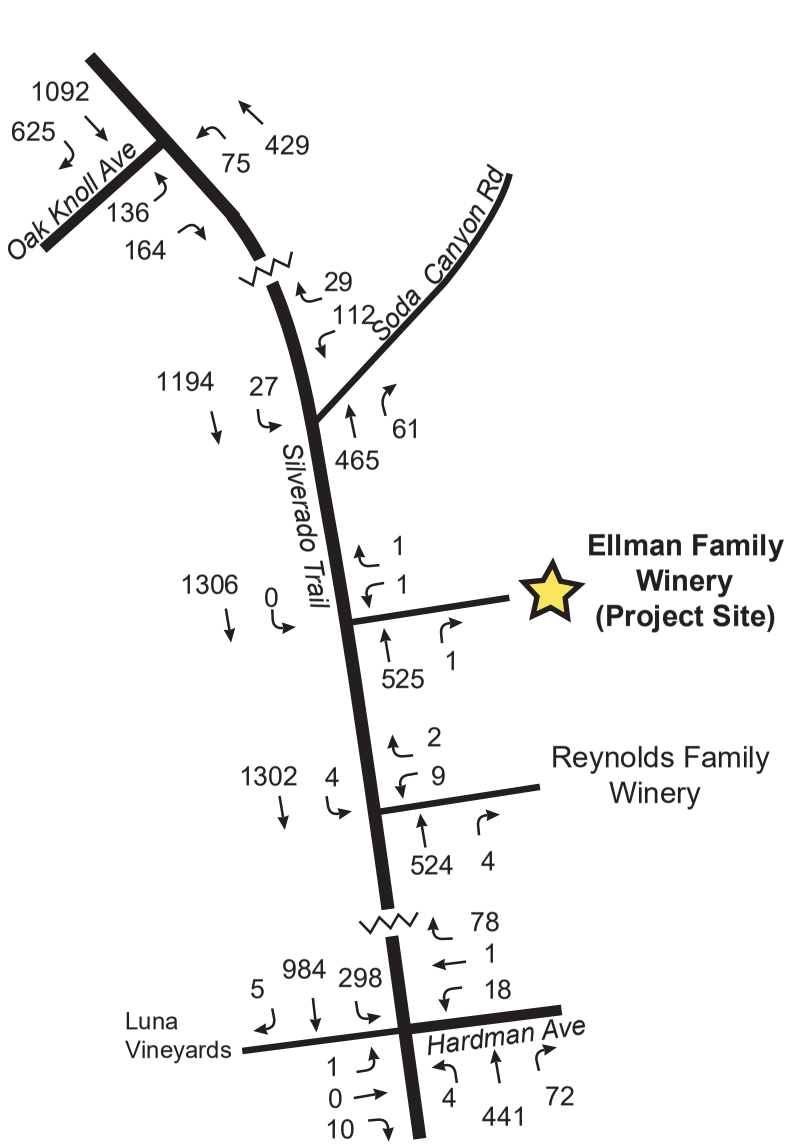
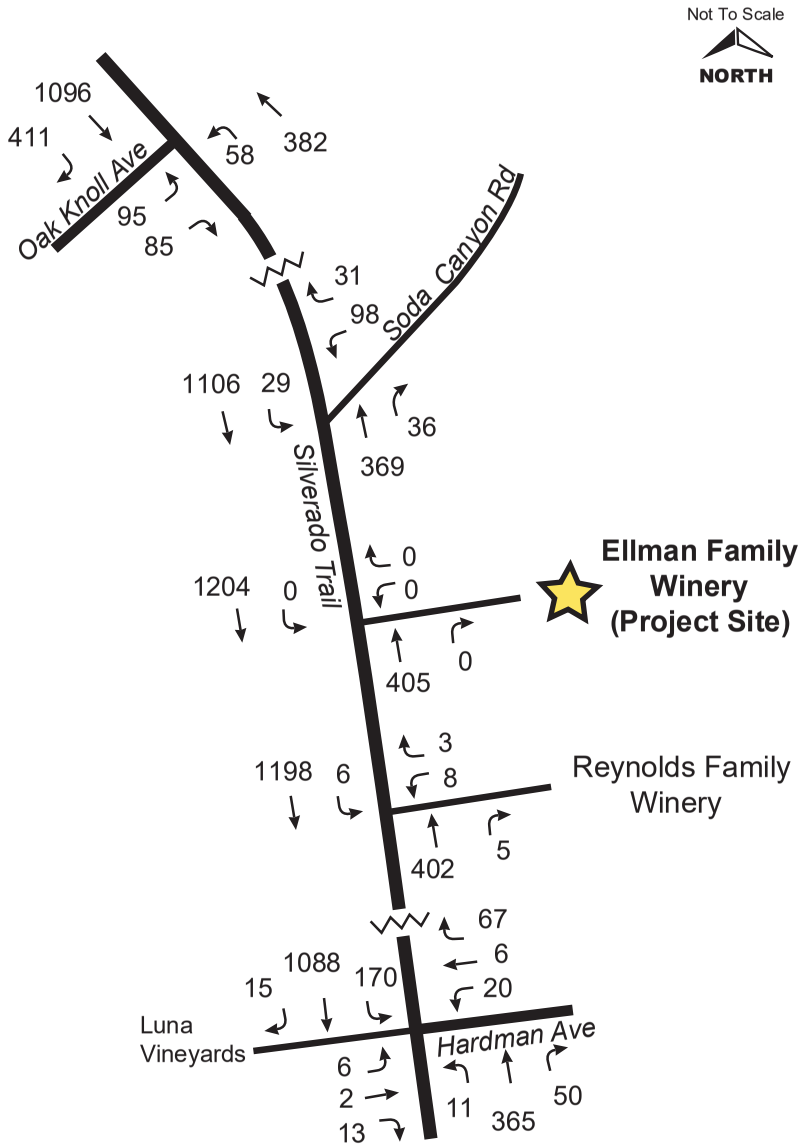
Figure 6
Year 2020 Harvest (without Project)
Friday & and Saturday PM Peak Hour Volumes



Friday
4:15-5:15 PM

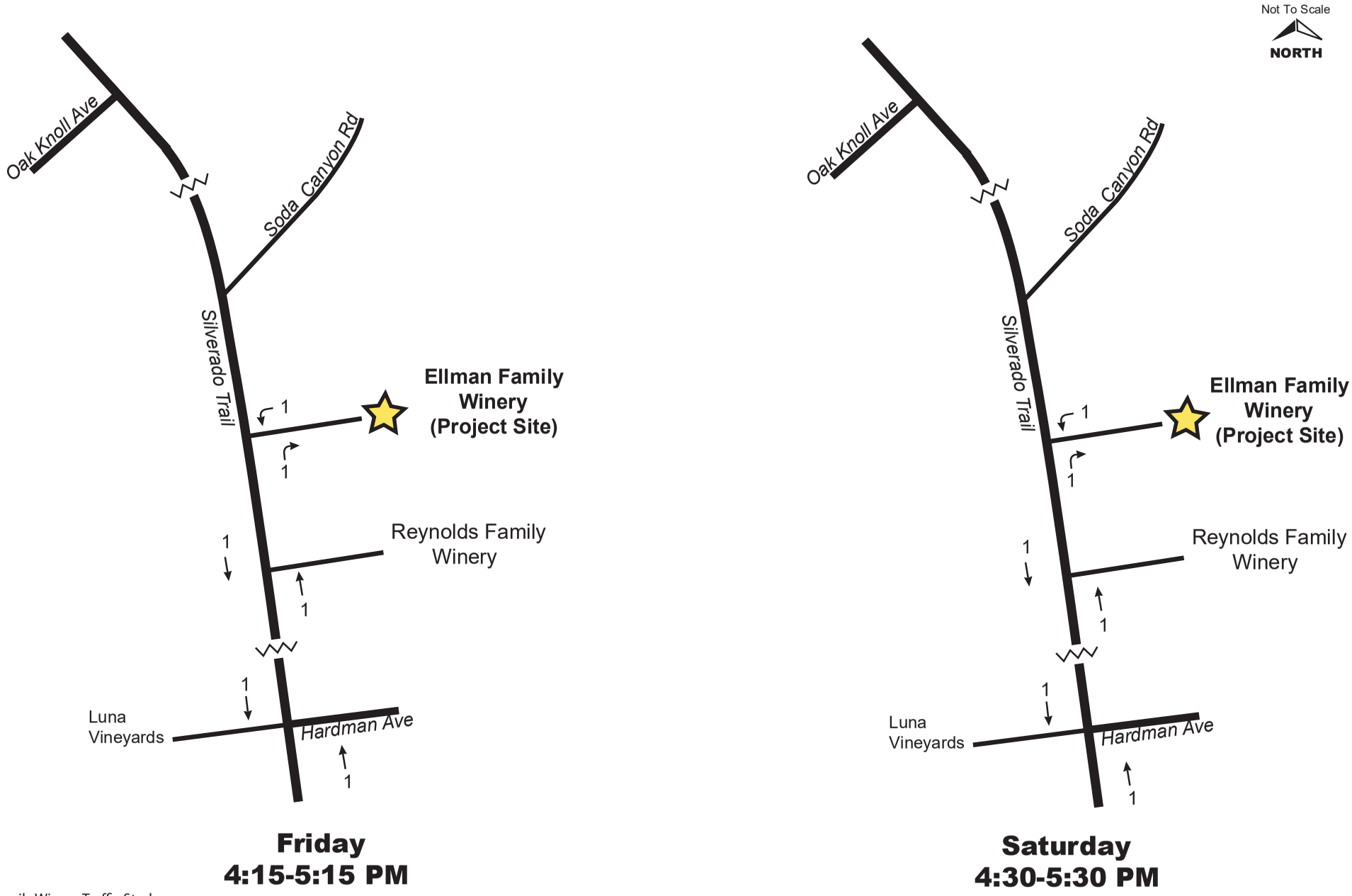


Saturday
4:30-5:30 PM

Ellman Family Winery Traffic Study

CRANE TRANSPORTATION GROUP

Figure 7
Year 2030 Cumulative Harvest (without Project)
Friday & and Saturday PM Peak Hour Volumes



Ellman Family Winery Traffic Study

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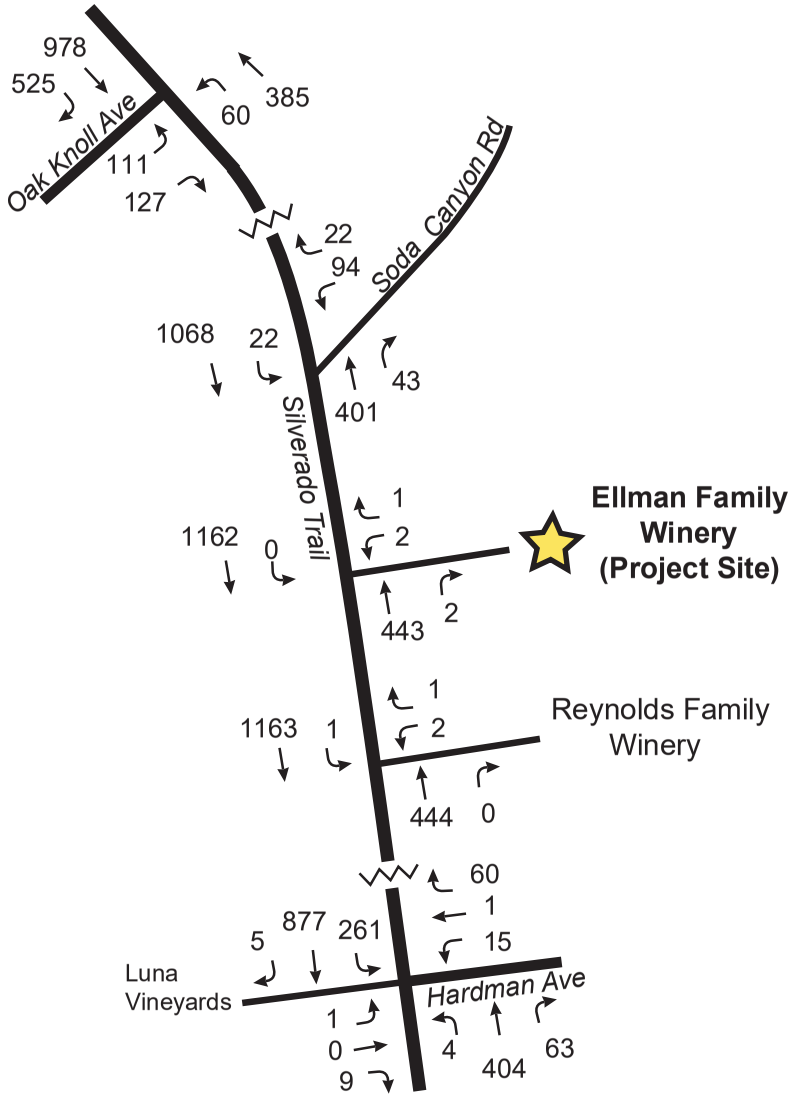
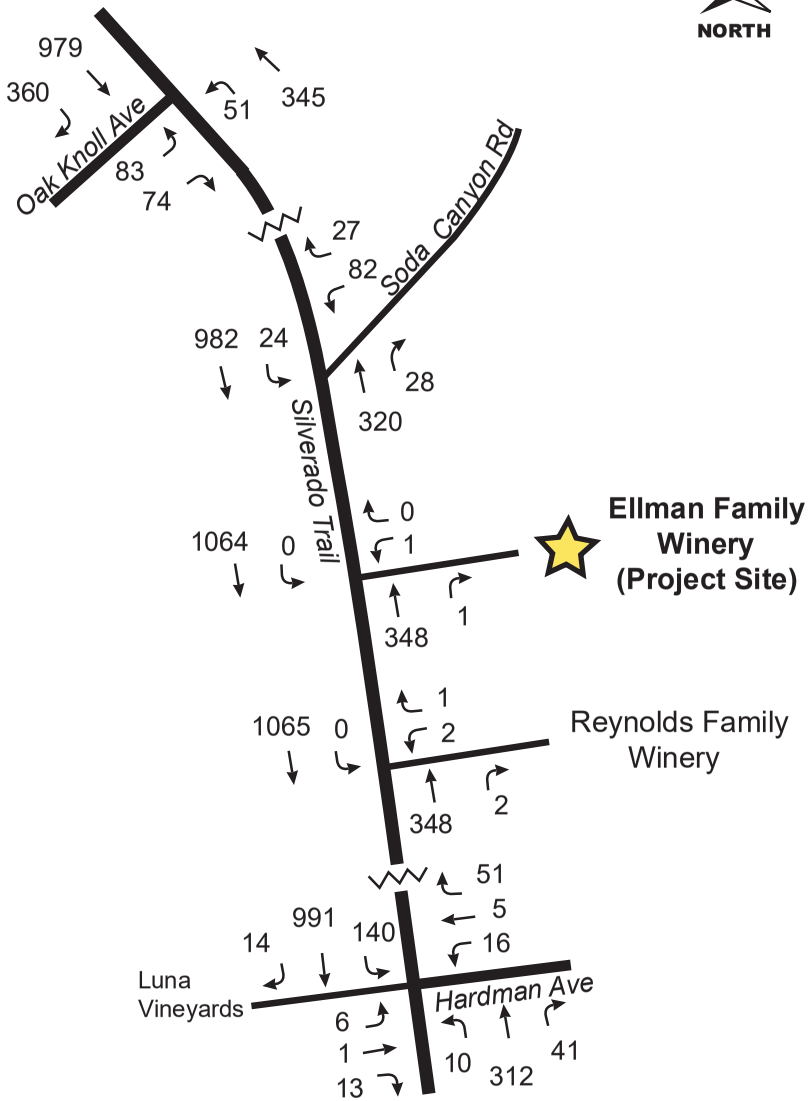
Figure 8
Project Increment
Friday & and Saturday PM Peak Hour Volumes



Friday
4:15-5:15 PM



Saturday
4:30-5:30 PM

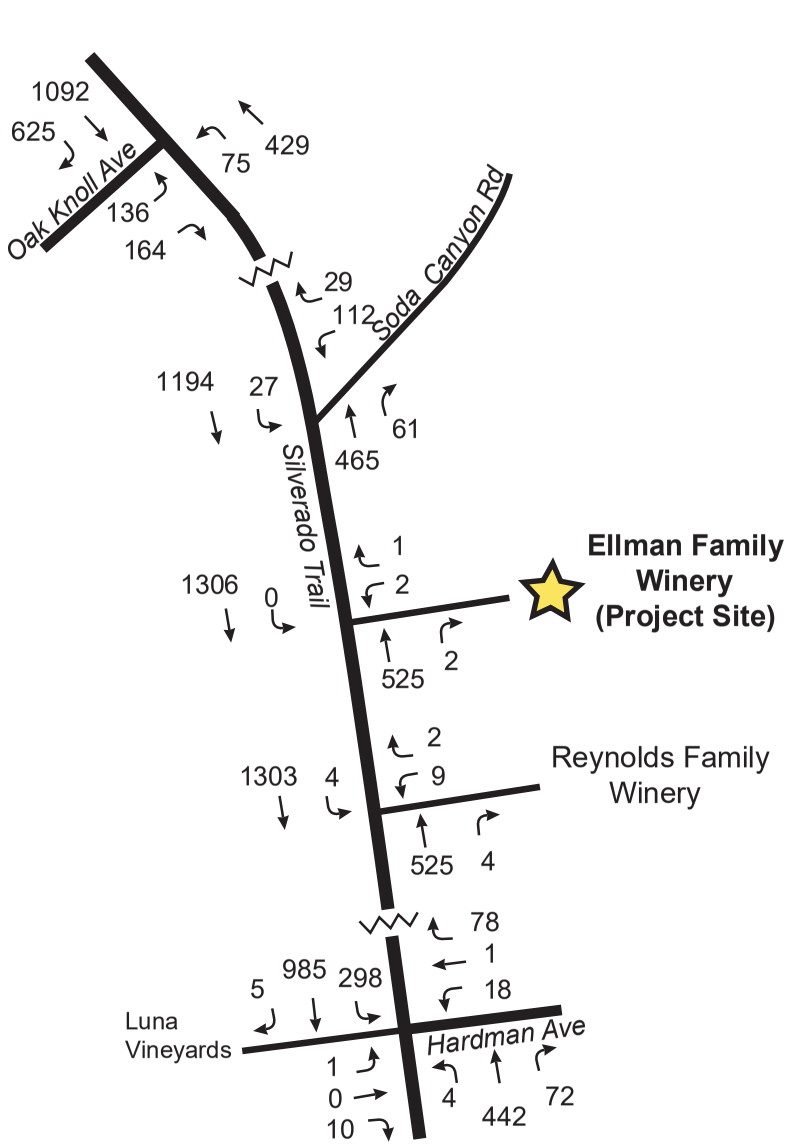
CRANE TRANSPORTATION GROUP

Figure 9
Existing (2017) Harvest (with Project)
Friday & and Saturday PM Peak Hour Volumes

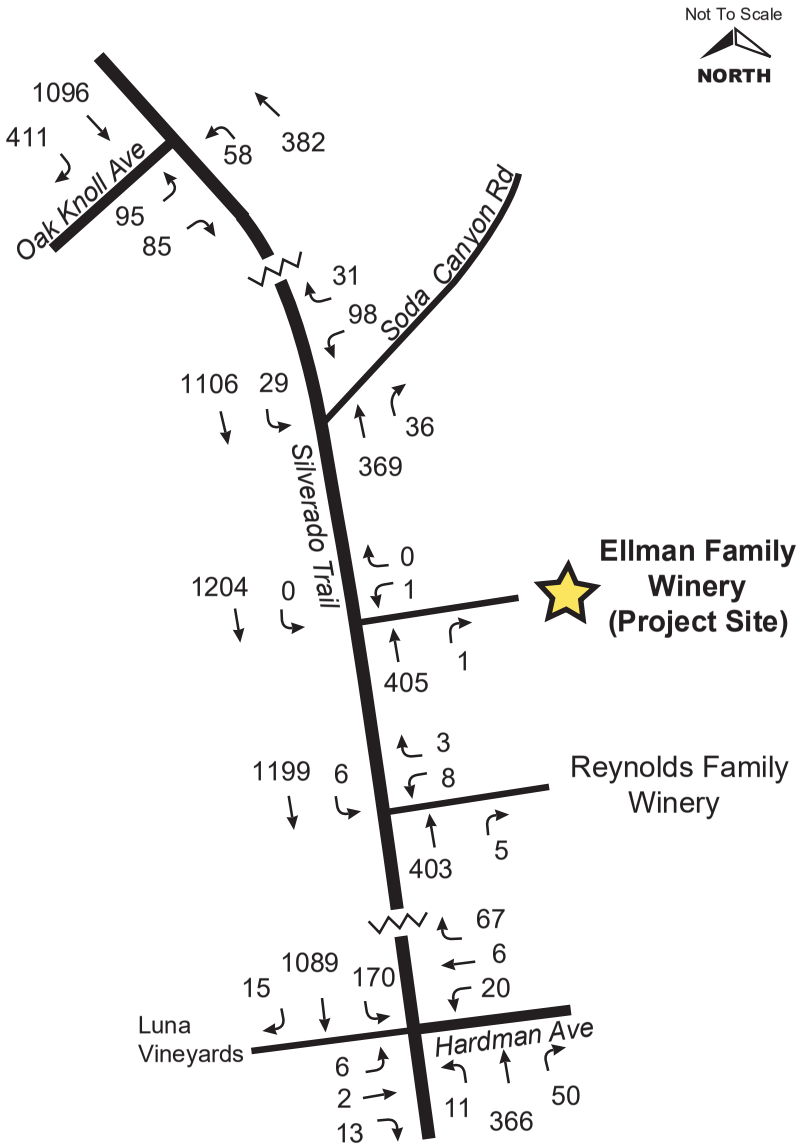
Ellman Family Winery Traffic Study

CRANE TRANSPORTATION GROUP

Figure 10
Year 2020 Harvest (with Project)
Friday & and Saturday PM Peak Hour Volumes



Friday
4:15-5:15 PM



Saturday
4:30-5:30 PM

Ellman Family Winery Traffic Study

CRANE TRANSPORTATION GROUP

Figure 11
Year 2030 Cumulative Harvest (with Project)
Friday & and Saturday PM Peak Hour Volumes

Tables

Table 1

SIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Average Control Delay (Seconds Per Vehicle)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and/or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.1 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	> 80.0

Source: 2017 Highway Capacity Manual 6th Edition (Transportation Research Board).

Table 2

UNSIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Average Control Delay (Seconds Per Vehicle)
A	Little or no delays	≤ 10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded (for an all-way stop), or with approach/turn movement capacity exceeded (for a side street stop controlled intersection)	> 50.0

Source: 2017 Highway Capacity Manual 6th Edition (Transportation Research Board).

Table 3

TRIP GENERATION
PROPOSED AND APPROVED DEVELOPMENTS
SERVED BY SODA CANYON ROAD OR ATLAS PEAK ROAD

PROJECT	FRIDAY PM PEAK HOUR TRIPS (4:30-5:30)		SATURDAY PM PEAK HOUR TRIPS (4:00-5:00)	
	IN	OUT	IN	OUT
Mountain Peak Winery	5	6	5	5
Relic Wine Cellars	0	6	0	2
V-12 Winery	0	4	0	2
Roy Estates Vineyards	0	4	0	2
Kitoko Winery (Atlas Peak Road)	0	3	0	3
TOTAL	5	23	5	14

Source: Crane Transportation Group after review of traffic reports for all projects.

Table 4 (page 1 of 2)

INTERSECTION LEVEL OF SERVICE

EXISTING – 2017 HARVEST

LOCATION	FRIDAY PM PEAK HOUR		SATURDAY PM PEAK HOUR	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oak Knoll Ave. (Oak Knoll Ave. Stop Sign Controlled Approach)	F-58.4 [1]	F-58.4 [0%] (0%)	E-35.1	E-35.1 [0%] (0%)
Silverado Trail/Soda Canyon Rd. (Soda Canyon Rd. Stop Sign Controlled Approach)	F-79.9 [2]	D-27.8	F-59.6	D-25.5
Silverado Trail/Hardman Ave./Luna Winery (Luna Winery/Hardman Ave. Stop Sign Controlled Approaches)	D-26.4/ E-40.6 [3]	D-26.4/ E-41.7 [.1%] (0%)	E-43.9/ E-38.3	E-43.9/ E-38.3 [.1%] (0%)
Silverado Trail/Project Driveway (Project Driveway Stop Sign Controlled Approach)	C-23.9[4]	C-17.6	N/A*	C-20.4

YEAR 2020 HARVEST

LOCATION	FRIDAY PM PEAK HOUR		SATURDAY PM PEAK HOUR	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oak Knoll Ave. (Oak Knoll Ave. Stop Sign Controlled Approach)	F-70.9[1]	F-70.9 [0%] (0%)	E-38.6	E-38.6 [0%] (0%)
Silverado Trail/Soda Canyon Rd. (Soda Canyon Rd. Stop Sign Controlled Approach)	F-98.9 [2]	D-30.1	F-73.8	D-27.7
Silverado Trail/Hardman Ave./Luna Winery (Luna Winery/Hardman Ave. Stop Sign Controlled Approaches)	D-28.0/ E-46.4 [3]	D-28.0/ F-46.4 [.1%] (0%)	E-48.1/ E-40.9	E-48.1/ E-41.8 [.1%] (0%)
Silverado Trail/Project Driveway (Project Driveway Stop Sign Controlled Approach)	D-25.2[4]	C-18.1	N/A*	C-21.0

CUMULATIVE (YEAR 2030) HARVEST

LOCATION	FRIDAY PM PEAK HOUR		SATURDAY PM PEAK HOUR	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oak Knoll Ave. (Oak Knoll Ave. Stop Sign Controlled Approach)	F-153.7[1]	F-153.7 [[0%]] ((0%))	F-52.6	F-52.6 [[0%]] ((0%))
Silverado Trail/Soda Canyon Rd. (Soda Canyon Rd. Stop Sign Controlled Approach)	F-207.2[2]	E-41.7 [[0%]] ((0%))	F-142.1	E-37.1 [[0%]] ((0%))
Silverado Trail/Hardman Ave./Luna Winery (Luna Winery/Hardman Ave. Stop Sign Controlled Approaches)	D-33.2/ F-71.4[3]	D-33.3 F-71.4 [[.9%]] ((0%))	F-69.9/ F-71.7	F-70.0/ F-71.7 [[.9%]] ((0%))
Silverado Trail/Project Driveway (Project Driveway Stop Sign Controlled Approach)	D-30.4	C-19.9	N/A*	C-23.1

Table 4 (page 2 of 2)

INTERSECTION LEVEL OF SERVICE

(1) Unsignalized level of service – control delay in seconds. Oak Knoll Avenue eastbound stop sign controlled approach.
(2) Unsignalized level of service – control delay in seconds. Soda Canyon Road westbound stop sign controlled approach.
(3) Unsignalized level of service – control delay in seconds. Luna Winery stop sign controlled eastbound approach/Hardman Avenue westbound stop sign controlled approach.
(4) Unsignalized level of service – control delay in seconds. Project driveway westbound stop sign controlled approach.

* No traffic volumes on driveway.

[xx] – Percent project traffic added to intersection.
[[xx]] – Percent project traffic added to intersection to growth in volumes between existing and cumulative conditions.

(xx) – Percent project traffic added to stop sign controlled approach.
((xx)) – Percent project traffic added to stop sign controlled approach to growth in volumes between existing and cumulative conditions.

Theoretical control delay results above 120 seconds with LOS F operation are presented for "with" versus "without" project comparison purposes only. Doubtful if some drivers would wait this long to make a left turn.

Year 2017 Highway Capacity Manual (HCM) 6th Edition Analysis Methodology – individual approach or turn movement results

Source: Crane Transportation Group

Table 5

INTERSECTION SIGNAL WARRANT EVALUATION

Do Volumes Meet Caltrans Peak Hour Warrant #3 Volume Criteria Levels?

EXISTING – 2017 HARVEST

INTERSECTION	FRIDAY PM PEAK HOUR (4:15-5:15)		SATURDAY PM PEAK HOUR (4:30-5:30)	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oak Knoll Ave.	Yes – R, U	Yes [0%]	Yes – R, U	Yes [0%]
Silverado Trail/Soda Canyon Rd.	Yes – R, U	Yes [0%]	Yes – R, U	Yes [0%]
Silverado Trail/Hardman Ave.	Yes – R	Yes [0.1%]	Yes – R	Yes [0.1%]

YEAR 2020 HARVEST

INTERSECTION	FRIDAY PM PEAK HOUR		SATURDAY PM PEAK HOUR	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oak Knoll Ave.	Yes – R, U	Yes [0%]	Yes – R, U	Yes [0%]
Silverado Trail/Soda Canyon Rd.	Yes – R, U	Yes [0%]	Yes – R, U	Yes [0%]
Silverado Trail/Hardman Ave.	Yes – R	Yes [0.1%]	Yes – R	Yes [0.1%]

CUMULATIVE (YEAR 2030) HARVEST

INTERSECTION	FRIDAY PM PEAK HOUR		SATURDAY PM PEAK HOUR	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oak Knoll Ave.	Yes – R, U	Yes [0%]	Yes – R, U	Yes [0%]
Silverado Trail/Soda Canyon Rd.	Yes – R, U	Yes [0%]	Yes – R, U	Yes [0%]
Silverado Trail/Hardman Ave.	Yes – R	Yes (0.9%)	Yes – R	Yes (0.9%)

R = Rural warrant met; U = Urban warrant met
[xx] – Percent project traffic added to intersection. Less than a 1% increase is not considered a significant impact.
(xx) – Percent project traffic added to the growth in volumes between existing and cumulative conditions.
Source: Crane Transportation Group; Caltrans Manual on Uniform Traffic Control Devices, Revision 2, 2017

Table 6

PROJECT TRIP GENERATION
ELLMAN FAMILY WINERY

HARVEST

FRIDAY

	TOTAL	HOURS	TRIPS							
			3-4 PM		4-5 PM		5-6 PM		4:15-5:15 PM*	
			IN	OUT	IN	OUT	IN	OUT	IN	OUT
Admin Employees – Full Time	2	9:00 AM-6:00 PM	0	0	0	0	0	0	0	0
Production Employees – Full Time	5	6:00 AM-6:00 PM	0	0	0	0	0	0	0	0
Production Employees – Part Time	2	6:00 AM-6:00 PM	0	0	0	0	0	0	0	0
Tours/Testing Employees – Full Time	1	9:00 AM-6:00 PM	0	0	0	0	0	0	0	0
Visitors	10/day (4 vehicles/day)[(1)]	10:00 AM-6:00 PM	1	1	1	1	0	1	1	1
Grape Delivery Trucks	45 (over 11 days)	6:00 AM-Noon	0	0	0	0	0	0	0	0
Other Trucks	2	8:00 AM-5:00 PM	1	1	0	0	0	0	0	0
TOTAL			2	2	1	1	0	1	1	1

* Peak traffic hour at the Silverado Trail intersection with Soda Canyon Road.
(1) 2.6 visitors/vehicle average on weekdays per County data.

Source: Ellman Family Winery project applicant; Compiled by: Crane Transportation Group

Table 7

PROJECT TRIP GENERATION
ELLMAN FAMILY WINERY

HARVEST

SATURDAY

NEW OR ADJUSTED ACTIVITIES	NET NEW	HOURS	TRIPS											
			1-2 PM		2-3 PM		3-4 PM		4-5 PM		5-6 PM		4:30-5:30 PM*	
			IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Admin Employees – Full Time	0	9:00 AM-6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
Production Employees – Full Time	5	6:00 AM-6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
Production Employees – Part Time	2	6:00 AM-6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
Tours/Tasting Employees – Full Time	1	9:00 AM-6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
Visitors	15/day (6 vehicles/day)[(1)]	10:00 AM-6:00 PM	1	1	2	1	1	2	1	1	0	1	1	1
Grape Delivery Trucks	45 (over 11 days)	6:00 AM-Noon	0	0	0	0	0	0	0	0	0	0	0	0
Other Trucks	0	N/A	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL			1	1	2	1	1	2	1	1	0	1	1	1

* Peak traffic hour at the Silverado Trail intersection with Soda Canyon Road.
(1) 2.8 visitors/vehicle average on weekend days per County data.

Source: Ellman Family Winery project applicant; Compiled by: Crane Transportation Group

Table 8

SUMMARY OF ELLMAN FAMILY WINERY TRIP GENERATION

HARVEST

FRIDAY PM PEAK HOUR* (4:15-5:15)		SATURDAY PM PEAK HOUR* (4:45-5:45)	
INBOUND TRIPS	OUTBOUND TRIPS	INBOUND TRIPS	OUTBOUND TRIPS
1	1	1	1

* Peak traffic hours at the Silverado Trail intersection with Soda Canyon Road.

Source: Ellman Family Winery; compiled by Crane Transportation Group

Table 9

ELLMAN FAMILY WINERY
MARKETING EVENT TRAFFIC DETAILS

MARKETING EVENT	STAFF/GUEST CATEGORY	# OF PEOPLE	# OF VEHICLES	TIMES	REGULAR VISITATION ELIMINATED DURING MARKETING EVENT?
Marketing Event #1 24 total	Guests	10	4	10:00 AM-6:00 PM or 6:00 PM-10:00 PM Any day	Yes
	Extra winery staff	2	2		
	Caterers	1	1		
	Entertainers	0	0		
	Delivery vehicles	1	1		
	Other?				
Marketing Event #2 1 total	Guests	100	36	10:00 AM-6:00 PM or 6:00 PM-10:00 PM Weekend	No
	Extra winery staff	2	2		
	Caterers	1	1		
	Entertainers	1	1		
	Delivery vehicles	2	2		
	Other?				
Marketing Event #3 1 total	Guests	200	72	10:00 AM-6:00 PM or 6:00 PM-10:00 PM Weekend	No
	Extra winery staff	11	11		
	Caterers	2	1		
	Entertainers	2	2		
	Delivery vehicles	4	4		
	Other?				
Marketing Event #4 1 total	Guests	125	45	10:00 AM-6:00 PM or 6:00 PM-10:00 PM Weekend	No
	Extra winery staff	4	4		
	Caterers	2	2		
	Entertainers	2	2		
	Delivery vehicles	2	2		
	Other?				

Source: Ellman Family Winery applicant

Appendix

Appendix

ELLMAN FAMILY WINERY
EXPECTED PROJECT TRAFFIC ACTIVITY DETAILS - HARVEST

Gallons/Year Production: 30,000
1st Year of Expected Full Production: 2019

A. **Full-time admin employees** # on Weekdays _1___ # on Saturday __1__ # on Sunday __0__ Work hours: Weekday 9:00 AM to 6:00 PM Saturday 9:00 AM to 6:00 PM Sunday N/A	B. **Part-time admin employees** # on Weekdays _1___ # on Saturday __1__ # on Sunday __1__ Work hours: Weekday 9:00 AM to 6:00 PM Saturday 9:00 AM to 6:00 PM Sunday 9:00 AM to 6:00 PM
C. **Full-time production employees** # on Weekdays _2___ # on Saturday __2__ # on Sunday __0__ Work hours: Weekday 6:00 AM to 6:00 PM Saturday 6:00 AM to 6:00 PM Sunday N/A	D. **Part-time production employees** # on Weekdays _2___ # on Saturday __2__ # on Sunday __0__ Work hours: Weekday N/A Saturday N/A Sunday N/A
E. **Tours & tasting employees** # on Weekdays _1___ # on Saturday __1__ # on Sunday __1__ Work hours: Weekday 9:00 AM to 6:00 PM Saturday 9:00 AM to 6:00 PM Sunday 9:00 AM to 6:00 PM	F. **Other employees** N/A
G. **Maximum tours/tasting visitors** # on Weekdays _15__ # on Saturday __15__ # on Sunday _15__ Tasting hours: Weekday 10:00 AM to 6:00 PM Saturday 10:00 AM to 6:00 PM Sunday 10:00 AM to 6:00 PM	H. **Grape delivery trucks** # on Weekdays _4-5__ # on Saturday __2-3___ # on Sunday ___0__ Delivery hours: Weekday 6:00 AM to Noon Saturday 6:00 AM to Noon Sunday N/A # days of grape delivery: 11

Appendix

ELLMAN FAMILY WINERY
EXPECTED PROJECT TRAFFIC ACTIVITY DETAILS - HARVEST

I. **Other trucks**
on Weekdays __2_
on Saturday ___0__
on Sunday ___0__
Delivery hours:
Weekday 8:00 AM to 5:00 PM
Saturday N/A
Sunday N/A

J. **Grape Source & Trucks**

Percent grapes grown on site: 30%

Grapes grown off site – access route to winery entrance
From the north on Silverado Trail: 50%
From the south on Silverado Trail: 50%

Number of existing grape haul truck trips eliminated due to use of on-site grapes for proposed winery: 11

Appendix

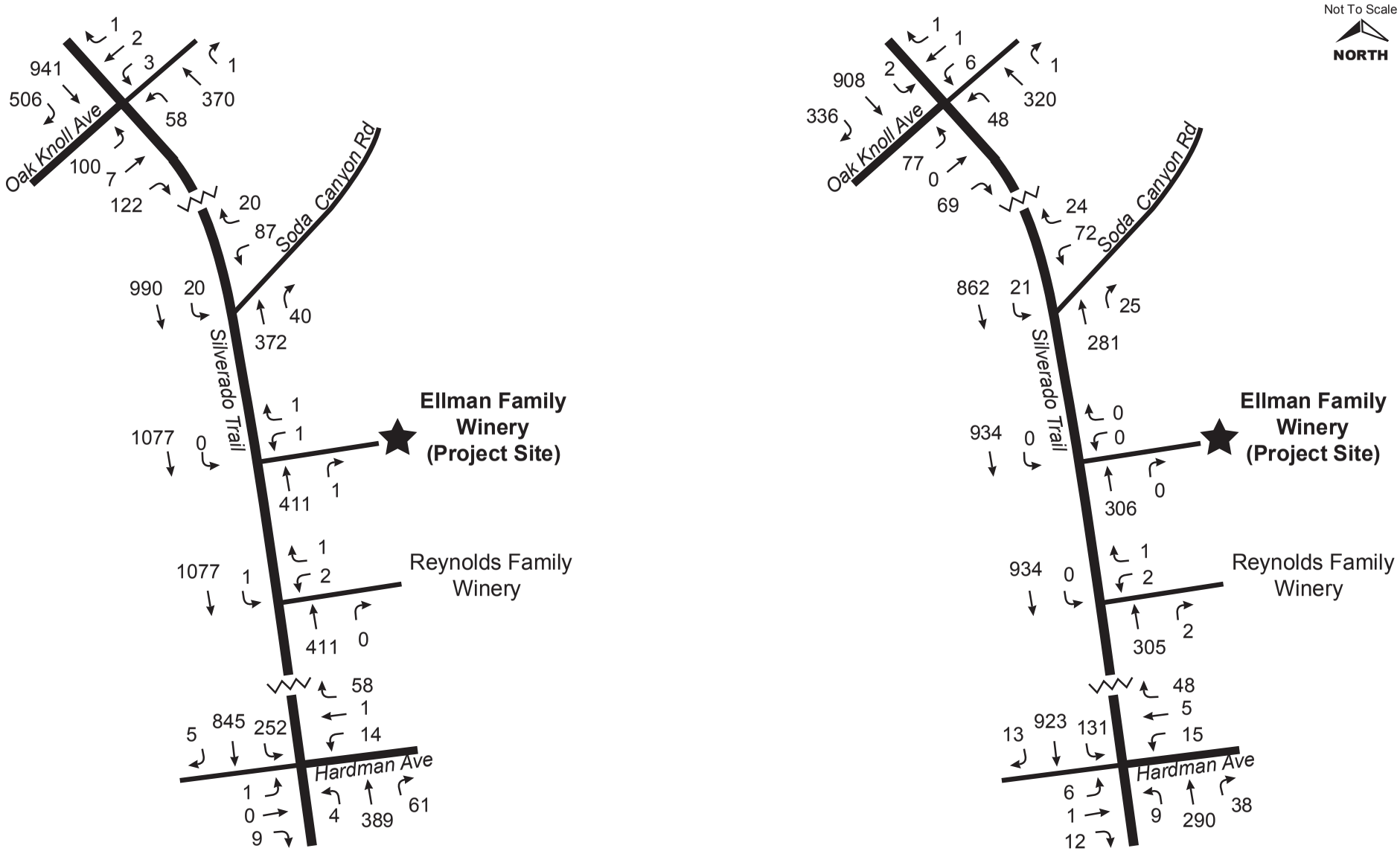
ELLMAN FAMILY WINERY
EXPECTED PROJECT TRAFFIC ACTIVITY DETAILS - HARVEST

K. **Marketing Events**

Marketing Event #1	# events/year: 24 maximum # people/event: 10 typical days: any day typical hours: 10:00 AM to 6:00 PM or 6:00 PM to 10:00 PM
Marketing Event #2	# events/year: 1 maximum # people/event: 100 typical days: weekends typical hours: 10:00 AM to 6:00 PM or 6:00 PM to 10:00 PM
Marketing Event #3	# events/year: 1 maximum # people/event: 200 typical days: weekends typical hours: 10:00 AM to 6:00 PM or 6:00 PM to 10:00 PM
Marketing Event #4	# events/year: 1 maximum # people/event: 125 typical days: weekend typical hours: 10:00 AM to 6:00 PM or 6:00 PM to 10:00 PM

L. **Bottling**

Days of on-site bottling per year: 4



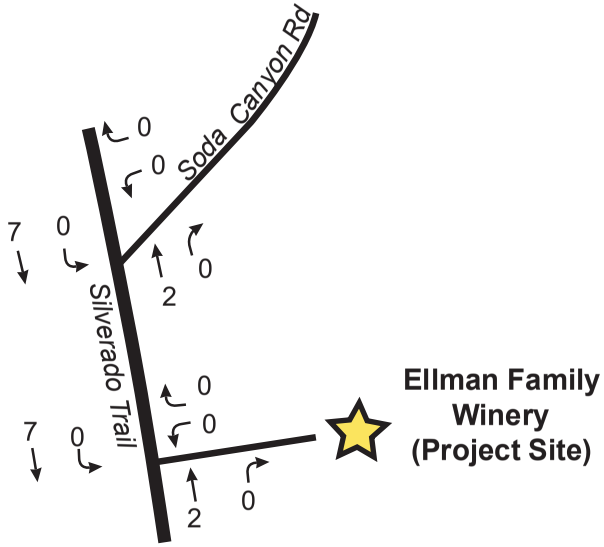
Ellman Family Winery Traffic Study

CRANE TRANSPORTATION GROUP

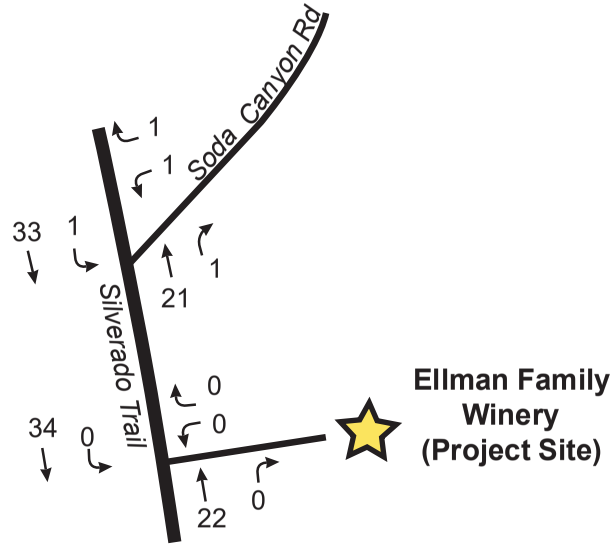
Figure A-1
Existing Friday & and Saturday
PM Peak Hour Volumes
March 10-11, and April 28-29 2017

Not To Scale

NORTH



Friday
2:30-6:30 PM



Saturday
12:00-6:00 PM

CRANE TRANSPORTATION GROUP

Figure A-2
Existing Friday and Saturday
PM Peak Period Bicycle Volumes
March 10-11, 2017

PEAK HOUR VOLUME WARRANT #3
(Urban Area)

* NOTE

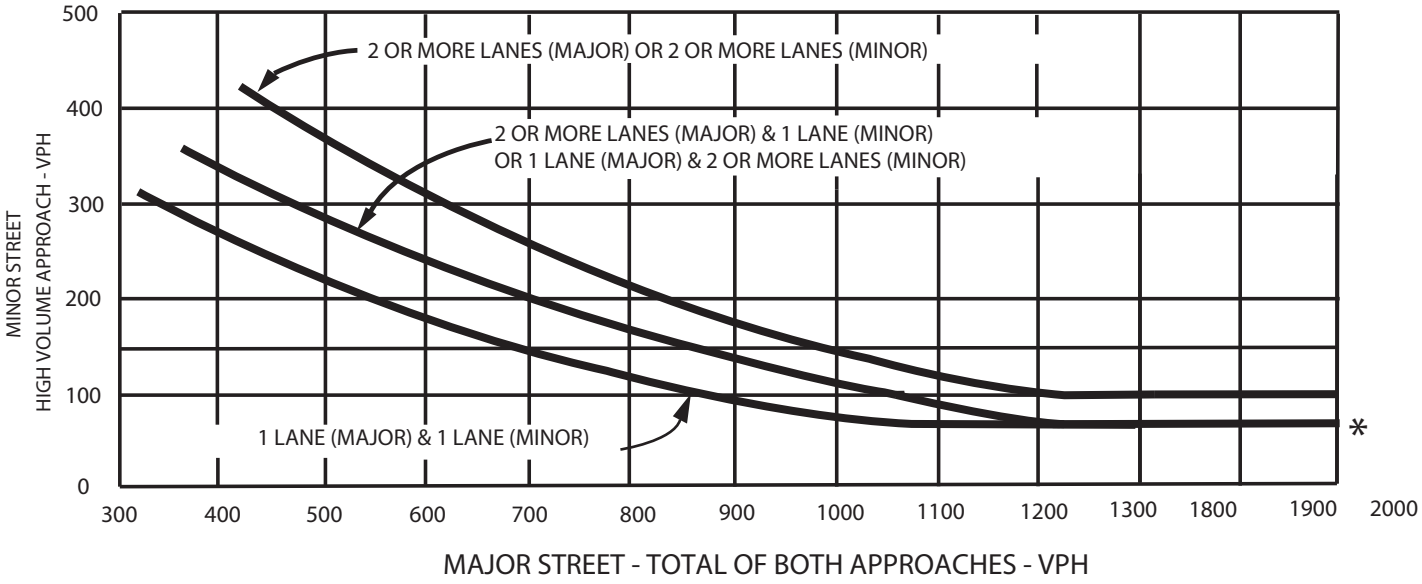
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE

Source: Year 2014 Manual on Uniform Traffic Control Devices, Federal Highway Administration

CRANE TRANSPORTATION GROUP

Figure A-3

PEAK HOUR VOLUME WARRANT #3
(Urban Area)



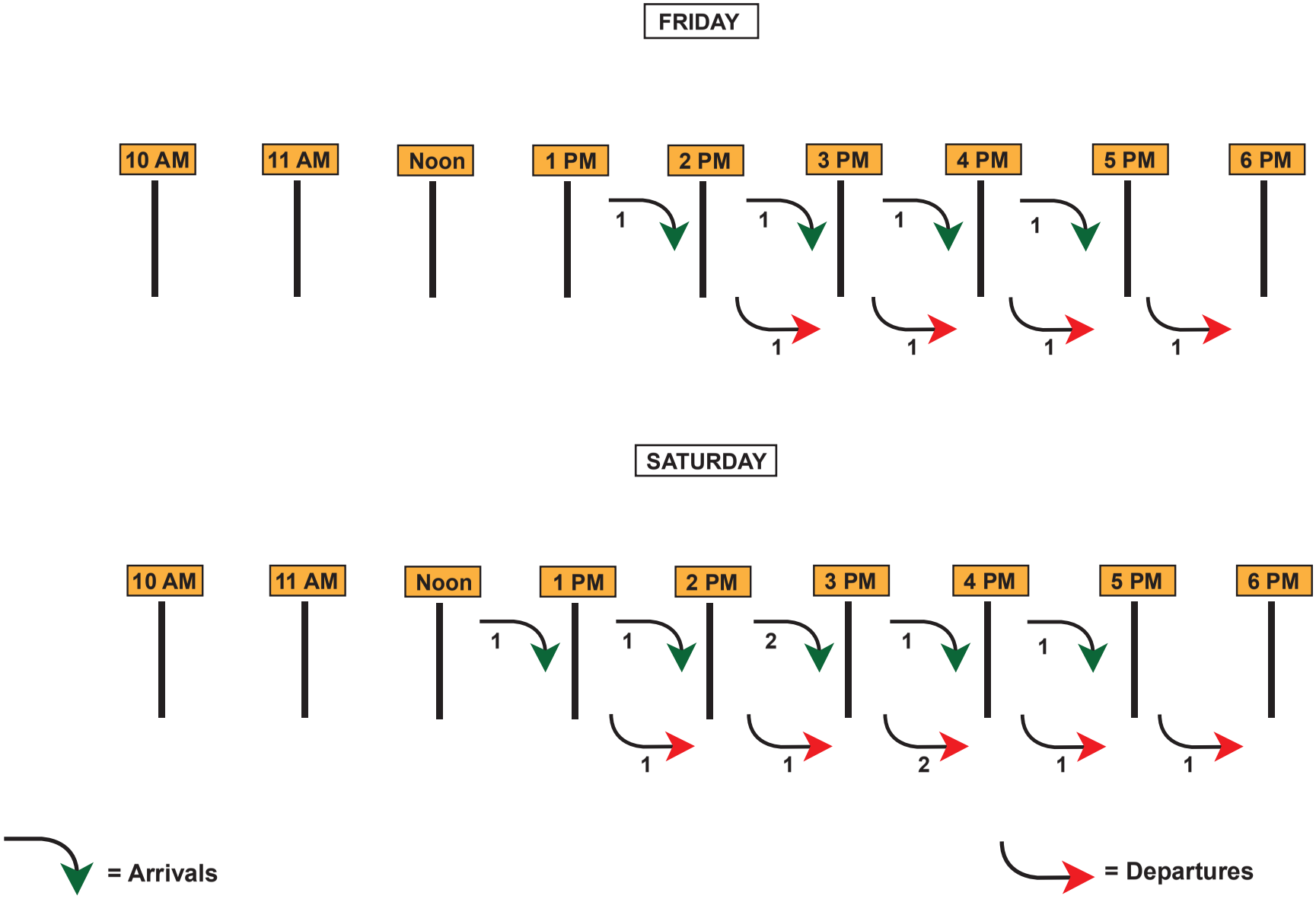
* NOTE

100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE

Source: Year 2014 Manual on Uniform Traffic Control Devices, Federal Highway Administration

Figure A-4
PEAK HOUR VOLUME WARRANT #3
(Rural Area)

CRANE TRANSPORTATION GROUP



CRANE TRANSPORTATION GROUP

Figure A-5

Ellman Family Winery
Distribution of New Guests

TECHNICAL APPENDIX

Capacity Worksheets

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	111	127	60	385	978	525
Future Vol, veh/h	111	127	60	385	978	525
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	132	63	401	1019	547

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1820	1293	1566	0	-	0
Stage 1	1293	-	-	-	-	-
Stage 2	527	-	-	-	-	-
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	~ 85	199	421	-	-	-
Stage 1	257	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 72	199	421	-	-	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	218	-	-	-	-	-
Stage 2	592	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	58.4	2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	421	-	167	199	-	-
HCM Lane V/C Ratio	0.148	-	0.692	0.665	-	-
HCM Control Delay (s)	15	-	64.6	53	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	0.5	-	4.1	4	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	443	1	0	1162
Future Vol, veh/h	1	1	443	1	0	1162
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	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	2	0	2	0
Mvmt Flow	1	1	447	1	0	1174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1622	448	0	0	448	0
Stage 1	448	-	-	-	-	-
Stage 2	1174	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	114	615	-	-	1112	-
Stage 1	648	-	-	-	-	-
Stage 2	296	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	114	615	-	-	1112	-
Mov Cap-2 Maneuver	114	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	296	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	192	1112	-
HCM Lane V/C Ratio	-	-	0.011	-	-
HCM Control Delay (s)	-	-	23.9	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	94	22	401	43	22	1068
Future Vol, veh/h	94	22	401	43	22	1068
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	95	22	405	43	22	1079

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1550	427	0	0	448	0
Stage 1	427	-	-	-	-	-
Stage 2	1123	-	-	-	-	-
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	125	628	-	-	1112	-
Stage 1	658	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	123	628	-	-	1112	-
Mov Cap-2 Maneuver	123	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	311	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	79.9	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	123	628	1112	-
HCM Lane V/C Ratio	-	-	0.772	0.035	0.02	-
HCM Control Delay (s)	-	-	96.1	10.9	8.3	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	4.5	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	9	15	1	60	4	403	63	261	876	5
Future Vol, veh/h	1	0	9	15	1	60	4	403	63	261	876	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	1	0	9	16	1	63	4	424	66	275	922	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1972	1973	925	1944	1942	457	927	0	0	490	0	0
Stage 1	1475	1475	-	465	465	-	-	-	-	-	-	-
Stage 2	497	498	-	1479	1477	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	47	63	329	50	66	608	746	-	-	1084	-	-
Stage 1	159	192	-	581	566	-	-	-	-	-	-	-
Stage 2	559	548	-	158	192	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	47	329	39	49	608	746	-	-	1084	-	-
Mov Cap-2 Maneuver	33	47	-	39	49	-	-	-	-	-	-	-
Stage 1	158	143	-	578	563	-	-	-	-	-	-	-
Stage 2	497	545	-	115	143	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.4	40.6	0.1	2.2
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	746	-	-	33	329	40	608	1084	-	-
HCM Lane V/C Ratio	0.006	-	-	0.032	0.029	0.421	0.104	0.253	-	-
HCM Control Delay (s)	9.9	-	-	117.7	16.3	149.2	11.6	9.4	-	-
HCM Lane LOS	A	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	1.5	0.3	1	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	83	74	51	345	979	360
Future Vol, veh/h	83	74	51	345	979	360
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	88	79	54	367	1041	383

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1708	1233	1424	0	-	0
Stage 1	1233	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	101	218	484	-	-	-
Stage 1	278	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	90	218	484	-	-	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	247	-	-	-	-	-
Stage 2	630	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	35.1	1.7	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	484	-	191	218	-	-
HCM Lane V/C Ratio	0.112	-	0.462	0.361	-	-
HCM Control Delay (s)	13.4	-	39.1	30.6	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.4	-	2.2	1.6	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	82	27	320	28	24	982
Future Vol, veh/h	82	27	320	28	24	982
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	90	30	352	31	26	1079

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1499	368	0	0	383	0
Stage 1	368	-	-	-	-	-
Stage 2	1131	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	136	682	-	-	1187	-
Stage 1	704	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	133	682	-	-	1187	-
Mov Cap-2 Maneuver	133	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	311	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	59.6	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	133	682	1187	-
HCM Lane V/C Ratio	-	-	0.678	0.044	0.022	-
HCM Control Delay (s)	-	-	75.8	10.5	8.1	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	3.7	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	13	16	5	51	10	311	41	140	990	14
Future Vol, veh/h	6	1	13	16	5	51	10	311	41	140	990	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	7	1	14	17	5	55	11	338	45	152	1076	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1801	1793	1084	1778	1778	361	1091	0	0	383	0	0
Stage 1	1388	1388	-	383	383	-	-	-	-	-	-	-
Stage 2	413	405	-	1395	1395	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	62	82	266	65	83	688	647	-	-	1187	-	-
Stage 1	178	212	-	644	616	-	-	-	-	-	-	-
Stage 2	620	602	-	177	210	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	48	70	266	54	71	688	647	-	-	1187	-	-
Mov Cap-2 Maneuver	48	70	-	54	71	-	-	-	-	-	-	-
Stage 1	175	185	-	633	606	-	-	-	-	-	-	-
Stage 2	555	592	-	145	183	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	43.9	38.3	0.3	1
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	647	-	-	50	266	57	688	1187	-	-
HCM Lane V/C Ratio	0.017	-	-	0.152	0.053	0.4	0.081	0.128	-	-
HCM Control Delay (s)	10.7	-	-	89.5	19.3	105.2	10.7	8.5	-	-
HCM Lane LOS	B	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.2	1.5	0.3	0.4	-	-

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	115	136	62	396	1004	542
Future Vol, veh/h	115	136	62	396	1004	542
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	142	65	413	1046	565

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1872	1329	1611	0	-	0
Stage 1	1329	-	-	-	-	-
Stage 2	543	-	-	-	-	-
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	~ 79	189	405	-	-	-
Stage 1	247	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 66	189	405	-	-	-
Mov Cap-2 Maneuver	158	-	-	-	-	-
Stage 1	207	-	-	-	-	-
Stage 2	582	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	70.9	2.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	405	-	158	189	-	-
HCM Lane V/C Ratio	0.159	-	0.758	0.75	-	-
HCM Control Delay (s)	15.6	-	77	65.7	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	0.6	-	4.7	4.9	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	462	1	0	1195
Future Vol, veh/h	1	1	462	1	0	1195
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	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	2	0	2	0
Mvmt Flow	1	1	467	1	0	1207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1675	468	0	0	468	0
Stage 1	468	-	-	-	-	-
Stage 2	1207	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	106	599	-	-	1094	-
Stage 1	634	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	106	599	-	-	1094	-
Mov Cap-2 Maneuver	106	-	-	-	-	-
Stage 1	634	-	-	-	-	-
Stage 2	286	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.2	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	180	1094	-
HCM Lane V/C Ratio	-	-	0.011	-	-
HCM Control Delay (s)	-	-	25.2	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	98	23	416	47	23	1097
Future Vol, veh/h	98	23	416	47	23	1097
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	99	23	420	47	23	1108

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1598	444	0	0	467	0
Stage 1	444	-	-	-	-	-
Stage 2	1154	-	-	-	-	-
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	117	614	-	-	1094	-
Stage 1	646	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	115	614	-	-	1094	-
Mov Cap-2 Maneuver	115	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	300	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	98.9	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	115	614	1094	-
HCM Lane V/C Ratio	-	-	0.861	0.038	0.021	-
HCM Control Delay (s)	-	-	119.5	11.1	8.4	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	5.2	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	9	15	1	62	4	412	66	270	901	5
Future Vol, veh/h	1	0	9	15	1	62	4	412	66	270	901	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	1	0	9	16	1	65	4	434	69	284	948	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2029	2030	951	2000	1998	469	953	0	0	503	0	0
Stage 1	1519	1519	-	477	477	-	-	-	-	-	-	-
Stage 2	510	511	-	1523	1521	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	43	58	318	45	61	598	729	-	-	1072	-	-
Stage 1	150	183	-	573	559	-	-	-	-	-	-	-
Stage 2	550	540	-	149	183	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	30	42	318	35	45	598	729	-	-	1072	-	-
Mov Cap-2 Maneuver	30	42	-	35	45	-	-	-	-	-	-	-
Stage 1	149	135	-	570	556	-	-	-	-	-	-	-
Stage 2	486	537	-	106	135	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28	46.4	0.1	2.2
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	729	-	-	30	318	35	598	1072	-	-
HCM Lane V/C Ratio	0.006	-	-	0.035	0.03	0.481	0.109	0.265	-	-
HCM Control Delay (s)	10	-	-	129.3	16.7	180.6	11.8	9.6	-	-
HCM Lane LOS	A	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	1.6	0.4	1.1	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	86	77	53	354	1006	372
Future Vol, veh/h	86	77	53	354	1006	372
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	91	82	56	377	1070	396

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1757	1268	1466	0	-	0
Stage 1	1268	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	94	208	467	-	-	-
Stage 1	267	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 83	208	467	-	-	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	235	-	-	-	-	-
Stage 2	621	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	38.6	1.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	467	-	181	208	-	-
HCM Lane V/C Ratio	0.121	-	0.505	0.394	-	-
HCM Control Delay (s)	13.8	-	43.6	33.1	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.4	-	2.5	1.8	-	-

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

Intersection	
Int Delay, s/veh	5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	86	27	331	30	25	1010
Future Vol, veh/h	86	27	331	30	25	1010
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	95	30	364	33	27	1110

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1545	381	0	0	397	0
Stage 1	381	-	-	-	-	-
Stage 2	1164	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	127	671	-	-	1173	-
Stage 1	695	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	124	671	-	-	1173	-
Mov Cap-2 Maneuver	124	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	300	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	73.8	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	124	671	1173	-
HCM Lane V/C Ratio	-	-	0.762	0.044	0.023	-
HCM Control Delay (s)	-	-	93.7	10.6	8.1	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	4.4	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	13	16	5	53	10	324	42	145	1015	14
Future Vol, veh/h	6	1	13	16	5	53	10	324	42	145	1015	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	7	1	14	17	5	58	11	352	46	158	1103	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1856	1847	1111	1831	1831	375	1118	0	0	398	0	0
Stage 1	1427	1427	-	397	397	-	-	-	-	-	-	-
Stage 2	429	420	-	1434	1434	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	57	75	257	60	77	676	632	-	-	1172	-	-
Stage 1	169	203	-	633	607	-	-	-	-	-	-	-
Stage 2	608	593	-	168	201	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	43	64	257	50	65	676	632	-	-	1172	-	-
Mov Cap-2 Maneuver	43	64	-	50	65	-	-	-	-	-	-	-
Stage 1	166	176	-	622	597	-	-	-	-	-	-	-
Stage 2	542	583	-	137	174	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	48.1	40.9	0.3	1.1
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	632	-	-	45	257	53	676	1172	-	-
HCM Lane V/C Ratio	0.017	-	-	0.169	0.055	0.431	0.085	0.134	-	-
HCM Control Delay (s)	10.8	-	-	100.6	19.8	116.8	10.8	8.5	-	-
HCM Lane LOS	B	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.2	1.6	0.3	0.5	-	-

Intersection	
Int Delay, s/veh	18.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	136	164	75	429	1092	625
Future Vol, veh/h	136	164	75	429	1092	625
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	140	169	77	442	1126	644

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2044	1448	1770	0	-	0
Stage 1	1448	-	-	-	-	-
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	~ 62	~ 161	352	-	-	-
Stage 1	216	-	-	-	-	-
Stage 2	550	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 48	~ 161	352	-	-	-
Mov Cap-2 Maneuver	~ 130	-	-	-	-	-
Stage 1	169	-	-	-	-	-
Stage 2	550	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	153.7	2.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	352	-	130	161	-	-
HCM Lane V/C Ratio	0.22	-	1.079	1.05	-	-
HCM Control Delay (s)	18.1	-	167.6	142.1	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	0.8	-	7.9	8.5	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	525	1	0	1306
Future Vol, veh/h	1	1	525	1	0	1306
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	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	2	0	2	0
Mvmt Flow	1	1	530	1	0	1319

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1850	531	0	0	531	0
Stage 1	531	-	-	-	-	-
Stage 2	1319	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	83	552	-	-	1036	-
Stage 1	594	-	-	-	-	-
Stage 2	252	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	83	552	-	-	1036	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	252	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	30.4	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	144	1036	-
HCM Lane V/C Ratio	-	-	0.014	-	-
HCM Control Delay (s)	-	-	30.4	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	15.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	112	29	465	61	27	1194
Future Vol, veh/h	112	29	465	61	27	1194
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	29	470	62	27	1206

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1761	501	0	0	532	0
Stage 1	501	-	-	-	-	-
Stage 2	1260	-	-	-	-	-
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	~ 93	570	-	-	1036	-
Stage 1	609	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 91	570	-	-	1036	-
Mov Cap-2 Maneuver	~ 91	-	-	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	267	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	207.2	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	91	570	1036	-
HCM Lane V/C Ratio	-	-	1.243	0.051	0.026	-
HCM Control Delay (s)	-	-	257.8	11.7	8.6	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	8	0.2	0.1	-

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

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	10	18	1	78	4	441	72	298	984	5
Future Vol, veh/h	1	0	10	18	1	78	4	441	72	298	984	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	1	0	10	19	1	81	4	459	75	310	1025	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2194	2190	1028	2158	2155	497	1030	0	0	534	0	0
Stage 1	1648	1648	-	505	505	-	-	-	-	-	-	-
Stage 2	546	542	-	1653	1650	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	33	46	287	35	48	577	682	-	-	1044	-	-
Stage 1	126	158	-	553	544	-	-	-	-	-	-	-
Stage 2	526	523	-	126	158	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	21	32	287	26	34	577	682	-	-	1044	-	-
Mov Cap-2 Maneuver	21	32	-	26	34	-	-	-	-	-	-	-
Stage 1	125	111	-	550	541	-	-	-	-	-	-	-
Stage 2	448	520	-	85	111	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	33.2	71.4	0.1	2.3
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	682	-	-	21	287	26	577	1044	-	-
HCM Lane V/C Ratio	0.006	-	-	0.05	0.036	0.761	0.141	0.297	-	-
HCM Control Delay (s)	10.3	-	-	185.2	18	$ 314	12.3	9.9	-	-
HCM Lane LOS	B	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	2.4	0.5	1.3	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	95	85	58	382	1096	411
Future Vol, veh/h	95	85	58	382	1096	411
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	100	89	61	402	1154	433

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1895	1371	1587	0	-	0
Stage 1	1371	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 78	181	419	-	-	-
Stage 1	238	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 67	181	419	-	-	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	203	-	-	-	-	-
Stage 2	598	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	52.6	2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	419	-	157	181	-	-
HCM Lane V/C Ratio	0.146	-	0.637	0.494	-	-
HCM Control Delay (s)	15.1	-	61.3	42.9	-	-
HCM Lane LOS	C	-	F	E	-	-
HCM 95th %tile Q(veh)	0.5	-	3.5	2.4	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	405	0	0	1204
Future Vol, veh/h	0	0	405	0	0	1204
Conflicting Peds, #/hr	0	2	0	2	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	440	0	0	1309

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1751	444	0	0	442	0
Stage 1	442	-	-	-	-	-
Stage 2	1309	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	95	618	-	-	1129	-
Stage 1	652	-	-	-	-	-
Stage 2	255	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	95	616	-	-	1127	-
Mov Cap-2 Maneuver	95	-	-	-	-	-
Stage 1	651	-	-	-	-	-
Stage 2	255	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1127	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	11.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	98	31	369	36	29	1106
Future Vol, veh/h	98	31	369	36	29	1106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	107	34	401	39	32	1202

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1687	421	0	0	440	0
Stage 1	421	-	-	-	-	-
Stage 2	1266	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 104	637	-	-	1131	-
Stage 1	667	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 101	637	-	-	1131	-
Mov Cap-2 Maneuver	~ 101	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	268	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	142.1	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	101	637	1131	-
HCM Lane V/C Ratio	-	-	1.055	0.053	0.028	-
HCM Control Delay (s)	-	-	183.6	11	8.3	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	6.7	0.2	0.1	-

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

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	2	13	20	6	67	11	365	50	170	1088	15
Future Vol, veh/h	6	2	13	20	6	67	11	365	50	170	1088	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	2	14	22	6	72	12	392	54	183	1170	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2026	2014	1178	1995	1995	419	1186	0	0	446	0	0
Stage 1	1544	1544	-	443	443	-	-	-	-	-	-	-
Stage 2	482	470	-	1552	1552	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	43	59	235	46	61	638	596	-	-	1125	-	-
Stage 1	145	178	-	598	579	-	-	-	-	-	-	-
Stage 2	569	563	-	144	176	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	30	48	235	36	50	638	596	-	-	1125	-	-
Mov Cap-2 Maneuver	30	48	-	36	50	-	-	-	-	-	-	-
Stage 1	142	149	-	586	567	-	-	-	-	-	-	-
Stage 2	489	552	-	112	147	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	69.9	71.7	0.3	1.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	596	-	-	33	235	38	638	1125	-	-
HCM Lane V/C Ratio	0.02	-	-	0.261	0.059	0.736	0.113	0.162	-	-
HCM Control Delay (s)	11.2	-	-	148.9	21.3	227.1	11.4	8.8	-	-
HCM Lane LOS	B	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.2	2.7	0.4	0.6	-	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	111	127	60	385	978	525
Future Vol, veh/h	111	127	60	385	978	525
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	132	63	401	1019	547

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1820	1293	1566	0	-	0
Stage 1	1293	-	-	-	-	-
Stage 2	527	-	-	-	-	-
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	~ 85	199	421	-	-	-
Stage 1	257	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 72	199	421	-	-	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	218	-	-	-	-	-
Stage 2	592	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	58.4	2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	421	-	167	199	-	-
HCM Lane V/C Ratio	0.148	-	0.692	0.665	-	-
HCM Control Delay (s)	15	-	64.6	53	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	0.5	-	4.1	4	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	443	2	0	1162
Future Vol, veh/h	2	1	443	2	0	1162
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	-	-	-	0	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	2	0	2	0
Mvmt Flow	2	1	447	2	0	1174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1622	448	0	0	449	0
Stage 1	448	-	-	-	-	-
Stage 2	1174	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	114	615	-	-	1111	-
Stage 1	648	-	-	-	-	-
Stage 2	296	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	114	615	-	-	1111	-
Mov Cap-2 Maneuver	228	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	296	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	289	1111	-
HCM Lane V/C Ratio	-	-	0.01	-	-
HCM Control Delay (s)	-	-	17.6	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	94	22	401	43	22	1068
Future Vol, veh/h	94	22	401	43	22	1068
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	95	22	405	43	22	1079

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1550	427	0	0	448	0
Stage 1	427	-	-	-	-	-
Stage 2	1123	-	-	-	-	-
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	125	628	-	-	1112	-
Stage 1	658	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	123	628	-	-	1112	-
Mov Cap-2 Maneuver	227	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	311	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.8	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	227	628	1112	-
HCM Lane V/C Ratio	-	-	0.418	0.035	0.02	-
HCM Control Delay (s)	-	-	31.8	10.9	8.3	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	1.9	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	9	15	1	60	4	404	63	261	877	5
Future Vol, veh/h	1	0	9	15	1	60	4	404	63	261	877	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	1	0	9	16	1	63	4	425	66	275	923	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1974	1975	926	1946	1944	458	928	0	0	491	0	0
Stage 1	1476	1476	-	466	466	-	-	-	-	-	-	-
Stage 2	498	499	-	1480	1478	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	47	63	329	49	66	607	745	-	-	1083	-	-
Stage 1	159	192	-	581	566	-	-	-	-	-	-	-
Stage 2	558	547	-	158	192	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	47	329	38	49	607	745	-	-	1083	-	-
Mov Cap-2 Maneuver	33	47	-	38	49	-	-	-	-	-	-	-
Stage 1	158	143	-	578	563	-	-	-	-	-	-	-
Stage 2	496	544	-	114	143	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.4	41.7	0.1	2.2
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	745	-	-	33	329	39	607	1083	-	-
HCM Lane V/C Ratio	0.006	-	-	0.032	0.029	0.432	0.104	0.254	-	-
HCM Control Delay (s)	9.9	-	-	117.7	16.3	154.6	11.6	9.5	-	-
HCM Lane LOS	A	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	1.5	0.3	1	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	83	74	51	345	979	360
Future Vol, veh/h	83	74	51	345	979	360
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	88	79	54	367	1041	383

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1708	1233	1424	0	-	0
Stage 1	1233	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	101	218	484	-	-	-
Stage 1	278	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	90	218	484	-	-	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	247	-	-	-	-	-
Stage 2	630	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	35.1	1.7	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	484	-	191	218	-	-
HCM Lane V/C Ratio	0.112	-	0.462	0.361	-	-
HCM Control Delay (s)	13.4	-	39.1	30.6	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.4	-	2.2	1.6	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	348	1	0	1064
Future Vol, veh/h	1	0	348	1	0	1064
Conflicting Peds, #/hr	0	2	0	2	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	0	382	1	0	1169

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1554	387	0	0	385	0
Stage 1	385	-	-	-	-	-
Stage 2	1169	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	126	665	-	-	1185	-
Stage 1	692	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	126	663	-	-	1183	-
Mov Cap-2 Maneuver	235	-	-	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	298	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	235	1183	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	20.4	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	82	27	320	28	24	982
Future Vol, veh/h	82	27	320	28	24	982
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	90	30	352	31	26	1079

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1499	368	0	0	383	0
Stage 1	368	-	-	-	-	-
Stage 2	1131	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	136	682	-	-	1187	-
Stage 1	704	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	133	682	-	-	1187	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	311	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.5	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	230	682	1187	-
HCM Lane V/C Ratio	-	-	0.392	0.044	0.022	-
HCM Control Delay (s)	-	-	30.4	10.5	8.1	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	13	16	5	51	10	312	41	140	991	14
Future Vol, veh/h	6	1	13	16	5	51	10	312	41	140	991	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	7	1	14	17	5	55	11	339	45	152	1077	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1803	1795	1085	1780	1780	362	1092	0	0	384	0	0
Stage 1	1389	1389	-	384	384	-	-	-	-	-	-	-
Stage 2	414	406	-	1396	1396	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	62	81	266	65	83	687	647	-	-	1186	-	-
Stage 1	178	212	-	643	615	-	-	-	-	-	-	-
Stage 2	620	601	-	177	210	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	48	69	266	54	71	687	647	-	-	1186	-	-
Mov Cap-2 Maneuver	48	69	-	54	71	-	-	-	-	-	-	-
Stage 1	175	185	-	632	605	-	-	-	-	-	-	-
Stage 2	555	591	-	145	183	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	43.9	38.3	0.3	1
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	647	-	-	50	266	57	687	1186	-	-
HCM Lane V/C Ratio	0.017	-	-	0.152	0.053	0.4	0.081	0.128	-	-
HCM Control Delay (s)	10.7	-	-	89.5	19.3	105.2	10.7	8.5	-	-
HCM Lane LOS	B	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.2	1.5	0.3	0.4	-	-

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	115	136	62	396	1004	542
Future Vol, veh/h	115	136	62	396	1004	542
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	142	65	413	1046	565

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1872	1329	1611	0	-	0
Stage 1	1329	-	-	-	-	-
Stage 2	543	-	-	-	-	-
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	~ 79	189	405	-	-	-
Stage 1	247	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 66	189	405	-	-	-
Mov Cap-2 Maneuver	158	-	-	-	-	-
Stage 1	207	-	-	-	-	-
Stage 2	582	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	70.9	2.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	405	-	158	189	-	-
HCM Lane V/C Ratio	0.159	-	0.758	0.75	-	-
HCM Control Delay (s)	15.6	-	77	65.7	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	0.6	-	4.7	4.9	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	462	2	0	1195
Future Vol, veh/h	2	1	462	2	0	1195
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	-	-	-	0	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	2	0	2	0
Mvmt Flow	2	1	467	2	0	1207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1675	468	0	0	469	0
Stage 1	468	-	-	-	-	-
Stage 2	1207	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	106	599	-	-	1093	-
Stage 1	634	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	106	599	-	-	1093	-
Mov Cap-2 Maneuver	219	-	-	-	-	-
Stage 1	634	-	-	-	-	-
Stage 2	286	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	278	1093	-
HCM Lane V/C Ratio	-	-	0.011	-	-
HCM Control Delay (s)	-	-	18.1	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	98	23	416	47	23	1097
Future Vol, veh/h	98	23	416	47	23	1097
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	99	23	420	47	23	1108

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1598	444	0	0	467	0
Stage 1	444	-	-	-	-	-
Stage 2	1154	-	-	-	-	-
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	117	614	-	-	1094	-
Stage 1	646	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	115	614	-	-	1094	-
Mov Cap-2 Maneuver	218	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	300	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	30.1	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	218	614	1094	-
HCM Lane V/C Ratio	-	-	0.454	0.038	0.021	-
HCM Control Delay (s)	-	-	34.6	11.1	8.4	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	2.2	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	9	15	1	62	4	413	66	270	902	5
Future Vol, veh/h	1	0	9	15	1	62	4	413	66	270	902	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	1	0	9	16	1	65	4	435	69	284	949	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2031	2032	952	2002	2000	470	954	0	0	504	0	0
Stage 1	1520	1520	-	478	478	-	-	-	-	-	-	-
Stage 2	511	512	-	1524	1522	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	43	58	317	45	61	598	729	-	-	1071	-	-
Stage 1	150	183	-	572	559	-	-	-	-	-	-	-
Stage 2	549	540	-	149	182	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	30	42	317	35	45	598	729	-	-	1071	-	-
Mov Cap-2 Maneuver	30	42	-	35	45	-	-	-	-	-	-	-
Stage 1	149	135	-	569	556	-	-	-	-	-	-	-
Stage 2	485	537	-	106	134	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28	46.4	0.1	2.2
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	729	-	-	30	317	35	598	1071	-	-
HCM Lane V/C Ratio	0.006	-	-	0.035	0.03	0.481	0.109	0.265	-	-
HCM Control Delay (s)	10	-	-	129.3	16.7	180.6	11.8	9.6	-	-
HCM Lane LOS	A	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	1.6	0.4	1.1	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	86	77	53	354	1006	372
Future Vol, veh/h	86	77	53	354	1006	372
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	91	82	56	377	1070	396

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1757	1268	1466	0	-	0
Stage 1	1268	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	94	208	467	-	-	-
Stage 1	267	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 83	208	467	-	-	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	235	-	-	-	-	-
Stage 2	621	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	38.6	1.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	467	-	181	208	-	-
HCM Lane V/C Ratio	0.121	-	0.505	0.394	-	-
HCM Control Delay (s)	13.8	-	43.6	33.1	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.4	-	2.5	1.8	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	361	1	0	1096
Future Vol, veh/h	1	0	361	1	0	1096
Conflicting Peds, #/hr	0	2	0	2	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	0	397	1	0	1204

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1604	402	0	0	400	0
Stage 1	400	-	-	-	-	-
Stage 2	1204	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	117	653	-	-	1170	-
Stage 1	681	-	-	-	-	-
Stage 2	287	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	117	651	-	-	1168	-
Mov Cap-2 Maneuver	226	-	-	-	-	-
Stage 1	680	-	-	-	-	-
Stage 2	287	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	226	1168	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	21	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	86	27	331	30	25	1010
Future Vol, veh/h	86	27	331	30	25	1010
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	95	30	364	33	27	1110

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1545	381	0	0	397	0
Stage 1	381	-	-	-	-	-
Stage 2	1164	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	127	671	-	-	1173	-
Stage 1	695	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	124	671	-	-	1173	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	300	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.7	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	220	671	1173	-
HCM Lane V/C Ratio	-	-	0.43	0.044	0.023	-
HCM Control Delay (s)	-	-	33.1	10.6	8.1	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	2	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	13	16	5	53	10	325	42	145	1016	14
Future Vol, veh/h	6	1	13	16	5	53	10	325	42	145	1016	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	7	1	14	17	5	58	11	353	46	158	1104	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1858	1849	1112	1833	1833	376	1119	0	0	399	0	0
Stage 1	1428	1428	-	398	398	-	-	-	-	-	-	-
Stage 2	430	421	-	1435	1435	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	57	75	256	59	77	675	632	-	-	1171	-	-
Stage 1	169	203	-	632	606	-	-	-	-	-	-	-
Stage 2	607	592	-	168	201	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	43	64	256	49	65	675	632	-	-	1171	-	-
Mov Cap-2 Maneuver	43	64	-	49	65	-	-	-	-	-	-	-
Stage 1	166	176	-	621	596	-	-	-	-	-	-	-
Stage 2	541	582	-	136	174	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	48.1	41.8	0.3	1.1
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	632	-	-	45	256	52	675	1171	-	-
HCM Lane V/C Ratio	0.017	-	-	0.169	0.055	0.439	0.085	0.135	-	-
HCM Control Delay (s)	10.8	-	-	100.6	19.9	120.1	10.8	8.6	-	-
HCM Lane LOS	B	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.2	1.6	0.3	0.5	-	-

Intersection	
Int Delay, s/veh	18.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	136	164	75	429	1092	625
Future Vol, veh/h	136	164	75	429	1092	625
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	140	169	77	442	1126	644

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2044	1448	1770	0	-	0
Stage 1	1448	-	-	-	-	-
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	~ 62	~ 161	352	-	-	-
Stage 1	216	-	-	-	-	-
Stage 2	550	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 48	~ 161	352	-	-	-
Mov Cap-2 Maneuver	~ 130	-	-	-	-	-
Stage 1	169	-	-	-	-	-
Stage 2	550	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	153.7	2.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	352	-	130	161	-	-
HCM Lane V/C Ratio	0.22	-	1.079	1.05	-	-
HCM Control Delay (s)	18.1	-	167.6	142.1	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	0.8	-	7.9	8.5	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	525	2	0	1306
Future Vol, veh/h	2	1	525	2	0	1306
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	-	-	-	0	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	2	0	2	0
Mvmt Flow	2	1	530	2	0	1319

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1850	531	0	0	532	0
Stage 1	531	-	-	-	-	-
Stage 2	1319	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	83	552	-	-	1036	-
Stage 1	594	-	-	-	-	-
Stage 2	252	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	83	552	-	-	1036	-
Mov Cap-2 Maneuver	192	-	-	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	252	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	245	1036	-
HCM Lane V/C Ratio	-	-	0.012	-	-
HCM Control Delay (s)	-	-	19.9	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	112	29	465	61	27	1194
Future Vol, veh/h	112	29	465	61	27	1194
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	29	470	62	27	1206

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1761	501	0	0	532	0
Stage 1	501	-	-	-	-	-
Stage 2	1260	-	-	-	-	-
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	~ 93	570	-	-	1036	-
Stage 1	609	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 91	570	-	-	1036	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	267	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	41.7	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	188	570	1036	-
HCM Lane V/C Ratio	-	-	0.602	0.051	0.026	-
HCM Control Delay (s)	-	-	49.5	11.7	8.6	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	3.3	0.2	0.1	-

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

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	10	18	1	78	4	442	72	298	985	5
Future Vol, veh/h	1	0	10	18	1	78	4	442	72	298	985	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	1	0	10	19	1	81	4	460	75	310	1026	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2196	2192	1029	2160	2157	498	1031	0	0	535	0	0
Stage 1	1649	1649	-	506	506	-	-	-	-	-	-	-
Stage 2	547	543	-	1654	1651	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	33	46	286	35	48	576	682	-	-	1043	-	-
Stage 1	126	158	-	552	543	-	-	-	-	-	-	-
Stage 2	525	523	-	125	158	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	21	32	286	26	34	576	682	-	-	1043	-	-
Mov Cap-2 Maneuver	21	32	-	26	34	-	-	-	-	-	-	-
Stage 1	125	111	-	549	540	-	-	-	-	-	-	-
Stage 2	447	520	-	85	111	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	33.3	71.4	0.1	2.3
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	682	-	-	21	286	26	576	1043	-	-
HCM Lane V/C Ratio	0.006	-	-	0.05	0.036	0.761	0.141	0.298	-	-
HCM Control Delay (s)	10.3	-	-	185.2	18.1	$ 314	12.3	9.9	-	-
HCM Lane LOS	B	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	2.4	0.5	1.3	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	95	85	58	382	1096	411
Future Vol, veh/h	95	85	58	382	1096	411
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	25	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	100	89	61	402	1154	433

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1895	1371	1587	0	-	0
Stage 1	1371	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 78	181	419	-	-	-
Stage 1	238	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 67	181	419	-	-	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	203	-	-	-	-	-
Stage 2	598	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	52.6	2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	419	-	157	181	-	-
HCM Lane V/C Ratio	0.146	-	0.637	0.494	-	-
HCM Control Delay (s)	15.1	-	61.3	42.9	-	-
HCM Lane LOS	C	-	F	E	-	-
HCM 95th %tile Q(veh)	0.5	-	3.5	2.4	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	405	1	0	1204
Future Vol, veh/h	1	0	405	1	0	1204
Conflicting Peds, #/hr	0	2	0	2	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	0	440	1	0	1309

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1752	445	0	0	443	0
Stage 1	443	-	-	-	-	-
Stage 2	1309	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	95	617	-	-	1128	-
Stage 1	651	-	-	-	-	-
Stage 2	255	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	95	615	-	-	1126	-
Mov Cap-2 Maneuver	200	-	-	-	-	-
Stage 1	650	-	-	-	-	-
Stage 2	255	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	200	1126	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	23.1	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	98	31	369	36	29	1106
Future Vol, veh/h	98	31	369	36	29	1106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	70	0	-	-	80	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	107	34	401	39	32	1202

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1687	421	0	0	440	0
Stage 1	421	-	-	-	-	-
Stage 2	1266	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 104	637	-	-	1131	-
Stage 1	667	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 101	637	-	-	1131	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	268	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.1	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	191	637	1131	-
HCM Lane V/C Ratio	-	-	0.558	0.053	0.028	-
HCM Control Delay (s)	-	-	45.3	11	8.3	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	3	0.2	0.1	-

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

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	2	13	20	6	67	11	366	50	170	1089	15
Future Vol, veh/h	6	2	13	20	6	67	11	366	50	170	1089	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	25	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	2	14	22	6	72	12	394	54	183	1171	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2029	2017	1179	1998	1998	421	1187	0	0	448	0	0
Stage 1	1545	1545	-	445	445	-	-	-	-	-	-	-
Stage 2	484	472	-	1553	1553	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	43	59	234	45	61	637	595	-	-	1123	-	-
Stage 1	145	178	-	596	578	-	-	-	-	-	-	-
Stage 2	568	562	-	143	176	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	30	48	234	35	50	637	595	-	-	1123	-	-
Mov Cap-2 Maneuver	30	48	-	35	50	-	-	-	-	-	-	-
Stage 1	142	149	-	584	566	-	-	-	-	-	-	-
Stage 2	488	551	-	111	147	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	70	71.7	0.3	1.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	595	-	-	33	234	38	637	1123	-	-
HCM Lane V/C Ratio	0.02	-	-	0.261	0.06	0.736	0.113	0.163	-	-
HCM Control Delay (s)	11.2	-	-	148.9	21.4	227.1	11.4	8.8	-	-
HCM Lane LOS	B	-	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.2	2.7	0.4	0.6	-	-