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Traffic Impact Study

Paraduxx Winery P18-00347-MOD
Planning Commission Hearing January 22, 2020

CRANE TRANSPORTATION GROUP
TRAFFIC AND TRANSPORTATION PLANNING AND ENGINEERING

FINAL
TRAFFIC IMPACT REPORT

PARADUXX WINERY
USE PERMIT MODIFICATION 2018
(P18-00347)

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Prepared for: PARADUXX WINERY

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Table of Contents

I. INTRODUCTION

This report has been prepared at the request of Paraduxx Winery to determine whether proposed changes to existing winery operation as detailed in their use permit modification 2018 will result in any significant circulation impacts to the local roadway network. The project site is located along the west side of Silverado Trail between Oakville Cross Road and Yountville Cross Road (see **Figure 1 Regional Map** and **Figure 2 Site Specific Air Photo**). The scope of analysis includes evaluation of Silverado Trail as well as the Silverado Trail intersections with the winery driveway, Yountville Cross Road and Oakville Cross Road for harvest year 2016, Year 2020 and cumulative year 2030 horizons.

II. SCOPE OF SERVICES

The scope of service for this traffic study was developed to provide analysis requested by both the Napa County Public Works and the Planning, Building & Environmental Services departments. It should be noted that this study was first submitted to the County in 2016 and has then been revised several times reflecting comments by County staff, updated County review criteria and changes in the project description. The existing conditions analysis has remained 2016 harvest conditions as the 2020 and Cumulative 2030 evaluation horizons are the important analysis years since use permit modification activities would only be in operation by 2020 at the earliest. The analysis has conformed to the following criteria.

- **Project trip generation has been based upon direction from the County Public Works Department.**
- **All significance criteria used for operations evaluation have been approved by the Napa County Public Works Department and meet CEQA requirements.**

Evaluation was conducted for harvest (crush) Friday PM commute peak hour and Saturday afternoon peak hour traffic conditions. Historical traffic count information for major Napa County roadways indicates that there are higher volumes during this time period than during all other times of the year. Existing (year 2016), year 2020 and year 2030 (Cumulative – General Plan Buildout) With and Without Project operating conditions were evaluated for Silverado Trail arterial operation both north and south of the winery as well as at the Silverado Trail intersections with the project driveway, Yountville Cross Road and Oakville Cross Road. In addition, new marketing event sizes and proposed limitations to start and end times were detailed. Finally, sight line adequacy was evaluated at the project driveway intersection with Silverado Trail. Significant impacts, if any, were identified and measures listed, if needed, to mitigate all impacts to a less than significant level. Five years of accident data for Silverado Trail between and including the Oakville Cross Road and Yountville Cross Road intersections have also been requested by County Public Works and have been provided in a separate memo report.

III. SUMMARY OF FINDINGS

A. "WITHOUT PROJECT" OPERATING CONDITIONS

1. EXISTING VOLUMES – HARVEST 2016

Silverado Trail adjacent to the proposed project site had higher September harvest two-way traffic volumes during the Friday PM peak traffic hour compared Saturday PM peak traffic hour (about 1,825 two-way peak hour vehicles from 3:15 to 4:15 PM on Friday versus about 1,660 two-way peak hour vehicles from 3:30 to 4:30 PM on Saturday). The driveway serving the project site had about 40 vehicles during the Friday PM peak hour and about 25 vehicles during the Saturday PM peak hour.

2. PLANNED & ONGOING ROADWAY IMPROVEMENTS

There are no planned circulation system improvements along Silverado Trail at analysis locations. Repaving of Silverado Trail in the project vicinity was just completed in July 2019 as was an improvement at the Silverado Trail/Yountville Cross Road intersection where a median acceleration lane was provided on Silverado Trail just north of the intersection to facilitate left turns from Yountville Cross Road.

3. YEAR 2016, 2020 AND CUMULATIVE (2030) HARVEST "WITHOUT PROJECT" CIRCULATION SYSTEM OPERATION

- **Silverado Trail North & South of Winery** – Arterial operation would be LOS E in both directions north and south of the winery for all three horizon years.
- **Silverado Trail/Oakville Cross Road** intersection – There would be unacceptable level of service E or F operation on the stop sign controlled Oakville Cross Road approach during both the Friday and Saturday PM peak hours.
- **Silverado Trail/Yountville Cross Road** intersection – There would be unacceptable level of service E or F operation on the stop sign controlled Yountville Cross Road approach during the Friday PM peak hour, but acceptable level of service C or D operation during the Saturday PM peak hour.
- **Silverado Trail/Paraduxx Winery Driveway** intersection – Operation would be an acceptable level of service C or D during the Friday and Saturday PM peak hours.
- **Signal Warrants** – Both the Oakville and Yountville Cross Roads intersections have volumes meeting both urban and rural peak hour signal Warrant #3 criteria levels during the Friday and Saturday PM peak hours.

B. PROJECT IMPACTS

1. PROJECT TRIP GENERATION

The proposed use permit modification 2018 would be expected to generate 4 inbound and 8 outbound trips during the Friday PM peak hour along Silverado Trail, with 6 inbound and 9 outbound vehicles during the Saturday PM peak traffic hour along Silverado Trail.

NET NEW TRIPS BASED UPON EXISTING HOURLY TRAFFIC FLOW PATTERNS TO/FROM WINERY

FRIDAY PM PEAK HOUR TRIPS (3:15-4:15)		SATURDAY AFTERNOON PEAK HOUR TRIPS (3:30-4:30)	
IN	OUT	IN	OUT
4	8	6	9

Project trip generation expected during harvest Friday and Saturday peak traffic hours on the local circulation system was based upon methodology recently approved by the Napa County Public Works Department. Daily trip generation projections were first developed using the County's Use Permit Winery Traffic Information/Trip Generation Sheet trip rate factors. As requested by Napa County Public Works, two Fridays and two Saturdays of 24-hour counts on the winery driveway then determined the percent two-way traffic for each hour of the day. The Friday and Saturday hours with the highest percent of daily traffic were then determined and this maximum hourly percent was applied to the daily volumes. Resulting peak hour project volumes were then assumed to take place on the local roadway network peak hours even if the roadway peaks were different than the winery driveway peaks. For Paraduxx Winery, the driveway peak hours were 2:00-3:00 PM on both Friday and Saturday, while the peak traffic hours along Silverado Trail were 3:15-4:15 PM on Friday and 3:30-4:30 PM on Saturday. Virtually all new PM peak hour trips will be associated with increased visitation.

2. OFF-SITE IMPACTS

a. ARTERIALS (SILVERADO TRAIL)

i) Year 2016 or Year 2020 Harvest + Project Off-Site Circulation Impacts

The proposed project would not result in any significant off-site circulation impacts to Silverado Trail. The roadway would already be operating at LOS E and the addition of project traffic would not increase total arterial volumes by 1 percent or greater[1] at any location along Silverado Trail. ***Less than significant***.

[1] County of Napa significance criteria.

ii) Cumulative Year 2030 Harvest + Project Off-Site Circulation Impacts

The proposed project would not result in any significant off-site circulation impacts to Silverado Trail. The roadway would already be operating at LOS E and the addition of project traffic would not increase total arterial volumes by 1 percent or greater[2] at any location along Silverado Trail. ***Less than significant***.

b. INTERSECTIONS

i) Year 2016 or Year 2020 Harvest + Project Off-Site Circulation Impacts

The proposed project would not result in any significant off-site circulation impacts to the Silverado Trail/Oakville Cross Road or Silverado Trail/Yountville Cross Road intersections.

- The Silverado Trail/Oakville Cross Road intersection would already be operating unacceptably during both the Friday and Saturday PM peak hours, but the addition of project traffic would not increase peak hour volumes 10 percent or greater[2] on the stop sign controlled intersection approach. ***Less than significant.***

- The Silverado Trail/Yountville Cross Road intersection would already be operating unacceptably during the Friday PM peak hour, but the addition of project traffic would not increase peak hour volumes 10 percent or greater[2] on the stop sign controlled intersection approach. In addition, acceptable Saturday PM peak hour operation would not be degraded by the addition of project traffic. ***Less than significant.***

- The Silverado Trail/Paraduxx Winery intersection would continue to operate at level of service C or D with the addition of project traffic. ***Less than significant.***

ii) Cumulative Year 2030 Harvest + Project Off-Site Circulation Impacts

The proposed project would not result in any significant off-site circulation impacts to the Silverado Trail/Oakville Cross Road or Silverado Trail/Yountville Cross Road intersections.

- The Silverado Trail/Oakville Cross Road intersection would already be operating unacceptably during both the Friday and Saturday PM peak hours, but the addition of project traffic would not increase the change in peak hour volumes from existing to cumulative conditions by 5 percent or greater[2] on the stop sign controlled intersection approach. ***Less than significant.***

[2] County of Napa significance criteria.

- The Silverado Trail/Yountville Cross Road intersection would already be operating unacceptably during the Friday PM peak hour, but the addition of project traffic would not increase the change in peak hour volumes from existing to cumulative conditions by 5 percent or greater[3] on the stop sign controlled intersection approach. In addition, acceptable Saturday PM peak hour operation would not be degraded by the addition of project traffic. ***Less than significant.***

- The Silverado Trail/Paraduxx Winery intersection would continue to operate at level of service C or D with the addition of project traffic. ***Less than significant.***

c. SIGNAL WARRANTS

i) Year 2016 or Year 2020 Harvest + Project Off-Site Circulation Impacts

The Silverado Trail intersections with Oakville Cross Road and Yountville Cross Road would continue to have volumes exceeding Warrant #3 urban and rural criteria with the addition of project traffic These results are for informational purposes only as there are no County significance criteria for this evaluation.

ii) Cumulative Year 2030 Harvest + Project Off-Site Circulation Impacts

The Silverado Trail intersections with Oakville Cross Road and Yountville Cross Road would continue to have volumes exceeding Warrant #3 urban and rural criteria with the addition of project traffic These results are for informational purposes only as there are no County significance criteria for this evaluation.

3. Sight Lines at Project Driveway

Sight lines at the project's driveway connection to Silverado Trail meet minimum stopping sight distance criteria based upon the Caltrans July 2018 Highway Design Manual. ***Less than significant.***

4. Marketing Events

The project is modifying its current permitted marketing schedule of 277 events resulting in the schedule of 198 events shown below. There will be a reduction of about 355 guests per year with the new marketing event schedule (or about 4 percent of the currently permitted number of guests). All but 35 of the 198 events would be permitted under the existing use permit. Valet parking will be provided for all large events. For the 35 new events (60-guest events 33 times per year and 400-guest events two times per year) the applicant agrees that there will be no events beginning or ending between 2:30 and 5:30 PM on Fridays or Saturdays. ***Less than significant.***

[3] County of Napa significance criteria.

NEW MARKETING EVENTS
WITH USE PERMIT MODIFICATION 2018

SIZE & DAYS OF EVENTS	# OF EVENTS	# OF GUESTS/EVENT	# OF GUEST VEHICLES
Medium Events (Wed.-Sat.)	33	60	22-23
Large Events (Wed.-Sat.)	2	400	143-154

C. MITIGATION MEASURES

No measures are required.

D. CONCLUSIONS & RECOMMENDATIONS

The project will result in no significant off-site circulation system operational impacts to Silverado Trail or to the Silverado Trail intersections with Oakville Cross Road, Yountville Cross Road or the winery access driveway based upon County of Napa significance criteria. It is important to note that study results are based upon a very conservative analysis wherein it assumes (based upon County methodology) that the Friday and Saturday PM peak traffic hours at the Paraduxx Winery occur at exactly the same time as the peak traffic hours along the adjacent Silverado Trail. Even though this is not the case, study results still show no off-site significant impacts and would still be valid even if the winery's peak afternoon traffic hours shift to be the same as those along Silverado Trail.

A left turn lane is already provided on the Silverado Trail northbound approach to the project driveway and a median refuge area is provided to the north of the winery driveway to assist left turn movements from the project site. In addition, sight lines at the project driveway connection to Silverado Trail are acceptable and meet Caltrans stopping sight distance criteria. The number of marketing events is being reduced from 277 down to 198 (with a reduction of about 355 yearly guests) with only 35 of the total remaining events not covered by the winery's existing use permit. For the 35 new events, none would start or end between 2:30 and 5:30 PM on a Friday or Saturday.

IV. PROJECT LOCATION & DESCRIPTION

The Paraduxx Winery is located on the west side of Silverado Trail about a mile south of the Oakville Cross Road intersection and a mile north of the Yountville Cross Road intersection (see **Figures 1 & 2**). A left turn lane is already in place on the northbound Silverado Trail approach to the project entrance and a median refuge area is in place just north of the driveway to assist in left turn movements from the project site. For analysis purposes, the proposed use permit modification 2018 will be comprised of the following components.

- No net increase in employees traveling to/from the winery. While there will be an increase in production employees at the winery, their number will be offset by an equal decrease in other employees (admin/sales) that will be moving and working off site.
- Increase production from 200,000 up to 300,000 gallons per year.
- Increase daily visitors by 94 during peak tourist visitation days (from 50 up to 144 daily visitors). Maintain visitation hours between 10:00 AM and 6:00 PM.
- Increase grape delivery up to 10 trucks/day on weekdays and up to 6/day on Saturdays over two months.
- Increase on-site bottling 5,000-8,000 gallons/year (for an additional 4-6 days of bottling).
- The word "Stop" will be painted on the pavement of the Paraduxx driveway approach to Silverado Trail.
- Marketing event changes:
  - Small events (existing entitlement): Reduction of 104 events (from 260 to 156 events with 24 guests/event).
  - Cultural events (existing entitlement): Eliminate all 10 events with 24 guests/event.
  - Auction (existing entitlement): 2 events/year; proposed reduction in attendance by 200 guests/event (from 500 to 300 guests).
  - Newly proposed entitlements:
    - Medium events: 33 new events/year with up to 60 guests/event.
    - Large events: 2 events/year with 400 guests/event.
    - Newly proposed entitlement events will not start or end between 2:30 and 5:30 PM on Friday or Saturday.

V. EXISTING CIRCULATION SYSTEM EVALUATION PROCEDURES

A. ANALYSIS LOCATIONS

1. INTERSECTIONS

The following locations have been evaluated.

a. Silverado Trail/Oakville Cross Road intersection (The Oakville Cross Road approach is stop sign controlled.)

b. Silverado Trail/Yountville Cross Road intersection (The Yountville Cross Road eastbound approach is stop sign controlled.)

c. Silverado Trail/Project Driveway intersection

Figure 3 presents a schematic of approach lane geometrics and control at each analysis intersection.

2. ARTERIAL ROADWAY SEGMENTS

The following locations have been evaluated.

a. Silverado Trail Just North and South of the Paraduxx Driveway

B. VOLUMES

1. ANALYSIS SEASONS AND DAYS OF THE WEEK

Project traffic impacts have been evaluated during harvest conditions. Based upon more than four years of historical information from Caltrans PeMS (Performance Measurement System) count surveys along SR 29 in the Napa Valley, September has the highest daily volumes of the year (during harvest). Therefore, only September harvest conditions were selected for evaluation.

In regards to the peak traffic days of the week, the Napa County Travel Behavioral Study[4] 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 in this study.

2. COUNT RESULTS

Friday 3:00 to 6:00 PM as well as Saturday 1:00 to 6:00 PM turn movement counts were conducted by Crane Transportation Group (CTG) in October 2016 at the Silverado Trail intersections with Yountville Cross Road, Oakville Cross Road and the Winery driveway. The peak traffic hours for the system were determined to be 3:15 to 4:15 PM on Friday and 3:30 to 4:30 PM on Saturday. Resultant October 2016 peak hour counts are presented in **Appendix Figure A-1**. It should be noted, however, that there were many hours on both days that had similar volumes.

3. SEASONAL ADJUSTMENTS

October 2016 peak hour traffic counts were seasonally adjusted to reflect 2016 September harvest conditions. Historical traffic count data from Caltrans PeMS system as well as past studies were used to determine that September weekday volumes are about 1.5 percent higher than October weekday volumes, while September weekend volumes are about 2 percent higher than October weekend volumes.

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

Resultant 2016 Friday and Saturday PM peak hour harvest volumes are presented in **Figure 4**. Overall harvest Friday PM peak hour two-way volumes along Silverado Trail at the winery entrance would be expected to be about 10 percent higher than Saturday PM peak hour volumes (1,825 vehicles on Friday versus 1,660 vehicles on Saturday).

C. ROADWAYS

Roadway descriptions are based upon the designation that Silverado Trail runs in a general north-south direction through the project area while Oakville Cross Road and Yountville Cross Road run in an east-west direction. The project site is along the west side of Silverado Trail.

Silverado Trail is an arterial roadway in the project vicinity that has two well-paved 12-foot travel lanes and wide paved shoulders that are utilized as Class II bicycle lanes. Left turn lanes are provided on the northbound Silverado Trail approaches to Oakville Cross Road, Yountville Cross Road and the Paraduxx Winery driveway. There is also a median acceleration area just north of the Yountville Cross Road intersection to assist left turns from the Yountville Cross Road to northbound Silverado Trail. The posted speed limit is 55 miles per hour.

Oakville Cross Road is a two-lane rural collector roadway extending westerly from Silverado Trail to the west of SR 29. It is stop sign controlled on its eastbound approach to Silverado Trail.

Yountville Cross Road is a two-lane collector roadway extending westerly from Silverado Trail to the community of Yountville and an indirect connection to SR 29. It is stop sign controlled on its eastbound approach to Silverado Trail.

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.

Unsignalized Intersections. For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, the 2017 *Highway Capacity Manual Version 6* (Transportation Research Board, National Research Council) 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. 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 1** summarizes the relationship between delay and LOS for unsignalized intersections.

2. MINIMUM ACCEPTABLE OPERATION

Napa County's currently minimum acceptable operating standard for unsignalized intersections is Level of Service D (LOS D) for side street stop sign controlled approaches at two-way stop intersections and for overall operation at all-way-stop intersections. It should be noted, however, that the Napa County Board of Supervisors recently approved a Napa County General Plan Update Circulation element establishing that LOS E is now acceptable for Silverado Trail in the project area. However, to provide a conservative analysis the LOS D criteria as minimum acceptable has been used.

E. ARTERIAL LEVEL OF SERVICE

1. ANALYSIS METHODOLOGY

The 2017 Highway Capacity Manual Version 6 arterial analysis methodology has been utilized for analysis of Silverado Trail. Analysis results are presented as a level of service, volume to capacity ratio and percent time following. Input includes directional volumes, road and shoulder widths, percent trucks and RVs, terrain characteristics, percent available passing distance, etc.

2. MINIMUM ACCEPTABLE OPERATION

Napa County's currently minimum acceptable operating standard for unsignalized arterials is Level of Service D (LOS D).

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. 3)*. 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 A-2** for the existing condition warrant charts.

G. PLANNED IMPROVEMENTS

There are no planned and funded improvements at any location evaluated in this study.[5] The Silverado Trail/Yountville Cross Road intersection has recently been improved to provide a median acceleration lane on Silverado Trail just north of the intersection to facilitate left turn movements from Yountville Creek Road. In addition, Silverado Trail has recently been repaved in the project area.

VI. FUTURE HORIZON TRAFFIC VOLUME PROJECTIONS

Traffic analysis has been conducted for harvest existing (2016), year 2020 and cumulative (year 2030) horizons at County request. The 2030 cumulative horizon reflects the County General Plan Buildout year. Traffic modeling for the General Plan shows the following growths in two-way traffic between 2016 and 2030 for the following roadways.

Route	2016 to 2030 Projected Growth in 2-Way PM Peak Hour Traffic
Silverado Trail	PM peak hour = 12.5%
Oakville Cross Road	PM peak hour = 40%
Yountville Cross Road	PM peak hour = 18%

Projecting straight line traffic growth for analysis purposes, this translates into the following growths in two-way traffic between 2015 and 2020 for the same roadways.

Route	2016 to 2020 Projected Growth in 2-Way PM Peak Hour Traffic
Silverado Trail	PM peak hour = 3.6%
Oakville Cross Road	PM peak hour = 12%
Yountville Cross Road	PM peak hour = 5.2%

[5] Mr. Michael Hawkins, Napa County Public Works Department, March 2018.

Since traffic modeling projections were only available for weekday PM peak hour conditions and not for the Saturday PM peak hour, Saturday two-way PM peak hour volumes were increased by the percentages found for the weekday PM peak hour.

Resultant year 2020 harvest "Without Project" Friday and Saturday PM peak hour volumes are presented in **Figure 5**, while year 2030 harvest "Without Project" Friday and Saturday PM peak hour volumes are presented in **Figure 6**.

VII. OFF-SITE CIRCULATION SYSTEM OPERATION – WITHOUT PROJECT

1. YEAR 2016 HARVEST (WITHOUT PROJECT) OPERATING CONDITIONS

A. INTERSECTION LEVEL OF SERVICE – see Table 2 and Appendix A-3 for capacity worksheets

1) SILVERADO TRAIL/OAKVILLE CROSS ROAD

a) Friday PM Peak Hour

Unacceptable Oakville Cross Road stop sign controlled eastbound approach: LOS F

b) Saturday PM Peak Hour

Unacceptable Oakville Cross Road stop sign controlled eastbound approach: LOS E

2) SILVERADO TRAIL/YOUNTVILLE CROSS ROAD

a) Friday PM Peak Hour

Unacceptable Yountville Cross Road stop sign controlled eastbound approach: LOS E

b) Saturday PM Peak Hour

Acceptable Yountville Cross Road stop sign controlled eastbound approach: LOS C

3) SILVERADO TRAIL/PARADUXX WINERY DRIVEWAY

a) Friday PM Peak Hour

Acceptable Paraduxx Driveway eastbound approach: LOS D

b) Saturday PM Peak Hour

Acceptable Paraduxx Driveway eastbound approach: LOS C

B. ARTERIAL SEGMENT LEVEL OF SERVICE – see Table 3 & Appendix A-4 for capacity worksheets

1) SILVERADO TRAIL JUST NORTH OF PARADUXX WINERY

a) Friday PM Peak Hour
Northbound – LOS E
Southbound – LOS E

b) Saturday PM Peak Hour
Northbound – LOS E
Southbound – LOS E

2) SILVERADO TRAIL JUST SOUTH OF PARADUXX WINERY

a) Friday PM Peak Hour
Northbound – LOS E
Southbound – LOS E

b) Saturday PM Peak Hour
Northbound – LOS E
Southbound – LOS E

C. SIGNAL WARRANT EVALUATION – Table 4 & Appendix Figure A-2

1) SILVERADO TRAIL/OAKVILLE CROSS ROAD

a) Friday PM Peak Hour
Volumes exceed peak hour signal Warrant #3 urban and rural criteria.

b) Saturday PM Peak Hour
Volumes exceed peak hour signal Warrant #3 urban and rural criteria.

2) SILVERADO TRAIL/YOUNTVILLE CROSS ROAD

a) Friday PM Peak Hour
Volumes exceed peak hour signal Warrant #3 urban and rural criteria.

b) Saturday PM Peak Hour
Volumes exceed peak hour signal Warrant #3 urban and rural criteria.

2. YEAR 2020 HARVEST (WITHOUT PROJECT) OPERATING CONDITIONS

A. INTERSECTION LEVEL OF SERVICE – see Table 2

1) SILVERADO TRAIL/OAKVILLE CROSS ROAD

a) Friday PM Peak Hour

Unacceptable Oakville Cross Road stop sign controlled eastbound approach: LOS F

b) Saturday PM Peak Hour

Unacceptable Oakville Cross Road stop sign controlled eastbound approach: LOS E

2) SILVERADO TRAIL/YOUNTVILLE CROSS ROAD

b) Friday PM Peak Hour

Unacceptable Yountville Cross Road stop sign controlled eastbound approach: LOS E

b) Saturday PM Peak Hour

Acceptable Yountville Cross Road stop sign controlled eastbound approach: LOS D

3) SILVERADO TRAIL/PARADUXX WINERY DRIVEWAY

a) Friday PM Peak Hour

Acceptable Paraduxx Driveway eastbound approach: LOS D

b) Saturday PM Peak Hour

Acceptable Paraduxx Driveway eastbound approach: LOS C

B. ARTERIAL SEGMENT LEVEL OF SERVICE – see Table 3

1) SILVERADO TRAIL JUST NORTH OF PARADUXX WINERY

a) Friday PM Peak Hour

Northbound – LOS E
Southbound – LOS E

b) Saturday PM Peak Hour

Northbound – LOS E
Southbound – LOS E

2) SILVERADO TRAIL JUST SOUTH OF PARADUXX WINERY

a) Friday PM Peak Hour

Northbound – LOS E
Southbound – LOS E

b) Saturday PM Peak Hour

Northbound – LOS E
Southbound – LOS E

C. SIGNAL WARRANT EVALUATION – see Table 4

1) SILVERADO TRAIL/OAKVILLE CROSS ROAD

a) Friday PM Peak Hour

Volumes would exceed peak hour signal Warrant #3 urban and rural criteria.

b) Saturday PM Peak Hour

Volumes would exceed peak hour signal Warrant #3 urban and rural criteria.

2) SILVERADO TRAIL/YOUNTVILLE CROSS ROAD

a) Friday PM Peak Hour

Volumes would exceed peak hour signal Warrant #3 urban and rural criteria.

b) Saturday PM Peak Hour

Volumes would exceed peak hour signal Warrant #3 urban and rural criteria.

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

A. INTERSECTION LEVEL OF SERVICE – see Table 2

1) SILVERADO TRAIL/OAKVILLE CROSS ROAD

a) Friday PM Peak Hour

Unacceptable Oakville Cross Road stop sign controlled eastbound approach: LOS F

b) Saturday PM Peak Hour

Unacceptable Oakville Cross Road stop sign controlled eastbound approach: LOS F

2) SILVERADO TRAIL/YOUNTVILLE CROSS ROAD

a) Friday PM Peak Hour

Unacceptable Yountville Cross Road stop sign controlled eastbound approach: LOS F

b) Saturday PM Peak Hour

Acceptable Yountville Cross Road stop sign controlled eastbound approach: LOS D

3) SILVERADO TRAIL/PARADUXX WINERY DRIVEWAY

a) Friday PM Peak Hour

Acceptable Paraduxx Driveway eastbound approach: LOS D

b) Saturday PM Peak Hour

Acceptable Paraduxx Driveway eastbound approach: LOS C

B. ARTERIAL SEGMENT LEVEL OF SERVICE – see Table 3

1) SILVERADO TRAIL JUST NORTH OF PARADUXX WINERY

a) Friday PM Peak Hour
Northbound – LOS E
Southbound – LOS E

b) Saturday PM Peak Hour
Northbound – LOS E
Southbound – LOS E

2) SILVERADO TRAIL JUST SOUTH OF PARADUXX WINERY

a) Friday PM Peak Hour
Northbound – LOS E
Southbound – LOS E

b) Saturday PM Peak Hour
Northbound – LOS E
Southbound – LOS E

C. SIGNAL WARRANT EVALUATION – see Table 4

1) SILVERADO TRAIL/OAKVILLE CROSS ROAD

a) Friday PM Peak Hour

Volumes would exceed peak hour signal Warrant #3 urban and rural criteria.

b) Saturday PM Peak Hour

Volumes would exceed peak hour signal Warrant #3 urban and rural criteria.

2) SILVERADO TRAIL/YOUNTVILLE CROSS ROAD

a) Friday PM Peak Hour

Volumes would exceed peak hour signal Warrant #3 urban and rural criteria.

b) Saturday PM Peak Hour

Volumes would exceed peak hour signal Warrant #3 urban and rural criteria.

VIII. SIGNIFICANCE CRITERIA

A. COUNTY OF NAPA

The following criteria have recently 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.[6]

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.

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.

[6] 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.

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 IMPACT EVALUATION

A. TRIP GENERATION

1. METHODOLOGY

Project trip generation was determined using one of the three possible methodologies recently approved by Napa County Public Works for transportation impact study analysis. As detailed in Public Works guidance, first perform a site-specific analysis by conducting actual daily trip counts at the driveway of the project on two Fridays and two Saturdays (for winery use permit modifications). Next, determine the increment of net new daily traffic due to the use permit modification proposed project using trip rates from the use permit Winery Traffic Information/Trip Generation sheets. Based upon the two Friday and two Saturday 24-hour winery driveway counts, determine which hour on each day had the highest combined inbound + outbound traffic and determine the percent of total traffic occurring during those hours in relation to the daily counts. Apply these percentages to the net new Friday and Saturday daily traffic increments for the project to determine the amount of project traffic that would be expected to occur during the winery's peak traffic hour. Finally, assume that the winery's peak hourly traffic will occur at the same time as the ambient peak traffic time on the adjacent roadway system.

It should be noted that this analysis methodology is very conservative since it assumes that winery and adjacent roadway PM peak traffic hours will overlap, even though that is not currently the case with Paraduxx Winery and Silverado Trail. However, should the winery's peak traffic hours ever align with those of Silverado Trail, the conservative analysis contained in this study would still be valid and meet CEQA requirements.

Twenty-four-hour traffic counts were conducted on the Paraduxx Winery driveway on Friday, February 22 and July 19, 2019 as well as on Saturday, February 23 and July 20, 2019 (see **Appendix A-5**). Counts on both Fridays and Saturdays showed the peak traffic hour of the afternoon was 2:00-3:00 PM. On the two Fridays the 2:00-3:00 PM hour had 14 percent of daily traffic in February and 16 percent of daily traffic in July. On the two Saturdays the 2:00-3:00 PM hour had 16 percent of daily traffic in February and 20 percent of daily traffic in July. The higher of the two percentages from the Friday and Saturday survey days was applied to the daily project traffic increment (as shown in **Appendix A-6, County Use Permit Winery Trip Generation Sheets**).

2. PROJECT VOLUMES

Table 5 shows that during the harvest Friday PM peak traffic hour there would be a projected 4 inbound and 8 outbound vehicles, while during the harvest Saturday afternoon peak traffic hour there would be a projected 6 inbound and 9 outbound vehicles. Virtually all net new traffic during the Friday and Saturday PM peak hours would be due to increased visitation.

B. TRIP DISTRIBUTION

Project traffic was distributed to Silverado Trail in a pattern reflective of existing distribution patterns at the Paraduxx driveway intersection. Most outbound visitor and employee traffic during both PM peak hours would be expected to travel to the south on Silverado Trail. During the Friday PM peak hour the majority of inbound traffic on Silverado Trail would come from the north, while during the Saturday afternoon peak hour it would come from the south.

The harvest Friday and Saturday project traffic increments expected on Silverado Trail during the times of ambient peak traffic flows are presented in **Figure 7**. Friday and Saturday "With Project" PM peak hour harvest volumes for year 2016 are presented in **Figure 8**; "With Project" PM peak hour harvest volumes for year 2020 conditions are presented in **Figure 9**, and "With Project" PM peak hour harvest volumes for cumulative (year 2030) conditions are presented in **Figure 10**.

C. OFF-SITE IMPACTS

1. EXISTING (2016) HARVEST + PROJECT CONDITIONS

a. SUMMARY

Project traffic would not result in any significant level of service impacts along Silverado Trail or at the Silverado Trail intersections with Oakville Cross Road or Yountville Cross Road during either the Friday or Saturday PM peak traffic hours. Also, the Silverado Trail/Paraduxx Winery intersection would be operating at an acceptable level of service with the addition of project traffic. ***Less than significant.***

b. 2016 INTERSECTION LEVEL OF SERVICE IMPACTS – see Table 2

- **Silverado Trail/Oakville Cross Road**
  - Friday PM Peak Hour
    Operation of the stop sign controlled Oakville Cross Road intersection approach would remain an unacceptable LOS F with the addition of project traffic. The project would not increase volumes on the stop sign controlled Oakville Cross Road approach to Silverado Trail by 10 percent or greater (0.9%).[7] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation of the stop sign controlled Oakville Cross Road intersection approach would remain an unacceptable LOS E with the addition of project traffic. The project would not increase volumes on the stop sign controlled Oakville Cross Road approach to Silverado Trail by 10 percent or greater (0%).[7] ***Less than significant.***

[7] County of Napa significance criteria.

- **Silverado Trail/Yountville Cross Road**
  - Friday PM Peak Hour
    Operation of the stop sign controlled Yountville Cross Road intersection approach would remain an unacceptable LOS E with the addition of project traffic. The project would not increase volumes on the stop sign controlled Yountville Cross Road approach to Silverado Trail by 10 percent or greater (0%).[8] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation of the stop sign controlled Yountville Cross Road intersection approach would remain an acceptable LOS C with the addition of project traffic. ***Less than significant.***

- **Silverado Trail/Paraduxx Winery Driveway**
  - Friday PM Peak Hour
    Operation of the Paraduxx Winery approach to Silverado Trail would remain an acceptable LOS D with the addition of project traffic.

  - Saturday PM Peak Hour
    Operation of the Paraduxx Winery approach to Silverado Trail would remain an acceptable LOS C with the addition of project traffic.

c. 2016 ARTERIAL SEGMENT IMPACTS – see Table 3

- **Silverado Trail North of Paraduxx Winery**
  - Friday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase total segment volumes by 1 percent or more (0.3%).[8] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase total segment volumes by 1 percent or more (0.3%).[8] ***Less than significant.***

- **Silverado Trail South of Paraduxx Winery**
  - Friday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase total segment volumes by 1 percent or more (0.4%).[8] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase total segment volumes by 1 percent or more (0.6%).[8] ***Less than significant.***

[8] County of Napa significance criteria.

d. 2016 SIGNAL WARRANT EVALUATION – see Table 4

Signal warrant information is provided for informational purposes only per County significance criteria.

- **Silverado Trail/Oakville Cross Road**
  - Friday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

  - Saturday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

- **Silverado Trail/Yountville Cross Road**
  - Friday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

  - Saturday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

2. YEAR 2020 HARVEST + PROJECT CONDITIONS

a. SUMMARY

Project traffic would not result in any significant level of service impacts at the Silverado Trail intersections with Oakville Cross Road or Yountville Cross Road during either the Friday or Saturday PM peak traffic hours. Also, the Silverado Trail/Paraduxx Winery intersection would be operating at an acceptable level of service with the addition of project traffic. ***Less than significant.***

b. 2020 INTERSECTION LEVEL OF SERVICE IMPACTS – see Table 2

- **Silverado Trail/Oakville Cross Road**
  - Friday PM Peak Hour
    Operation of the stop sign controlled Oakville Cross Road intersection approach would remain an unacceptable LOS F with the addition of project traffic. The project would not increase volumes on the stop sign controlled Oakville Cross Road approach to Silverado Trail by 10 percent or greater (0.7%).[9] ***Less than significant.***

[9] County of Napa significance criteria.

- Saturday PM Peak Hour
  Operation of the stop sign controlled Oakville Cross Road intersection approach would remain an unacceptable LOS E with the addition of project traffic. The project would not increase volumes on the stop sign controlled Oakville Cross Road approach to Silverado Trail by 10 percent or greater (0%).[10] ***Less than significant.***

- **Silverado Trail/Yountville Cross Road**
  - Friday PM Peak Hour
    Operation of the stop sign controlled Yountville Cross Road intersection approach would remain an unacceptable LOS E with the addition of project traffic. The project would not increase volumes on the stop sign controlled Yountville Cross Road approach to Silverado Trail by 10 percent or greater (0%).[10] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation of the stop sign controlled Yountville Cross Road intersection approach would remain an acceptable LOS D with the addition of project traffic. ***Less than significant.***

- **Silverado Trail/Paraduxx Winery Driveway**
  - Friday PM Peak Hour
    Operation of the Paraduxx Winery approach to Silverado Trail would remain LOS D with the addition of project traffic.

  - Saturday PM Peak Hour
    Operation of the Paraduxx Winery approach to Silverado Trail would remain LOS C with the addition of project traffic.

c. 2020 ARTERIAL SEGMENT IMPACTS – see Table 3

- **Silverado Trail North of Paraduxx Winery**
  - Friday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase total segment volumes by 1 percent or more (0.3%).[10] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase total segment volumes by 1 percent or more (0.3%).[10] ***Less than significant.***

- **Silverado Trail South of Paraduxx Winery**
  - Friday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase total segment volumes by 1 percent or more (0.4%).[10] ***Less than significant.***

[10] County of Napa significance criteria.

- Saturday PM Peak Hour
  Operation would remain LOS E in both directions. The project would not increase total segment volumes by 1 percent or more (0.6%).[11] ***Less than significant.***

d. 2020 SIGNAL WARRANT EVALUATION – see Table 4

Signal warrant information is provided for informational purposes only per County significance criteria.

- **Silverado Trail/Oakville Cross Road**
  - Friday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

  - Saturday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

- **Silverado Trail/Yountville Cross Road**
  - Friday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

  - Saturday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

3. CUMULATIVE (YEAR 2030) HARVEST + PROJECT CONDITIONS

a. SUMMARY

Project traffic would not result in any significant level of service impacts at the Silverado Trail intersections with Oakville Cross Road or Yountville Cross Road during either the Friday or Saturday PM peak traffic hours. Also, the Silverado Trail/Paraduxx Winery intersection would be operating at an acceptable level of service with the addition of project traffic. ***Less than significant.***

[11] County of Napa significance criteria.

b. 2030 INTERSECTION LEVEL OF SERVICE IMPACTS – see Table 2

- **Silverado Trail/Oakville Cross Road**
  - Friday PM Peak Hour
    Operation of the stop sign controlled Oakville Cross Road intersection approach would remain an unacceptable LOS F with the addition of project traffic. The project would not change the increase in volumes from Existing to Cumulative conditions on the stop sign controlled Oakville Cross Road approach to Silverado Trail by 5 percent or greater (1.4%).[12] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation of the stop sign controlled Oakville Cross Road intersection approach would remain an unacceptable LOS F with the addition of project traffic. The project would not change the increase in volumes from Existing to Cumulative conditions on the stop sign controlled Oakville Cross Road approach to Silverado Trail by 5 percent or greater (0%).[12] ***Less than significant.***

- **Silverado Trail/Yountville Cross Road**
  - Friday PM Peak Hour
    Operation of the stop sign controlled Yountville Cross Road intersection approach would remain an unacceptable LOS F with the addition of project traffic. The project would not change the increase in volumes from Existing to Cumulative conditions on the stop sign controlled Yountville Cross Road approach to Silverado Trail by 5 percent or greater (0%).[12] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation of the stop sign controlled Yountville Cross Road intersection approach would remain an acceptable LOS D with the addition of project traffic. ***Less than significant.***

- **Silverado Trail/Paraduxx Winery Driveway**
  - Friday PM Peak Hour
    Operation of the Paraduxx Winery approach to Silverado Trail would remain LOS D with the addition of project traffic.

  - Saturday PM Peak Hour
    Operation of the Paraduxx Winery approach to Silverado Trail would remain LOS C with the addition of project traffic.

[12] County of Napa significance criteria.

c. 2030 Arterial Segment Impacts – see Table 3

- **Silverado Trail North of Paraduxx Winery**
  - Friday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase the change in two-way segment volumes between 2016 and 2030 by 5 percent or more (1.95%).[13] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase the change in two-way segment volumes between 2016 and 2030 by 5 percent or more (2.47%).[13] ***Less than significant.***

- **Silverado Trail South of Paraduxx Winery**
  - Friday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase the change in two-way segment volumes between 2016 and 2030 by 5 percent or more (2.73%).[13] ***Less than significant.***

  - Saturday PM Peak Hour
    Operation would remain LOS E in both directions. The project would not increase the change in two-way segment volumes between 2016 and 2030 by 5 percent or more (4.95%).[13] ***Less than significant.***

d. 2030 SIGNAL WARRANT EVALUATION – see Table 4

Signal warrant information is provided for informational purposes only per County significance criteria.

- **Silverado Trail/Oakville Cross Road**
  - Friday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

  - Saturday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

- **Silverado Trail/Yountville Cross Road**
  - Friday PM Peak Hour
    Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

[13] County of Napa significance criteria.

- Saturday PM Peak Hour
  Volumes would be exceeding urban and rural peak hour signal warrant criteria with or without project traffic.

X. OTHER POTENTIAL PROJECT IMPACTS

A. SIGHT LINES AT PROJECT ENTRANCE

Sight lines at the Silverado Trail/project access driveway intersection are currently acceptable to the north and south along Silverado Trail (at more than 900 feet in each direction).

Sight line to the north along Silverado Trail (to see southbound vehicles) 900+ feet
Sight line to the south along Silverado Trail (to see northbound vehicles) 1,000+ feet

The Caltrans Highway Design Manual (March 2014) states that stopping sight distance is the corner sight distance criteria to be utilized at private road connections to arterial roadways. The minimum required stopping sight distances based upon various vehicle speeds are as follows.

SPEED	MINIMUM REQUIRED STOPPING SIGHT DISTANCE
50 mph	430 feet
55 mph	500 feet
60 mph	580 feet

The posted speed limit at the project entrance is 55 miles per hour, and some vehicles were observed traveling higher than the posted limit during two field surveys by Crane Transportation Group. Based upon the 60 mile per hour criteria, resultant sight lines to the north and south along Silverado Trail from the project driveway would be acceptable. ***Less than significant***.

B. LEFT TURN LANE AT PROJECT ENTRANCE

There is already a left turn lane on the northbound Silverado Trail approach to the Paraduxx Winery entrance as well as a median refuge area along Silverado Trail north of the driveway to assist left turn movements from the project site (see **Figure 2**). ***Less than significant.***

C. MARKETING EVENTS

The number of marketing events will be reduced by 277 to 198 events, which will result in an approximate 4 percent reduction in visitors (from 8,105 down to 7,749 visitors).

	# OF EVENTS	# OF GUESTS	# OF GUEST VEHICLES	DAYS OF THE WEEK
Small Events	156	24/event	9-10	Wed.-Sat.
Medium Events*	33	60/event	20-23	Wed.-Sat.
Large Events*	2	400/event	143-154	Wed.-Sat.
Industry Open House	5	125/event	45	Sat. or Sun.
Auctions	2	300/event	108-116	Fri.-Sun.
TOTAL	198	7,749 total		

*** Only the 33 medium events (with up to 60 guests/event) and the two large events (with up to 400 guests/event) are considered new and are part of the use permit modification 2018. None of these new events would begin or end between 2:30 and 5:30 PM. *Less than significant.***

XI. MITIGATION MEASURES

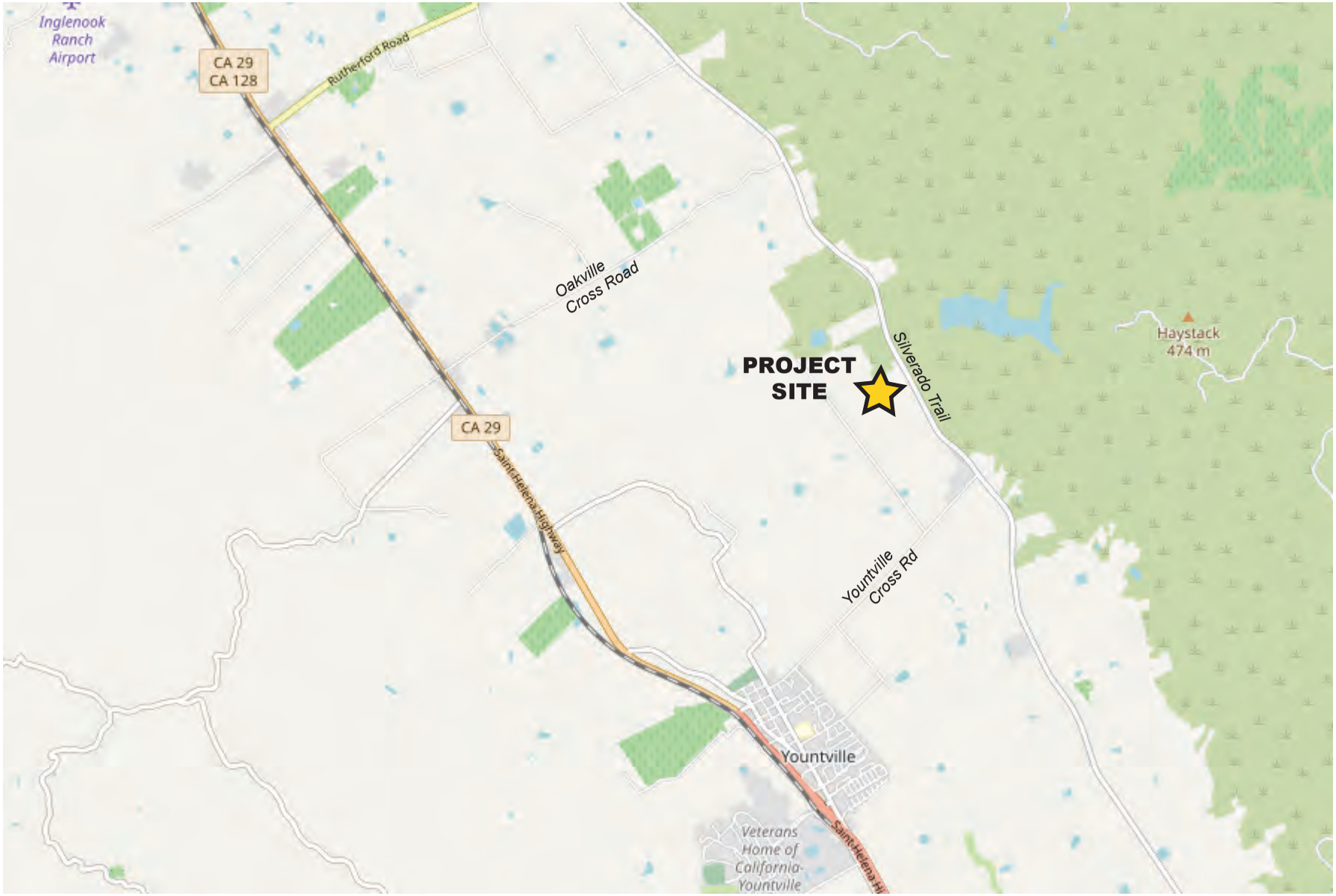
No off-site access circulation system mitigation measures are required.

XII. CONCLUSIONS & RECOMMENDATIONS

The project will result in no significant off-site circulation system operational impacts to Silverado Trail or to the Silverado Trail intersections with Oakville Cross Road, Yountville Cross Road or the winery access driveway based upon County of Napa significance criteria. It is important to note that study results are based upon a very conservative analysis wherein it assumes (based upon County methodology) that the Friday and Saturday PM peak traffic hours at the Paraduxx Winery occur at exactly the same time as the peak traffic hours along the adjacent Silverado Trail. Even though this is not the case, study results still show no off-site significant impacts and would still be valid even if the winery's peak afternoon traffic hours shift to be the same as those along Silverado Trail.

A left turn lane is already provided on the Silverado Trail northbound approach to the project driveway and a median refuge area is provided to the north of the winery driveway to assist left turn movements from the project site. In addition, sight lines at the project driveway connection to Silverado Trail are acceptable and meet Caltrans stopping sight distance criteria. The number of marketing events is being reduced from 277 down to 198 (with a reduction of about 355 yearly guests) with only 35 of the total remaining events not covered by the winery's existing use permit. For the 35 new events, none would start or end between 2:30 and 5:30 PM on a Friday or Saturday.

Figures



Paraduxx Winery Use Permit Modification 2019 Traffic Study

CRANE TRANSPORTATION GROUP

Figure 1

Area Map

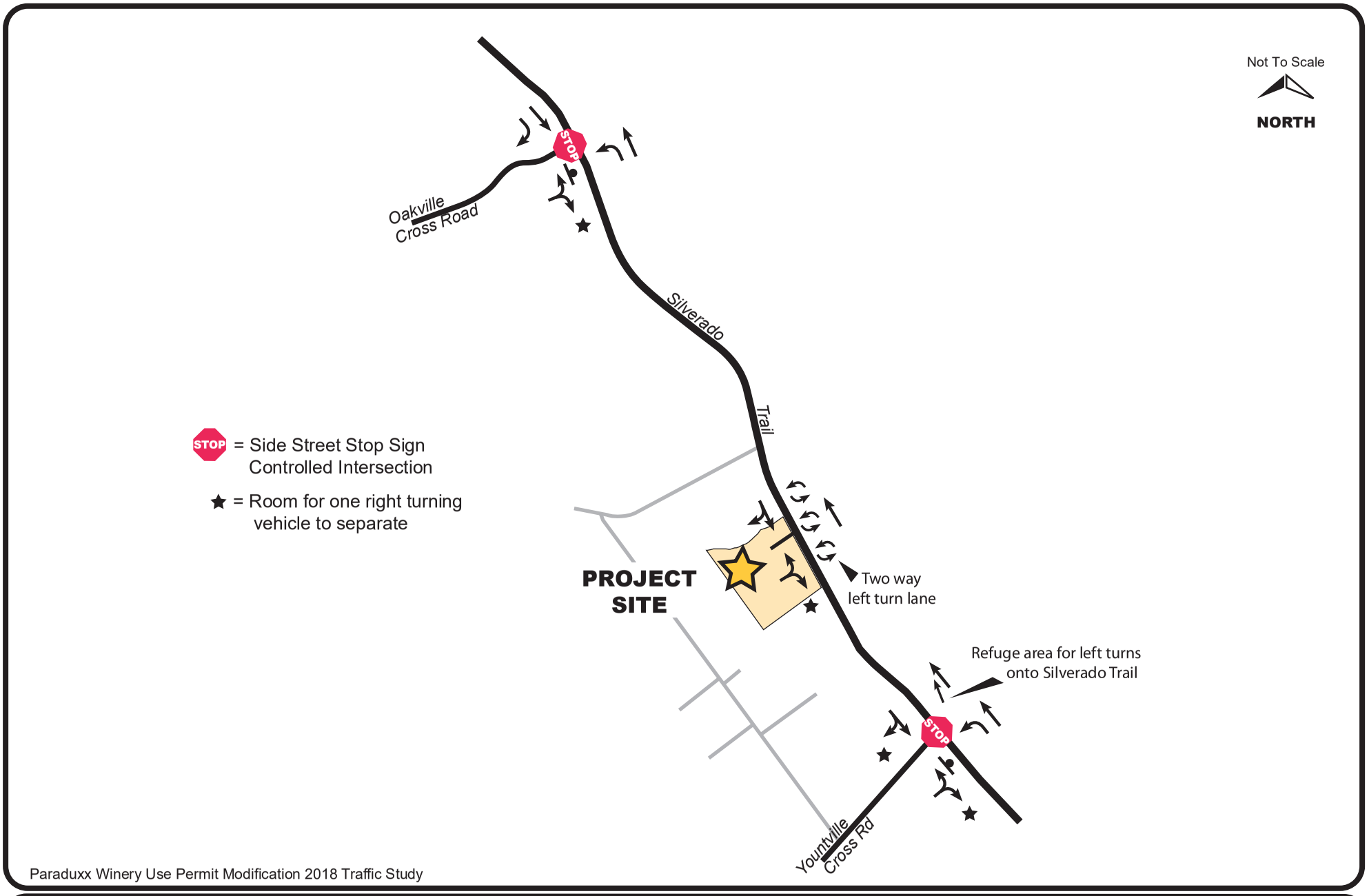
Paraduxx Winery Use Permit Modification 2019 Traffic Study

@GOOGLEMAPS2019

CRANE TRANSPORTATION GROUP

Figure 2

Project Site



CRANE TRANSPORTATION GROUP

Figure 3

Existing Lane Geometrics and Intersection Control

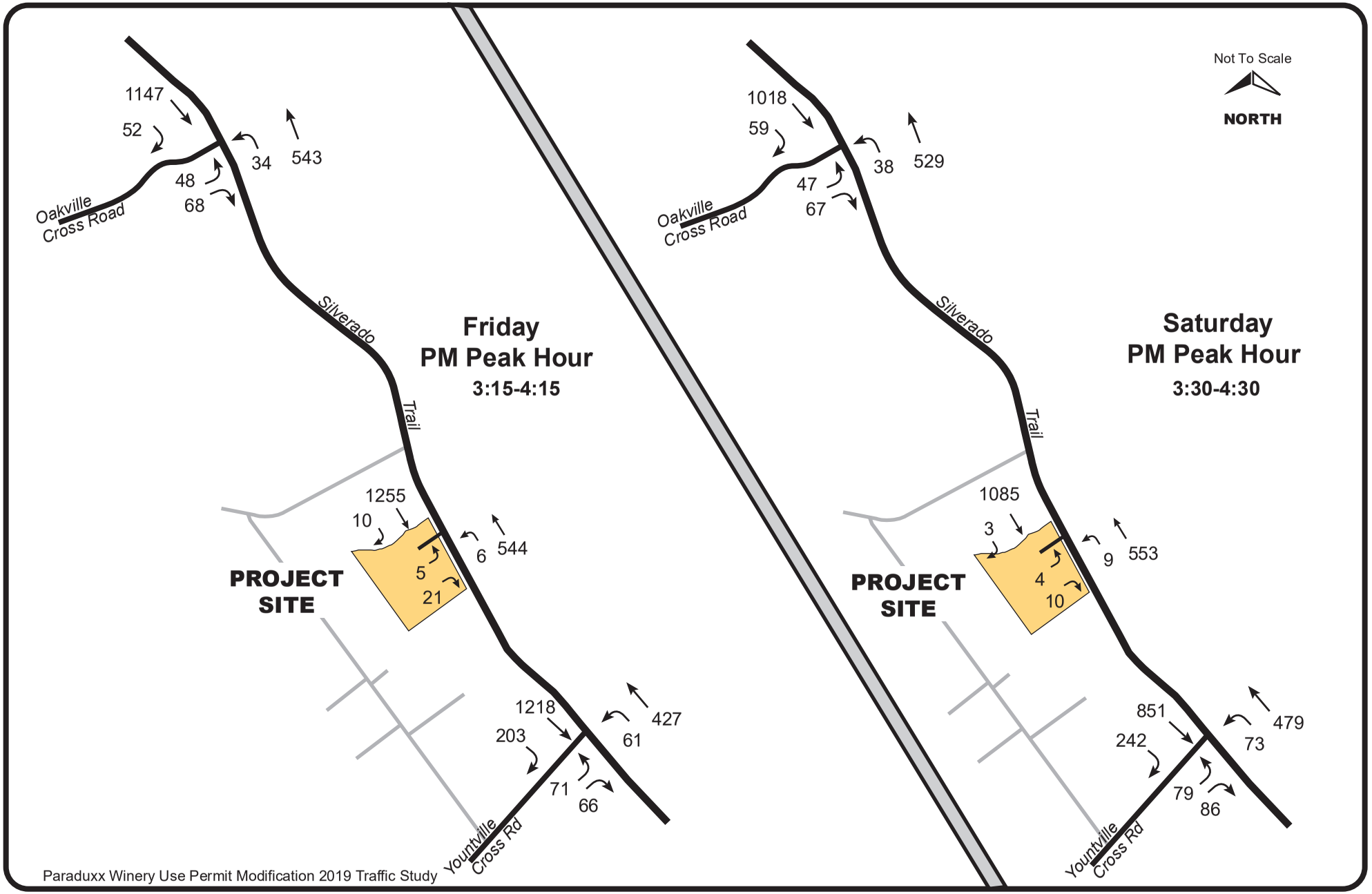


Figure 4

2016 Harvest (without Project)
Friday and Saturday PM Peak Hour Volumes

CRANE TRANSPORTATION GROUP

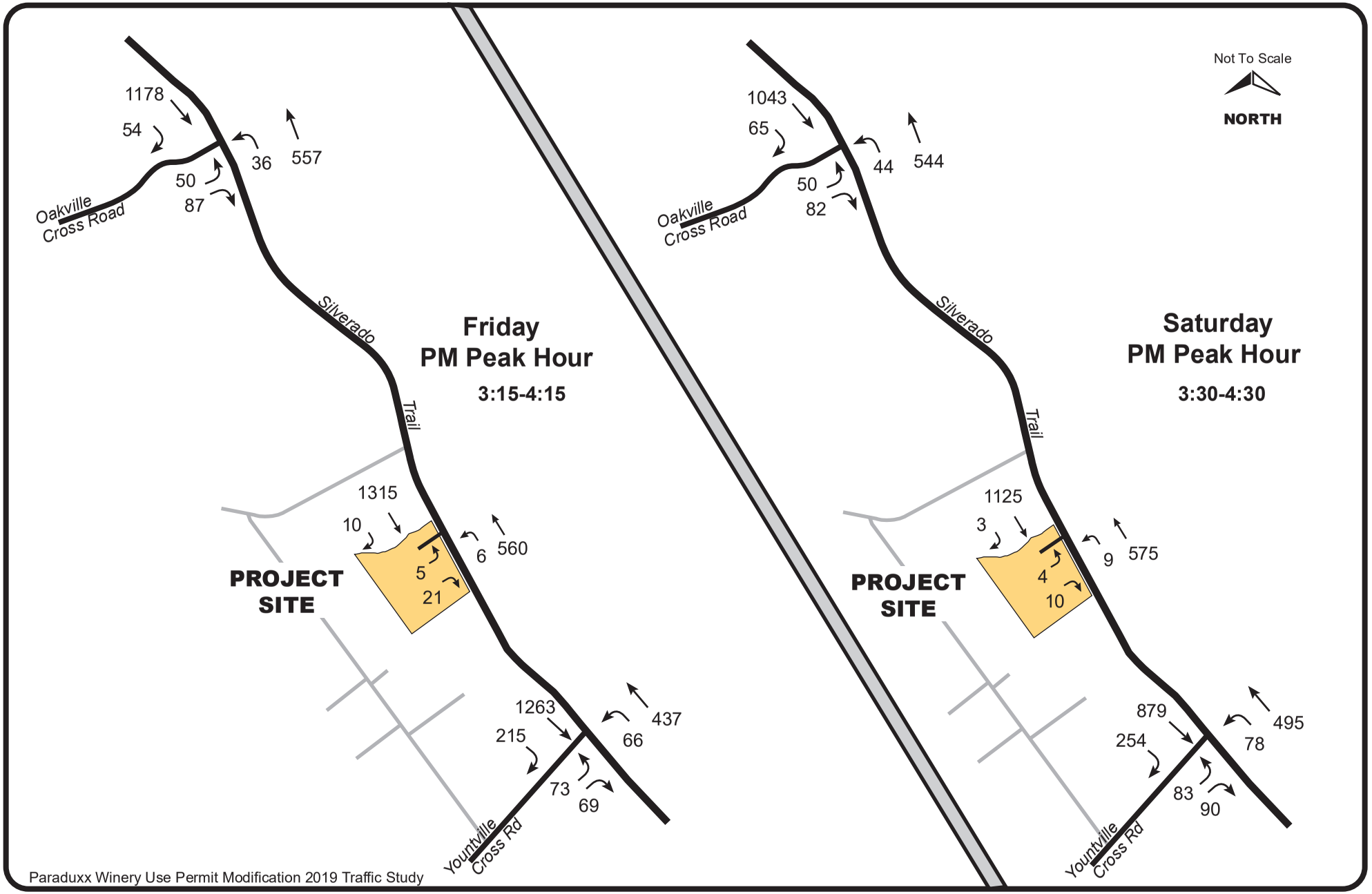


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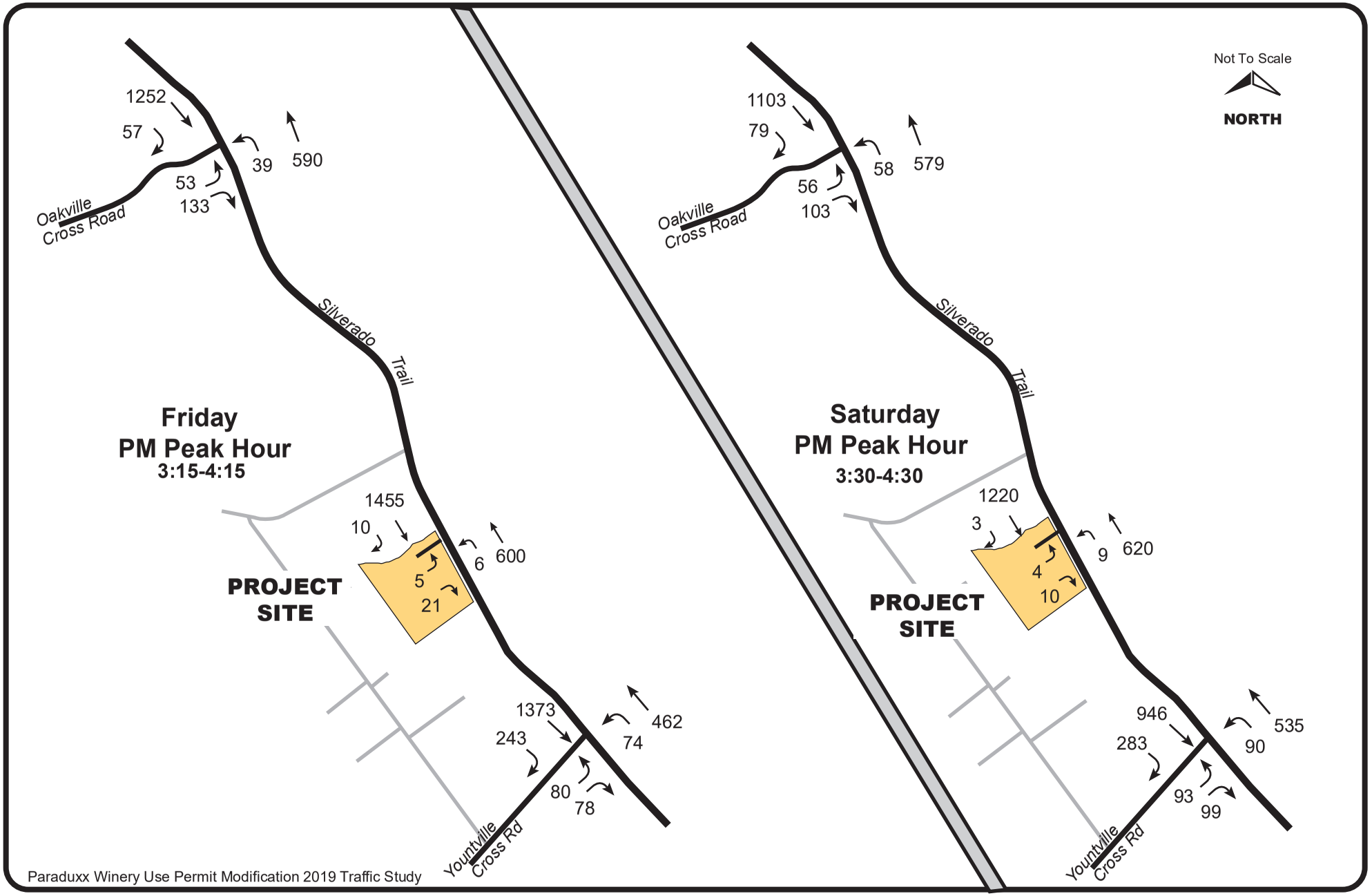
Figure 5

2020 Harvest (without Project)
Friday and Saturday PM Peak Hour Volumes



Paraduxx Winery Use Permit Modification 2019 Traffic Study

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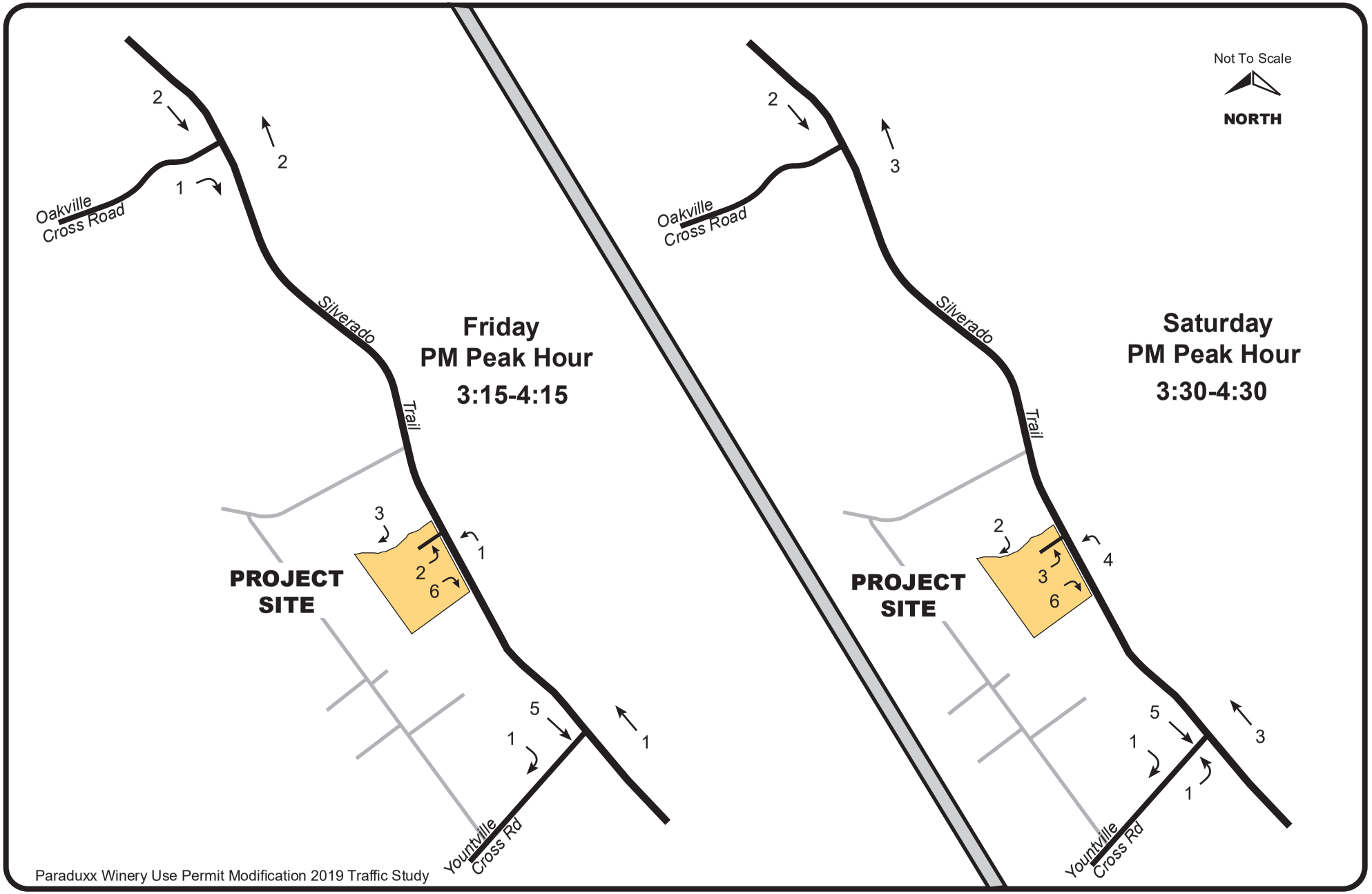
Figure 6

2030 Harvest (without Project)
Friday and Saturday PM Peak Hour Volumes



Paraduxx Winery Use Permit Modification 2019 Traffic Study

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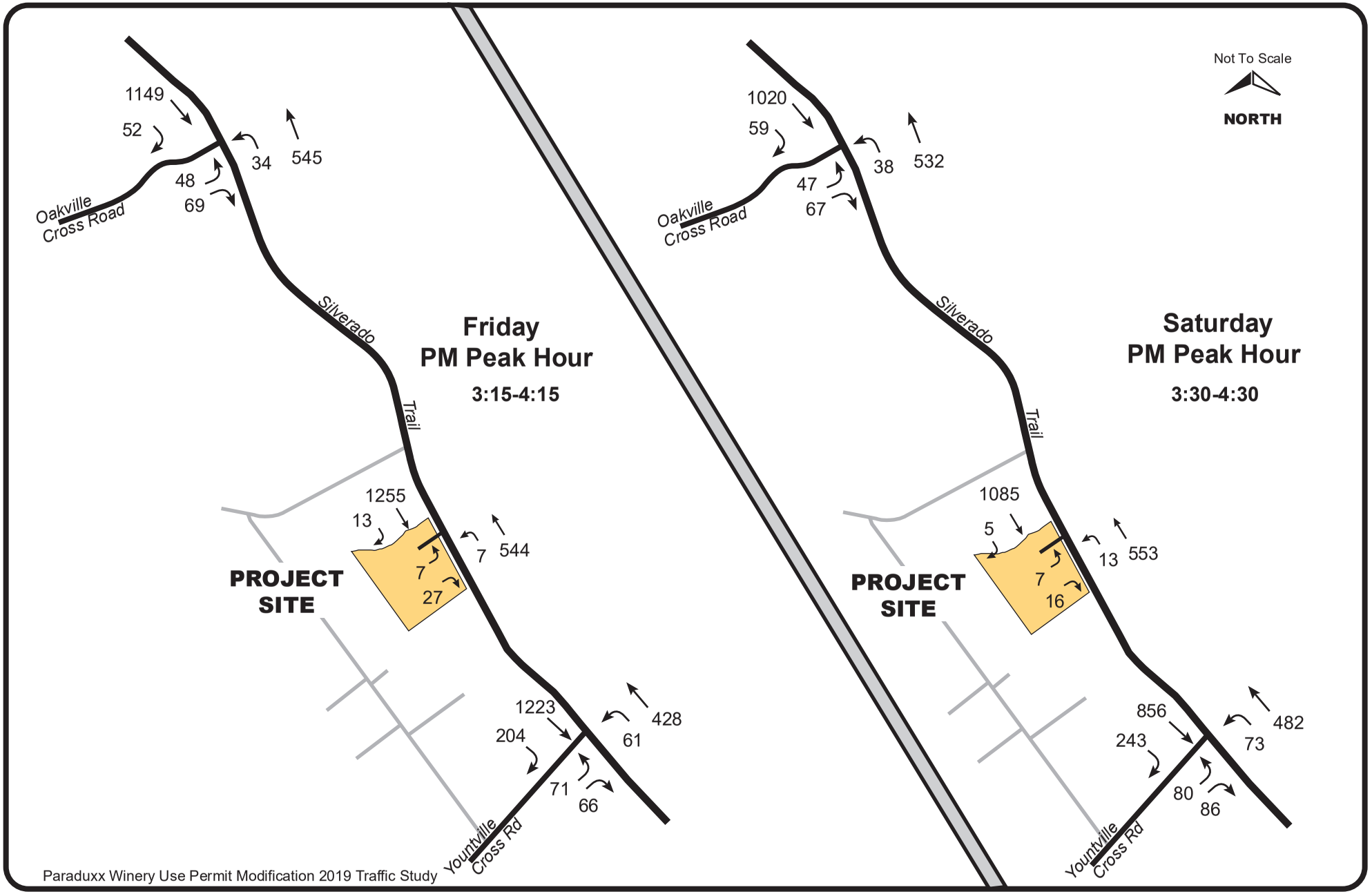
Figure 7
Project Increment
Friday and Saturday PM Peak Hour Volumes



Paraduxx Winery Use Permit Modification 2019 Traffic Study

CRANE TRANSPORTATION GROUP

Figure 8

Existing (2016) Harvest (with Project)
Friday and Saturday PM Peak Hour Volumes

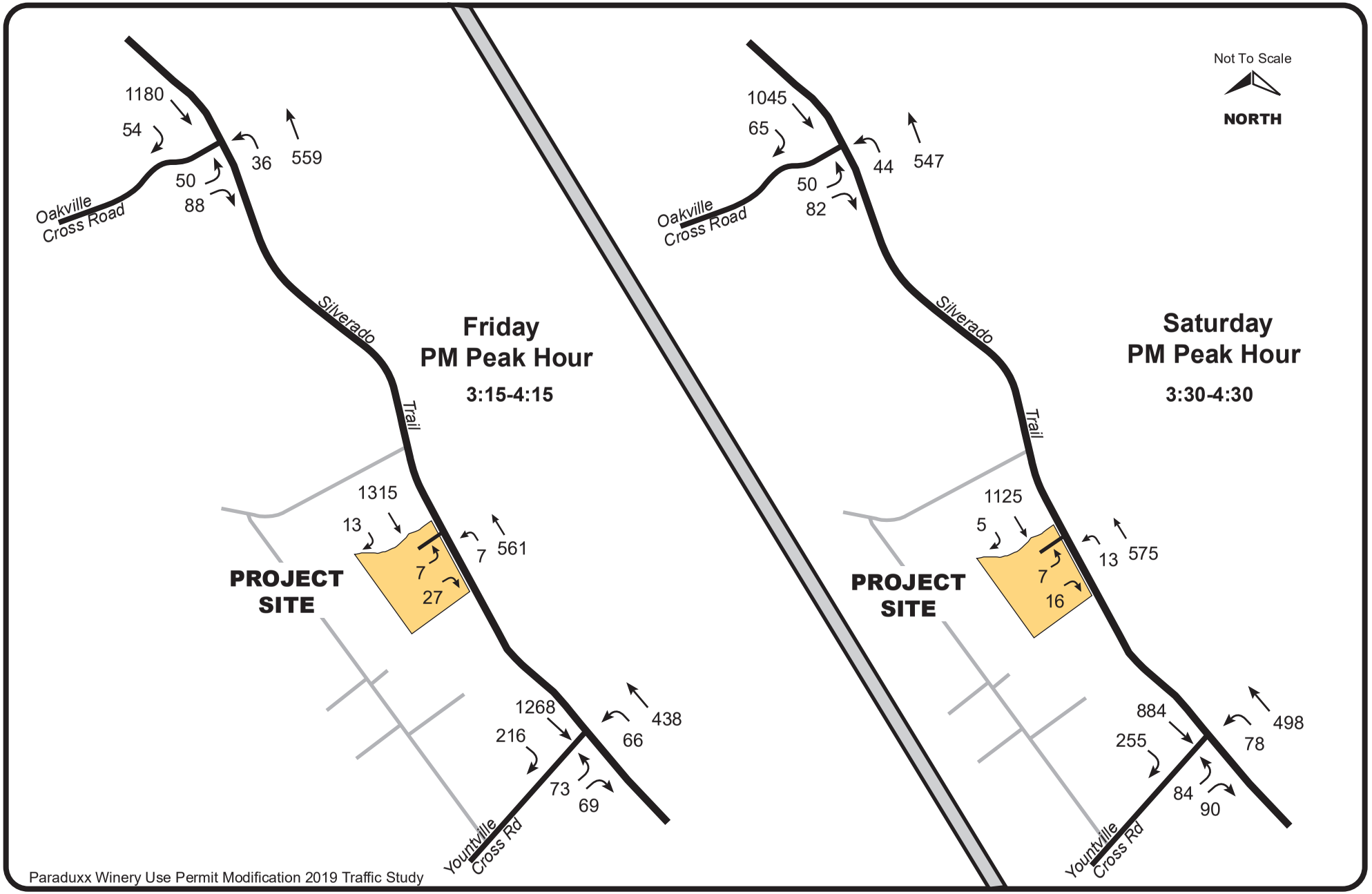


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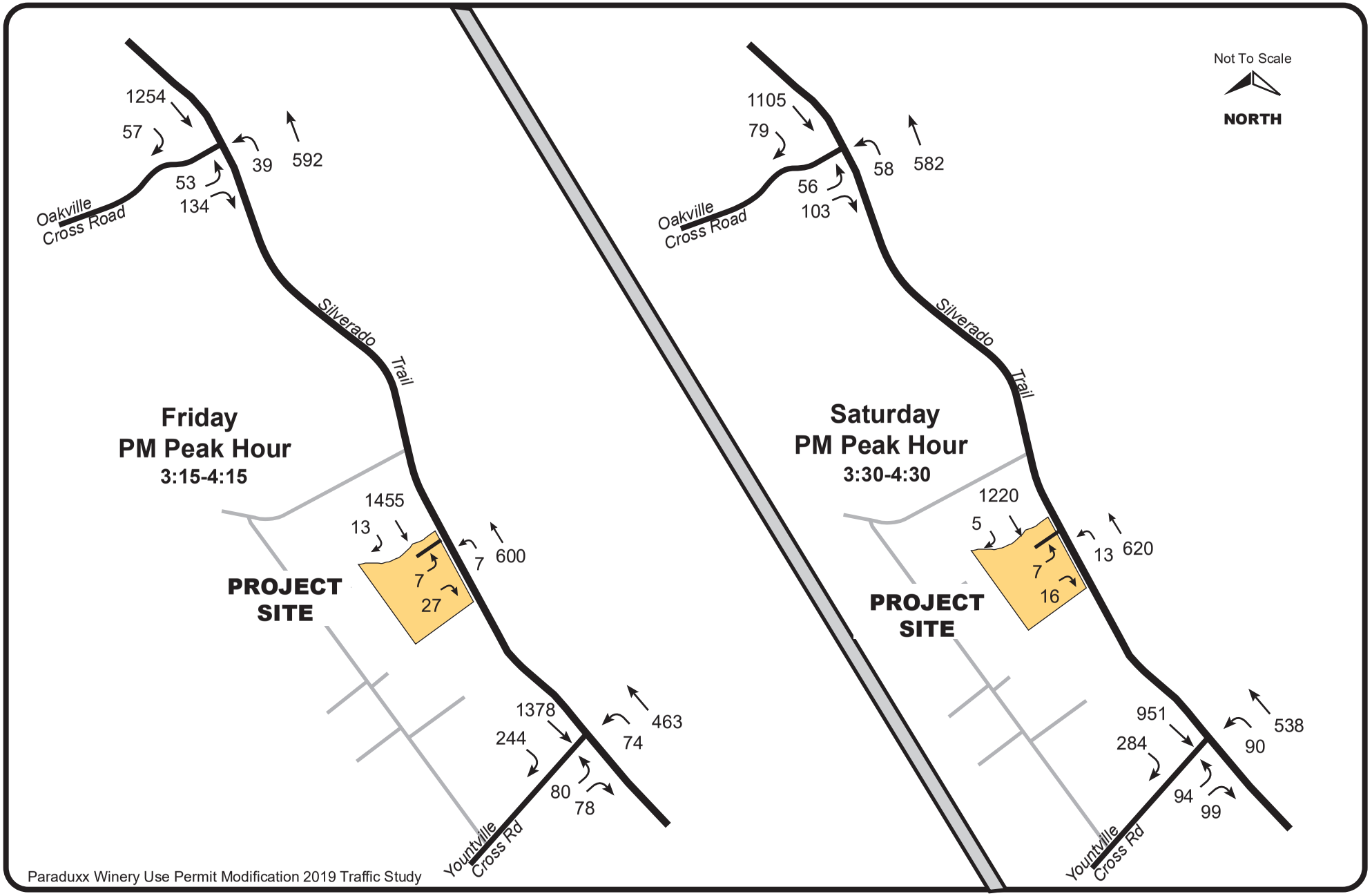
Figure 9

2020 Harvest (with Project)
Friday and Saturday PM Peak Hour Volumes



Paraduxx Winery Use Permit Modification 2019 Traffic Study

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Figure 10

2030 Harvest (with Project)
Friday and Saturday PM Peak Hour Volumes

Tables

Table 1

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	10.0 to 15.0
C	Average traffic delays	15.0 to 25.0
D	Long traffic delays	25.0 to 35.0
E	Very long traffic delays	35.0 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 Version 6 (Transportation Research Board).

Table 2 (page 1 of 2)

INTERSECTION LEVEL OF SERVICE

YEAR 2016 HARVEST

LOCATION	FRIDAY PM PEAK HOUR (3:15-4:15 PM)		SATURDAY PM PEAK HOUR (3:30-4:30 PM)	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oakville Cross Road	F-81.5[(1)]	F-83.1 (0.9%)*	E-40.9	E-41.4 (0%)
Silverado Trail/Yountville Cross Road	E-40.2[(2)]	E-40.5 (0%)*	C-23.4	C-23.7
Silverado Trail/Project Driveway	D-27.4[(3)]	D-28.2	C-20.1	C-20.5

YEAR 2020 HARVEST

LOCATION	FRIDAY PM PEAK HOUR (3:15-4:15 PM)		SATURDAY PM PEAK HOUR (3:30-4:30 PM)	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oakville Cross Road	F-94.4[(1)]	F-94.4 (0.7%)*	E-45.8	E-46.3 (0%)
Silverado Trail/Yountville Cross Road	E-45.8[(2)]	E-46.2 (0%)*	D-25.2	D-25.5
Silverado Trail/Project Driveway	D-29.6[(3)]	D-30.8	C-20.9	C-21.4

YEAR 2030 (CUMULATIVE) HARVEST

LOCATION	FRIDAY PM PEAK HOUR (3:15-4:15 PM)		SATURDAY PM PEAK HOUR (3:30-4:30 PM)	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oakville Cross Road	F-104.8[(1)]	F-107.1 (1.4%)**	F-66.4	F-66.5 (0%)
Silverado Trail/Yountville Cross Road	F-57.9[(2)]	F-58.6 (0%)**	D-30.1	D-30.6
Silverado Trail/Project Driveway	D-33.0[(3)]	D-34.2	C-23.1	C-23.7

(Footnotes on next page)

Table 2 (page 2 of 2)

INTERSECTION LEVEL OF SERVICE

(1) Unsignalized level of service – control delay in seconds: Oakville Cross Rd. stop sign controlled approach to Silverado Trail.
(2) Unsignalized level of service – control delay in seconds: Yountville Cross Rd. stop sign controlled approach to Silverado Trail.
(3) Unsignalized level of service – control delay in seconds: Project Driveway stop sign controlled approach to Silverado Trail.

* Percent increase in side street stop sign controlled traffic due to project. Less than a 10% increase is considered less than significant based upon Napa County significance criteria.

** Percent increase in the growth of side street stop sign controlled traffic (from 2016 to 2030) due to project. Less than a 5% increase is considered less than significant based upon Napa County significance criteria.

6th Edition Highway Capacity Manual (HCM) Analysis Methodology for unsignalized intersections (2017)
Source: Crane Transportation Group

Table 3

ARTERIAL LEVEL OF SERVICE

YEAR 2016 HARVEST

LOCATION	FRIDAY PM PEAK HOUR (3:15-4:15 PM)					SATURDAY PM PEAK HOUR (3:30-4:30 PM)				
	W/O PROJECT		WITH PROJECT		% VOL DUE TO PROJECT	W/O PROJECT		WITH PROJECT		% VOL DUE TO PROJECT
	NB	SB	NB	SB		NB	SB	NB	SB	
Silverado Trail just north of Paraduxx Driveway	E .33	E .77	E .33	E .77	0.3%*	E .37	E .73	E .37	E .73	0.3%*
Silverado Trail just south of Paraduxx Driveway	E .33	E .78	E .33	E .78	0.4%*	E .38	E .74	E .38	E .74	0.6%*

YEAR 2020 HARVEST

LOCATION	FRIDAY PM PEAK HOUR (3:15-4:15 PM)					SATURDAY PM PEAK HOUR (3:30-4:30 PM)				
	W/O PROJECT		WITH PROJECT		% VOL DUE TO PROJECT	W/O PROJECT		WITH PROJECT		% VOL DUE TO PROJECT
	NB	SB	NB	SB		NB	SB	NB	SB	
Silverado Trail just north of Paraduxx Driveway	E .34	E .81	E .34	E .81	0.3%*	E .39	E .76	E .39	E .76	0.3%*
Silverado Trail just south of Paraduxx Driveway	E .34	E .81	E .34	E .82	0.4%*	E .39	E .76	E .39	E .77	0.6%*

YEAR 2030 (CUMULATIVE) HARVEST

LOCATION	FRIDAY PM PEAK HOUR (3:15-4:15 PM)					SATURDAY PM PEAK HOUR (3:30-4:30 PM)				
	W/O PROJECT		WITH PROJECT		% VOL DUE TO PROJECT[(1)]	W/O PROJECT		WITH PROJECT		% VOL DUE TO PROJECT[(1)]
	NB	SB	NB	SB		NB	SB	NB	SB	
Silverado Trail just north of Paraduxx Driveway	E .37	E .89	E .37	E .89	1.95%**	E .41	E .82	E .42	E .82	2.47%**
Silverado Trail just south of Paraduxx Driveway	E .37	E .90	E .37	E .90	1.75%**	E .42	E .83	E .42	E .83	4.95%**

Level of service – volume/capacity ratio.

[(1)] Compared to 2016-2030 growth.

* Percent increase in total roadway segment volume due to project. Less than a 1% increase is considered less than significant based upon Napa County significance criteria.

** Percent increase in the growth of total roadway segment volume (from 2016 to 2030) due to project. Less than a 5% increase is considered less than significant based upon Napa County significance criteria.

Highway Capacity Manual, 6th Edition (2017) analysis methodology. Compiled by: Crane Transportation Group

Table 4

INTERSECTION SIGNAL WARRANT EVALUATION

Do Volumes Meet Caltrans Peak Hour Warrant #3 Volume Criteria Levels? (results presented for informational purposes only)

YEAR 2016 HARVEST

LOCATION	FRIDAY PM PEAK HOUR (3:15-4:15 PM)		SATURDAY PM PEAK HOUR (3:30-4:30 PM)	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oakville Cross Road	Yes	Yes	Yes	Yes
Silverado Trail/Yountville Cross Road	Yes	Yes	Yes	Yes

YEAR 2020 HARVEST

LOCATION	FRIDAY PM PEAK HOUR (3:15-4:15 PM)		SATURDAY PM PEAK HOUR (3:30-4:30 PM)	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oakville Cross Road	Yes	Yes	Yes	Yes
Silverado Trail/Yountville Cross Road	Yes	Yes	Yes	Yes

YEAR 2030 (CUMULATIVE) HARVEST

LOCATION	FRIDAY PM PEAK HOUR (3:15-4:15 PM)		SATURDAY PM PEAK HOUR (3:30-4:30 PM)	
	W/O PROJECT	WITH PROJECT	W/O PROJECT	WITH PROJECT
Silverado Trail/Oakville Cross Road	Yes	Yes	Yes	Yes
Silverado Trail/Yountville Cross Road	Yes	Yes	Yes	Yes

Criteria: Caltrans Manual of Uniform Traffic Control Devices, Revision 3, 2018
Source: Crane Transportation Group

Table 5

PROJECT PM PEAK HOUR TRIP GENERATION

CRUSH FRIDAY

	DAILY 2-WAY TRIPS*	PM PEAK HOUR %**	PM PEAK HOUR 2-WAY TRIPS
Existing	163		
Existing + Project	236		
Net Increase	73	16%	12

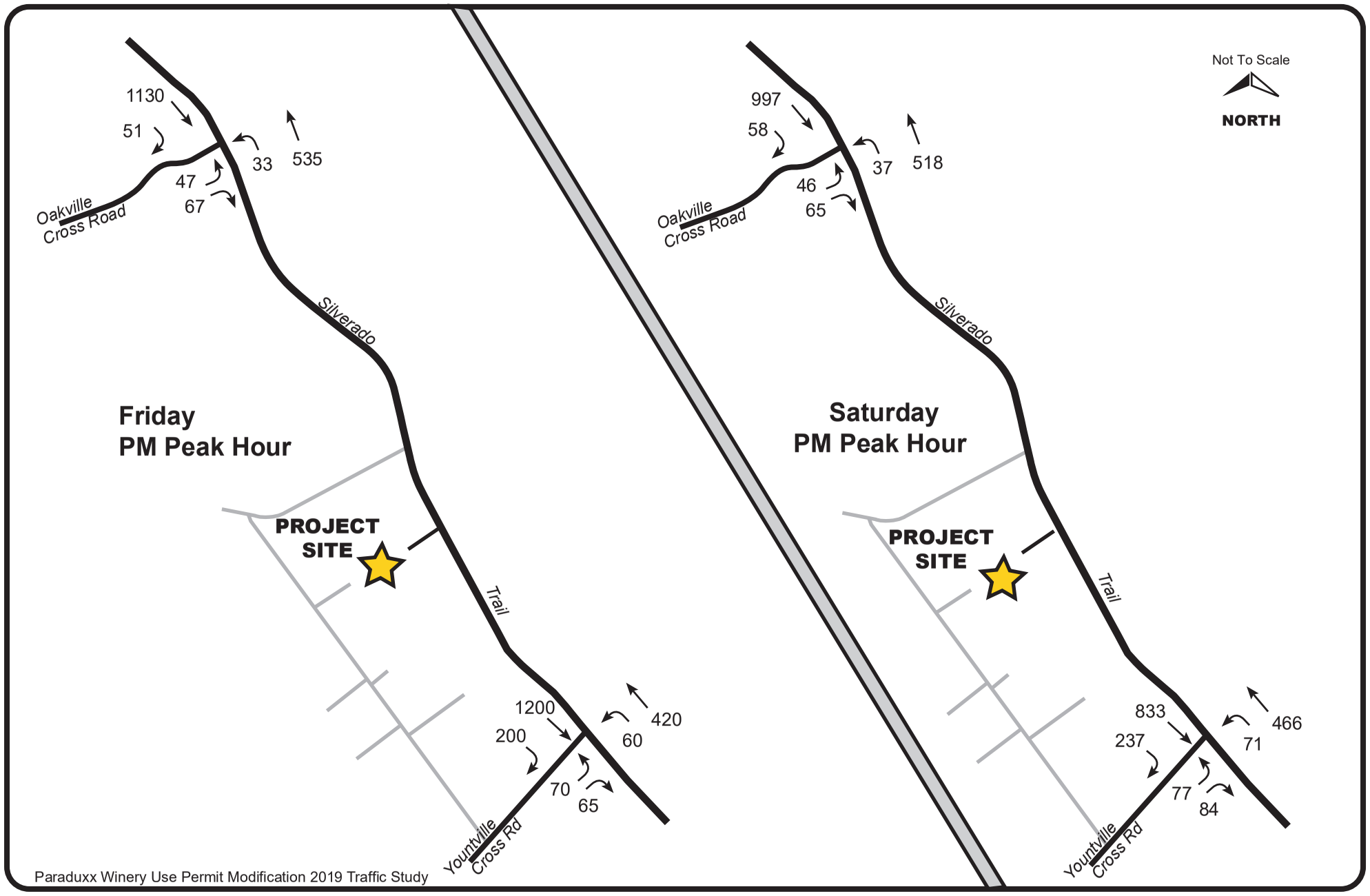
CRUSH SATURDAY

	DAILY 2-WAY TRIPS*	PM PEAK HOUR %**	PM PEAK HOUR 2-WAY TRIPS
Existing			
Existing + Project	206		
Net Increase	72	20%	15

* Source: Paraduxx Winery Traffic Information/Trip Generation Sheet.
** Source: Paraduxx Driveway 24-hour count results – maximum hourly inbound + outbound percent of daily volumes from two Fridays and two Saturdays.

Compiled by: Crane Transportation Group

Appendix 1



Paraduxx Winery Use Permit Modification 2019 Traffic Study

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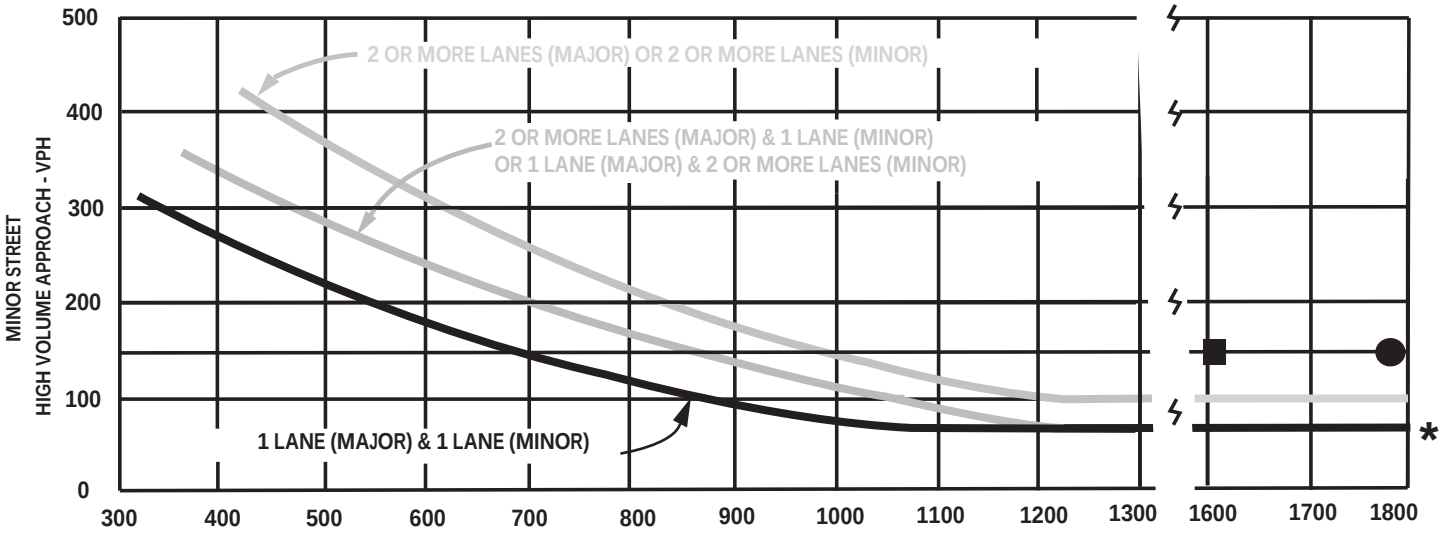
Figure A-1

Friday and Saturday PM Peak Hour Count Volumes
Friday Oct 21, 2016 and Saturday Oct 22, 2016

Appendix 2

Silverado Trail/Oakville Cross Road

PEAK HOUR VOLUME WARRANT #3
(Rural Area)



MAJOR STREET - TOTAL OF BOTH APPROACHES - VPH

Friday PM Peak Hour and
Saturday PM Peak Hour

● = Year 2016 Harvest Friday PM Peak Hour - Silverado Trail/Oakville Cross Road
■ = Year 2016 Harvest Saturday PM Peak Hour - Silverado Trail/Oakville Cross Road

* 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: California Manual on Uniform Traffic Control Devices - 2014 Revisions 1,2 & 3

Figure A-2 - Figure 1

Year 2016 Harvest (without Project) Friday and Saturday PM Peak Hour Rural Signal Warrant #3
Silverado Trail/Oakville Cross Road

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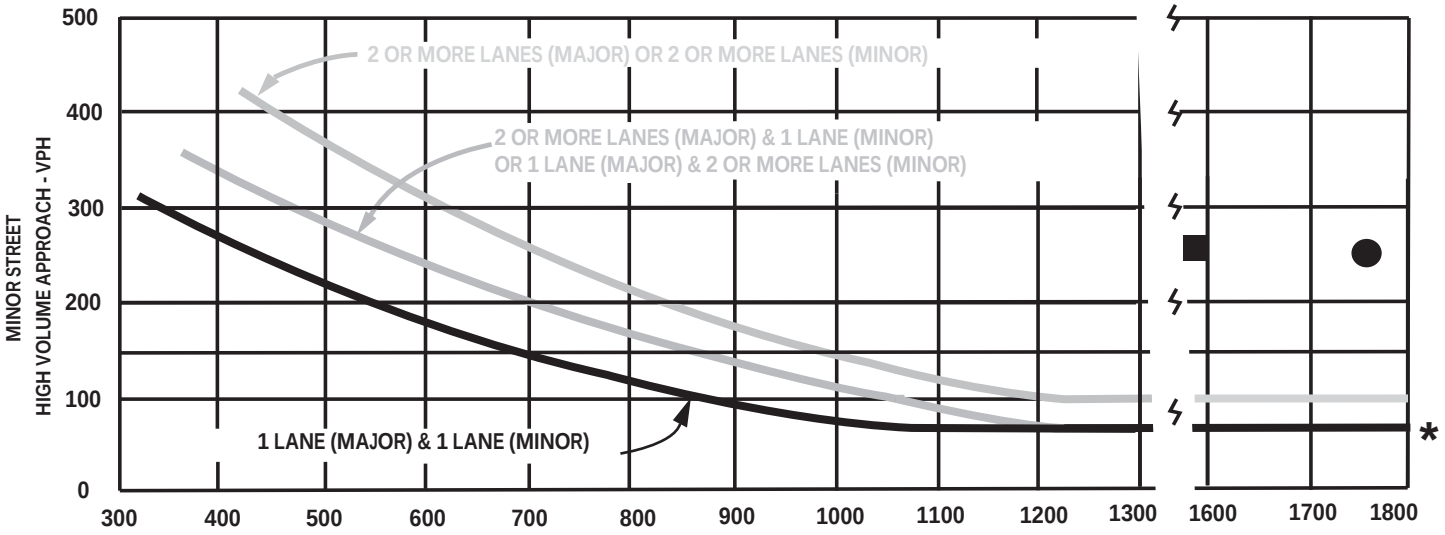
Silverado Trail/Yountville Cross Road

PEAK HOUR VOLUME WARRANT #3
(Rural Area)



Friday PM Peak Hour and
Saturday PM Peak Hour

● = Year 2016 Harvest Friday PM Peak Hour - Silverado Trail/Yountville Cross Road
■ = Year 2016 Harvest Saturday PM Peak Hour - Silverado Trail/Yountville Cross Road

* 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: California Manual on Uniform Traffic Control Devices - 2014 Revisions 1,2 & 3

Figure A-2 - Figure 2

Year 2016 Harvest (without Project) Friday and Saturday PM Peak Hour Rural Signal Warrant #3
Silverado Trail/Yountville Cross Road

CRANE TRANSPORTATION GROUP

Appendix 3

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	68	34	543	1147	52
Future Vol, veh/h	48	68	34	543	1147	52
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	2	2	4
Mvmt Flow	53	75	37	597	1260	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1931	1260	1317	0	-	0
Stage 1	1260	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Critical Hdwy	6.42	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	73	210	532	-	-	-
Stage 1	267	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	68	210	532	-	-	-
Mov Cap-2 Maneuver	68	-	-	-	-	-
Stage 1	248	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	81.5	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	532	-	68	210	-	-
HCM Lane V/C Ratio	0.07	-	0.776	0.356	-	-
HCM Control Delay (s)	12.3	-	152.5	31.3	-	-
HCM Lane LOS	B	-	F	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3.6	1.5	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	71	66	61	427	1218	203
Future Vol, veh/h	71	66	61	427	1218	203
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	250	-	-	75
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	4	1	2	4
Mvmt Flow	76	71	66	459	1310	218

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1901	1310	1528	0	-	0
Stage 1	1310	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 75	192	430	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 64	192	430	-	-	-
Mov Cap-2 Maneuver	162	-	-	-	-	-
Stage 1	212	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	40.2	1.9	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	430	-	162	192	-	-
HCM Lane V/C Ratio	0.153	-	0.471	0.37	-	-
HCM Control Delay (s)	14.9	-	45.6	34.3	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.5	-	2.2	1.6	-	-

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	21	6	544	1255	10
Future Vol, veh/h	5	21	6	544	1255	10
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	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	3	3	0
Mvmt Flow	5	23	7	591	1364	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1975	1370	1375	0	-	0
Stage 1	1370	-	-	-	-	-
Stage 2	605	-	-	-	-	-
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	69	181	505	-	-	-
Stage 1	238	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	68	181	505	-	-	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	235	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.4	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	505	-	175	181	-	-
HCM Lane V/C Ratio	0.013	-	0.031	0.126	-	-
HCM Control Delay (s)	12.2	-	26.2	27.7	-	-
HCM Lane LOS	B	-	D	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.4	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	67	38	529	1018	59
Future Vol, veh/h	47	67	38	529	1018	59
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	48	68	39	540	1039	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1657	1039	1099	0	-	0
Stage 1	1039	-	-	-	-	-
Stage 2	618	-	-	-	-	-
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	109	283	643	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	102	283	643	-	-	-
Mov Cap-2 Maneuver	102	-	-	-	-	-
Stage 1	323	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	40.9	0.7	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	643	-	102	283	-	-
HCM Lane V/C Ratio	0.06	-	0.47	0.242	-	-
HCM Control Delay (s)	11	-	68.3	21.7	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.2	-	2	0.9	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	79	86	73	479	851	242
Future Vol, veh/h	79	86	73	479	851	242
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	250	-	-	75
Veh in Median Storage, #	1	-	-	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	83	91	77	504	896	255

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1554	896	1151	0	-	0
Stage 1	896	-	-	-	-	-
Stage 2	658	-	-	-	-	-
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	342	614	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	519	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	110	342	614	-	-	-
Mov Cap-2 Maneuver	239	-	-	-	-	-
Stage 1	352	-	-	-	-	-
Stage 2	519	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.4	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	614	-	239	342	-	-
HCM Lane V/C Ratio	0.125	-	0.348	0.265	-	-
HCM Control Delay (s)	11.7	-	27.9	19.3	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	1.5	1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	10	9	553	1085	3
Future Vol, veh/h	4	10	9	553	1085	3
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	0	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	10	9	564	1107	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1691	1109	1110	0	-	0
Stage 1	1109	-	-	-	-	-
Stage 2	582	-	-	-	-	-
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	257	637	-	-	-
Stage 1	318	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	103	257	637	-	-	-
Mov Cap-2 Maneuver	226	-	-	-	-	-
Stage 1	314	-	-	-	-	-
Stage 2	563	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.1	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	637	-	226	257	-	-
HCM Lane V/C Ratio	0.014	-	0.018	0.04	-	-
HCM Control Delay (s)	10.7	-	21.2	19.6	-	-
HCM Lane LOS	B	-	C	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	87	36	557	1178	54
Future Vol, veh/h	50	87	36	557	1178	54
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	2	2	4
Mvmt Flow	55	96	40	612	1295	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1987	1295	1354	0	-	0
Stage 1	1295	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Critical Hdwy	6.42	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	67	200	515	-	-	-
Stage 1	257	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	62	200	515	-	-	-
Mov Cap-2 Maneuver	62	-	-	-	-	-
Stage 1	237	-	-	-	-	-
Stage 2	497	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	94.4	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	515	-	62	200	-	-
HCM Lane V/C Ratio	0.077	-	0.886	0.478	-	-
HCM Control Delay (s)	12.6	-	191.8	38.5	-	-
HCM Lane LOS	B	-	F	E	-	-
HCM 95th %tile Q(veh)	0.2	-	4.1	2.3	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	73	69	66	437	1263	215
Future Vol, veh/h	73	69	66	437	1263	215
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	250	-	-	75
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	4	1	2	4
Mvmt Flow	78	74	71	470	1358	231

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1970	1358	1589	0	-	0
Stage 1	1358	-	-	-	-	-
Stage 2	612	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 68	180	407	-	-	-
Stage 1	237	-	-	-	-	-
Stage 2	537	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 56	180	407	-	-	-
Mov Cap-2 Maneuver	150	-	-	-	-	-
Stage 1	196	-	-	-	-	-
Stage 2	537	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	45.8	2.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	407	-	150	180	-	-
HCM Lane V/C Ratio	0.174	-	0.523	0.412	-	-
HCM Control Delay (s)	15.7	-	52.7	38.4	-	-
HCM Lane LOS	C	-	F	E	-	-
HCM 95th %tile Q(veh)	0.6	-	2.6	1.8	-	-

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	21	6	560	1315	10
Future Vol, veh/h	5	21	6	560	1315	10
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	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	3	3	0
Mvmt Flow	5	23	7	609	1429	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2058	1435	1440	0	-	0
Stage 1	1435	-	-	-	-	-
Stage 2	623	-	-	-	-	-
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	61	166	477	-	-	-
Stage 1	222	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	60	166	477	-	-	-
Mov Cap-2 Maneuver	164	-	-	-	-	-
Stage 1	219	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.6	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	477	-	164	166	-	-
HCM Lane V/C Ratio	0.014	-	0.033	0.138	-	-
HCM Control Delay (s)	12.7	-	27.7	30.1	-	-
HCM Lane LOS	B	-	D	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.5	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	82	44	544	1043	65
Future Vol, veh/h	50	82	44	544	1043	65
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	51	84	45	555	1064	66

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1709	1064	1130	0	-	0
Stage 1	1064	-	-	-	-	-
Stage 2	645	-	-	-	-	-
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	273	626	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	94	273	626	-	-	-
Mov Cap-2 Maneuver	94	-	-	-	-	-
Stage 1	311	-	-	-	-	-
Stage 2	526	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	45.8	0.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	626	-	94	273	-	-
HCM Lane V/C Ratio	0.072	-	0.543	0.306	-	-
HCM Control Delay (s)	11.2	-	81.6	23.9	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.2	-	2.4	1.3	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	83	90	78	495	879	254
Future Vol, veh/h	83	90	78	495	879	254
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	250	-	-	75
Veh in Median Storage, #	1	-	-	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	87	95	82	521	925	267

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1610	925	1192	0	-	0
Stage 1	925	-	-	-	-	-
Stage 2	685	-	-	-	-	-
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	116	329	593	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	504	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	100	329	593	-	-	-
Mov Cap-2 Maneuver	227	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	504	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.2	1.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	593	-	227	329	-	-
HCM Lane V/C Ratio	0.138	-	0.385	0.288	-	-
HCM Control Delay (s)	12	-	30.5	20.3	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.5	-	1.7	1.2	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	10	9	575	1125	3
Future Vol, veh/h	4	10	9	575	1125	3
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	0	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	10	9	587	1148	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1755	1150	1151	0	-	0
Stage 1	1150	-	-	-	-	-
Stage 2	605	-	-	-	-	-
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	244	614	-	-	-
Stage 1	304	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	94	244	614	-	-	-
Mov Cap-2 Maneuver	215	-	-	-	-	-
Stage 1	299	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.9	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	614	-	215	244	-	-
HCM Lane V/C Ratio	0.015	-	0.019	0.042	-	-
HCM Control Delay (s)	11	-	22.1	20.4	-	-
HCM Lane LOS	B	-	C	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	133	39	590	1252	57
Future Vol, veh/h	53	133	39	590	1252	57
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	2	2	4
Mvmt Flow	56	140	41	621	1318	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2021	1318	1378	0	-	0
Stage 1	1318	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Critical Hdwy	6.42	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	64	194	504	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	59	194	504	-	-	-
Mov Cap-2 Maneuver	59	-	-	-	-	-
Stage 1	230	-	-	-	-	-
Stage 2	491	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	104.8	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	504	-	59	194	-	-
HCM Lane V/C Ratio	0.081	-	0.946	0.722	-	-
HCM Control Delay (s)	12.8	-	215.4	60.7	-	-
HCM Lane LOS	B	-	F	F	-	-
HCM 95th %tile Q(veh)	0.3	-	4.4	4.6	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	78	74	462	1373	243
Future Vol, veh/h	80	78	74	462	1373	243
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	250	-	-	75
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	4	4	4	1	2	4
Mvmt Flow	83	81	77	481	1430	253

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2065	1430	1683	0	-	0
Stage 1	1430	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 59	163	375	-	-	-
Stage 1	218	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 47	163	375	-	-	-
Mov Cap-2 Maneuver	134	-	-	-	-	-
Stage 1	173	-	-	-	-	-
Stage 2	524	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	57.9	2.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	375	-	134	163	-	-
HCM Lane V/C Ratio	0.206	-	0.622	0.498	-	-
HCM Control Delay (s)	17.1	-	68.3	47.2	-	-
HCM Lane LOS	C	-	F	E	-	-
HCM 95th %tile Q(veh)	0.8	-	3.3	2.4	-	-

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	21	6	600	1455	10
Future Vol, veh/h	5	21	6	600	1455	10
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	0	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	3	3	0
Mvmt Flow	5	22	6	625	1516	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2158	1521	1526	0	-	0
Stage 1	1521	-	-	-	-	-
Stage 2	637	-	-	-	-	-
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	53	147	443	-	-	-
Stage 1	201	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	52	147	443	-	-	-
Mov Cap-2 Maneuver	150	-	-	-	-	-
Stage 1	198	-	-	-	-	-
Stage 2	531	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	443	-	150	147	-	-
HCM Lane V/C Ratio	0.014	-	0.035	0.149	-	-
HCM Control Delay (s)	13.2	-	29.9	33.7	-	-
HCM Lane LOS	B	-	D	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.5	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	103	58	579	1103	79
Future Vol, veh/h	56	103	58	579	1103	79
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	57	105	59	591	1126	81

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1835	1126	1207	0	-	0
Stage 1	1126	-	-	-	-	-
Stage 2	709	-	-	-	-	-
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	84	252	585	-	-	-
Stage 1	313	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	76	252	585	-	-	-
Mov Cap-2 Maneuver	76	-	-	-	-	-
Stage 1	281	-	-	-	-	-
Stage 2	491	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	66.4	1.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	585	-	76	252	-	-
HCM Lane V/C Ratio	0.101	-	0.752	0.417	-	-
HCM Control Delay (s)	11.8	-	134.9	29.1	-	-
HCM Lane LOS	B	-	F	D	-	-
HCM 95th %tile Q(veh)	0.3	-	3.6	1.9	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	93	99	90	535	946	283
Future Vol, veh/h	93	99	90	535	946	283
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	250	-	-	75
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	97	103	94	557	985	295

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1730	985	1280	0	-	0
Stage 1	985	-	-	-	-	-
Stage 2	745	-	-	-	-	-
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	98	304	549	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 81	304	549	-	-	-
Mov Cap-2 Maneuver	203	-	-	-	-	-
Stage 1	303	-	-	-	-	-
Stage 2	473	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.1	1.9	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	549	-	203	304	-	-
HCM Lane V/C Ratio	0.171	-	0.477	0.339	-	-
HCM Control Delay (s)	12.9	-	37.9	22.8	-	-
HCM Lane LOS	B	-	E	C	-	-
HCM 95th %tile Q(veh)	0.6	-	2.3	1.5	-	-

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	10	9	620	1220	3
Future Vol, veh/h	4	10	9	620	1220	3
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	0	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	10	9	633	1245	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1898	1247	1248	0	-	0
Stage 1	1247	-	-	-	-	-
Stage 2	651	-	-	-	-	-
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	77	214	565	-	-	-
Stage 1	273	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	76	214	565	-	-	-
Mov Cap-2 Maneuver	192	-	-	-	-	-
Stage 1	269	-	-	-	-	-
Stage 2	523	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.1	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	565	-	192	214	-	-
HCM Lane V/C Ratio	0.016	-	0.021	0.048	-	-
HCM Control Delay (s)	11.5	-	24.2	22.7	-	-
HCM Lane LOS	B	-	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	69	34	545	1149	52
Future Vol, veh/h	48	69	34	545	1149	52
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	2	2	4
Mvmt Flow	53	76	37	599	1263	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1936	1263	1320	0	-	0
Stage 1	1263	-	-	-	-	-
Stage 2	673	-	-	-	-	-
Critical Hdwy	6.42	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	72	209	530	-	-	-
Stage 1	266	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	67	209	530	-	-	-
Mov Cap-2 Maneuver	67	-	-	-	-	-
Stage 1	247	-	-	-	-	-
Stage 2	507	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	83.1	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	530	-	67	209	-	-
HCM Lane V/C Ratio	0.07	-	0.787	0.363	-	-
HCM Control Delay (s)	12.3	-	156.9	31.7	-	-
HCM Lane LOS	B	-	F	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3.6	1.6	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	71	66	61	428	1223	204
Future Vol, veh/h	71	66	61	428	1223	204
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	250	-	-	75
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	4	1	2	4
Mvmt Flow	76	71	66	460	1315	219

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1907	1315	1534	0	-	0
Stage 1	1315	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 74	191	428	-	-	-
Stage 1	249	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 63	191	428	-	-	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	211	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	40.5	1.9	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	428	-	161	191	-	-
HCM Lane V/C Ratio	0.153	-	0.474	0.372	-	-
HCM Control Delay (s)	14.9	-	46	34.6	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.5	-	2.2	1.6	-	-

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	27	7	544	1255	13
Future Vol, veh/h	7	27	7	544	1255	13
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	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	3	3	0
Mvmt Flow	8	29	8	591	1364	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1978	1371	1378	0	-	0
Stage 1	1371	-	-	-	-	-
Stage 2	607	-	-	-	-	-
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	69	181	504	-	-	-
Stage 1	238	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	68	181	504	-	-	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	234	-	-	-	-	-
Stage 2	548	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.2	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	504	-	175	181	-	-
HCM Lane V/C Ratio	0.015	-	0.043	0.162	-	-
HCM Control Delay (s)	12.3	-	26.5	28.7	-	-
HCM Lane LOS	B	-	D	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.6	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	67	38	532	1020	59
Future Vol, veh/h	47	67	38	532	1020	59
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	48	68	39	543	1041	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1662	1041	1101	0	-	0
Stage 1	1041	-	-	-	-	-
Stage 2	621	-	-	-	-	-
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	108	282	642	-	-	-
Stage 1	343	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	101	282	642	-	-	-
Mov Cap-2 Maneuver	101	-	-	-	-	-
Stage 1	322	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	41.4	0.7	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	642	-	101	282	-	-
HCM Lane V/C Ratio	0.06	-	0.475	0.242	-	-
HCM Control Delay (s)	11	-	69.4	21.8	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.2	-	2.1	0.9	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	86	73	482	856	243
Future Vol, veh/h	80	86	73	482	856	243
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	250	-	-	75
Veh in Median Storage, #	1	-	-	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	84	91	77	507	901	256

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1562	901	1157	0	-	0
Stage 1	901	-	-	-	-	-
Stage 2	661	-	-	-	-	-
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	124	340	611	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	108	340	611	-	-	-
Mov Cap-2 Maneuver	237	-	-	-	-	-
Stage 1	350	-	-	-	-	-
Stage 2	517	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.7	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	611	-	237	340	-	-
HCM Lane V/C Ratio	0.126	-	0.355	0.266	-	-
HCM Control Delay (s)	11.7	-	28.3	19.4	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	1.5	1.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	16	13	553	1085	5
Future Vol, veh/h	7	16	13	553	1085	5
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	0	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	7	16	13	564	1107	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1700	1110	1112	0	-	0
Stage 1	1110	-	-	-	-	-
Stage 2	590	-	-	-	-	-
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	102	257	635	-	-	-
Stage 1	318	-	-	-	-	-
Stage 2	558	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	100	257	635	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	312	-	-	-	-	-
Stage 2	558	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.5	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	635	-	224	257	-	-
HCM Lane V/C Ratio	0.021	-	0.032	0.064	-	-
HCM Control Delay (s)	10.8	-	21.6	20	-	-
HCM Lane LOS	B	-	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0.2	-	-

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	88	36	559	1180	54
Future Vol, veh/h	50	88	36	559	1180	54
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	2	2	4
Mvmt Flow	55	97	40	614	1297	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1991	1297	1356	0	-	0
Stage 1	1297	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Critical Hdwy	6.42	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	67	200	514	-	-	-
Stage 1	256	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	62	200	514	-	-	-
Mov Cap-2 Maneuver	62	-	-	-	-	-
Stage 1	236	-	-	-	-	-
Stage 2	496	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	94.2	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	514	-	62	200	-	-
HCM Lane V/C Ratio	0.077	-	0.886	0.484	-	-
HCM Control Delay (s)	12.6	-	191.8	38.8	-	-
HCM Lane LOS	B	-	F	E	-	-
HCM 95th %tile Q(veh)	0.2	-	4.1	2.4	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	73	69	66	438	1268	216
Future Vol, veh/h	73	69	66	438	1268	216
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	250	-	-	75
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	4	1	2	4
Mvmt Flow	78	74	71	471	1363	232

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1976	1363	1595	0	-	0
Stage 1	1363	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 67	179	405	-	-	-
Stage 1	236	-	-	-	-	-
Stage 2	537	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 55	179	405	-	-	-
Mov Cap-2 Maneuver	149	-	-	-	-	-
Stage 1	195	-	-	-	-	-
Stage 2	537	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	46.2	2.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	405	-	149	179	-	-
HCM Lane V/C Ratio	0.175	-	0.527	0.414	-	-
HCM Control Delay (s)	15.8	-	53.3	38.7	-	-
HCM Lane LOS	C	-	F	E	-	-
HCM 95th %tile Q(veh)	0.6	-	2.6	1.9	-	-

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	27	7	560	1315	13
Future Vol, veh/h	7	27	7	560	1315	13
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	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	3	3	0
Mvmt Flow	8	29	8	609	1429	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2061	1436	1443	0	-	0
Stage 1	1436	-	-	-	-	-
Stage 2	625	-	-	-	-	-
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	61	165	476	-	-	-
Stage 1	221	-	-	-	-	-
Stage 2	537	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	60	165	476	-	-	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	217	-	-	-	-	-
Stage 2	537	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.8	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	476	-	163	165	-	-
HCM Lane V/C Ratio	0.016	-	0.047	0.178	-	-
HCM Control Delay (s)	12.7	-	28.2	31.5	-	-
HCM Lane LOS	B	-	D	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.6	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	82	44	547	1045	65
Future Vol, veh/h	50	82	44	547	1045	65
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	51	84	45	558	1066	66

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1714	1066	1132	0	-	0
Stage 1	1066	-	-	-	-	-
Stage 2	648	-	-	-	-	-
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	100	273	625	-	-	-
Stage 1	334	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	93	273	625	-	-	-
Mov Cap-2 Maneuver	93	-	-	-	-	-
Stage 1	310	-	-	-	-	-
Stage 2	524	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	46.3	0.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	625	-	93	273	-	-
HCM Lane V/C Ratio	0.072	-	0.549	0.306	-	-
HCM Control Delay (s)	11.2	-	83.1	23.9	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.2	-	2.5	1.3	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	84	90	78	498	884	255
Future Vol, veh/h	84	90	78	498	884	255
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	250	-	-	75
Veh in Median Storage, #	1	-	-	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	88	95	82	524	931	268

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1619	931	1199	0	-	0
Stage 1	931	-	-	-	-	-
Stage 2	688	-	-	-	-	-
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	115	326	589	-	-	-
Stage 1	387	-	-	-	-	-
Stage 2	503	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	326	589	-	-	-
Mov Cap-2 Maneuver	226	-	-	-	-	-
Stage 1	333	-	-	-	-	-
Stage 2	503	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.5	1.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	589	-	226	326	-	-
HCM Lane V/C Ratio	0.139	-	0.391	0.291	-	-
HCM Control Delay (s)	12.1	-	30.8	20.5	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.5	-	1.8	1.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	16	13	575	1125	5
Future Vol, veh/h	7	16	13	575	1125	5
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	0	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	7	16	13	587	1148	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1764	1151	1153	0	-	0
Stage 1	1151	-	-	-	-	-
Stage 2	613	-	-	-	-	-
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	93	243	613	-	-	-
Stage 1	304	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	91	243	613	-	-	-
Mov Cap-2 Maneuver	213	-	-	-	-	-
Stage 1	298	-	-	-	-	-
Stage 2	544	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.4	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	613	-	213	243	-	-
HCM Lane V/C Ratio	0.022	-	0.034	0.067	-	-
HCM Control Delay (s)	11	-	22.5	20.9	-	-
HCM Lane LOS	B	-	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0.2	-	-

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	134	39	592	1254	57
Future Vol, veh/h	53	134	39	592	1254	57
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	2	2	4
Mvmt Flow	56	141	41	623	1320	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2025	1320	1380	0	-	0
Stage 1	1320	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Critical Hdwy	6.42	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	63	194	503	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	58	194	503	-	-	-
Mov Cap-2 Maneuver	58	-	-	-	-	-
Stage 1	230	-	-	-	-	-
Stage 2	490	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	107.1	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	503	-	58	194	-	-
HCM Lane V/C Ratio	0.082	-	0.962	0.727	-	-
HCM Control Delay (s)	12.8	-	222.6	61.4	-	-
HCM Lane LOS	B	-	F	F	-	-
HCM 95th %tile Q(veh)	0.3	-	4.4	4.7	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	78	74	463	1378	244
Future Vol, veh/h	80	78	74	463	1378	244
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	250	-	-	75
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	4	4	4	1	2	4
Mvmt Flow	83	81	77	482	1435	254

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2071	1435	1689	0	-	0
Stage 1	1435	-	-	-	-	-
Stage 2	636	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 59	162	373	-	-	-
Stage 1	217	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 47	162	373	-	-	-
Mov Cap-2 Maneuver	133	-	-	-	-	-
Stage 1	172	-	-	-	-	-
Stage 2	524	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	58.6	2.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	373	-	133	162	-	-
HCM Lane V/C Ratio	0.207	-	0.627	0.502	-	-
HCM Control Delay (s)	17.1	-	69.3	47.7	-	-
HCM Lane LOS	C	-	F	E	-	-
HCM 95th %tile Q(veh)	0.8	-	3.3	2.4	-	-

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	27	7	600	1455	13
Future Vol, veh/h	7	27	7	600	1455	13
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	0	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	3	3	0
Mvmt Flow	7	28	7	625	1516	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2162	1523	1530	0	-	0
Stage 1	1523	-	-	-	-	-
Stage 2	639	-	-	-	-	-
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	53	147	441	-	-	-
Stage 1	201	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	52	147	441	-	-	-
Mov Cap-2 Maneuver	150	-	-	-	-	-
Stage 1	198	-	-	-	-	-
Stage 2	530	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.2	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	441	-	150	147	-	-
HCM Lane V/C Ratio	0.017	-	0.049	0.191	-	-
HCM Control Delay (s)	13.3	-	30.2	35.2	-	-
HCM Lane LOS	B	-	D	E	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.7	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	103	58	582	1105	79
Future Vol, veh/h	56	103	58	582	1105	79
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	100	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	57	105	59	594	1128	81

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1840	1128	1209	0	-	0
Stage 1	1128	-	-	-	-	-
Stage 2	712	-	-	-	-	-
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	84	251	584	-	-	-
Stage 1	312	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	76	251	584	-	-	-
Mov Cap-2 Maneuver	76	-	-	-	-	-
Stage 1	280	-	-	-	-	-
Stage 2	490	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	66.5	1.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	584	-	76	251	-	-
HCM Lane V/C Ratio	0.101	-	0.752	0.419	-	-
HCM Control Delay (s)	11.9	-	134.9	29.3	-	-
HCM Lane LOS	B	-	F	D	-	-
HCM 95th %tile Q(veh)	0.3	-	3.6	2	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	94	99	90	538	951	284
Future Vol, veh/h	94	99	90	538	951	284
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	250	-	-	75
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	98	103	94	560	991	296

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1739	991	1287	0	-	0
Stage 1	991	-	-	-	-	-
Stage 2	748	-	-	-	-	-
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	~ 97	301	546	-	-	-
Stage 1	362	-	-	-	-	-
Stage 2	471	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 80	301	546	-	-	-
Mov Cap-2 Maneuver	202	-	-	-	-	-
Stage 1	300	-	-	-	-	-
Stage 2	471	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.6	1.9	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	546	-	202	301	-	-
HCM Lane V/C Ratio	0.172	-	0.485	0.343	-	-
HCM Control Delay (s)	13	-	38.5	23.1	-	-
HCM Lane LOS	B	-	E	C	-	-
HCM 95th %tile Q(veh)	0.6	-	2.4	1.5	-	-

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	16	13	620	1220	5
Future Vol, veh/h	7	16	13	620	1220	5
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	0	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	7	16	13	633	1245	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1907	1248	1250	0	-	0
Stage 1	1248	-	-	-	-	-
Stage 2	659	-	-	-	-	-
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	76	213	564	-	-	-
Stage 1	273	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	74	213	564	-	-	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	267	-	-	-	-	-
Stage 2	518	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.7	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	564	-	190	213	-	-
HCM Lane V/C Ratio	0.024	-	0.038	0.077	-	-
HCM Control Delay (s)	11.5	-	24.7	23.3	-	-
HCM Lane LOS	B	-	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0.2	-	-

Appendix 4

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	Existing without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	549	veh/h
Opposing direction volume, Vo	1265	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	569	pc/h	1304	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	37.4	mi/h
Percent Free Flow Speed, PFFS	70.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	566 pc/h	1304 pc/h
Base percent time-spent-following,(note-4) BPTSFd	64.4 %	
Adjustment for no-passing zones, fnp	15.9	
Percent time-spent-following, PTSFd	69.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.33	
Peak 15-min vehicle-miles of travel, VMT15	212	veh-mi
Peak-hour vehicle-miles of travel, VMT60	824	veh-mi
Peak 15-min total travel time, TT15	5.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	37.4	mi/h
Percent time-spent-following, PTSFd (from above)	69.2	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	566.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.05
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	Existing without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	550	veh/h
Opposing direction volume, Vo	1276	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	570	pc/h	1315	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	36.8	mi/h
Percent Free Flow Speed, PFFS	70.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	567 pc/h	1315 pc/h
Base percent time-spent-following,(note-4) BPTSFd	64.4 %	
Adjustment for no-passing zones, fnp	13.9	
Percent time-spent-following, PTSFd	68.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.33	
Peak 15-min vehicle-miles of travel, VMT15	113	veh-mi
Peak-hour vehicle-miles of travel, VMT60	440	veh-mi
Peak 15-min total travel time, TT15	3.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.8	mi/h
Percent time-spent-following, PTSFd (from above)	68.6	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	567.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.05
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	Existing w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd 1265 veh/h
Opposing direction volume, Vo 549 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1*	1.1
PCE for RVs, ER	1.0*	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.995	0.995
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1311 pc/h	569 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	36.4	mi/h
Percent Free Flow Speed, PFFS	69.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1304 pc/h	566 pc/h
Base percent time-spent-following,(note-4) BPTSFd	81.7 %	
Adjustment for no-passing zones, fnp	15.4	
Percent time-spent-following, PTSFd	92.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.77	
Peak 15-min vehicle-miles of travel, VMT15	489	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1898	veh-mi
Peak 15-min total travel time, TT15	13.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.4	mi/h
Percent time-spent-following, PTSFd (from above)	92.4	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1304.1
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.47
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	Existing without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1276	veh/h
Opposing direction volume, Vo	550	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1322	pc/h	570	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	2.0	mi/h
Average travel speed, ATSd	35.3	mi/h
Percent Free Flow Speed, PFFS	67.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1315	pc/h	567	pc/h
Base percent time-spent-following,(note-4) BPTSFd	81.9	%		
Adjustment for no-passing zones, fnp	16.1			
Percent time-spent-following, PTSFd	93.1	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.78	
Peak 15-min vehicle-miles of travel, VMT15	263	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1021	veh-mi
Peak 15-min total travel time, TT15	7.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.3	mi/h
Percent time-spent-following, PTSFd (from above)	93.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1315.5
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.48
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	Existing without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	557	veh/h
Opposing direction volume, Vo	1088	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	636	pc/h	1236	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	37.4	mi/h
Percent Free Flow Speed, PFFS	70.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	633 pc/h	1236 pc/h
Base percent time-spent-following,(note-4) BPTSFd	67.3 %	
Adjustment for no-passing zones, fnp	17.0	
Percent time-spent-following, PTSFd	73.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.37	
Peak 15-min vehicle-miles of travel, VMT15	237	veh-mi
Peak-hour vehicle-miles of travel, VMT60	836	veh-mi
Peak 15-min total travel time, TT15	6.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	37.4	mi/h
Percent time-spent-following, PTSFd (from above)	73.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	633.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.11
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	Existing without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	562	veh/h
Opposing direction volume, Vo	1095	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	642	pc/h	1244	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	36.8	mi/h
Percent Free Flow Speed, PFFS	70.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	639 pc/h	1244 pc/h
Base percent time-spent-following,(note-4) BPTSFd	67.6 %	
Adjustment for no-passing zones, fnp	15.2	
Percent time-spent-following, PTSFd	72.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.38	
Peak 15-min vehicle-miles of travel, VMT15	239	veh-mi
Peak-hour vehicle-miles of travel, VMT60	843	veh-mi
Peak 15-min total travel time, TT15	6.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.8	mi/h
Percent time-spent-following, PTSFd (from above)	72.8	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	638.6
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.11
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	Existing w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	1088	veh/h
Opposing direction volume, Vo	557	veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1*	1.1
PCE for RVs, ER	1.0*	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.995	0.995
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1243 pc/h	636 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	36.6	mi/h
Percent Free Flow Speed, PFFS	69.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1236 pc/h	633 pc/h
Base percent time-spent-following,(note-4) BPTSFd	80.7 %	
Adjustment for no-passing zones, fnp	16.5	
Percent time-spent-following, PTSFd	91.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.73	
Peak 15-min vehicle-miles of travel, VMT15	464	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1632	veh-mi
Peak 15-min total travel time, TT15	12.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.6	mi/h
Percent time-spent-following, PTSFd (from above)	91.6	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1236.4
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.45
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	Existing w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1095	veh/h
Opposing direction volume, Vo	562	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1251	pc/h	642	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	35.5	mi/h
Percent Free Flow Speed, PFFS	68.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1244 pc/h	639 pc/h
Base percent time-spent-following,(note-4) BPTSFd	80.6 %	
Adjustment for no-passing zones, fnp	17.3	
Percent time-spent-following, PTSFd	92.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.74	
Peak 15-min vehicle-miles of travel, VMT15	249	veh-mi
Peak-hour vehicle-miles of travel, VMT60	876	veh-mi
Peak 15-min total travel time, TT15	7.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.5	mi/h
Percent time-spent-following, PTSFd (from above)	92.0	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1244.3
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.45
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	565	veh/h
Opposing direction volume, Vo	1325	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	585	pc/h	1366	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	36.8	mi/h
Percent Free Flow Speed, PFFS	69.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	582 pc/h	1366 pc/h
Base percent time-spent-following,(note-4) BPTSFd	65.6 %	
Adjustment for no-passing zones, fnp	14.8	
Percent time-spent-following, PTSFd	70.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	218	veh-mi
Peak-hour vehicle-miles of travel, VMT60	848	veh-mi
Peak 15-min total travel time, TT15	5.9	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.8	mi/h
Percent time-spent-following, PTSFd (from above)	70.0	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	582.5
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.06
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2020 without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	566	veh/h
Opposing direction volume, Vo	1336	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	586	pc/h	1377	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	36.2	mi/h
Percent Free Flow Speed, PFFS	69.6	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	584	pc/h	1377	pc/h
Base percent time-spent-following,(note-4) BPTSFd	66.1	%		
Adjustment for no-passing zones, fnp	12.9			
Percent time-spent-following, PTSFd	69.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	117	veh-mi
Peak-hour vehicle-miles of travel, VMT60	453	veh-mi
Peak 15-min total travel time, TT15	3.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.2	mi/h
Percent time-spent-following, PTSFd (from above)	69.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	583.5
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.06
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Rolling		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	1325	veh/h
Opposing direction volume, Vo	565	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.7	
PCE for RVs, ER	1.0*		1.1	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.964	
Grade adj. factor,(note-1) fg	1.00		0.97	
Directional flow rate,(note-2) vi	1373	pc/h	623	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.6	mi/h
Average travel speed, ATSd	35.7	mi/h
Percent Free Flow Speed, PFFS	67.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.990
Grade adjustment factor,(note-1) fg	1.00	0.97
Directional flow rate,(note-2) vi	1366 pc/h	606 pc/h
Base percent time-spent-following,(note-4) BPTSFd	82.6 %	
Adjustment for no-passing zones, fnp	14.0	
Percent time-spent-following, PTSFd	92.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.81	
Peak 15-min vehicle-miles of travel, VMT15	512	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1988	veh-mi
Peak 15-min total travel time, TT15	14.3	veh-h
Capacity from ATS, CdATS	1671	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1671	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.7	mi/h
Percent time-spent-following, PTSFd (from above)	92.3	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1366.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.50
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1336	veh/h
Opposing direction volume, Vo	566	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1384	pc/h	586	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	2.0	mi/h
Average travel speed, ATSd	34.8	mi/h
Percent Free Flow Speed, PFFS	66.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1377 pc/h	584 pc/h
Base percent time-spent-following,(note-4) BPTSFd	83.0 %	
Adjustment for no-passing zones, fnp	14.9	
Percent time-spent-following, PTSFd	93.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.81	
Peak 15-min vehicle-miles of travel, VMT15	275	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1069	veh-mi
Peak 15-min total travel time, TT15	7.9	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.8	mi/h
Percent time-spent-following, PTSFd (from above)	93.5	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1377.3
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.50
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	579	veh/h
Opposing direction volume, Vo	1128	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	661	pc/h	1282	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	36.8	mi/h
Percent Free Flow Speed, PFFS	69.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	658 pc/h	1282 pc/h
Base percent time-spent-following,(note-4) BPTSFd	68.9 %	
Adjustment for no-passing zones, fnp	16.1	
Percent time-spent-following, PTSFd	74.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.39	
Peak 15-min vehicle-miles of travel, VMT15	247	veh-mi
Peak-hour vehicle-miles of travel, VMT60	869	veh-mi
Peak 15-min total travel time, TT15	6.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.8	mi/h
Percent time-spent-following, PTSFd (from above)	74.4	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	658.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.13
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2020 without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	584	veh/h
Opposing direction volume, Vo	1135	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	667	pc/h	1290	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	36.2	mi/h
Percent Free Flow Speed, PFFS	69.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	664 pc/h	1290 pc/h
Base percent time-spent-following,(note-4) BPTSFd	69.2 %	
Adjustment for no-passing zones, fnp	14.4	
Percent time-spent-following, PTSFd	74.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.39	
Peak 15-min vehicle-miles of travel, VMT15	249	veh-mi
Peak-hour vehicle-miles of travel, VMT60	876	veh-mi
Peak 15-min total travel time, TT15	6.9	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.2	mi/h
Percent time-spent-following, PTSFd (from above)	74.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	663.6
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.13
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd 1128 veh/h
Opposing direction volume, Vo 579 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1*	1.1
PCE for RVs, ER	1.0*	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.995	0.995
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1288 pc/h	661 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	36.2	mi/h
Percent Free Flow Speed, PFFS	68.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1282 pc/h	658 pc/h
Base percent time-spent-following,(note-4) BPTSFd	81.4 %	
Adjustment for no-passing zones, fnp	15.6	
Percent time-spent-following, PTSFd	91.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.76	
Peak 15-min vehicle-miles of travel, VMT15	481	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1692	veh-mi
Peak 15-min total travel time, TT15	13.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.2	mi/h
Percent time-spent-following, PTSFd (from above)	91.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1281.8
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.46
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2020 w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1135	veh/h
Opposing direction volume, Vo	584	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1296	pc/h	667	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	1.7	mi/h
Average travel speed, ATSd	35.1	mi/h
Percent Free Flow Speed, PFFS	67.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1290 pc/h	664 pc/h
Base percent time-spent-following,(note-4) BPTSFd	82.2 %	
Adjustment for no-passing zones, fnp	16.3	
Percent time-spent-following, PTSFd	93.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.76	
Peak 15-min vehicle-miles of travel, VMT15	258	veh-mi
Peak-hour vehicle-miles of travel, VMT60	908	veh-mi
Peak 15-min total travel time, TT15	7.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.1	mi/h
Percent time-spent-following, PTSFd (from above)	93.0	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1289.8
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.47
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2030 w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	605	veh/h
Opposing direction volume, Vo	1465	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	627	pc/h	1510	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	35.5	mi/h
Percent Free Flow Speed, PFFS	67.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	624 pc/h	1510 pc/h
Base percent time-spent-following,(note-4) BPTSFd	68.9 %	
Adjustment for no-passing zones, fnp	13.8	
Percent time-spent-following, PTSFd	72.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.37	
Peak 15-min vehicle-miles of travel, VMT15	234	veh-mi
Peak-hour vehicle-miles of travel, VMT60	908	veh-mi
Peak 15-min total travel time, TT15	6.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.5	mi/h
Percent time-spent-following, PTSFd (from above)	72.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	623.7
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.10
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2030 w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	606	veh/h
Opposing direction volume, Vo	1476	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	628	pc/h	1522	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	34.8	mi/h
Percent Free Flow Speed, PFFS	66.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	625 pc/h	1522 pc/h
Base percent time-spent-following,(note-4) BPTSFd	68.9 %	
Adjustment for no-passing zones, fnp	12.2	
Percent time-spent-following, PTSFd	72.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.37	
Peak 15-min vehicle-miles of travel, VMT15	125	veh-mi
Peak-hour vehicle-miles of travel, VMT60	485	veh-mi
Peak 15-min total travel time, TT15	3.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.8	mi/h
Percent time-spent-following, PTSFd (from above)	72.5	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	624.7
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.10
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2030 w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	1465	veh/h
Opposing direction volume, Vo	605	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1518	pc/h	627	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.6	mi/h
Average travel speed, ATSd	34.5	mi/h
Percent Free Flow Speed, PFFS	65.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1510 pc/h	624 pc/h
Base percent time-spent-following,(note-4) BPTSFd	85.4 %	
Adjustment for no-passing zones, fnp	13.4	
Percent time-spent-following, PTSFd	94.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.89	
Peak 15-min vehicle-miles of travel, VMT15	566	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2198	veh-mi
Peak 15-min total travel time, TT15	16.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.5	mi/h
Percent time-spent-following, PTSFd (from above)	94.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1510.3
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.55
Bicycle LOS	D

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2030 w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1476	veh/h
Opposing direction volume, Vo	606	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1529	pc/h	628	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	33.4	mi/h
Percent Free Flow Speed, PFFS	64.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1522 pc/h	625 pc/h
Base percent time-spent-following,(note-4) BPTSFd	85.4 %	
Adjustment for no-passing zones, fnp	14.2	
Percent time-spent-following, PTSFd	95.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.90	
Peak 15-min vehicle-miles of travel, VMT15	304	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1181	veh-mi
Peak 15-min total travel time, TT15	9.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	33.4	mi/h
Percent time-spent-following, PTSFd (from above)	95.5	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1521.6
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.55
Bicycle LOS	D

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2030 without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Rolling		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	624	veh/h
Opposing direction volume, Vo	1223	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.3	
PCE for RVs, ER	1.0*		1.1	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.983	
Grade adj. factor,(note-1) fg	0.98		1.00	
Directional flow rate,(note-2) vi	727	pc/h	1414	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	35.4	mi/h
Percent Free Flow Speed, PFFS	67.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	0.99	1.00
Directional flow rate,(note-2) vi	716 pc/h	1390 pc/h
Base percent time-spent-following,(note-4) BPTSFd	72.2 %	
Adjustment for no-passing zones, fnp	14.7	
Percent time-spent-following, PTSFd	77.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.41	
Peak 15-min vehicle-miles of travel, VMT15	266	veh-mi
Peak-hour vehicle-miles of travel, VMT60	936	veh-mi
Peak 15-min total travel time, TT15	7.5	veh-h
Capacity from ATS, CdATS	1671	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1671	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.4	mi/h
Percent time-spent-following, PTSFd (from above)	77.2	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	709.1
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.16
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2030 without Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd 629 veh/h
Opposing direction volume, Vo 1230 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	718	pc/h	1398	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	35.0	mi/h
Percent Free Flow Speed, PFFS	67.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	715 pc/h	1398 pc/h
Base percent time-spent-following,(note-4) BPTSFd	72.2 %	
Adjustment for no-passing zones, fnp	13.3	
Percent time-spent-following, PTSFd	76.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.42	
Peak 15-min vehicle-miles of travel, VMT15	143	veh-mi
Peak-hour vehicle-miles of travel, VMT60	503	veh-mi
Peak 15-min total travel time, TT15	4.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.0	mi/h
Percent time-spent-following, PTSFd (from above)	76.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	714.8
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.17
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2030 w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade		% Recreational vehicles	2	%
Grade: Length	0.25	mi	% No-passing zones	70	%
Up/down	3.0	%	Access point density	9	/mi

Analysis direction volume, Vd	1223	veh/h
Opposing direction volume, Vo	624	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1397	pc/h	713	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	35.0	mi/h
Percent Free Flow Speed, PFFS	66.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	0.92		1.00	
Directional flow rate,(note-2) vi	1511	pc/h	709	pc/h
Base percent time-spent-following,(note-4) BPTSFd	86.7	%		
Adjustment for no-passing zones, fnp	13.8			
Percent time-spent-following, PTSFd	96.1	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.89	
Peak 15-min vehicle-miles of travel, VMT15	521	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1835	veh-mi
Peak 15-min total travel time, TT15	14.9	veh-h
Capacity from ATS, CdATS	1692	veh/h
Capacity from PTSF, CdPTSF	1564	veh/h
Directional Capacity	1564	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.0	mi/h
Percent time-spent-following, PTSFd (from above)	96.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1389.8
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.50
Bicycle LOS	D

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2030 w-o Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1230	veh/h
Opposing direction volume, Vo	629	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1405	pc/h	718	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	1.6	mi/h
Average travel speed, ATSd	34.0	mi/h
Percent Free Flow Speed, PFFS	65.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1398 pc/h	715 pc/h
Base percent time-spent-following,(note-4) BPTSFd	84.6 %	
Adjustment for no-passing zones, fnp	15.1	
Percent time-spent-following, PTSFd	94.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.83	
Peak 15-min vehicle-miles of travel, VMT15	280	veh-mi
Peak-hour vehicle-miles of travel, VMT60	984	veh-mi
Peak 15-min total travel time, TT15	8.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.0	mi/h
Percent time-spent-following, PTSFd (from above)	94.6	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1397.7
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.51
Bicycle LOS	D

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	Existing with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	551	veh/h
Opposing direction volume, Vo	1268	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	571	pc/h	1307	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	37.4	mi/h
Percent Free Flow Speed, PFFS	70.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	568 pc/h	1307 pc/h
Base percent time-spent-following,(note-4) BPTSFd	64.5 %	
Adjustment for no-passing zones, fnp	15.8	
Percent time-spent-following, PTSFd	69.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.33	
Peak 15-min vehicle-miles of travel, VMT15	213	veh-mi
Peak-hour vehicle-miles of travel, VMT60	827	veh-mi
Peak 15-min total travel time, TT15	5.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	37.4	mi/h
Percent time-spent-following, PTSFd (from above)	69.3	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	568.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.05
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	Existing with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	551	veh/h
Opposing direction volume, Vo	1282	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	571	pc/h	1322	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	36.7	mi/h
Percent Free Flow Speed, PFFS	70.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	568 pc/h	1322 pc/h
Base percent time-spent-following,(note-4) BPTSFd	64.5 %	
Adjustment for no-passing zones, fnp	13.8	
Percent time-spent-following, PTSFd	68.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.33	
Peak 15-min vehicle-miles of travel, VMT15	114	veh-mi
Peak-hour vehicle-miles of travel, VMT60	441	veh-mi
Peak 15-min total travel time, TT15	3.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.7	mi/h
Percent time-spent-following, PTSFd (from above)	68.6	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	568.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.05
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	Existing with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	1268	veh/h
Opposing direction volume, Vo	551	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1314	pc/h	571	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	36.4	mi/h
Percent Free Flow Speed, PFFS	68.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1307 pc/h	568 pc/h
Base percent time-spent-following,(note-4) BPTSFd	81.5 %	
Adjustment for no-passing zones, fnp	15.3	
Percent time-spent-following, PTSFd	92.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.77	
Peak 15-min vehicle-miles of travel, VMT15	490	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1902	veh-mi
Peak 15-min total travel time, TT15	13.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.4	mi/h
Percent time-spent-following, PTSFd (from above)	92.2	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1307.2
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.47
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	Existing with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1282	veh/h
Opposing direction volume, Vo	551	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1328	pc/h	571	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	2.0	mi/h
Average travel speed, ATSd	35.2	mi/h
Percent Free Flow Speed, PFFS	67.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1322 pc/h	568 pc/h
Base percent time-spent-following,(note-4) BPTSFd	81.8 %	
Adjustment for no-passing zones, fnp	15.9	
Percent time-spent-following, PTSFd	92.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.78	
Peak 15-min vehicle-miles of travel, VMT15	264	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1026	veh-mi
Peak 15-min total travel time, TT15	7.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.2	mi/h
Percent time-spent-following, PTSFd (from above)	92.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1321.6
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.48
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co9
Analysis Year	Existing with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	560	veh/h
Opposing direction volume, Vo	1090	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	640	pc/h	1239	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	37.3	mi/h
Percent Free Flow Speed, PFFS	70.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	636 pc/h	1239 pc/h
Base percent time-spent-following,(note-4) BPTSFd	67.5 %	
Adjustment for no-passing zones, fnp	17.0	
Percent time-spent-following, PTSFd	73.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.37	
Peak 15-min vehicle-miles of travel, VMT15	239	veh-mi
Peak-hour vehicle-miles of travel, VMT60	840	veh-mi
Peak 15-min total travel time, TT15	6.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	37.3	mi/h
Percent time-spent-following, PTSFd (from above)	73.3	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	636.4
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.11
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	Existing with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	566	veh/h
Opposing direction volume, Vo	1101	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	646	pc/h	1251	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	36.7	mi/h
Percent Free Flow Speed, PFFS	70.6	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	643 pc/h	1251 pc/h
Base percent time-spent-following,(note-4) BPTSFd	67.8 %	
Adjustment for no-passing zones, fnp	15.1	
Percent time-spent-following, PTSFd	72.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.38	
Peak 15-min vehicle-miles of travel, VMT15	241	veh-mi
Peak-hour vehicle-miles of travel, VMT60	849	veh-mi
Peak 15-min total travel time, TT15	6.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.7	mi/h
Percent time-spent-following, PTSFd (from above)	72.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	643.2
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.11
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	Existing with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	1090	veh/h
Opposing direction volume, Vo	560	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1245	pc/h	640	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	36.6	mi/h
Percent Free Flow Speed, PFFS	69.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1239 pc/h	636 pc/h
Base percent time-spent-following,(note-4) BPTSFd	80.5 %	
Adjustment for no-passing zones, fnp	16.5	
Percent time-spent-following, PTSFd	91.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.73	
Peak 15-min vehicle-miles of travel, VMT15	464	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1635	veh-mi
Peak 15-min total travel time, TT15	12.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.6	mi/h
Percent time-spent-following, PTSFd (from above)	91.4	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1238.6
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.45
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	Existing with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1101	veh/h
Opposing direction volume, Vo	566	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1257	pc/h	646	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	35.5	mi/h
Percent Free Flow Speed, PFFS	68.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1251 pc/h	643 pc/h
Base percent time-spent-following,(note-4) BPTSFd	81.4 %	
Adjustment for no-passing zones, fnp	17.1	
Percent time-spent-following, PTSFd	92.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.74	
Peak 15-min vehicle-miles of travel, VMT15	250	veh-mi
Peak-hour vehicle-miles of travel, VMT60	881	veh-mi
Peak 15-min total travel time, TT15	7.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.5	mi/h
Percent time-spent-following, PTSFd (from above)	92.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1251.1
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.45
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	567	veh/h
Opposing direction volume, Vo	1328	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	587	pc/h	1369	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	36.8	mi/h
Percent Free Flow Speed, PFFS	69.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	585 pc/h	1369 pc/h
Base percent time-spent-following,(note-4) BPTSFd	65.8 %	
Adjustment for no-passing zones, fnp	14.7	
Percent time-spent-following, PTSFd	70.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	219	veh-mi
Peak-hour vehicle-miles of travel, VMT60	851	veh-mi
Peak 15-min total travel time, TT15	5.9	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.8	mi/h
Percent time-spent-following, PTSFd (from above)	70.2	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	584.5
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.07
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2020 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	567	veh/h
Opposing direction volume, Vo	1342	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	587	pc/h	1384	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	36.1	mi/h
Percent Free Flow Speed, PFFS	69.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	585 pc/h	1384 pc/h
Base percent time-spent-following,(note-4) BPTSFd	66.2 %	
Adjustment for no-passing zones, fnp	12.8	
Percent time-spent-following, PTSFd	70.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	117	veh-mi
Peak-hour vehicle-miles of travel, VMT60	454	veh-mi
Peak 15-min total travel time, TT15	3.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.1	mi/h
Percent time-spent-following, PTSFd (from above)	70.0	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	584.5
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.07
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	1328	veh/h
Opposing direction volume, Vo	567	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1376	pc/h	587	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.7	mi/h
Average travel speed, ATSd	35.8	mi/h
Percent Free Flow Speed, PFFS	67.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1369 pc/h	585 pc/h
Base percent time-spent-following,(note-4) BPTSFd	82.9 %	
Adjustment for no-passing zones, fnp	14.2	
Percent time-spent-following, PTSFd	92.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.81	
Peak 15-min vehicle-miles of travel, VMT15	513	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1992	veh-mi
Peak 15-min total travel time, TT15	14.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.8	mi/h
Percent time-spent-following, PTSFd (from above)	92.8	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1369.1
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.50
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1342	veh/h
Opposing direction volume, Vo	567	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1390	pc/h	587	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	2.0	mi/h
Average travel speed, ATSd	34.7	mi/h
Percent Free Flow Speed, PFFS	66.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1384 pc/h	585 pc/h
Base percent time-spent-following,(note-4) BPTSFd	83.1 %	
Adjustment for no-passing zones, fnp	14.8	
Percent time-spent-following, PTSFd	93.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.82	
Peak 15-min vehicle-miles of travel, VMT15	277	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1074	veh-mi
Peak 15-min total travel time, TT15	8.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.7	mi/h
Percent time-spent-following, PTSFd (from above)	93.5	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1383.5
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.50
Bicycle LOS	D

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	582	veh/h
Opposing direction volume, Vo	1130	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	665	pc/h	1284	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	36.8	mi/h
Percent Free Flow Speed, PFFS	69.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	661 pc/h	1284 pc/h
Base percent time-spent-following,(note-4) BPTSFd	69.0 %	
Adjustment for no-passing zones, fnp	16.0	
Percent time-spent-following, PTSFd	74.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.39	
Peak 15-min vehicle-miles of travel, VMT15	248	veh-mi
Peak-hour vehicle-miles of travel, VMT60	873	veh-mi
Peak 15-min total travel time, TT15	6.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.8	mi/h
Percent time-spent-following, PTSFd (from above)	74.4	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	661.4
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.13
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2020 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd 588 veh/h
Opposing direction volume, Vo 1141 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	672	pc/h	1297	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	36.1	mi/h
Percent Free Flow Speed, PFFS	69.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	668 pc/h	1297 pc/h
Base percent time-spent-following,(note-4) BPTSFd	69.4 %	
Adjustment for no-passing zones, fnp	14.2	
Percent time-spent-following, PTSFd	74.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.39	
Peak 15-min vehicle-miles of travel, VMT15	251	veh-mi
Peak-hour vehicle-miles of travel, VMT60	882	veh-mi
Peak 15-min total travel time, TT15	6.9	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.1	mi/h
Percent time-spent-following, PTSFd (from above)	74.2	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	668.2
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.13
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2020 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	1130	veh/h
Opposing direction volume, Vo	582	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1291	pc/h	665	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	36.1	mi/h
Percent Free Flow Speed, PFFS	68.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1284 pc/h	661 pc/h
Base percent time-spent-following,(note-4) BPTSFd	82.3 %	
Adjustment for no-passing zones, fnp	15.5	
Percent time-spent-following, PTSFd	92.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.76	
Peak 15-min vehicle-miles of travel, VMT15	482	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1695	veh-mi
Peak 15-min total travel time, TT15	13.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.1	mi/h
Percent time-spent-following, PTSFd (from above)	92.5	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1284.1
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.46
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2020 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1141	veh/h
Opposing direction volume, Vo	588	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1303	pc/h	672	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	1.7	mi/h
Average travel speed, ATSd	35.0	mi/h
Percent Free Flow Speed, PFFS	67.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1297 pc/h	668 pc/h
Base percent time-spent-following,(note-4) BPTSFd	82.1 %	
Adjustment for no-passing zones, fnp	16.1	
Percent time-spent-following, PTSFd	92.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.77	
Peak 15-min vehicle-miles of travel, VMT15	259	veh-mi
Peak-hour vehicle-miles of travel, VMT60	913	veh-mi
Peak 15-min total travel time, TT15	7.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.0	mi/h
Percent time-spent-following, PTSFd (from above)	92.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1296.6
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.47
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2030 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	607	veh/h
Opposing direction volume, Vo	1468	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	629	pc/h	1513	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	35.5	mi/h
Percent Free Flow Speed, PFFS	67.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	626 pc/h	1513 pc/h
Base percent time-spent-following,(note-4) BPTSFd	69.0 %	
Adjustment for no-passing zones, fnp	13.9	
Percent time-spent-following, PTSFd	73.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.37	
Peak 15-min vehicle-miles of travel, VMT15	235	veh-mi
Peak-hour vehicle-miles of travel, VMT60	911	veh-mi
Peak 15-min total travel time, TT15	6.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.5	mi/h
Percent time-spent-following, PTSFd (from above)	73.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	625.8
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.10
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2030 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	607	veh/h
Opposing direction volume, Vo	1482	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	629	pc/h	1528	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	34.7	mi/h
Percent Free Flow Speed, PFFS	66.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	626 pc/h	1528 pc/h
Base percent time-spent-following,(note-4) BPTSFd	69.4 %	
Adjustment for no-passing zones, fnp	12.2	
Percent time-spent-following, PTSFd	72.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.37	
Peak 15-min vehicle-miles of travel, VMT15	125	veh-mi
Peak-hour vehicle-miles of travel, VMT60	486	veh-mi
Peak 15-min total travel time, TT15	3.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.7	mi/h
Percent time-spent-following, PTSFd (from above)	72.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	625.8
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.10
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2030 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	1468	veh/h
Opposing direction volume, Vo	607	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1521	pc/h	629	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.6	mi/h
Average travel speed, ATSd	34.5	mi/h
Percent Free Flow Speed, PFFS	65.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1513 pc/h	626 pc/h
Base percent time-spent-following,(note-4) BPTSFd	86.1 %	
Adjustment for no-passing zones, fnp	13.4	
Percent time-spent-following, PTSFd	95.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.89	
Peak 15-min vehicle-miles of travel, VMT15	568	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2202	veh-mi
Peak 15-min total travel time, TT15	16.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.5	mi/h
Percent time-spent-following, PTSFd (from above)	95.6	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1513.4
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.55
Bicycle LOS	D

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Friday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2030 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.97	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1482	veh/h
Opposing direction volume, Vo	607	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1536	pc/h	629	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	33.4	mi/h
Percent Free Flow Speed, PFFS	64.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1528 pc/h	626 pc/h
Base percent time-spent-following,(note-4) BPTSFd	86.3 %	
Adjustment for no-passing zones, fnp	14.1	
Percent time-spent-following, PTSFd	96.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.90	
Peak 15-min vehicle-miles of travel, VMT15	306	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1186	veh-mi
Peak 15-min total travel time, TT15	9.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	33.4	mi/h
Percent time-spent-following, PTSFd (from above)	96.3	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1527.8
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.55
Bicycle LOS	D

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2030 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	85	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd 627 veh/h
Opposing direction volume, Vo 1225 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	716	pc/h	1392	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	35.6	mi/h
Percent Free Flow Speed, PFFS	67.6	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	713 pc/h	1392 pc/h
Base percent time-spent-following,(note-4) BPTSFd	72.1 %	
Adjustment for no-passing zones, fnp	14.7	
Percent time-spent-following, PTSFd	77.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.42	
Peak 15-min vehicle-miles of travel, VMT15	267	veh-mi
Peak-hour vehicle-miles of travel, VMT60	941	veh-mi
Peak 15-min total travel time, TT15	7.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.6	mi/h
Percent time-spent-following, PTSFd (from above)	77.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	712.5
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.17
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail NB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2030 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	50	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd 633 veh/h
Opposing direction volume, Vo 1236 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.0	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	723	pc/h	1405	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	34.9	mi/h
Percent Free Flow Speed, PFFS	67.2	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	719	pc/h	1405	pc/h
Base percent time-spent-following,(note-4) BPTSFd	72.3	%		
Adjustment for no-passing zones, fnp	13.2			
Percent time-spent-following, PTSFd	76.8	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.42	
Peak 15-min vehicle-miles of travel, VMT15	144	veh-mi
Peak-hour vehicle-miles of travel, VMT60	506	veh-mi
Peak 15-min total travel time, TT15	4.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.9	mi/h
Percent time-spent-following, PTSFd (from above)	76.8	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	719.3
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.17
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

HCS7: Two-Lane Highways Release 7.7

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado North of Project
Jurisdiction	Napa Co
Analysis Year	2030 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	70	%
Up/down	-	%	Access point density	9	/mi

Analysis direction volume, Vd	1225	veh/h
Opposing direction volume, Vo	627	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1399	pc/h	716	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.3	mi/h
Free-flow speed, FFSd	52.8	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	35.0	mi/h
Percent Free Flow Speed, PFFS	66.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1392 pc/h	713 pc/h
Base percent time-spent-following,(note-4) BPTSFd	84.5 %	
Adjustment for no-passing zones, fnp	14.3	
Percent time-spent-following, PTSFd	94.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.82	
Peak 15-min vehicle-miles of travel, VMT15	522	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1838	veh-mi
Peak 15-min total travel time, TT15	14.9	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.0	mi/h
Percent time-spent-following, PTSFd (from above)	94.0	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1392.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.51
Bicycle LOS	D

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DRR
Agency/Co.	CTG
Date Performed	2019-08-06
Analysis Time Period	Saturday PM Peak Hour
Highway	Silverado Trail SB
From/To	Silverado South of Project
Jurisdiction	Napa Co
Analysis Year	2030 with Project
Description	Paraduxx Winery

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.8	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	12	/mi

Analysis direction volume, Vd	1236	veh/h
Opposing direction volume, Vo	633	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1*		1.1	
PCE for RVs, ER	1.0*		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.995		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1412	pc/h	723	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.0	mi/h
Free-flow speed, FFSd	52.0	mi/h
Adjustment for no-passing zones, fnp	1.6	mi/h
Average travel speed, ATSd	33.9	mi/h
Percent Free Flow Speed, PFFS	65.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1405 pc/h	719 pc/h
Base percent time-spent-following,(note-4) BPTSFd	84.6 %	
Adjustment for no-passing zones, fnp	15.0	
Percent time-spent-following, PTSFd	94.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.83	
Peak 15-min vehicle-miles of travel, VMT15	281	veh-mi
Peak-hour vehicle-miles of travel, VMT60	989	veh-mi
Peak 15-min total travel time, TT15	8.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.8	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	33.9	mi/h
Percent time-spent-following, PTSFd (from above)	94.5	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1404.5
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.51
Bicycle LOS	D

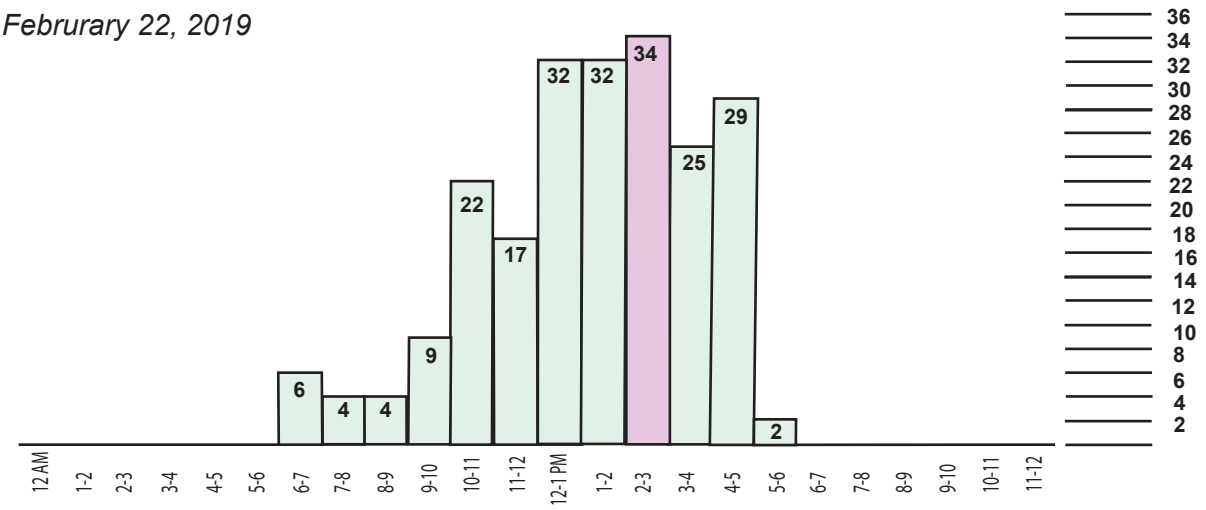
Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Appendix 5

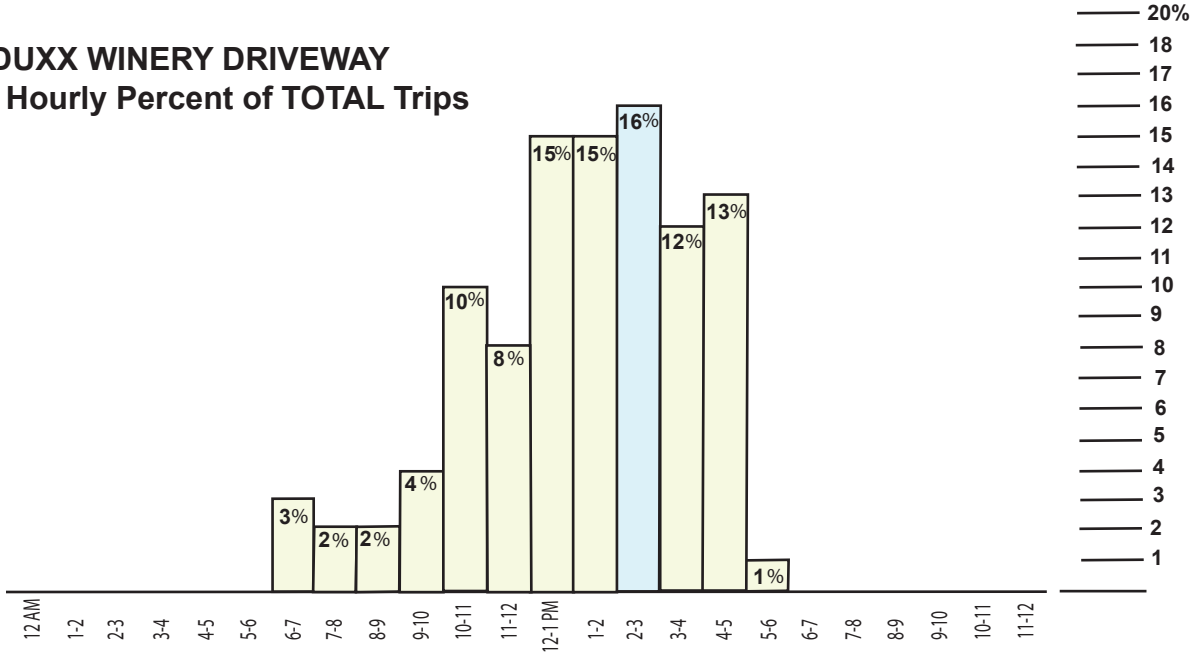
PARADUXX WINERY DRIVEWAY
Friday TOTAL Trips

Friday, Februrary 22, 2019



Friday, Februrary 22, 2019

PARADUXX WINERY DRIVEWAY
Friday Hourly Percent of TOTAL Trips



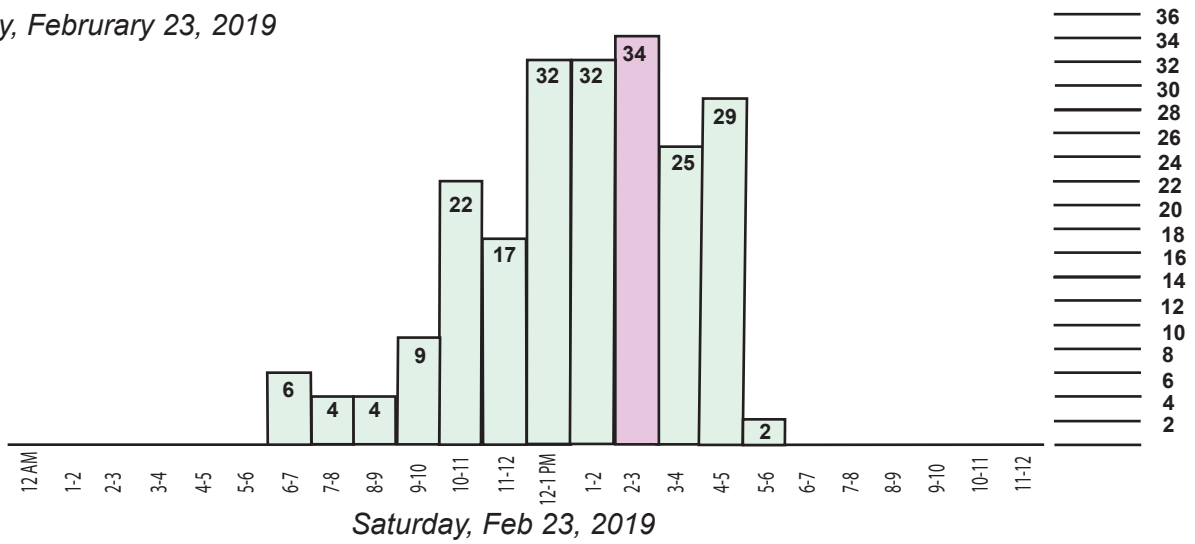
Friday, Februrary 22, 2019

Total In/Out - 229 Vehicles

Figure A-5 - Figure 1

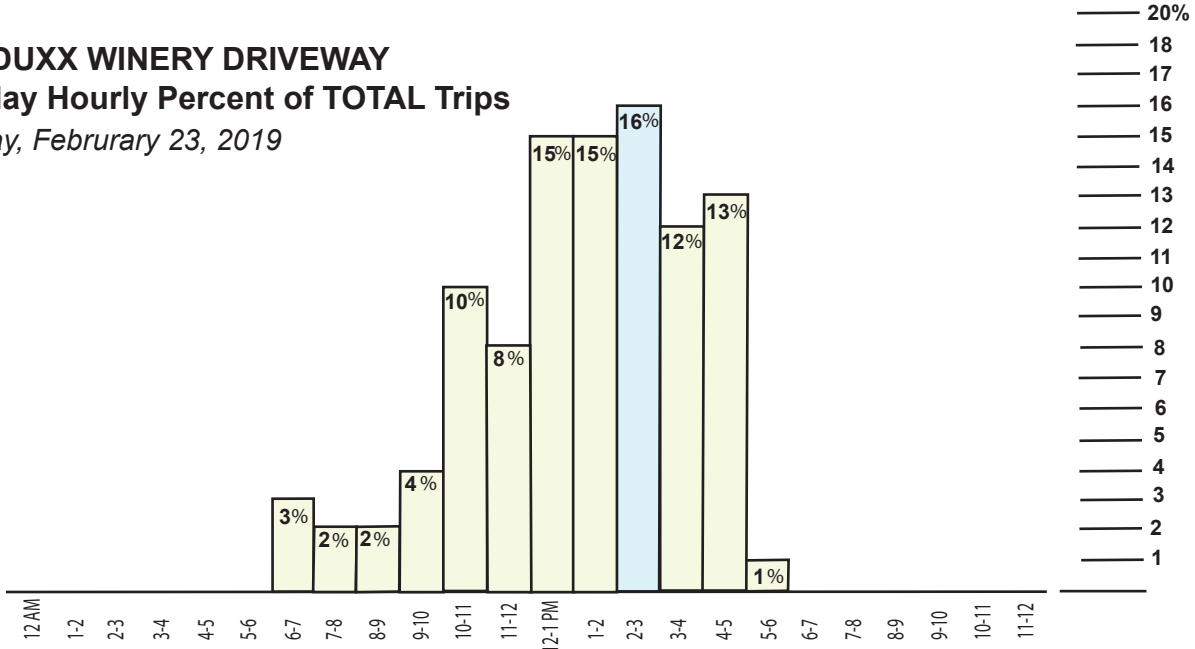
Friday Traffic Totals and Percentages
Paraduxx Winery (by Hour) - February 22, 2019

PARADUXX WINERY DRIVEWAY
Saturday TOTAL Trips
Saturday, Februrary 23, 2019



Saturday, Feb 23, 2019

PARADUXX WINERY DRIVEWAY
Saturday Hourly Percent of TOTAL Trips
Saturday, Februrary 23, 2019

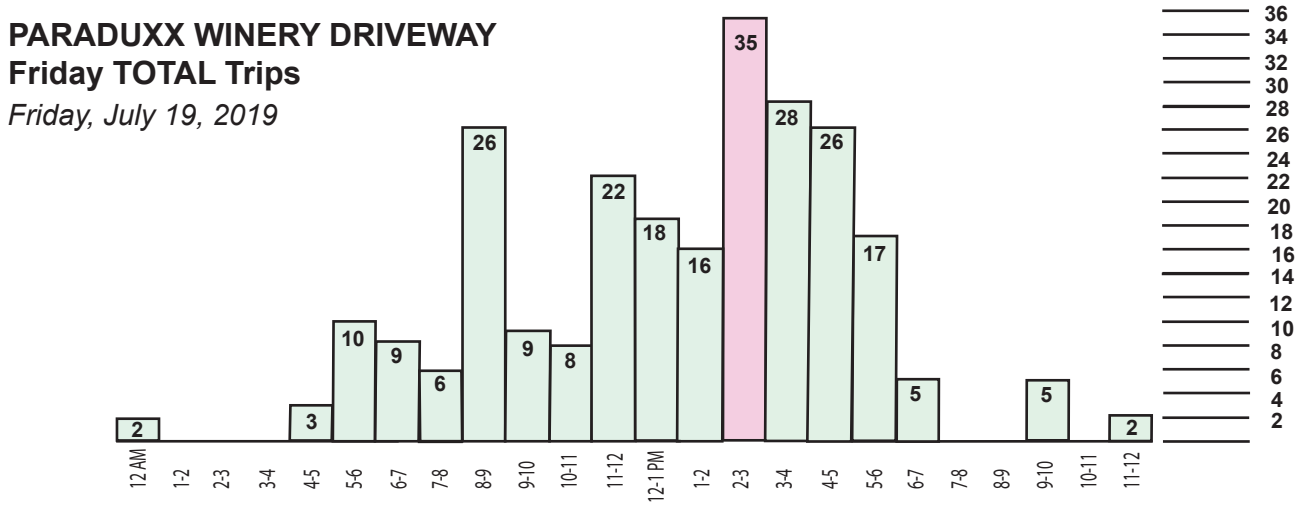


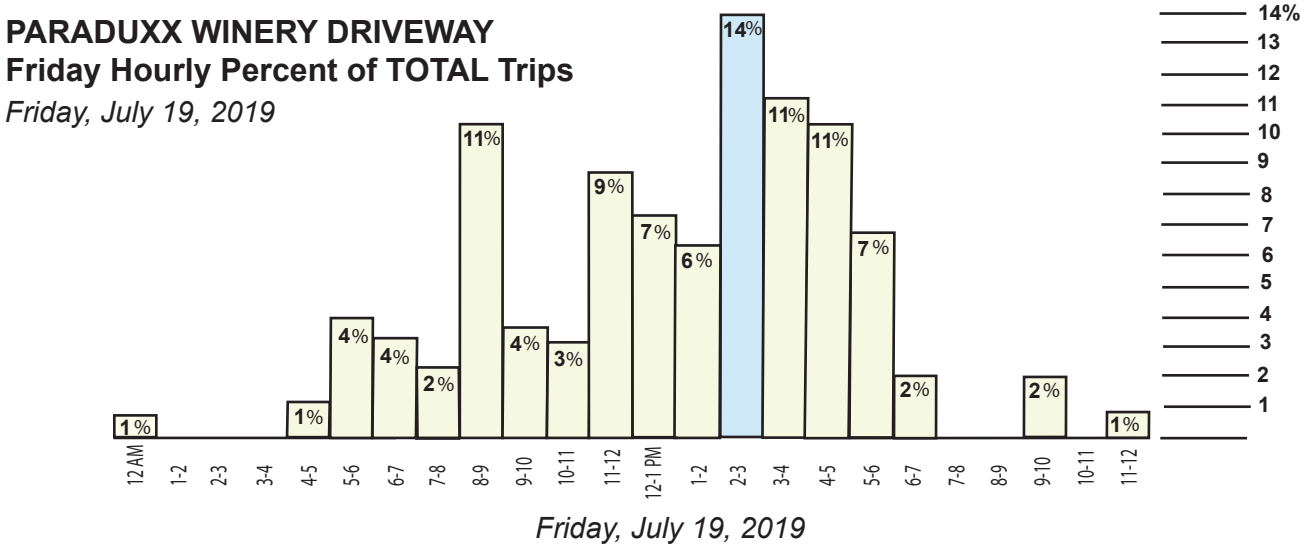
Saturday, Feb 23, 2019

Total In/Out - 217 Vehicles

Figure A-5 Figure 2

Saturday Traffic Totals and Percentages
Paraduxx Winery (by Hour) - February 23, 2019

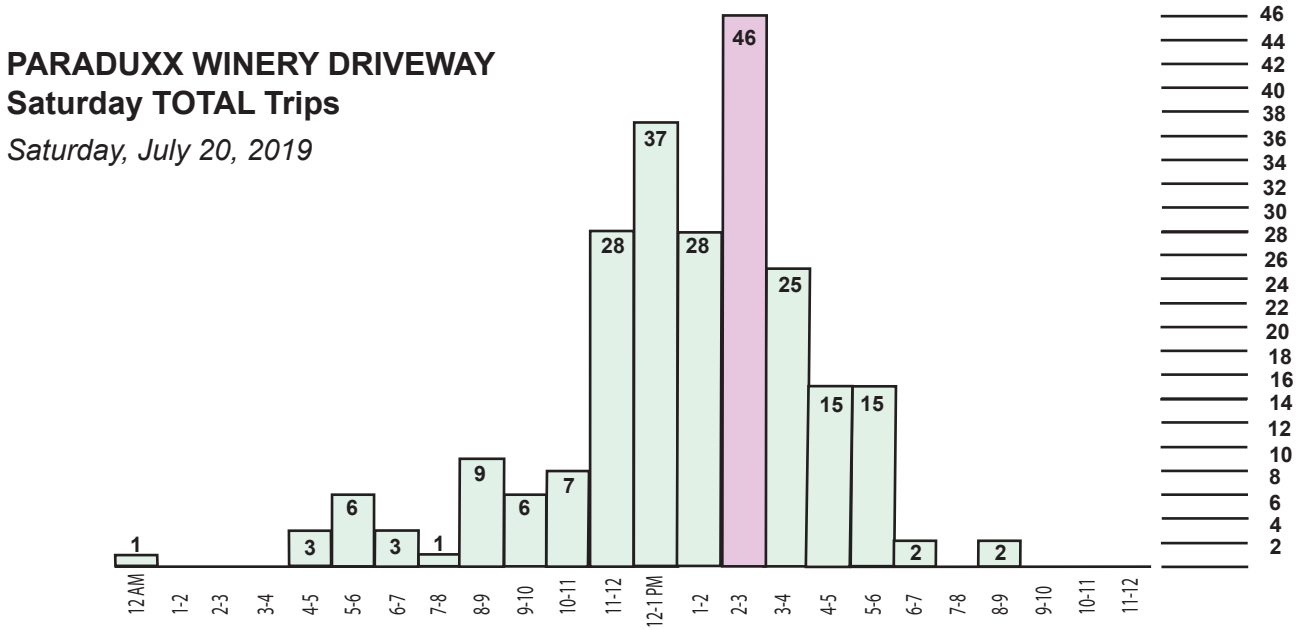




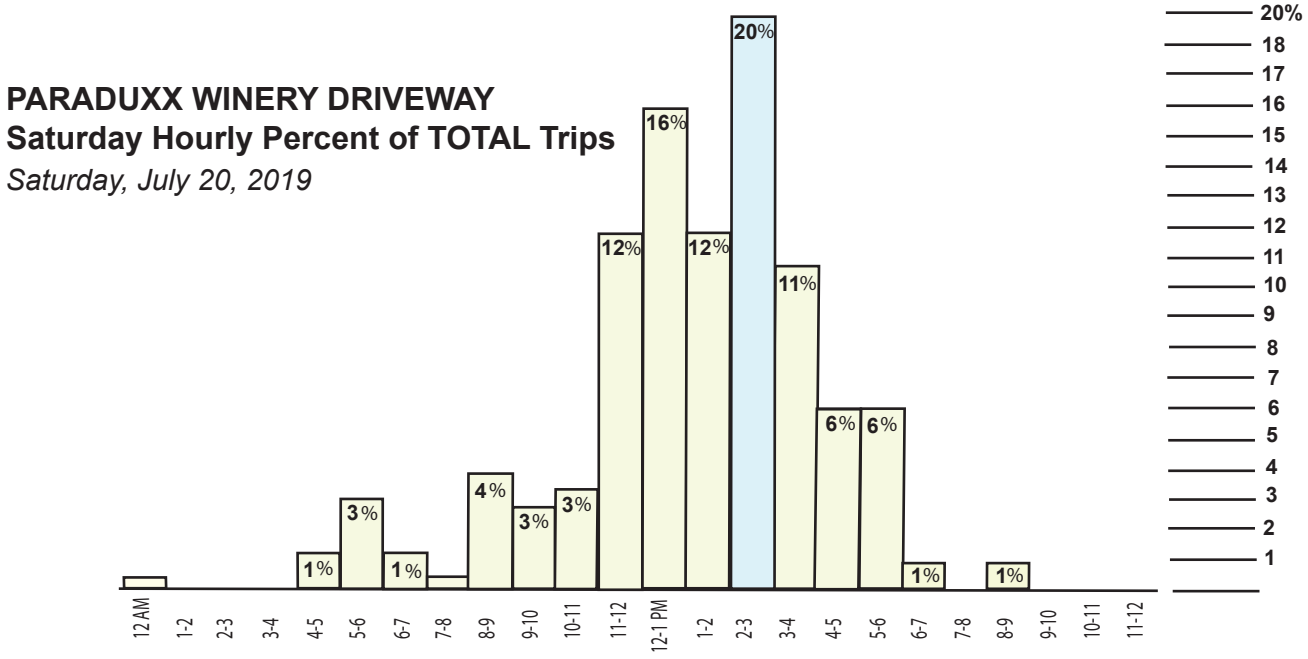
Total In/Out - 247 Vehicles

Figure A-5 - Figure 3

Friday Traffic Totals and Percentages
Paraduxx Winery (by Hour) - July 19, 2019



Saturday, July 20, 2019



Saturday, July 20, 2019

Total In/Out - 234 Vehicles

Figure A-5 - Figure 4

Saturday Traffic Totals and Percentages
Paraduxx Winery (by Hour) - July 20, 2019

Appendix 6

Appendix A-6

PARADUXX WINERY – EXISTING CONDITIONS

Winery Traffic Information / Trip Generation Sheet

Traffic during a Typical Weekday

Number of FT employees: 31 x 3.05 one-way trips per employee	=	95 daily trips.
Number of PT employees: 5 x 1.90 one-way trips per employee	=	10 daily trips.
Average number of weekday visitors: 40 / 2.6 visitors per vehicle x 2 one-way trips	=	32 daily trips.
Gallons of production: 200,000 1,000 x .009 truck trips daily[3] x 2 one-way trips	=	4 daily trips.
Total	=	141 daily trips.
Number of total weekday trips X .38	=	54 PM peak trips.

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 20 x 3.05 one-way trips per employee	=	60 daily trips.
Number of PT employees (on Saturdays): 5 x 1.90 one-way trips per employee	=	10 daily trips.
Average number of Saturday visitors: 50 / 2.8 visitors per vehicle x 2 one-way trips	=	36 daily trips.
Total	=	106 daily trips.
Number of total Saturday trips X .57	=	60 PM peak trips.

Traffic during a Crush Saturday

Number of FT employees (during crush): 25 x 3.05 one-way trips per employee	=	76 daily trips.
Number of PT employees (during crush): 5 x 1.90 one-way trips per employee	=	10 daily trips.
Average number of Saturday visitors: 50 / 2.8 visitors per vehicle x 2 one-way trips	=	36 daily trips.
Gallons of production: 200,000 / 1,000 x .009 truck trips daily x 2 one-way trips	=	4 daily trips.
Avg. annual tons of grape on-haul: 30 x.11 truck trips daily [4] x 2 one-way trips	=	8 daily trips
Total	=	134 daily trips.
Number of total Saturday trips X .57	=	76 PM peak trips

Largest Marketing Event – Additional Traffic

Number of event staff (largest event): 22 x 2 one-way trips per staff person	=	44 trips.
Number of visitors (largest event): 500 / 2.8 visitors per vehicle x 2 one-way trips	=	358 trips.
Number of special event truck trips (largest event): 2 x 2 one-way trips	=	4 trips.

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[3]Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).
[4]Assume 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).

Appendix A-6

PARADUXX WINERY – EXISTING CONDITIONS

Winery Traffic Information / Trip Generation Sheet

Traffic during a Crush Weekday

Number of FT employees: 36 x 3.05 one-way trips per employee	=	110	daily trips.
Number of PT employees: 5 x 1.90 one-way trips per employee	=	10	daily trips.
Average number of weekday visitors: 50 / 2.6 visitors per vehicle x 2 one-way trips	=	39	daily trips.
Gallons of production: 200,000 1,000 x .009 truck trips daily[3] x 2 one-way trips	=	4	daily trips.
Total	=	163	daily trips.
Number of total weekday trips X .57 *	=	93	PM peak trips.

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* .57 rather than .38 factor requested by Public Works due to peak traffic hour on Friday afternoon along Silverado Trail occurring from 3:15 to 4:15, peak activity time at the winery.

[3]Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).
[4]Assume 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).

Appendix A-6

PARADUXX WINERY – EXISTING + PROJECT CONDITIONS

Winery Traffic Information / Trip Generation Sheet

Traffic during a Typical Weekday

Number of FT employees: 31 x 3.05 one-way trips per employee	=	95 daily trips.
Number of PT employees: 5 x 1.90 one-way trips per employee	=	10 daily trips.
Average number of weekday visitors: 50 / 2.6 visitors per vehicle x 2 one-way trips	=	38 daily trips.
Gallons of production: 300,000 1,000 x .009 truck trips daily[3] x 2 one-way trips	=	5 daily trips.
Total	=	148 daily trips.
Number of total weekday trips X .38	=	57 PM peak trips.

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 20 x 3.05 one-way trips per employee	=	60 daily trips.
Number of PT employees (on Saturdays): 5 x 1.90 one-way trips per employee	=	10 daily trips.
Average number of Saturday visitors: 120 / 2.8 visitors per vehicle x 2 one-way trips	=	86 daily trips.
Total	=	156 daily trips.
Number of total Saturday trips X .57	=	89 PM peak trips.

Traffic during a Crush Saturday

Number of FT employees (during crush): 25 x 3.05 one-way trips per employee	=	76 daily trips.
Number of PT employees (during crush): 5 x 1.90 one-way trips per employee	=	10 daily trips.
Average number of Saturday visitors: 144 / 2.8 visitors per vehicle x 2 one-way trips	=	105 daily trips.
Gallons of production: 300,000 / 1,000 x .009 truck trips daily x 2 one-way trips	=	5 daily trips.
Avg. annual tons of grape on-haul: 45 x.11 truck trips daily [4] x 2 one-way trips	=	10 daily trips
Total	=	206 daily trips.
Number of total Saturday trips X .57	=	118 PM peak trips

Largest Marketing Event – Additional Traffic

Number of event staff (largest event): 18 x 2 one-way trips per staff person	=	36 trips.
Number of visitors (largest event): 400 / 2.8 visitors per vehicle x 2 one-way trips	=	286 trips.
Number of special event truck trips (largest event): 2 x 2 one-way trips	=	2 trips.

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[3]Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).
[4]Assume 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).

Appendix A-6

PARADUXX WINERY – EXISTING + PROJECT CONDITIONS

Winery Traffic Information / Trip Generation Sheet

Traffic during a Crush Weekday

Number of FT employees: 36 x 3.05 one-way trips per employee	=	110 daily trips.
Number of PT employees: 5 x 1.90 one-way trips per employee	=	10 daily trips.
Average number of weekday visitors: 144 / 2.6 visitors per vehicle x 2 one-way trips	=	111 daily trips.
Gallons of production: 300,000 1,000 x .009 truck trips daily[3] x 2 one-way trips	=	5 daily trips.
Total	=	236 daily trips.
Number of total weekday trips X .57 *	=	135 PM peak trips.

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* .57 rather than .38 factor requested by Public Works due to peak traffic hour on Friday afternoon along Silverado Trail occurring from 3:15 to 4:15, peak activity time at the winery.

[3]Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).
[4]Assume 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).