Traffic Study Report

Proposed AXR Napa Valley Use Modification Project

Final Submittal

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Executive Summary

The proposed AXR Napa Valley Use Modification project consists of moderate increases in production, visitation, employment, and marketing events to allow the Winery to respond to changing economic conditions. The Winery is located at 3199 St. Helena Highway (SR 29) in St. Helena, Napa County--- (**see Figure 1.1--Project Vicinity Map**). Wine production using primarily on-site grapes is proposed to increase from 20,000 to 35,000 gallons per year. Employment would increase by ten (10) full-time employees (weekday) and four (4) full-time employees on the weekend. Part-time employment would increase by five (5) employees (weekday) and be *reduced* by six (6) employees on the weekend. Daily visitation would increase by 40 guests per day from 20 visitors to 60 visitors. A maximum of 420 guests per week would visit the Winery. Finally, the requested marketing activities would include 31 annual events with a maximum attendance of 150 guests (three times per year). A VMT/TDM reduction plan is proposed with the development (even with minimal increases in proposed Use Modification traffic). Based on input from Napa County Traffic Engineering staff, four intersections along St. Helena Highway were analyzed for existing, near-term, and cumulative conditions with and without the proposed project. These included the Bale Lane, AXR Napa Valley driveways (north and south), and Lodi Lane intersections along St. Helena Highway. As part of overall project circulation improvements, a new northbound left-turn lane on St. Helena Highway would be constructed at the project's south driveway entrance. In addition, specific arterial segments of Bale Lane, St. Helena Highway, and Lodi Lane were evaluated for peak hour weekday operating conditions.

Based on analyses of Existing, Near-Term, and Cumulative traffic conditions with and without the project; the following findings and recommendations are presented:

1. Existing (No Project) Conditions

All study intersections along St. Helena Highway are currently operating at LOS C or better during both the weekday (Friday) PM peak hour and weekend (Saturday) midday peak hour for the stop-sign controlled movements from the minor streets onto St. Helena Highway.. Based on collision history analysis, the study intersections also experience accident rates slightly lower than the State average for similar facilities based on the number of "rear-end" and "broadside" accidents. None of the four study intersections qualify for the peak hour signal warrant under Existing Conditions

Arterial operation is acceptable (LOS D or better) on the Bale Lane, St. Helena Highway (north of Lodi Lane) and Lodi Lane segments during both the weekday PM peak and weekend midday peak hours.

2. Near-Term (No Project) Conditions

Under Near-Term Year 2025 (No Project) conditions, approved project traffic was added to existing traffic volumes to account for increased growth within the project study area. Specifically, two approved/pending projects were identified from the County's "Current Project List" located south of the project site in the Lodi Lane Area. These included both the "Inn at the Abbey" and "Duckhorn Vineyards." Combined, the two projects are expected to generate 50 weekday PM peak hour trips and 74 weekend (Saturday) peak hour trips. With background growth from the NVTA model (1.46%/year) and approved/pending project trips added to existing volumes, the four study intersections along St. Helena Highway would be operating at LOS D during both the weekday and weekend peak hours.

Based on increases in traffic volumes from Near-Term (No Project) traffic growth on St. Helena Highway the three arterial segments would be operating at LOS D or better during the Friday and Saturday peak hours.

3. Cumulative Year 2040 (No Project) Conditions

With Cumulative Year 2040 (No Project) conditions, cumulative volume projections for St. Helena Highway were reviewed from the Solano Napa Valley Transportation Authority (NVTA) Activity Based Model (SNABM). Using the growth in volumes between 2015 and 2040 in Napa County, overall growth would increase by 37% over a 25-year period or 1.46% per year.[1] Cumulative Year 2040 (No Project) conditions represent an approximate 17-year period or 24.82% increase in existing volumes to allow for both local and regional growth.

[1] Solano Transportation Authority (STA) | Napa Valley Transportation Authority (NVTA, Solano Napa Activity – Based Model (SNABM), Model Documentation, Table 28, August 27, 2020.

With Cumulative Year 2040 (No Project) traffic growth added to existing volumes, the three of the four study intersections along St. Helena Highway would be operating.at LOS D or better during the weekday (Friday) PM peak hour and the weekend (Saturday) midday peak hour with the exception of the Lodi Lane intersection. At this location, the Lodi Lane/SR 29 intersection operation is projected at LOS E (39.4 seconds of delay) during the Friday PM peak hour.

Based on increases in traffic volumes from Cumulative Year 2040 (No Project) traffic growth on St. Helena Highway the three arterial segments would be operating at LOS D or better during the Friday and Saturday peak hours.

Proposed Project Impacts

4. Trip Generation

The proposed project daily and peak hour trip generation was conservatively based on Napa County Trip Generation ratios for winery production, employment, and visitation (see **Appendix D**). Based on the most recent County ratios, the project is estimated to generate 92 net new daily trips with 25 weekday PM peak hour trips and 49 net new weekend daily trips with 18 Saturday midday peak hour trips.

5. Intersection/Arterial Impacts

With proposed project traffic, intersection operation along St. Helena Highway at Bale Lane, AXR Napa Valley driveways (north and south), and Lodi Lane would remain unchanged from "No Project" levels under Existing, Near-Term, and Cumulative Year 2040 conditions. Significant improvements in intersection LOS and safety at the project's south driveway would be realized due to the construction of the northbound left-turn on SR 29. The four study intersections would continue to operate at LOS D or better during both the weekday and weekend peak hours under Existing Plus Project and Near-Term Plus Project conditions. Under Cumulative Year 2040 Plus Project conditions, the Lodi Lane/SR 29 intersection would operate at LOS E during the weekday PM peak hour. However, the proposed project would contribute less than five (5) seconds of additional delay to the intersection. In addition, the proposed project trips at this intersection represent less than 10 percent of the anticipated growth during each peak hour. A review of previous transportation studies conducted for adjacent Use Modification projects along Lodi Lane and SR 29 recommend the following for the Lodi Lane/SR 29 intersection:

- It is recommended that the westbound approach at the Lodi Lane/SR 29 intersection be restriped to include a dedicated right-turn lane. The proportional fair share costs to the proposed project would be 1% or less and could be shared with other approved/pending projects (Inn at the Abbey & Duckhorn Vineyards).[2]

The Bale Lane, AXR Napa Valley Driveways (north and south), and Lodi Lane intersections at St. Helena Highway would not qualify for the peak hour signal warrant under any "with project" scenarios including Existing, Near-Term, and Cumulative Year 2040 conditions.

Arterial LOS would remain unchanged from "No Project" levels under Existing, Near-Term, and Cumulative Year 2040 conditions. All three roadway segments would operate at LOS D or better during the weekday and weekend peak hours.

Site Access/Design Parameters

6. Driveway Access

AXR Napa Valley is served by two (2) driveway connections to/from SR 29. The primary driveway (south driveway) is located at 3199 St. Helena Highway (SR 29). With proposed Use Modifications, driveway access to the AXR Napa Valley Winery would be improved to provide a northbound left-turn lane on SR 29 at the project's south driveway. As directed, all existing and proposed project trips will be inbound from the south driveway, circulate and/or park on the site, then exit outbound from the north project driveway. The south project driveway will be limited to inbound access only for northbound left-turns and southbound right-turns. The north project driveway will be limited to outbound access only for eastbound right-turn movements from the site(south on SR 29).

The south project driveway will be signed for outbound flow "Do Not Enter" (MUTCD, R5-1) for internal traffic flow with sign(s) facing west towards the main Winery on-site building to prevent outbound flow. For the north project driveway, current driveway signage and limited vehicle access (right-turns-only) outbound would remain unchanged from existing conditions. The north project driveway is currently signed for "No Left-Turn" (MUTCD, R3-2) and "Do Not

[2] W-Trans, Traffic Impact Study for the Duckhorn Vineyards Use Permit Modification, June 10, 2021.

Enter" (MUTCD, R5-1) for vehicles on SR 29. In addition, outbound motorists are instructed for "Right-Turns Only" (CA MUTCD, R3-5R).

The two project driveways working in tandem serve to provide three purposes:

1. Disperse project-generated daily and peak hour vehicle trips;
2. Improve vehicle safety and access at the south project driveway for northbound left-turn movements from the primary access highway (SR 29) by providing a dedicated left-turn lane;
3. Provide more uniform one-way traffic flow within the project site with clear inbound/outbound directions.

The five-year collision analysis conducted for the segment of State Route 29 adjacent to proposed project driveways indicates that there is not a vehicle collision issue associated with vehicle access to/from the highway. The roadway segment collision analysis evaluated SR 29 1,000 feet north and south of the AXR Napa Valley driveways. As shown in **Table 2.3,** the roadway segment experienced one (1) collision over the past five years with a calculated collision rate below the State average. The recorded collision was a "broadside" on the east side of the highway where a motorist was off the shoulder of the highway and was pulling back into through-traffic when the collision occurred. This type of maneuver would be difficult to resolve. However, the installation of a new left-turn lane at the project's south driveway will improve vehicle safety on SR 29 by removing left-turning vehicles into the project site from northbound through-traffic on St. Helena Highway at shown in **Figure 7.1**.

7. Left-Turn-Lane Analysis

At the County's request, a left-turn lane warrant analysis was conducted for the proposed project's southern driveway at State Route 29. (As noted, the proposed project will install a dedicated northbound left-turn lane at this driveway). Based on Napa County's Road and Street Standards for left-turn lane installation, the left-turn lane warrant evaluated for the south project driveway was based on average daily traffic (ADT) volumes generated at the proposed project driveway verses ADT volumes on State Route 29. Based on these Napa County ADT warrant graph criteria, a project will meet the left-turn lane warrant when the volumes fall above the plotted graph line on the chart. In the case of the proposed project, focused project ADT generated at the inbound south driveway would equal 116 daily trips with 15,700 daily trips on Deer Park Road and fall above the minimum ADT volumes for installation of a left-turn lane (see Napa County Left-Turn Lane Warrant Analysis—**Appendix F**).

8. Caltrans Review

Recent Caltrans review of the proposed project has focused on the placement of recommended driveway signing as well as the overall design exception request of the planned northbound left-turn on SR 29 at the site's south driveway (*Luana Chen, Caltrans District 4, Local Development Review, 9-9-25*). As a result, an encroachment permit will be submitted to Caltrans that will include the following two design components as follows:

- The location of the "Do Not Enter" sign for internal traffic flow at the south project driveway will be depicted on the drawings/plans submitted as part of the Caltrans encroachment permit application.
- A Design Standards Decision Document (DSDD) to justify any nonstandard features of the northbound left-turn lane design on SR 29 at the south project driveway will be submitted with the Caltrans encroachment permit application.

9. Vehicle Site Distance

Radar speed surveys on SR 29 were conducted for the roadway in the project area. The "critical" vehicle speed (the speed at which 85% of all surveyed vehicles travel at or below) along SR 29 was measured at 45 mph at the project driveway. The posted speed limit in the project driveway area is 50 mph. Caltrans' design standards indicate that measured vehicle speeds require a stopping sight distance of 430 feet both north and south of the driveway measured along the travel lanes of St. Helena Highway. Based on field measurements, sight distance from the AXR Napa Valley driveways to the north on the St. Helena Highway is approximately 520 feet (north driveway) and 700 feet (south driveway). Sight distance from the existing driveways to the south is in excess of 600 feet. Therefore, the sight distance recommendations would be met for the speed limit and measured vehicle speeds.

10. Internal Circulation

The existing AXR Napa Valley project driveways from St. Helena Highway provide vehicle access east-west (inbound/outbound) to the Winery tasting and production buildings (**see Figure 6.1—Project Site Plan**). The inbound south driveway extends a short distance (250-feet) in a northwest direction from the highway through vineyard areas to the main AXR Napa Valley building (tours and tastings). A large ADA parking space is located on the south side of the main Winery building. The south AXR Napa Valley driveway forms a circular connection with the outbound north AXR Napa Valley driveway immediately north of the main building. Guests can be picked-up/dropped-off from the driveway area in front of the main Winery building, but no vehicle parking is allowed in this area. The outbound north AXR Napa Valley driveway extends west past the main Winery building to provide access to the Winery production building (Barn) and parking areas. Vehicle parking is provided off the north project driveway as well as between the two Winery buildings.

Vehicle Miles Traveled

Based on Napa County VMT guidelines, the following criteria would screen the proposed AXR Napa Valley Use Modification project from further VMT analysis (see Section 8—Vehicle Miles Traveled). However, a TDM plan is suggested consistent with County policies and guidelines.

Given the largely rural nature of Napa County, a reasonable screening approach is to apply a combination of the concepts and guidelines expressed in both the OPR Technical Advisory and the Napa County TIS Guidelines. Development projects proposed in Napa County can use the following structure to determine what level of VMT analysis will be required:

A Project modifying an existing facility that would generate additional trips where the net cumulative result of all project modifications after January 1, 2022 would generate less than 110 net new daily passenger vehicle and truck trips.

a. Project is not required to prepare a TIS

b. Project is presumed to have a less-than-significant environmental impact for VMT

c. Applicant is encouraged to describe the measures they are taking and/or plan to take that would reduce the Project's trip generation and/or VMT

Based on the above Napa County VMT analysis and criteria, the proposed project is calculated to generate 92 net new daily trips on a weekday (maximum) and satisfies all requirements to be screened out and not require VMT analysis.

Transportation Demand Management

TDM Plan

The following measures are suggested and/or occurring to further reduce the demand of vehicles to/from the site. Given the nature of the proposed Use Modification with moderate increases in visitation, employment, and marketing events, large-scale TDM measures are not practical given the overall size of the Winery operations. However, specific AXR Napa Valley-focused TDM measures are described in some detail below.

Visitor Tours and Tastings/Marketing Events:

- When smaller marketing events are being held at the Winery (25 guests), the combination of tours/tastings and marketing events shall not exceed 60 daily visitors.
- When large marketing events occur seven times per year (75-150 guests), tours/tasting visitors shall not be allowed on those days.
- To the maximum extent feasible, scheduling of tours and tastings shall not occur during peak weekday travel times between 4:00-6:00 p.m.
- When making appointments for all guests and visitors, indicate the existing Caltrans access restrictions at the SR 29--AXR Napa Valley north project driveway (right-turn outbound only) with inbound flow only at the south project driveway. Refer them to the Winery's website for directions and instructions.

Shuttles, Hire Car, Limousines

- To the extent possible, shuttle and other high occupancy vehicles shall transport guests to marketing events or tours and tastings for groups of 25 persons or more, with all vehicles parking on-site in designated areas.

Employees:

In addition to the employee TDM measures currently embedded in Winery operations, the following is suggested:

- Staggered/Flextime employee work hours: The winery will make efforts to have employees who do not live on-site arrive and/or depart the premises outside of the peak commute periods. For example, wine production employees would be encouraged to arrive prior to 7:00 a.m. and to depart before 3:00 p.m. (before 12:00 p.m. on the weekends). The exception would be during the crush/harvest season. Employees working in the visitor-serving capacities would be encouraged to arrive after 9:00 a.m. and depart after 6:00 p.m. (after 4:00 p.m. on weekends);
- Carpool/Vanpool (Bay Area Commuter Benefits Program): Winery enrolls in program and notifies employees and subsidizes carpooling activities per program details;
- Provide and Maintain Bicycle Racks for Employees/Visitors: Provide and maintain bicycle racks for use by employees/visitors. Provide other resources associated with bicycle uses;
- Delivery Off-Peak Scheduling: The Winery will endeavor to schedule deliveries during off-peak commute times.

General:

- Ride Share/Car Free Operations: The winery will make efforts to encourage ride shares and “car free” tourism as described in the program of the Napa Valley Destination Council and Napa Valley Transportation Agency.
- Napa Valley Forward Program: The Winery can enter into an agreement with the agency’s designated commuting hub platform to provide information to the Winery’s traffic reduction efforts.

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1. Introduction

The following report provides a focused traffic impact analysis (TIA), vehicle miles traveled (VMT), and transportation demand management (TDM) plan for the proposed AXR Napa Valley Use Permit Modification project located at 3199 St. Helena Highway North (State Route 29) in St. Helena (see **Figure 1.1**—Project Vicinity Map). Review of the initial project work-scope was provided by Napa County Planning, Building, and Environmental Services (PBES), Department of Public Works.[3] As a result of Napa County comments, the analysis has been refined to reflect their concerns and direction associated with potential transportation impacts from proposed project Use Modifications. Specifically, a new northbound left-turn lane will be installed at the project site's south driveway to improve overall vehicle access and safety on St. Helena Highway.

Based on the most recent detailed project description, the use permit modification will involve increased activities in wine production, employment, visitation, and marketing events. Existing project access from St. Helena Highway (inbound) at the project driveways has historically been limited to right-turns only by historic agreements with Caltrans. However, as part of the revised project description, a northbound left-turn lane will be installed on SR 29 consistent with both Caltrans and Napa County Street and Roadway design standards. Therefore, one of the key tasks of the TIA is to evaluate the operation of the two major intersections providing access to the project site located on St. Helena Highway north and south of the existing project driveway for vehicle delay, queuing, and safety.

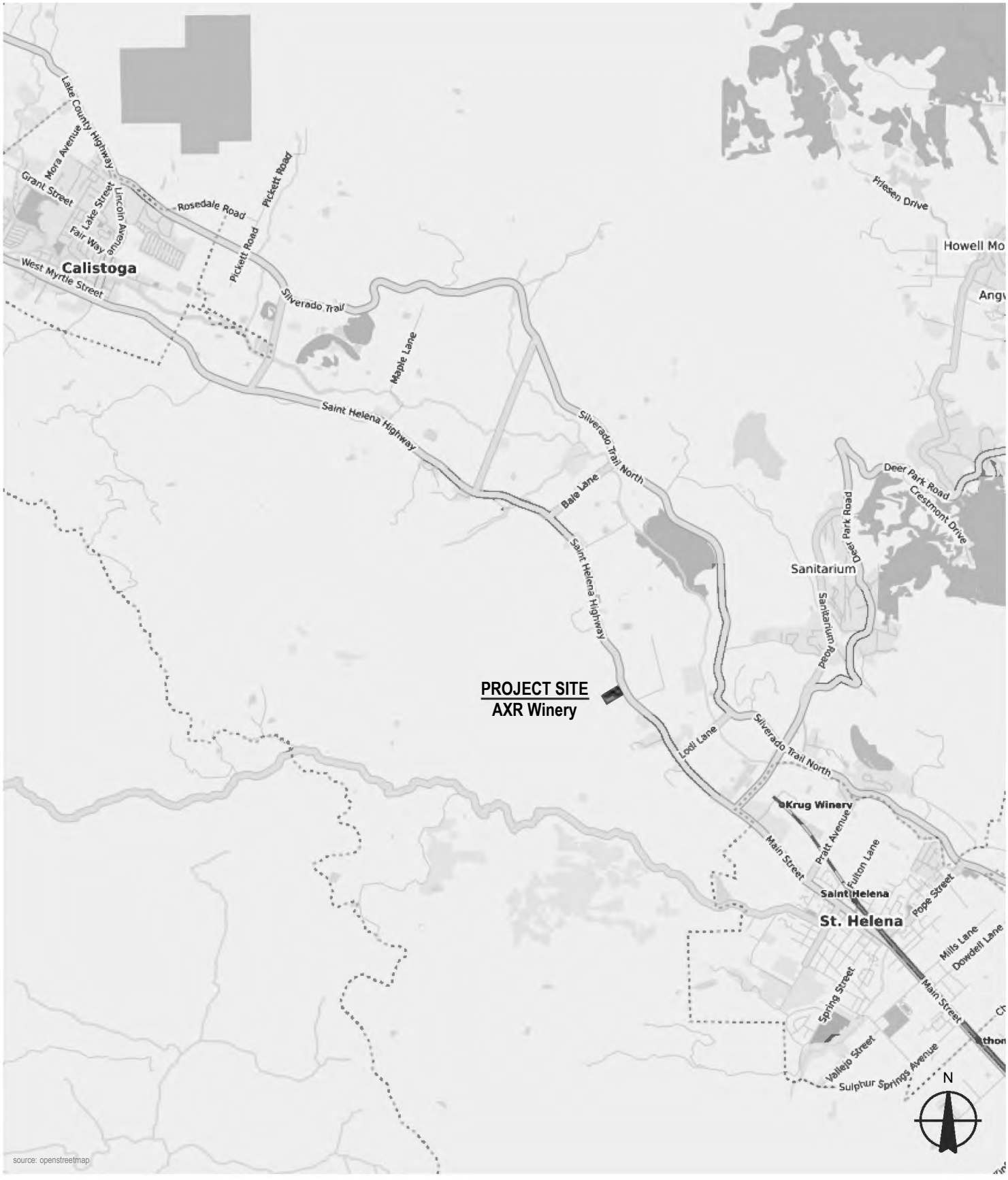
Based on Updated Napa County transportation guidelines, potential project impacts would represent the increase from current use permit activities and proposed project use modification changes. The resulting net increase in the proposed project daily trip generation will guide how overall impacts are assessed and aide County staff for the proposed project's environmental review.

Using recent Napa County transportation guidelines that include TIA/VMT/TDM policies (Napa County 2022), GHD has analyzed existing, near-term (approved), and cumulative conditions with and without the proposed project. In addition, a vehicle collision analysis has been conducted focusing on Lodi Lane Road and Bale Lane as primary north-south access intersection(s) and the along the adjacent roadway segments. Project site access, circulation, and vehicle sight distance have been evaluated using County standards. Consistent with County guidelines, proposed project vehicle miles traveled (VMT) was identified with recommended transportation demand management (TDM) measures.

The following key transportation components associated with project activities and transportation operations were evaluated:

- Existing Conditions (Year 2023) with/without Project: Weekday PM peak hour and weekend (Saturday) mid-day peak hour operations at the Bale Lane/St. Helena Highway, AXR Napa Valley Driveway/St. Helena Highway, Lodi Lane/St. Helena Highway, and associated roadway segments;
- Near-Term (2025) with/without Project. Operating conditions reflecting other approved projects in the study area encompassing Napa County and the City of St. Helena;
- Net increase in proposed project trip generation from current existing permitted conditions to proposed project use modification conditions including production, visitation, employment, and marketing events based on accepted Napa County trip generation ratios;
- Estimated increase in project vehicle miles travelled (VMT) using recommended vehicle trips length from the Napa County transportation guidelines;
- Project site access at the winery's 3199 St. Helena Highway north and south driveways with the planned northbound left-turn lane and circulation of vehicles within the winery areas;
- Cumulative year 2040 with/without project using growth projections along St. Helena Highway, Bale Lane, and Lodi Lane based on the Napa Valley Transportation Authority (NVTA) active model projections;

[3] Napa County PBES, Bremer Family Winery, P22-00086 Traffic Impact Study Scope of Services, Memorandum, Sayed Fakhry, PE, TE, TJKM Transportation Consultants, October 24, 2022.



Legend

XX - Weekday PM Peak Hour Volumes
(XX) - Weekend Peak Hour Volumes

Turn Lane
Stop Sign
Traffic Signal
Roundabout

GHD

Project Vicinity Map

Project No. 12610827

FIGURE 1.1

- Transportation Demand Management (TDM) plans to reduce overall vehicle trip lengths and trip generation tailored to specific Winery activities related to visitation and employment as well as other recommended County strategies.

Executive Summary/Mitigation: Based on the findings of the operational analysis for the proposed AXR Napa Valley Use Modification project, mitigation measures are recommended to provide acceptable operations during the design peak hour conditions. Mitigations may include, but are not limited to, signalization, lane geometry changes/additions, travel lane requirements, signage and striping, additional gate service lanes, transportation demand measures, and turn restrictions/wayfinding.

The following scenarios were evaluated for transportation analyses for the proposed AXR Napa Valley Use Modification Project:

- Existing Conditions (Year 2023)
- Existing plus Project Conditions
- Near-Term (Year 2025) No-Project Conditions
- Near-Term (Year 2025) plus Project Conditions
- Cumulative Year 2040 No-Project Conditions
- Cumulative Year 2040 plus Project Conditions

1.1 Project Description

Using the proposed project's most recent County use permit (major modification) application for winery uses the activities anticipated to increase over existing levels during harvest season include the following:

- The number of weekly visitors would increase from 20 persons per week to 60 persons per week;
- Maximum daily visitation would not exceed 60 persons per day and 420 persons per week;
- Winery production would increase by 15,000 gallons from 20,000 gallons per year to 35,000 gallons per year;
- There would be 31 marketing events per year as follows:
    - Two (2) events per month with up to 25 guests
    - Four (4) annual events with up to 75 guests
    - Three (3) annual events with up to 150 guests;
- The number of full-time employees would increase by 10 employees during the weekday and 4 employees during the weekend. Part-time employment would increase by 5 employees during the weekday and be reduced by 6 employees (8 part-time to 2 part-time) during the weekend.

Vehicle access to the project site is provided by two driveways (north and south) at 3199 St. Helena Highway. As noted, no inbound left-turn movements are currently allowed from the highway at these driveways based on existing Caltrans restrictions/signage. With proposed project improvements, a northbound left-turn lane will be constructed on SR 29 at the project's south driveway. It is noted that a small residential lane (Bea Lane) is located approximately 200-feet north of the proposed project's north driveway. Bea Lane provides access to residential and winery areas east of St. Helena Highway. However, no guests and/or employees use Bea Lane to access the AXR Napa Valley grounds (and are instructed as such).

2. Transportation Network

2.1 Project Setting

This section outlines both the roadway, intersection, pedestrian/bicycle network that provides both direct and indirect access to the AXR Napa Valley, and collision history at the primary study intersection/roadway. The Winery is located at 3199 St. Helena Highway approximately 2 miles north of downtown St. Helena. Bale Lane is located about 1.5 miles north of the project site with Lodi Lane located approximately 0.65 miles south of the project site. Both of these roadways provide east-west access between Silverado Trail and State Route 29 (SR 29 or St. Helena Highway). A brief description of each roadway follows:

2.1.1 Roadways

State Route 29 (SR-29) or St. Helena Highway is the primary north-south route through the Napa Valley extending from the City of Vallejo north to the City of Calistoga. The highway varies from four travel lanes (between Vallejo and Yountville) narrowing to two travel lanes north of Yountville. This two-lane roadway configuration continues for the majority of the highway. However, segments of SR 29 contain a two-way-left-turn-lane (TWLTL) between Mee Lane north to St. Helena. In the project study area, SR-29 has two travel lanes and wide shoulder areas with a 50-mph speed limit.

Bale Lane is located approximately 1.5 miles north of the project site and extends in an east-west direction between SR 29 and Silverado Trail. Bale Lane is a two-lane semi-rural roadway with unimproved shoulders and provides access to agricultural and residential areas north of the project site with a 45-mph speed limit..

Lodi Lane is located approximately 0.6 miles south of the project site and also extends in an east-west direction between SR 29 and Silverado Trail. Like Bale Lane, Lodi Lane is a two-lane semi-rural roadway with unimproved shoulders and provides access to agricultural and residential areas south of the project site with a 40-mph speed limit.

Silverado Trail is located approximately 0.80 miles northeast of the proposed project site and is one of the two primary north-south routes providing access through the Napa Valley. A two-lane rural throughway, Silverado Trail provides access to agricultural, winery, and commercial areas on the east side of the Napa Valley. Extending from the City of Napa north through St. Helena, Silverado Trail eventually extends to Calistoga with a 50-mph speed limit in the study area. Both Bale Lane and Lodi Lane provide convenient east-west connections from Silverado Trail north and south of the proposed project site (via SR 29)

2.1.2 Intersections

To update existing peak hour traffic operating conditions, new peak period multi-model traffic counts were conducted along SR 29 at the Bale Lane, AXR Napa Valley (north and south driveways), and Lodi Lane intersections in June 2023[4]. Based on Napa County guidelines, vehicle counts were conducted during the Friday PM commute period and a Saturday peak afternoon period at the following intersections:

- Bale Lane / SR 29
- AXR Napa Valley North Driveway/ SR 29
- AXR Napa Valley South Driveway / SR 29
- Lodi Lane / SR 29

The County requires two Friday intersection counts (4:00-6:00 p.m.) and two Saturday afternoon (1:00-3:00 p.m.) counts that are then averaged to provide a representative sampling of traffic flow volumes. The resultant “peak hour” of traffic flow on SR 29 typically occurs between 4:00-5:00 p.m. (Friday) and 2:00-3:00 p.m. (Saturday) along this highway segment. Traffic count data has been included in **Appendix A.** Peak period counts were conducted during the non-harvest/crush season (early June) and do not fully reflect peak traffic conditions on St. Helena Highway.

[4] All Traffic Data Systems, Peak period intersection counts along St. Helena Highway at Bale Lane, AXR Napa Valley, and Lodi Lane , Fridays (June 9 & 10, 2023) & Saturdays (June 16 & 17, 2023).

Therefore, Napa County guidelines indicate existing count volumes will be increased by 7% to represent harvest season conditions.[5] Existing (adjusted) AM and PM peak hour intersection volumes are shown in **Figure 2.1**.

2.1.3 Intersection Field Observations

The AXR Napa Valley is served by two (2) driveway connections to/from SR 29. The primary driveway (south driveway) is located at 3199 St. Helena Highway (SR 29). The driveway is signed from SR 29 for no inbound (northbound) left-turn movements into the driveway in accordance with Caltrans direction. Two "No Left-Turn" signs (CA Manual on Uniform Traffic Control Devices—MUTCD, R3-2 Signs) are present on both sides of highway facing south at the driveway entrance. Southbound vehicles on SR 29 can turn right at this driveway to ingress the site. Outbound vehicles from the driveway are allowed to turn left or right (northbound or southbound) onto SR 29.

A secondary AXR Napa Valley driveway (north driveway) is located approximately 200 feet north of the primary AXR Napa Valley driveway. As with the primary project driveway, it is signed for "No Left-Turn" (MUTCD, R3-2) and "Do Not Enter" (MUTCD, R5-1) for northbound vehicles on SR 29. In addition, outbound motorists are instructed for "Right-Turns Only" (CA MUTCD, R3-5R).

The Bale Lane and Lodi Lane intersections are stop-sign controlled for the westbound minor street approaches at SR 29. At both intersections, a separate left-turn lane pocket is provided on southbound SR 29 from the highway onto the minor street. Each southbound left-turn lane on SR 29 at Bale Lane and Lodi Lane has a storage capacity of approximately 100 feet (4 car lengths).

2.1.4 Average Daily Traffic (ADT) Volumes

In addition to intersection count volumes, ADT (24-hour) two-way roadway segment volumes were collected/obtained on the following roadway segments:[6] [7]

Bale Lane: East of SR 29

SR 29: North of Lodi Lane

Lodi Lane: East of SR 29

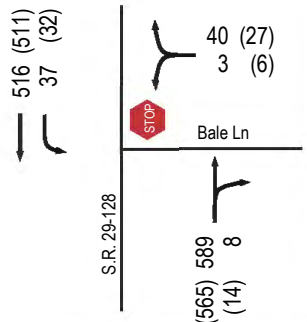
Again, existing ADT volumes were increased by 7% to account for harvest season conditions. As recorded, the SR 29 highway segment north of Lodi Lane is currently carrying 15,700 daily vehicles. The roadway segment on Bale Lane east of SR 29 is carrying 835 daily vehicles while the segment on Lodi Lane east of SR 29 is carrying 1,020 daily vehicles.

2.1.5 Pedestrians/Bicycles

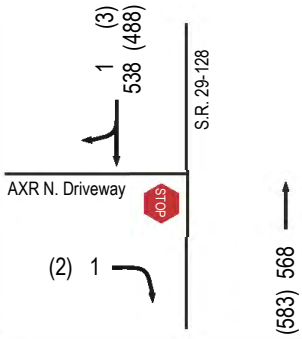
Based on the rural nature of the SR 29, Bale Lane, and Lodi Lane and their distance from St. Helena and Calistoga, observed pedestrian and bicycle facilities in the project study area were limited in nature. Based on field observations during data collection, there are no designated pedestrian/bicycle facilities on these roadways in the project study area. Bale Lane and Lodi Lane have no shoulders, curb or gutter, or sidewalks in the project vicinity. Pedestrian and bicycle counts conducted at the three study intersections revealed very minor use during the weekday PM peak and Saturday midday peak hours (1-2 peds/bikes). However, a large group of bicyclists (21 bicyclists) were observed during the Saturday midday peak hour southbound on SR 29 at Bale Lane, AXR Napa Valley north and south driveways, and Lodi Lane. Total pedestrian/bicycle at the three study intersections along SR 29 during the weekday PM and Saturday midday peak hours are shown in **Table 2.1**.

[5] Napa County PBES, Napa County Traffic Impact Study (TIS) Guidelines, February 2022.
[6] Counts Unlimited, Average Daily Traffic (ADT) counts, Bale Lane, and Lodi Lane (east of SR 29), June 9, 10 & June 16, 17, 2023.
[7] Caltrans, Highway Volumes, SR 29 north of Lodi Lane, Peak Month, 2023.

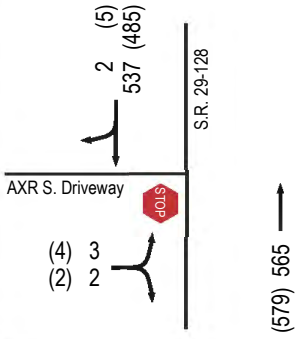
1 S.R. 29 - 128 / Bale Ln



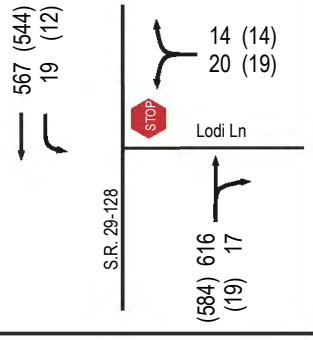
2 S.R. 29 - 128 / AXR N. Driveway

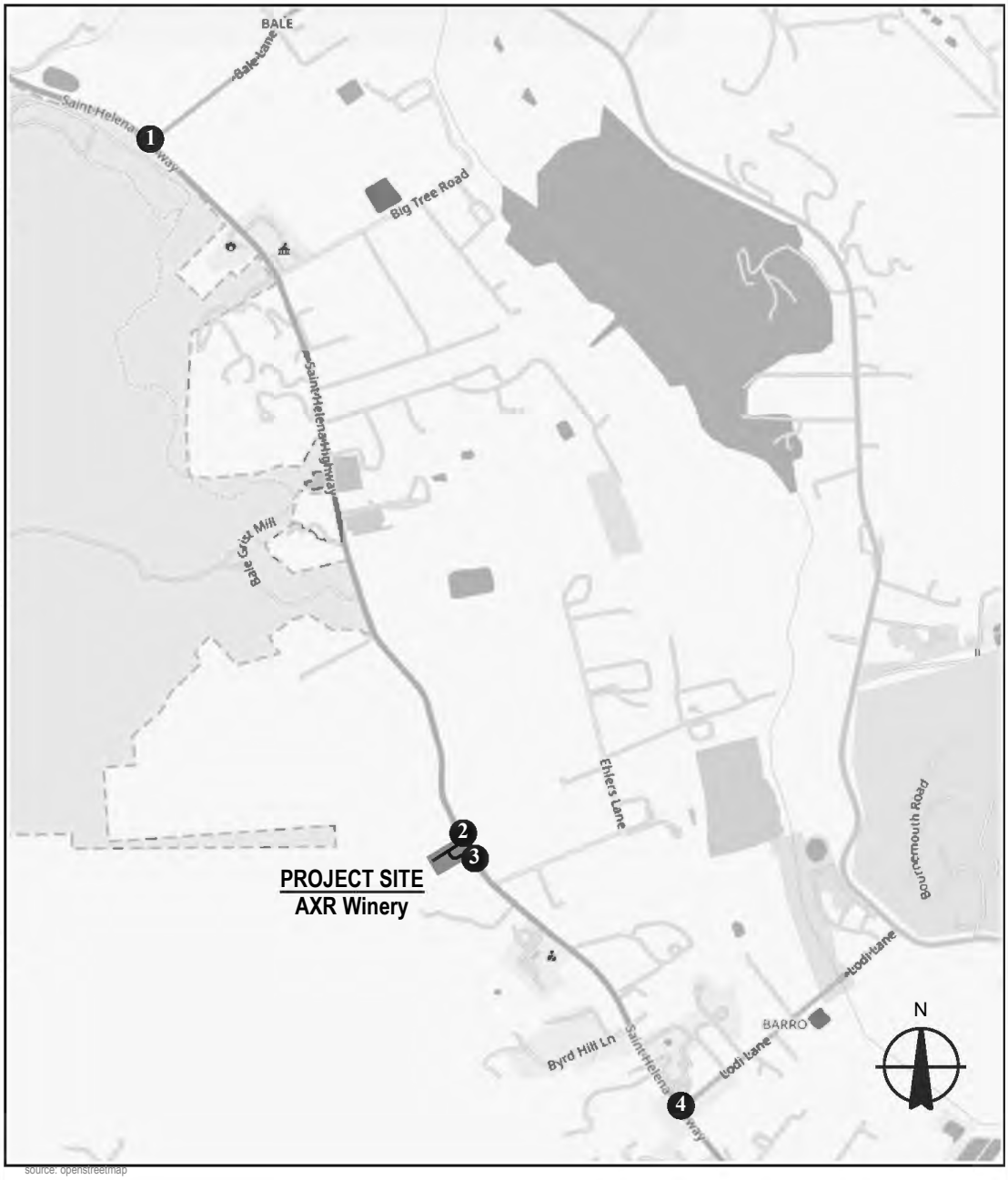


3 S.R. 29 - 128 / AXR S. Driveway



4 S.R. 29 - 128 / Lodi Ln





Legend

XX - Weekday PM Peak Hour Volumes
(XX) - Weekend Peak Hour Volumes
Turn Lane
STOP Stop Sign
Traffic Signal
Roundabout

GHD

Existing
Weekday P.M. and (Weekend Mid-day)
Peak Hour Intersection Volumes

Project No. 12610827

FIGURE 2.1

Table 2.1 Pedestrian and Bicycle Volumes, Friday PM and Saturday Midday Peak Hours

#	Intersection	Control Type	PM Peak Hour Pedestrian/Bicyclists	MD Peak Hour Pedestrian/Bicyclists
1	Bale Lane / St. Helena Highway	TWSC	2	21
2&3	AXR Napa Valley N&S Driveways / St. Helena Highway	TWSC	2	21
4	Lodi Lane / St. Helena Highway	TWSC	1	21

Source: Counts Unlimited, Weekday PM and Saturday Midday peak hour pedestrian/bicycle count data, Bale Lane, AXR Napa Valley Driveway, and Lodi Lane, June 17, 2023.

A review of the Napa Countywide Bike Plan reveals that Bale Lane is proposed to be designated as a Class III (Bike Route) facility with St. Helena Highway (SR 29) proposed as a Class II route in segments (Bike Lanes).[8]

2.1.6 Transit

Transit service in the regional area is currently provided by The Vine and is operated by the Napa Valley Transportation Authority (NVTA). The Vine operates both fixed-route and "flex route" service that provides access encompassing the City of Napa and other major towns along Highway 29 including Yountville, St. Helena, and Calistoga. . Currently, Route 10 "Up Valley Connector" provides transit service in the project vicinity along SR 29 with stops at Lodi Lane. Headways are approximately every hour during the weekdays (5:30 am – 9:43 PM) and Saturdays (7:00 am – 9:15 pm). In addition, The Vine does operate flexible service routes and para-transit routes in St. Helena with "on-demand" door-to-door services within ¾ of a mile of St. Helena.

2.2 Collision Analysis

A collision analysis was conducted for the study area to determine any trends or patterns that may indicate a safety issue at adjacent intersections and roadways in the study area. Collision rates are calculated based on records provided by the California Highway Patrol as published in their State-wide Integrated Traffic Records System (SWITRS) database. The most current five (5) year period from January 1, 2018, through December 31, 2022, was analyzed. Collision characteristics and rates for the primary existing intersections of Bale Lane, AXR Napa Valley Driveway, and Lodi Lane at SR 29 area shown in **Table 2.2**.

Based on a review of the collision data, there were no fatal or severe injury collisions recorded for the study locations in the past five years. In addition, the calculated collision rate for the study locations was compared to the average collision rate for similar facilities state-wide, as indicated in the *2019 Collision Data on California State Highways* (Caltrans). As presented in **Table 2.2**, the four project study intersections are experiencing collision rates lower than the 2019 California Average for similar facilities. In fact, the majority of collisions (3) were at the Bale Lane/SR 29 intersection with one "broadside", one "hit object", and one "head-on." These types of collisions are consistent with minor-street, stop-sign control intersections and the relatively high vehicle speed limit on SR 29. (It is noted that the "head-on" collision was actually a "broadside" and was mis-categorized).

In addition to intersection collision analysis, roadway segment collision analysis was also evaluated for SR 29 1,000 feet north and south of the AXR Napa Valley driveway. As shown in **Table 2.3,** the roadway segment experienced one (1) collision over the past five years with a calculated collision rate below the State average. The recorded collision was a "broadside" where a motorist was off the shoulder of the highway and was pulling back into through-traffic when the collision occurred. This type of maneuver would be difficult to resolve. However, the installation of a new left-turn lane at the project's south driveway will improve vehicle safety on SR 29 by removing left-turning vehicles into the project site from northbound through-traffic on St. Helena Highway at shown in **Figure 7.1**.

[8] Napa Valley Transportation Authority (NVTA), Napa Countywide Bike Plan, Planning Area—North Valley, 2019.

Table 2.2 Study Intersection Collision Analysis

Intersection ID	Intersection	By Severity					By Type							By Year					Bicycle Involved Collisions	Pedestrian Involved Collisions	**Total Collisions** (2018-2022)	**24-Hr Entering Volume**	Collision Rate (Per Million Entering Vehicles)	CA Average Collision Rate (Per Million Entering Vehicles)
		Fatal	Severe Injury	Injury (Other Visible)	Injury (Complaint of Pain)	Property Damage Only	Head-On	Sideswipe	Rear End	Broadside	Hit Object	Vehicle/Pedestrian	Other	2018	2019	2020	2021	2022						
1	SR 29-128 / Bale Ln	0	0	0	1	2	1	0	0	1	1	0	0	1	0	1	1	0	0	0	3	11930	**0.14**	0.29
2	SR 29-128 / AXR Winery N&S Drives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15700	**0.00**	0.29
3	SR 29-128 / Lodi Ln	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12530	**0.00**	0.29

Table 2.3 Roadway Segment Collision Analysis

Segment ID	Segment	By Severity					By Type							By Year					Bicycle Involved Collisions	Pedestrian Involved Collisions	**Total Collisions** (2018-2022)	**24-Hr Entering Volume**	**Collision Rate** (Per Million Vehicle Miles)
		Fatal	Severe Injury	Injury (Other Visible)	Injury (Complaint of Pain)	Property Damage Only	Head-On	Sideswipe	Rear End	Broadside	Hit Object	Vehicle/Pedestrian	Other	2018	2019	2020	2021	2022					
A	SR 29-128 (St. Helena Hwy) 1,000 ft. fronting AXR Winery	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	15700	**0.18**

2.3 Analysis Methodologies

Operational design standards are established using information in the Napa County Traffic Impact Study (TIS) Guidelines (Napa County, 2022), Napa Valley General Plan Circulation Element (Napa County, 2019) and the Highway Capacity Manual (HCM), Sixth Edition (TRB, 2016) for intersection capacities.

2.3.1 Intersection LOS Methodologies

Level of Service (LOS) was calculated for all intersection control types using the methods documented in the HCM, Sixth Edition (TRB, 2016). Level of service is a qualitative measure of traffic operating conditions, whereby a letter grade “A” through “F” is assigned to an intersection or roadway segment representing progressively worsening traffic conditions.

For two-way stop-controlled (TWSC) and/or “T-type” intersections such as the Bale Lane, AXR Napa Valley Driveway, and Lodi Lane intersections at SR 29, the intersection delay and LOS are represented by the stop-sign controlled approach (worst case) and is expressed in seconds of vehicle delay with a corresponding LOS range.

All unsignalized intersection operations analyses are conducted using procedures and methodologies contained in the HCM (TRB, 2016). These methodologies are applied using the Synchro/SimTraffic simulation software (Version 11).

2.3.2 Operational Design Standards

Operational design standards for acceptable intersection operations are based on the Napa County Traffic Impact Study (TIS) Guidelines. Should intersection operations be forecasted to perform below acceptable LOS and standards, measures are recommended to improve operations to acceptable LOS and standards as follows:

Intersections:

- The operational analyses of unsignalized intersections are considered substandard if project-related traffic would cause the worst approach (i.e., greatest delay) at an intersection to operate at LOS E or worse during one or more peak hours.

All study intersections were analyzed at a threshold of LOS D. Refer to **Table 2.4** for the intersection Level-of-Service descriptions and LOS criteria for signalized and unsignalized intersections based on Transportation Research Board (TRB, 2016).

Roadways:

Roadway segment LOS has been based on the Highway Capacity Manual (HCM) "Two-Lane Highway" automobile analysis. The HCM methodology involves roadway widths, terrain, heavy vehicles, directional and opposing vehicle flow, and potential passing zones. For two-lane highways, the LOS criteria can differ depending on the classification of the highway that falls into Class I, Class II, or Class III. Class I highways refer to regional routes connecting cities with high-speed travel. Class II highways are more recreational in nature with motorists not anticipating high vehicle speeds nor longer trips between regions. Finally, Class III highways can be a combination of both Class I or Class II highways the have a mix of both regional and local traffic volumes.

For the purpose of this analysis, all roadways study segments have been classified as Class II highways consistent with previous transportation analyses in the study area. The measure of effectiveness (MOE) is the average vehicle travel speed and percent time spent following or PTSF that yields an associated LOS for Class II facilities.

All roadway segments were analyzed for Class II LOS threshold of D or better as shown in **Table 2.5.**

Bicycle Facilities:

- The operational analysis of bicycle facilities is considered substandard if the project would result in potentially hazardous conditions for bicyclists or otherwise would substantially interfere with bicycle accessibility to the project site and adjoining areas.

Pedestrian Facilities

- The operational analyses of pedestrian facilities are considered substandard if the project would result in substantial overcrowding on sidewalks, would create potentially hazardous conditions for pedestrians or otherwise would substantially interfere with pedestrian accessibility to the project site and adjoining areas.

2.3.3 Technical Parameters for Intersection Operations

The following technical parameters were developed for this study:

- A Peak Hour Factor (PHF) will be calculated based on the traffic counts conducted for this study for each analysis location and the HCM (TRB, 2016). Intersection PHF's are used for existing and design year conditions. A default PHF of 0.93 is used for Design Year conditions and/or calculated PHF (whichever is more conservative).
- Peak hour truck percentages were calculated based on Heavy Vehicle counts conducted as part of the SR 29 intersection data collection and/or 5% based on County direction (GHD, 2022).
- Speeds on SR 29, Bale Lane, and Lodi Lane (used for intersection analysis) are based on the current posted speed limit.
- SR 29 mainline lane width of 12' will be used in the analysis.
- The intersection saturation flow rate is assumed to be 1,900 passenger cars per hour per lane based on the HCM (TRB, 2016).

All parameters not listed above should be assumed as default or calculated values based on the HCM (TRB, 2016).

Table 2.4 Intersection Level-of-Service (LOS) Delay Criteria

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

Table 2.5 Roadway Segment Level-of-Service (LOS) Delay Criteria

Automobile Level-of-Service Criteria	
LOS	Class II Highways PTSF %
A	≤40
B	>40-55
C	>55-70
D	>70-85
E	>85

PTSF = Percent Time Spent Following

2.4 Existing Intersection Operations

2.4.1 Intersection Level-of-Service

Existing weekday PM peak hour (Friday) and weekend midday peak hour (Saturday) study intersection operation were quantified using existing traffic volumes and existing lane geometry and control. Table 2.3 presents intersection operations for Existing Conditions. Detailed Synchro calculation sheets are included in **Appendix B**.

As presented in **Table 2.6**, the two-way-stop-controlled (TWSC) intersections of Bale Lane, AXR Napa Valley Driveways (north and south), and Lodi Lane at SR 29 are currently operating at acceptable levels (LOS D or better) during the PM peak hour and Saturday Midday peak hour. The westbound approach of Lodi Lane was observed to experience longs vehicle delays for the left-turn movement onto SR 29 not completely reflected in the LOS calculation. However, there is a combined westbound left and right-turn lane on Lodi Lane that provides for a slightly better LOS using both movement delays.

2.4.2 Roadway Segment Level-of-Service

With Existing traffic volumes, all roadway segments are operating at acceptable levels-of-service (LOS C or better) during the AM and PM peak hours. As shown in **Table 2.7,** roadway segments along Bale Lane and Lodi Lane are operating at LOS A during the AM and PM commute periods. SR 29 north of Lodi Lane is operating at LOS C during the same time periods. Field observations indicate SR 29 experiences relatively free-flow conditions in the segment north and south of the AXR Napa Valley driveway.

Table 2.6 Existing Intersection Level-of-Service (LOS), Weekday PM Peak & Weekend Midday Peak Hour

ID	Intersection	Peak Hour	Target LOS	Exisiting		
				Control	Delay	LOS
1	Bale Lane/St. Helena Highway	PM	D	TWSC	14.6	B
		MD	D		15.7	C
2	AXR Napa Valley N. Driveway / St. Helena Highway	PM	D	TWSC	12.1	B
		MD	D		11.6	B
3	AXR Napa Valley S. Driveway / St. Helena Highway	PM	D	TWSC	18.7	C
		MD	D		18.8	C
4	Lodi Lane / St. Helena Highway	PM	D	TWSC	23.8	C
		MD	D		21.6	C

BOLD Indicate LOS of E or worse

1 Intersection LOS based on Synchro-Simtraffic (Version 11.0);

2 Delay reported from HCM 6 (TRB, 2016) methodology, TWSC = Two-Way-Stop-Control, PM = Friday Weekday Peak, MD = Saturday Midday Peak

Table 2.7 Existing Roadway Segment Level-of-Service (LOS), Weekday PM Peak & Weekend Midday Peak Hour

Study Segment Direction	Friday PM Peak PTSF	LOS	Saturday Midday Peak PTSF	LOS
1. Bale Ln. - E. of SR 29				
Eastbound	10.8	A	10.8	A
Westbound	10.5	A	8.6	A
2. SR 29 - N. of Lodi Ln.				
Northbound	62.1	C	62.8	C
Southbound	60.7	C	58.2	C
3. Lodi Ln. - E. of SR 29				
Eastbound	14.0	A	12.7	A
Westbound	13.5	A	13.5	A

PTSF = Percent time spent following

2.4.3 Signal Warrant Evaluation

Based on the California Manual on Uniform Traffic Control Devices (CAMUTCD) peak hour signal warrant criteria, the unsignalized study intersections of Bale Lane, AXR Napa Valley Driveways, and Lodi Lane were evaluated for signal warrant.[9] The peak hour warrant(s) is one of several standards to help determine if installation of a traffic signal is appropriate. Qualifying for signalization using the peak hour warrants does not necessarily mean a signal should be installed. The decision to install a traffic signal should be based on further studies utilizing additional warrants as presented in the CAMUTCD. At this time, none of the project study intersections qualify for signalization under the peak hour warrant (the warrant graphs are provided in **Appendix C**).

3. Near-Term (No Project) Conditions

3.1.1 Methodology

Both near-term conditions (approved, no project) and cumulative volume projections for Bale Lane, SR 29, and Lodi Lane were reviewed from the Solano - Napa Activity Based Model (SNABM). Using the growth in volumes between 2015 and 2040 in Napa County, overall growth would increase by 37% over a 25-year period or 1.46% per year.[10] Near-Term (No Project) conditions represent an approximate 2-year period (Year 2025) to allow for completion of approved projects.

In addition to the SNABM traffic growth projections, local approved/pending projects in the immediate study area have been included in overall traffic growth based on Napa County TIS Guidelines. Based on directions from Napa County Planning staff, there are two ongoing development projects that could affect traffic volumes along St. Helena Highway and Lodi Lane and include the following:

- **The Inn at the Abbey (P19-00038)**—3010 St. Helena Highway, St. Helena. Approximately 0.6 miles south of the project site, new Hotel with 79-rooms.
- **Duckhorn Winery (P19-00097)**—1000 Lodi Lane, Angwin. Approximately 3.5 miles northeast of the project site; annual production of 30,000 gallons, 4 full-time employees, 1 part-time employee, average of 12 visitors per day.

[9] California Manual on Uniform Traffic Control Devices (CAMUTCD), Chapter 4C, Peak hour signal warrant (#3), 2014 Edition (Revised March 27, 2020).
[10] Solano Transportation Authority (STA) | Napa Valley Transportation Authority (NVTA, Solano Napa Activity – Based Model (SNABM), Model Documentation, Table 28, August 27, 2020.

3.1.2 Near-Term (Approved Project) Trip Generation

Based on Napa County's Winery Trip Generation Worksheet for use modifications, the approved project's daily and peak hour vehicle trips have been calculated as follows:

The Inn at the Abbey: Weekday: 645 daily trips, 33 PM peak hour trips
Weekend: 645 daily trips, 57 Midday peak hour trips

Duckhorn Winery: Weekday: 120 daily trips, 17 PM peak hour trips
Weekend: 112 daily trips, 17 Midday peak hour trips

Approved project trip generation was taken directly from the *Traffic Impact Study, Duckhorn Vineyards Winery Use Permit Modification, County of Napa.*[11]

Both approved/pending project sites are located south and east of the proposed project site in the Lodi Lane area. Excluding local traffic associated with employment, deliveries, and visitation; the majority of traffic flow would be to/from the south via SR 29 and Silverado Trail to Lodi Lane. Peak hour approved/pending project trips were assigned to the roadways based on existing traffic flows and previous transportation studies conducted for the developments.

Near-term (No Project) volumes for the weekday (Friday) PM peak hour and weekend (Saturday) midday peak hour are shown in **Figure 3.1**

3.1.3 Near-Term (No Project) Intersection Operations

With Near-Term (No Project) volumes, study intersection LOS has been calculated and shown in **Table 3.1.** As calculated, all intersections would continue to operate at acceptable LOS (LOS D or better) during the Friday PM peak hour and Saturday midday peak hour. .

Table 3.1 Near-Term (No Project) Intersection Level-of-Service (LOS), Weekday PM Peak & Weekend Midday Peak Hour

ID	Intersection	Peak Hour	Target LOS	Exisiting			Near-Term (No Project)		
				Control	Delay	LOS	Control	Delay	LOS
1	Bale Lane/St. Helena Highway	PM	D	TWSC	14.6	B	TWSC	15.1	C
		MD	D		15.7	C		16.1	C
2	AXR Napa Valley N. Driveway / St. Helena Highway	PM	D	TWSC	12.1	B	TWSC	12.2	B
		MD	D		11.6	B		11.7	B
3	AXR Napa Valley S. Driveway / St. Helena Highway	PM	D	TWSC	18.7	C	TWSC	19.3	C
		MD	D		18.8	C		19.3	C
4	Lodi Lane / St. Helena Highway	PM	D	TWSC	23.8	C	TWSC	26.2	D
		MD	D		21.6	C		24.1	C

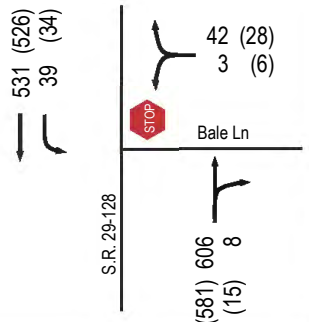
BOLD Indicate LOS of E or worse

1 Intersection LOS based on Synchro-Simtraffic (Version 11.0);

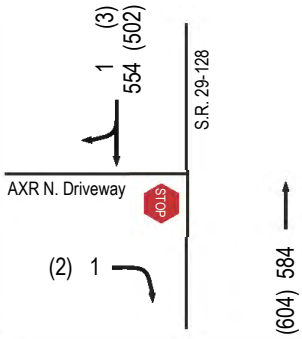
2 Delay reported from HCM 6 (TRB, 2016) methodology, TWSC = Two-Way-Stop-Control, PM = Friday Weekday Peak, MD = Saturday Midday Peak

[11] W-Trans, Traffic Impact Study for the Duckhorn Vineyards Use Permit Modification, County of Napa, June 10, 2021.

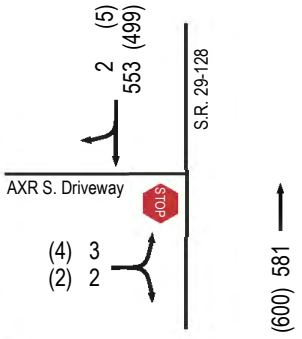
1 S.R. 29 - 128 / Bale Ln



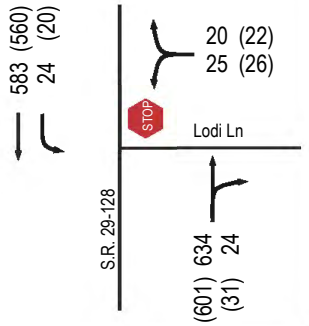
2 S.R. 29 - 128 / AXR N. Driveway

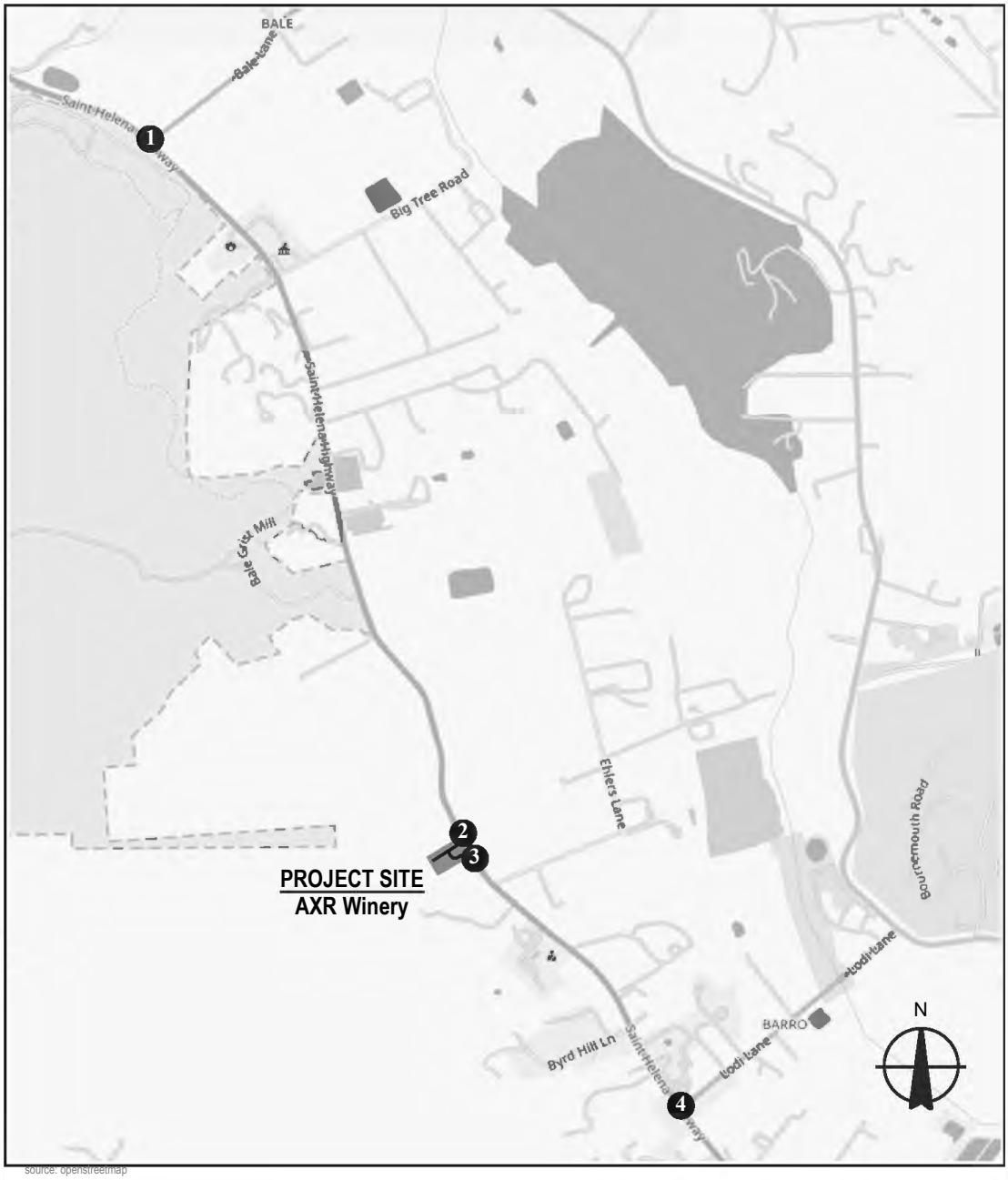


3 S.R. 29 - 128 / AXR S. Driveway



4 S.R. 29 - 128 / Lodi Ln





source: openstreetmap

Legend

XX - Weekday PM Peak Hour Volumes
(XX) - Weekend Peak Hour Volumes
Turn Lane
STOP Stop Sign
Traffic Signal
Roundabout

GHD

Near Term No Project
Weekday P.M. and (Weekend Mid-day)
Peak Hour Intersection Volumes

Project No. 12610827

FIGURE 3.1

3.1.4 Roadway Segment Operations

With Near-Term (No Project) traffic volumes, all roadway segments would continue to operate at acceptable levels-of-service (LOS C or better) during the AM and PM peak hours. As shown in **Table 3.2,** roadway segments along Bale Lane and Lodi Lane are operating at LOS A during the AM and PM commute periods. SR 29 north of Lodi Lane is operating at LOS C during the same time periods. Field observations indicate SR 29 experiences relatively free-flow conditions in the segment north and south of the AXR Napa Valley driveway.

Table 3.2 Near-Term (No Project) Roadway Study Segment (LOS), Weekday PM Peak & Weekend Midday Peak Hour

Study Segment Direction	Friday PM Peak PTSF	LOS	Saturday Midday Peak PTSF	LOS
1. Bale Ln. - E. of SR 29				
Eastbound	11.2	A	11.4	A
Westbound	10.8	A	8.8	A
2. SR 29 - N. of Lodi Ln.				
Northbound	62.8	C	63.7	C
Southbound	61.4	C	58.9	C
3. Lodi Ln. - E. of SR 29				
Eastbound	16.8	A	17.5	A
Westbound	16.1	A	16.8	A

3.1.5 Signal Warrant Evaluation

With Near-Term (No Project) volumes, the unsignalized study intersections of Bale Lane, AXR Napa Valley Driveway (north and south), and Lodi Lane intersections at SR 29 were evaluated for signalization.[12] At this time, the project study intersection does not qualify for signalization under the peak hour warrant (the warrant graphs are provided in the **Appendix C**).

4. Cumulative Year 2040 (No Project) Conditions

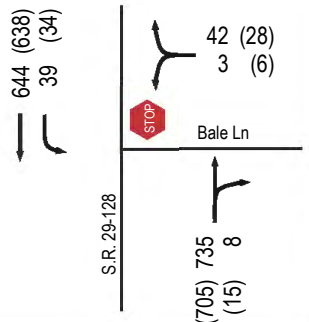
4.1.1 Methodology

As noted under Near-Term (No Project) conditions, cumulative volume projections for Bale Lane, SR 29, and Lodi Lane were reviewed from the Solano - Napa Activity Based Model (SNABM). Using the growth in volumes between 2015 and 2040 in Napa County, overall growth would increase by 37% over a 25-year period or 1.46% per year on State Route 29. Existing AM and PM peak hour volumes were increased by 24.82% for the future horizon year 2040. Please note, minor street volumes along Bale Lane and Lodi Lane were not included in model projections. Therefore, approved/pending development volumes applies to these roadways given their minor status and their limited opportunities for development.

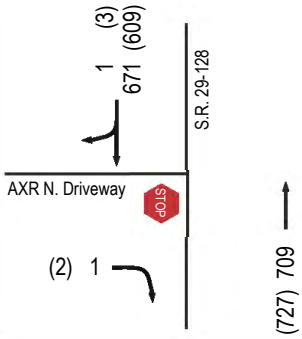
Cumulative Year 2040 (No Project) volumes for the weekday (Friday) PM peak hour and weekend (Saturday) midday peak hour are shown in **Figure 4.1.**

[12] California Manual on Uniform Traffic Control Devices (CAMUTCD), Chapter 4C, Peak hour signal warrant (#3), 2014 Edition (Revised March 27, 2020).

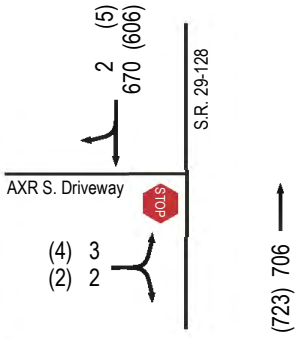
1 S.R. 29 - 128 / Bale Ln



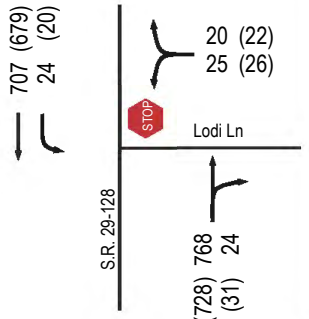
2 S.R. 29 - 128 / AXR N. Driveway

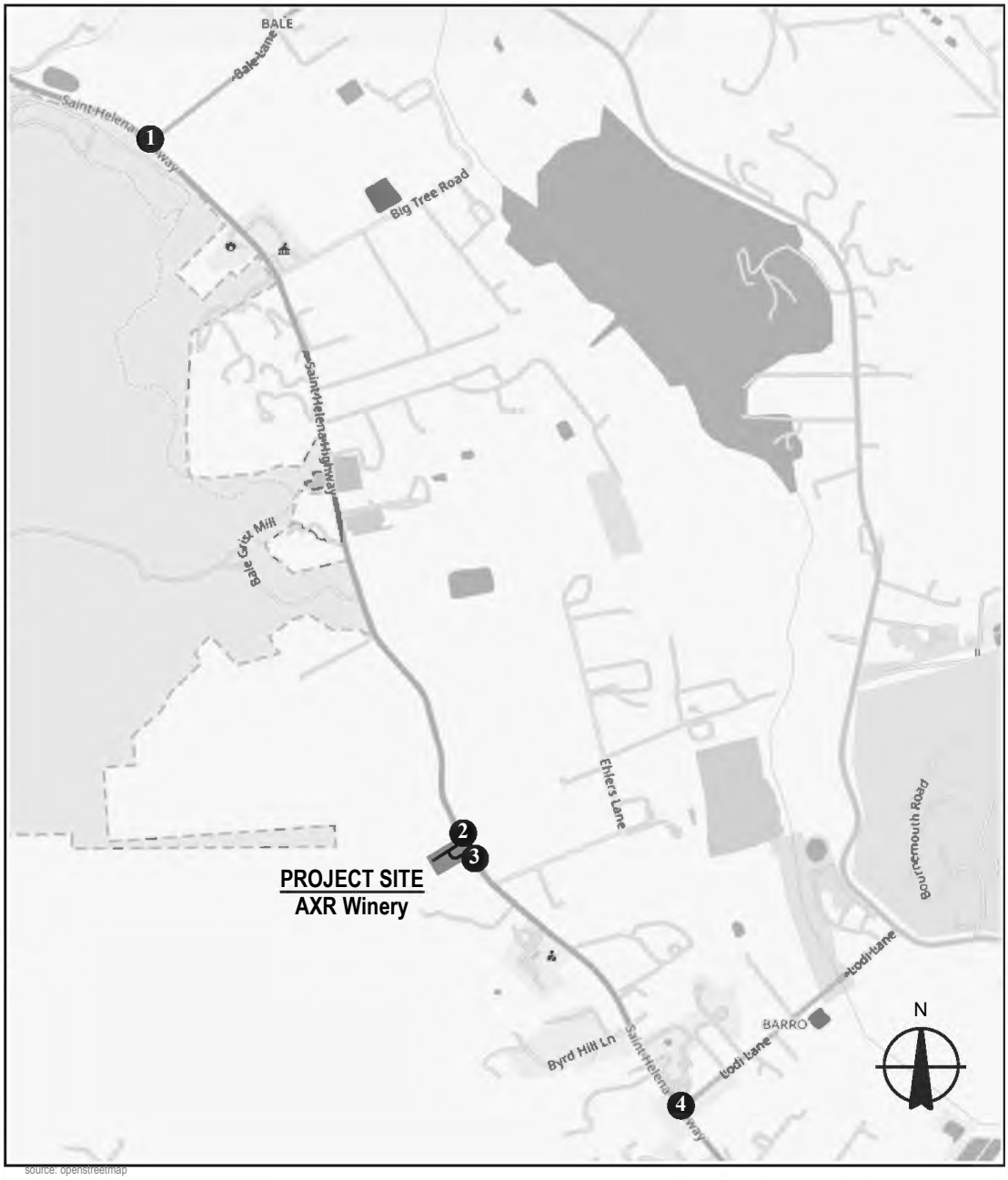


3 S.R. 29 - 128 / AXR S. Driveway



4 S.R. 29 - 128 / Lodi Ln





source: openstreetmap

Legend

XX - Weekday PM Peak Hour Volumes
(XX) - Weekend Peak Hour Volumes
Turn Lane
STOP Stop Sign
Traffic Signal
Roundabout

GHD

Cumulative Year 2040 No Project Weekday P.M. and (Weekend Mid-day) Peak Hour Intersection Volumes

Project No. 12610827

FIGURE 4.1

4.1.2 Cumulative Year 2040 Intersection Operations

With generated Cumulative Year 2040 (No Project) volumes, study intersection LOS for the AM and PM peak hour were calculated and are shown in **Table 4.1.** As calculated, the study intersection of Lodi Lane/SR 29 would be operating at unacceptable levels (LOS E—39.4 seconds of delay) for the minor street, stop-sign controlled left and right-turn movements from Lodi Lane onto SR 29 during the Friday PM peak hour. All remaining study intersections along SR 29 at Bale Lane and the AXR Napa Valley driveways (north and south) would be operating at acceptable levels (LOS D or better) during the weekday and weekend peak hours.

Table 4.4.1 Cumulative Year 2040 (No Project) Intersection Level-of-Service (LOS), Weekday PM Peak & Weekend Midday Peak Hour

ID	Intersection	Peak Hour	Target LOS	Exisiting			Near-Term (No Project)			Cumulative Yr. 2040 (No Project)		
				Control	Delay	LOS	Control	Delay	LOS	Control	Delay	LOS
1	Bale Lane/St. Helena Highway	PM	D	TWSC	14.6	B	TWSC	15.1	C	TWSC	17.8	C
		MD	D		15.7	C		16.1	C		19.8	C
2	AXR Napa Valley N. Driveway / St. Helena Highway	PM	D	TWSC	12.1	B	TWSC	12.2	B	TWSC	13.6	B
		MD	D		11.6	B		11.7	B		12.8	B
3	AXR Napa Valley S. Driveway / St. Helena Highway	PM	D	TWSC	18.7	C	TWSC	19.3	C	TWSC	24.9	C
		MD	D		18.8	C		19.3	C		24.8	C
4	Lodi Lane / St. Helena Highway	PM	D	TWSC	23.8	C	TWSC	26.2	D	TWSC	**39.4**	**E**
		MD	D		21.6	C		24.1	C		34.8	D

BOLD Indicate LOS of E or worse

1 Intersection LOS based on Synchro-Simtraffic (Version 11.0);

2 Delay reported from HCM 6 (TRB, 2016) methodology, TWSC = Two-Way-Stop-Control, PM = Friday Weekday Peak, MD = Saturday Midday Peak

4.1.3 Roadway Segment Operations

With Cumulative Year 2040 (No Project) traffic volumes, all roadway segments would continue to operate at acceptable levels-of-service (LOS D or better) during the AM and PM peak hours. As shown in **Table 4.2,** roadway segments along Bale Lane and Lodi Lane would be operating at LOS A during the AM and PM commute periods. SR 29 north of Lodi Lane would operate at LOS D during the same time periods.

Table 4.2 Cumulative Year 2040 (No Project) Roadway Segment LOS, Weekday PM Peak & Weekend Midday Peak Hour

Study Segment Direction	Friday PM Peak PTSF	LOS	Saturday Midday Peak PTSF	LOS
1. Bale Ln. - E. of SR 29				
Eastbound	11.2	A	11.4	A
Westbound	10.8	A	8.8	A
2. SR 29 - N. of Lodi Ln.				
Northbound	67.9	D	68.5	D
Southbound	63.9	D	63.9	D
3. Lodi Ln. - E. of SR 29				
Eastbound	16.8	A	17.5	A
Westbound	16.1	A	16.8	A

4.1.4 Signal Warrant Evaluation

With Cumulative Year 2040 (No Project) volumes, the unsignalized intersections of Bale Lane, AXR Napa Valley, and Lodi Lane do not qualify for signalization under the peak hour warrant (the warrant graphs are provided in Appendix **C**).

5. Napa County Significance Criteria

The County of Napa's significance criteria has been based on the Napa County Traffic Impact Study (TIS) Guidelines (*Napa County, 2022*). Some of the key significance criteria applicable to proposed project development would be as follows as described in Table 5 of the TIS Guidelines:

On-Site Circulation

- Site design for circulation, access, and/or parking areas fail to meet County Road and Street Standards or industry standard design guidelines;
- A project fails to provide adequate or safe accessibility for service and delivery trucks on-site (including access to truck loading areas) or for passenger drop-off and pick-up areas.

Off-Site Traffic Operations

- Per Attachment B, a roadway segment or intersection operates acceptably according to Policy CIR-38 under a no project scenario, and the addition of project traffic causes overall traffic operations on the facility to operate unacceptably;
- A roadway segment or intersection operates unacceptably according to Policy CIR-38 under a no project scenario and the project adds a certain amount of traffic;
- Project-generated Vehicle Miles Traveled (VMT) exceeds the standards described in the General Plan Policy CIR-7.

Intersection Traffic Control

- The addition of project traffic causes an all-way-stop-controlled or side-street stop-controlled intersection to meet Caltrans signal warrant criteria. All such intersections will first be evaluated with roundabout intersection control. The project team should also consider potential right-of-way constraints at intersections where roundabouts are being considered.

Expanding on significance criteria for roadway segments and intersections, the following Level-of-Service (LOS) criteria would apply:

Unsignalized Intersections:

- LOS D or better deteriorates to LOS E or F with Project Trips; or
- LOS E or F, and Project trips increase the total entering volume by one percent or more. For side-street stop-controlled intersections, based on the delay for each stop-controlled approach that operates at LOS E or F

Arterial

- LOS D or better deteriorates to LOS E or F with Project Trips; or
- LOS E or F, and Project trips increases the total segment volume by one percent or more.

Cumulative

- Project contributes five percent or more to total growth in volume entering at failing intersections;
- Project contributes five percent or more to total growth in volume on a failing arterial road segment.

Vehicle Miles Traveled (VMT)

The County identifies “screening” criteria for small winery projects that generate less than 110 net new daily trips as follows:

A Project modifying an existing facility that would generate additional trips where the net cumulative result of all project modifications after January 1, 2022 would generate less than 110net new daily passenger vehicle and truck trips.

- Project is not required to prepare a TIS
- Project is presumed to have a less-than-significant environmental impact for VMT
- Applicant is encouraged to describe the measures they are taking and/or plan to take that would reduce the Project’s trip generation and/or VMT

Based on initial project modification estimates, it is likely the proposed project’s use modification would qualify for the County’s reasonable VMT screening approach (see Section 8--VMT)

6. Project Impacts

6.1 Project Description/Purpose

Based on the most recent detailed project description for the AXR Napa Valley, the use permit modification will involve moderate increases in wine production, employment, and visitation activities. In addition, the Winery’s marketing plan would be modified to hold 31 annual events consistent with current Winery activities. Since the number of annual marketing events would represent slightly more than two (2) events per month, the associated vehicle trips generated by that marketing event has been included in the proposed project’s weekly trip generation (25 guests). Proposed project access from SR 29 (St. Helena Highway) is currently limited for inbound vehicle traffic to right-turns only based on existing enforcement signs and Caltrans agreements. Specific project components can be described as follows:

Visitation: The number of daily visitors would increase by 40 guests from 20 persons per day to 60 persons per day; The maximum weekly visitation would not exceed 420 guests per week;

Production: Winery production would increase by 15,000 gallons from 20,000 gallons per year to 35,000 gallons per year;

Employment: The number of full-time employees would increase by 10 employees during the weekday and 4 employees during the weekend. Part-time employment would increase by 5 employees during the weekday and be reduced by 6 employees (8 part-time to 2 part-time) during the weekend.

Marketing Events: There would be 31 marketing events per year as follows:

- Two (2) events per month with up to 25 guests
- Four (4) annual events with up to 75 guests
- Three (3) annual events with up to 150 guests;

Vehicle access to the project site is provided by two driveways (north and south) at 3199 St. Helena Highway. A new northbound (inbound) left-turn lane will be installed at the project's south driveway on SR 29 as part of overall project circulation improvements. The north project driveway at SR 29 will be limited to right-turns-only for outbound traffic (current operation) as per . existing Caltrans restrictions/signage.[13] It is noted that a small residential lane (Bea Lane) is located approximately 200-feet north of the proposed project's north driveway. Bea Lane provides access to residential and winery areas west of St. Helena Highway. However, no guests and/or employees use Bea Lane to access the AXR Napa Valley grounds (and are instructed as such). The proposed project site plan is shown in **Figure 6.1**

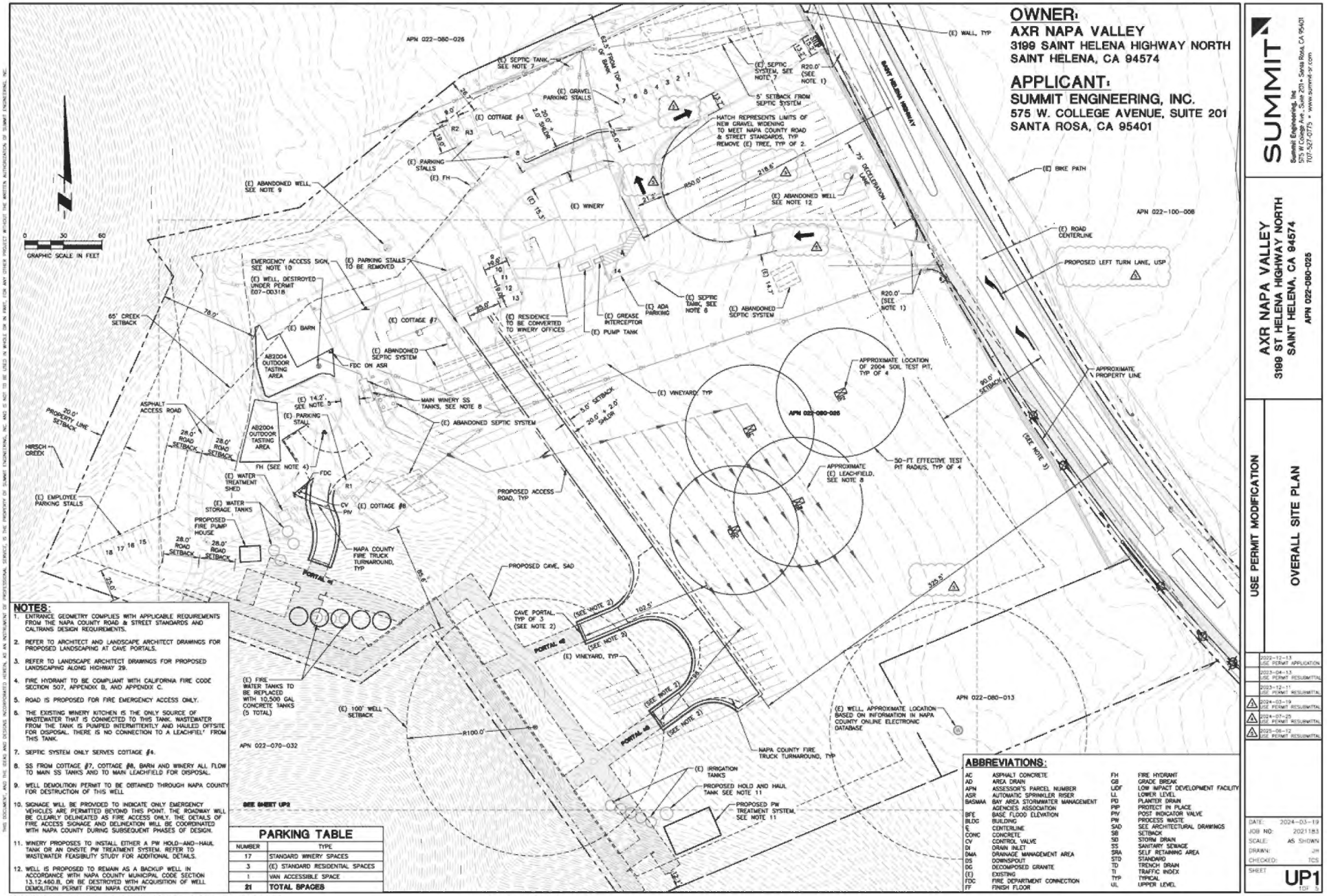
Daily operations for the proposed AXR Napa Valley project would involve an on-site winery operation with a maximum annual production of 35,000 gallons. All fruit would be processed on-site during the year with the majority occurring during the harvest/crush season. A maximum of 60 daily visitors is expected during the Monday-Sunday period. The maximum weekly visitation for tours and tastings would not exceed 420 guests per week and would be monitored by winery staff (as they currently do now). Visitor hours would be limited to between 10:00 a.m.–5:00 p.m. and would be by appointment only. Employment would increase by 14 full-time employees (10 weekday and 4 weekend). However, part-time employment would increase by 5 employees on the weekday but decrease by 6 employees on the weekend. Finally, marketing events would be spread out over the course of the year with the most frequent event occurring twice per month with 25 guests. The largest marketing event would be held three times per year with 150 guests. In addition, the Winery participates in other off-site industry and County-wide events including the Napa Valley Auction, Napa Valley Film Festival, and other such events. Specific AXR Napa Valley marketing events would be held outside of normal peak weekday and weekend travel periods starting at 11:00 a.m. and extending through 10:00 p.m. to encourage off-peak ingress/egress.

6.2 Project Trip Generation

Based on proposed Use Modifications associated with AXR Napa Valley activities, the total net increase in weekday and weekend daily and peak hour traffic volumes have been calculated and are shown in **Table 6.1.** Daily and peak hour trip generation has been based on the most recent Napa County PBES Winery Trip Generation Worksheets (see **Appendix D**). County daily and peak hour trip ratios account for production, visitation, employment, and marketing components associated with proposed use modification activities. The overall increase in proposed AXR Napa Valley Use Modification trips would be the net increase in daily and peak hours trips from current permitted levels to proposed use modification levels.

Project trip generation has been based on the approximate 6-11 week harvest season (worst case). The proposed project is expected to generate an average of 92 weekday (Friday) daily trips with 25 PM peak hour trips. During the weekend (Saturday), the project would generate 49 daily trips with 18 midday peak ho. trips. On an annual basis, the project is estimated to generate 25,610 net new trips per year. It is noted that a discussion of proposed project vehicle miles traveled (VMT) as a result of use modification activities is provided in Section 8—VMT.

[13] Caltrans, No (inbound) left or right-turn movements nor outbound left-turn movements allowed at AXR Napa Valley north driveway on SR 29, Encroachment permit #04066MC2098).



GHD

Project Site Plan (Coverage and Development)

Project No. 12610827

FIGURE 6.1

N

Table 6.1 AXR Napa Valley Daily and Peak Hour Trip Generation

Net New Trips	Harvest	Non-Harvest
Maximum Weekday Traffic (Friday)		
Net New Weekday Daily Trips	92	79
Net New Weekday Peak Hour Trips	25	20
Maximum Weekend Traffic (Saturday)		
Net New Weekend Daily Trips	49	39
Net New Weekend Peak Hour Trips	18	10
Maximum Annual Traffic		
Net New Annual Trips	25,610	

Source: Napa County Planning, Building, Environmental Services (PBES), Use Permit/Major Modification Application, Winery Trip Generation Worksheets, Weekday and Weekend Daily and Peak Hour Trip Generation, December 19, 2022 (Appendix D).

6.3 Project Trip Assignment

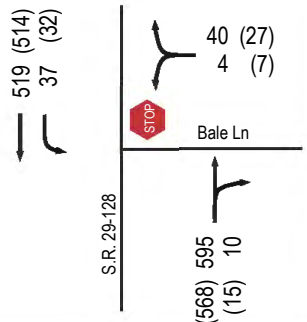
Based on observed turning percentages at the AXR Napa Valley driveways and north-south traffic flows along SR 29 during both the weekday PM peak hour and Saturday mid-day peak hours; project trips were distributed 55% to/from the south on SR 29 and 45% to/from the north on the same highway. Discussions with the project applicant indicate that more visitors to the Winery tend to originate from south Valley areas and points beyond than from the north.[14] The majority of guest visitation originates through the Napa Valley via SR 29 and Silverado Trail to access the Winery site.

Based on the planned installation of a northbound left-turn lane (inbound) at the project's south driveway; all inbound Winery-related trip generation on SR 29 would access the site via the south project driveway. All outbound traffic from the site would use the north project driveway to access SR 29. However, note that outbound project trips from the north driveway would be limited to right-turns-only.

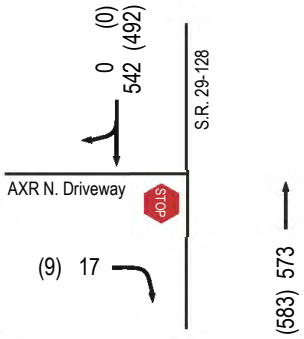
Existing plus Project Friday PM peak hour and Saturday midday peak hour trips have been shown in **Figure 6.2**

[14] Mr. Don Van Laeken, Personal communication, Guest visitation patterns, June 14, 2023.

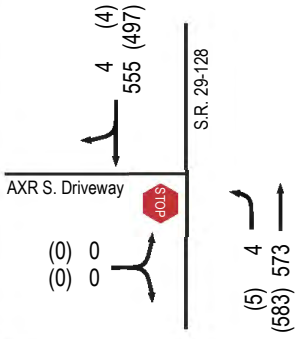
1 S.R. 29 - 128 / Bale Ln



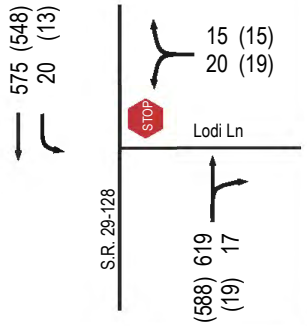
2 S.R. 29 - 128 / AXR N. Driveway

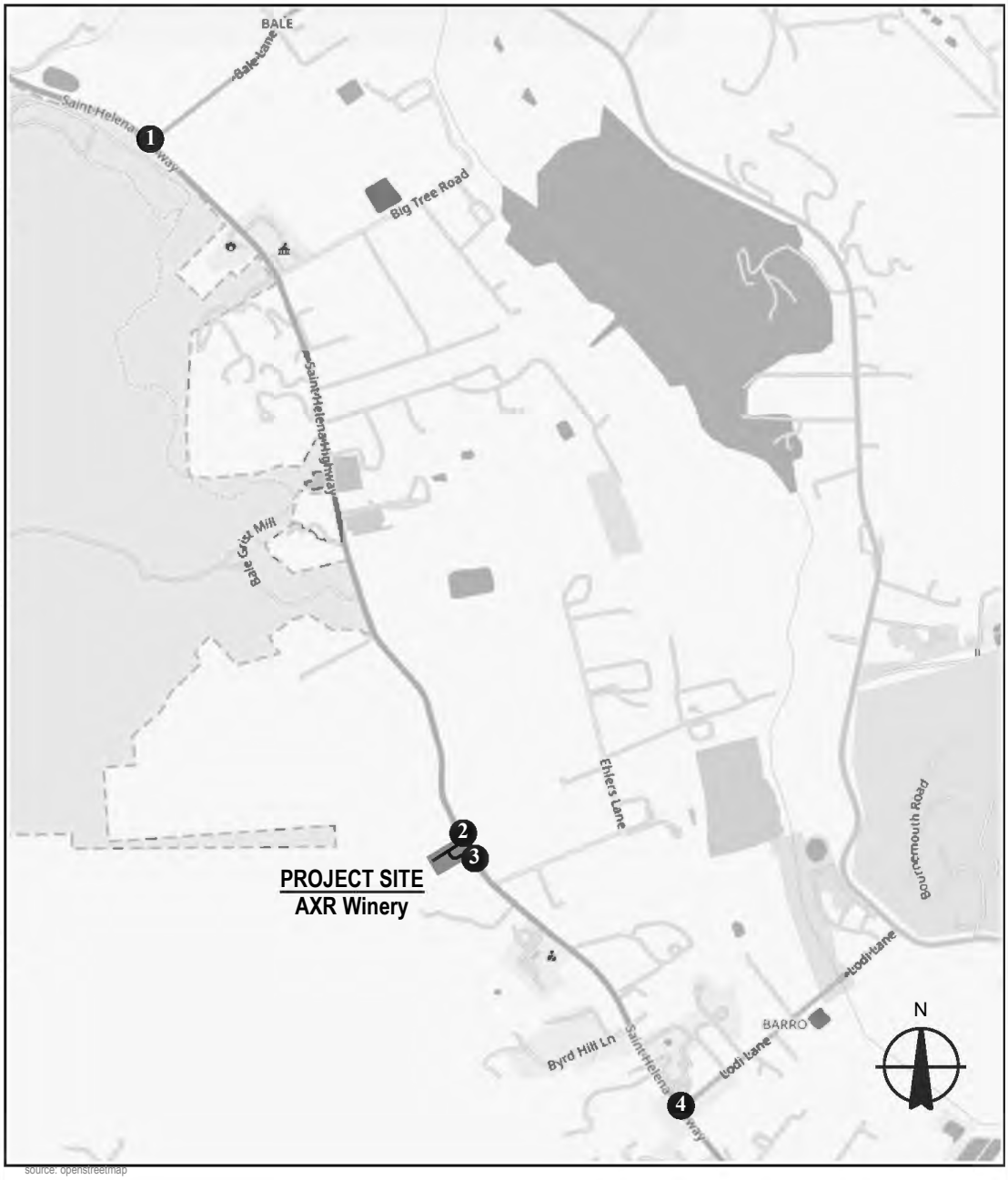


3 S.R. 29 - 128 / AXR S. Driveway



4 S.R. 29 - 128 / Lodi Ln





Legend

XX - Weekday PM Peak Hour Volumes
(XX) - Weekend Peak Hour Volumes
Turn Lane
STOP Stop Sign
Traffic Signal
Roundabout

GHD

Existing Plus Project
Weekday P.M. and (Weekend Mid-day)
Peak Hour Intersection Volumes

Project No. 12610827

FIGURE 6.2

6.4 Project Effects on Intersection LOS

6.4.1 Existing Plus Project Conditions

During the peak winery activity periods, the winery would generate 25 Friday PM peak hour weekday trips with 12 trips using SR 29 to/from north and 13 trips using SR 29 to/from the south (based on existing turn restrictions). During the Saturday mid-day peak hour the project would generate 18 midday peak hour trips with 8 trips to/from the north on SR 29 and the remaining 10 trips to/from the south. Weekday Friday PM peak hour and weekend Saturday mid-day peak hour intersection levels of service were evaluated with proposed project traffic and are shown in **Intersection LOS Summary Table 6.2.**

As shown in **Table 6.2**, the proposed AXR Napa Valley Use Modification project would continue to allow intersection operation of LOS C or better during both the Friday PM peak and Saturday midday peak hours.

Table 6.2 Summary Table: Existing, Near-Term, and Cumulative Year 2040 "Plus Project" Intersection LOS

ID	Intersection	Peak Hour	Target LOS	Existing plus Project			Near-Term plus Project			Cumulative Yr. 2040 plus Project		
				Control	Delay	LOS	Control	Delay	LOS	Control	Delay	LOS
1	Bale Lane/St. Helena Highway	PM	D	TWSC	15.1	C	TWSC	15.5	C	TWSC	18.7	C
		MD	D		16.2	C		16.6	C		20.6	C
2	AXR Napa Valley N. Driveway / St. Helena Highway	PM	D	TWSC	12.4	B	TWSC	12.5	B	TWSC	14.0	B
		MD	D		11.7	B		11.9	B		13.0	B
3	AXR Napa Valley S. Driveway / St. Helena Highway	PM	D	TWSC	8.7	A	TWSC	8.7	A	TWSC	9.2	A
		MD	D		8.5	A		8.5	A		9.0	A
4	Lodi Lane / St. Helena Highway	PM	D	TWSC	24.0	C	TWSC	26.5	D	TWSC	**40.2**	**E**
		MD	D		21.6	C		24.3	C		**35.4**	**E**

BOLD Indicate LOS of E or worse

1 Intersection LOS based on Synchro-Simtraffic (Version 11.0);

2 Delay reported from HCM 6 (TRB, 2016) methodology, TWSC = Two-Way-Stop-Control, PM = Friday Weekday Peak, MD = Saturday Midday Peak

6.4.2 Near-Term Plus Project Conditions

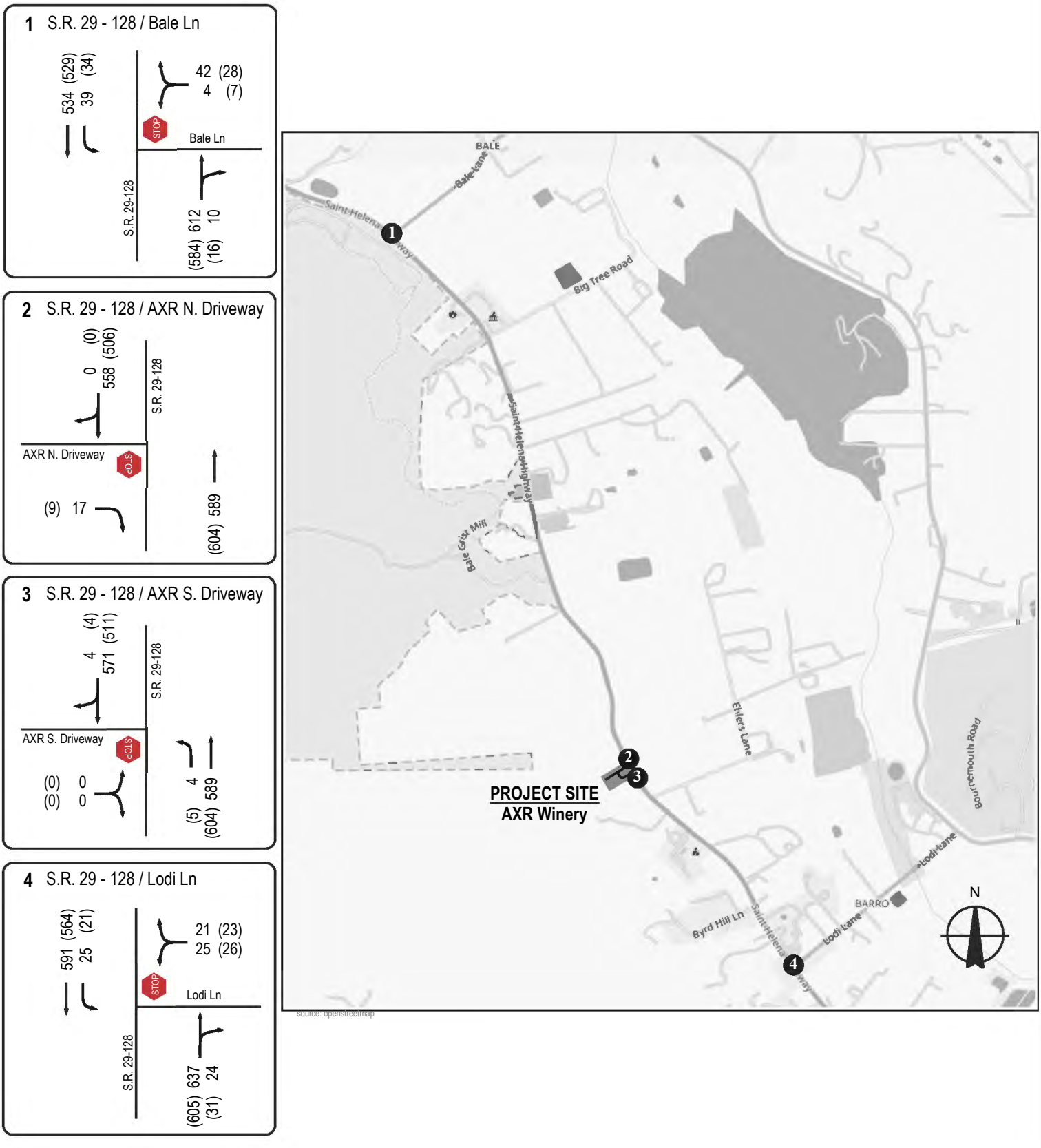
Near-Term Plus Project weekday Friday PM peak hour and weekend Saturday midday peak hour volumes are shown in **Figure 6.3**

As shown in **Summary Table 6.2**, the proposed AXR Napa Valley Use Modification project would allow intersection operation of LOS D or better during both the Friday PM peak and Saturday midday peak hours with Near-Term Plus Project volumes.

6.4.3 Cumulative Year 2040 Plus Project Conditions

Cumulative Year 2040 Plus Project weekday Friday PM peak hour and weekend Saturday midday peak hour volumes are shown in **Figure 6.4**

As shown in **LOS Summary Table 6.2**, with proposed AXR Napa Valley Use Modification project traffic the Lodi Lane/SR 29 intersection's westbound minor-street stop controlled movements from Lodi Lane would continue to operate at unacceptable levels (LOS E) during the Friday PM peak and Saturday midday peak hours with Cumulative Year 2040 Plus Project volumes. However, the proposed project would contribute less than five (5) seconds of additional delay. In addition, the proposed project's trips at this intersection represent less than 10 percent of the anticipated growth during each peak hour. A review of previous transportation studies conducted for adjacent Use Modification projects along Lodi Lane and SR 29 recommend the following for the Lodi Lane/SR 29 intersection:



Legend

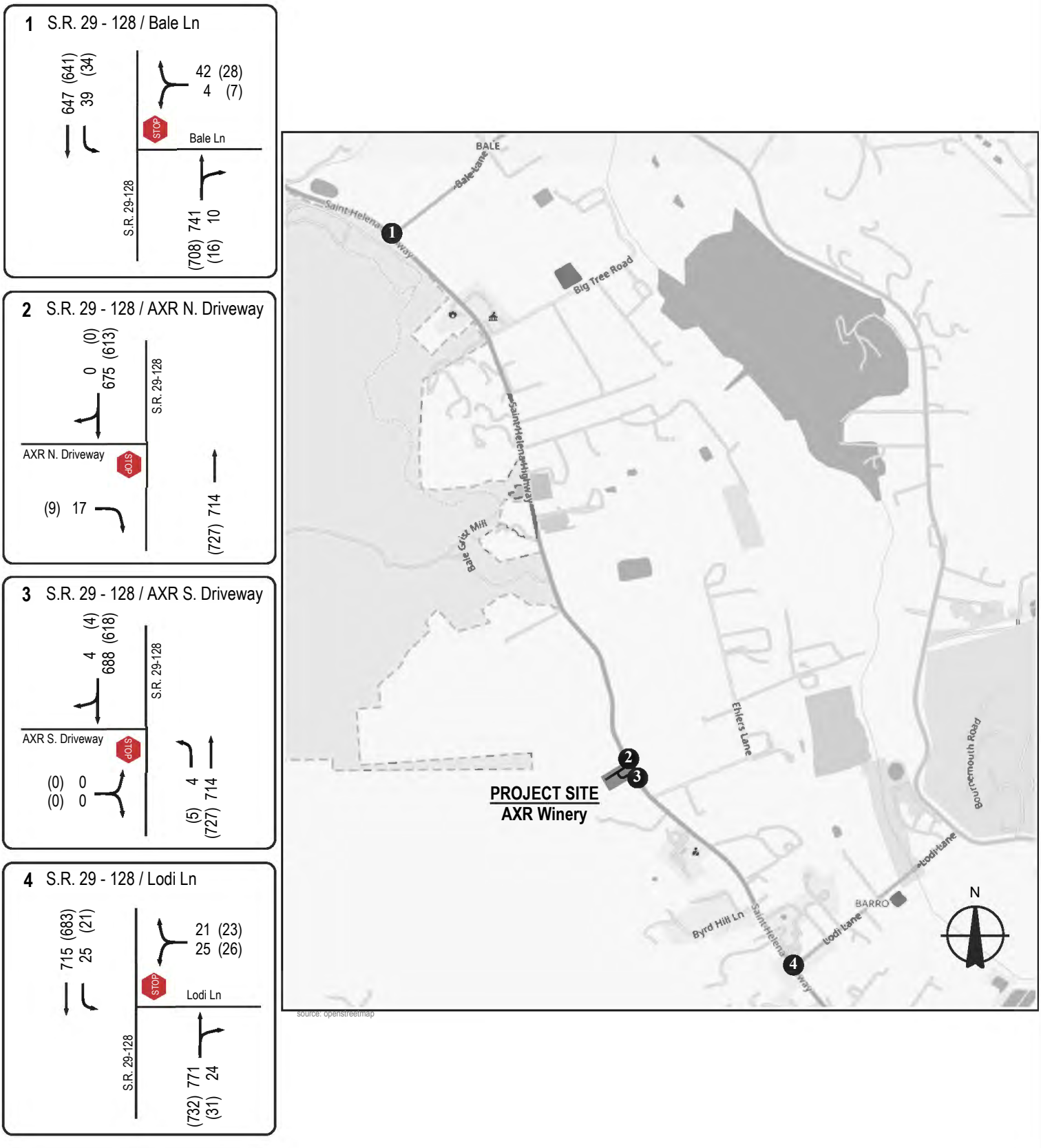
XX - Weekday PM Peak Hour Volumes
(XX) - Weekend Peak Hour Volumes
Turn Lane
STOP Stop Sign
Traffic Signal
Roundabout

GHD

Near Term Plus Project
Weekday P.M. and (Weekend Mid-day)
Peak Hour Intersection Volumes

Project No. 12610827

FIGURE 6.3



Legend

XX - Weekday PM Peak Hour Volumes
(XX) - Weekend Peak Hour Volumes

Turn Lane | STOP Stop Sign

Traffic Signal | Roundabout

GHD

Cumulative Year 2040 Plus Project
Weekday P.M. and (Weekend Mid-day)
Peak Hour Intersection Volumes

Project No. 12610827

FIGURE 6.4

- It is recommended that the westbound approach at the Lodi Lane/SR 29 intersection be restriped to include a dedicated right-turn lane. The proportional fair share costs to the proposed project would be 1% or less and could be shared with other approved/pending projects (Inn at the Abbey & Duckhorn Vineyards).[15]

All remaining project study intersections at Bale Lane and the AXR Napa Valley north and south driveway intersections at SR 29 would operate acceptably (LOS D or better) with Cumulative Year 2040 Plus Project volumes.

6.4.4 Signal Warrant Evaluation

Under all "with project" scenarios that in Existing, Near-Term, and Cumulative Year 2040 volumes, the unsignalized study intersections of Bale Lane, AXR Napa Valley driveways (north and south), and Lodi Lane at SR 29 would not qualify for signalization using the peak hour warrant criteria (the warrant graphs are provided in the **Appendix C**).

6.5 Project Effects on Roadway Segment LOS

6.5.1 Existing Plus Project Conditions

Under Existing plus Project Conditions, all six roadway segments would operate at LOS D or better during both peak hours. As shown in **Table 6.3**, percent time spent following (PTSF) and roadway segment LOS are presented.

Table 6.3 Existing Plus Project Roadway Segment LOS, Weekday PM Peak & Weekend Midday Peak Hour

Study Segment	Friday PM Peak		Saturday Midday Peak	
	E (NP)	E+Prj.	E (NP)	E+Prj.
Direction	PTSF/ LOS	PTSF/ LOS	PTSF/ LOS	PTSF/ LOS
1. Bale Ln. - E. of SR 29				
Eastbound	10.8 A	10.8 A	10.8 A	10.9 A
Westbound	10.5 A	11.2 A	8.6 A	9.4 A
2. SR 29 - N. of Lodi Ln.				
Northbound	62.1 C	62.5 C	62.8 C	63.0 D
Southbound	60.7 C	60.9 C	58.2 C	58.5 C
3. Lodi Ln. - E. of SR 29				
Eastbound	14.0 A	14.2 A	12.7 A	13.0 A
Westbound	13.5 A	13.5 A	13.5 A	14.0 A

E = Existing, (NP) = No Project, PTSF = Percent Time Spent Following

6.5.2 Near-Term Plus Project Conditions

Under Near-Term plus Project Conditions, all six roadway segments would operate at LOS D or better during both peak hours. As shown in **Table 6.4**, percent time spent following (PTSF) and roadway segment LOS are presented.

[15] W-Trans, Traffic Impact Study for the Duckhorn Vineyards Use Permit Modification, June 10, 2021.

6.5.3 Cumulative Year 2040 Plus Project Conditions

Under Cumulative Year 2040 plus Project Conditions, all six roadway segments would operate at LOS D or better during both peak hours. As shown in **Table 6.5**, percent time spent following (PTSF) and roadway segment LOS are presented.

Table 6.4 Near-Term Plus Project Roadway Segment LOS, Weekday PM Peak & Weekend Midday Peak Hour

Study Segment	Friday PM Peak		Saturday Midday Peak	
	N-T (NP)	N-T+Prj.	N-T (NP)	N-T+Prj.
Direction	PTSF/ LOS	PTSF/ LOS	PTSF/ LOS	PTSF/ LOS
1. Bale Ln. - E. of SR 29				
Eastbound	11.2 A	11.2 A	11.4 A	11.4 A
Westbound	10.8 A	11.5 A	8.8 A	9.6 A
2. SR 29 - N. of Lodi Ln.				
Northbound	62.8 C	63.2 D	63.7 D	63.9 D
Southbound	61.4 C	61.7 C	58.9 C	59.2 C
3. Lodi Ln. - E. of SR 29				
Eastbound	16.8 A	17.0 A	17.5 A	17.7 A
Westbound	16.1 A	16.1 A	16.8 A	16.8 A

E = Existing, (NP) = No Project, PTSF = Percent Time Spent Following

Table 6.5 Cumulative Year 2040 Plus Project Roadway Segment LOS, Weekday PM Peak & Weekend Midday Peak Hour

Study Segment	Friday PM Peak		Saturday Midday Peak	
	C (NP)	C+Prj.	C (NP)	C+Prj.
Direction	PTSF/ LOS	PTSF/ LOS	PTSF/ LOS	PTSF/ LOS
1. Bale Ln. - E. of SR 29				
Eastbound	11.2 A	11.2 A	11.4 A	11.4 A
Westbound	10.8 A	10.8 A	8.8 A	8.8 A
2. SR 29 - N. of Lodi Ln.				
Northbound	67.9 D	68.2 D	68.5 D	68.7 D
Southbound	63.9 D	66.6 D	63.9 D	64.2 D
3. Lodi Ln. - E. of SR 29				
Eastbound	16.8 A	16.8 A	17.5 A	16.5 A
Westbound	16.1 A	16.1 A	16.8 A	15.2 A

E = Existing, (NP) = No Project, PTSF = Percent Time Spent Following

7. Site Access/Design Parameters

7.1.1 Driveway Access

AXR Napa Valley is served by two (2) driveway connections to/from SR 29. The primary driveway (south driveway) is located at 3199 St. Helena Highway (SR 29). With proposed Use Modifications, driveway access to the AXR Napa Valley Winery would be improved to provide a northbound left-turn lane on SR 29 at the project's south driveway. As directed, all existing and proposed project trips will be inbound from the south driveway, circulate and/or park on the site, then exit outbound from the north project driveway. The south project driveway will be limited to inbound access only for northbound left-turns and southbound right-turns. The north project driveway will be limited to outbound access only for eastbound right-turn movements from the site(south on SR 29).

The south project driveway will be signed for "Do Not Enter" (MUTCD, R5-1) for internal traffic flow with signs facing west towards the main Winery on-site building to prevent outbound flow. For the north project driveway, current driveway signage and limited vehicle access (right-turns-only) outbound would remain unchanged from existing conditions. The north project driveway is currently signed for "No Left-Turn" (MUTCD, R3-2) and "Do Not Enter" (MUTCD, R5-1) for vehicles on SR 29. In addition, outbound motorists are instructed for "Right-Turns Only" (CA MUTCD, R3-5R). Planned project circulation in/out of the site in shown in **Figure 6.1.**

The two project driveways working in tandem serve to provide three purposes:

4. Disperse project-generated daily and peak hour vehicle trips;
5. Improve vehicle safety and access at the south project driveway for northbound left-turn movements from the primary access highway (SR 29) by providing a dedicated left-turn lane;
6. Provide more uniform one-way traffic flow within the project site with clear inbound/outbound directions.

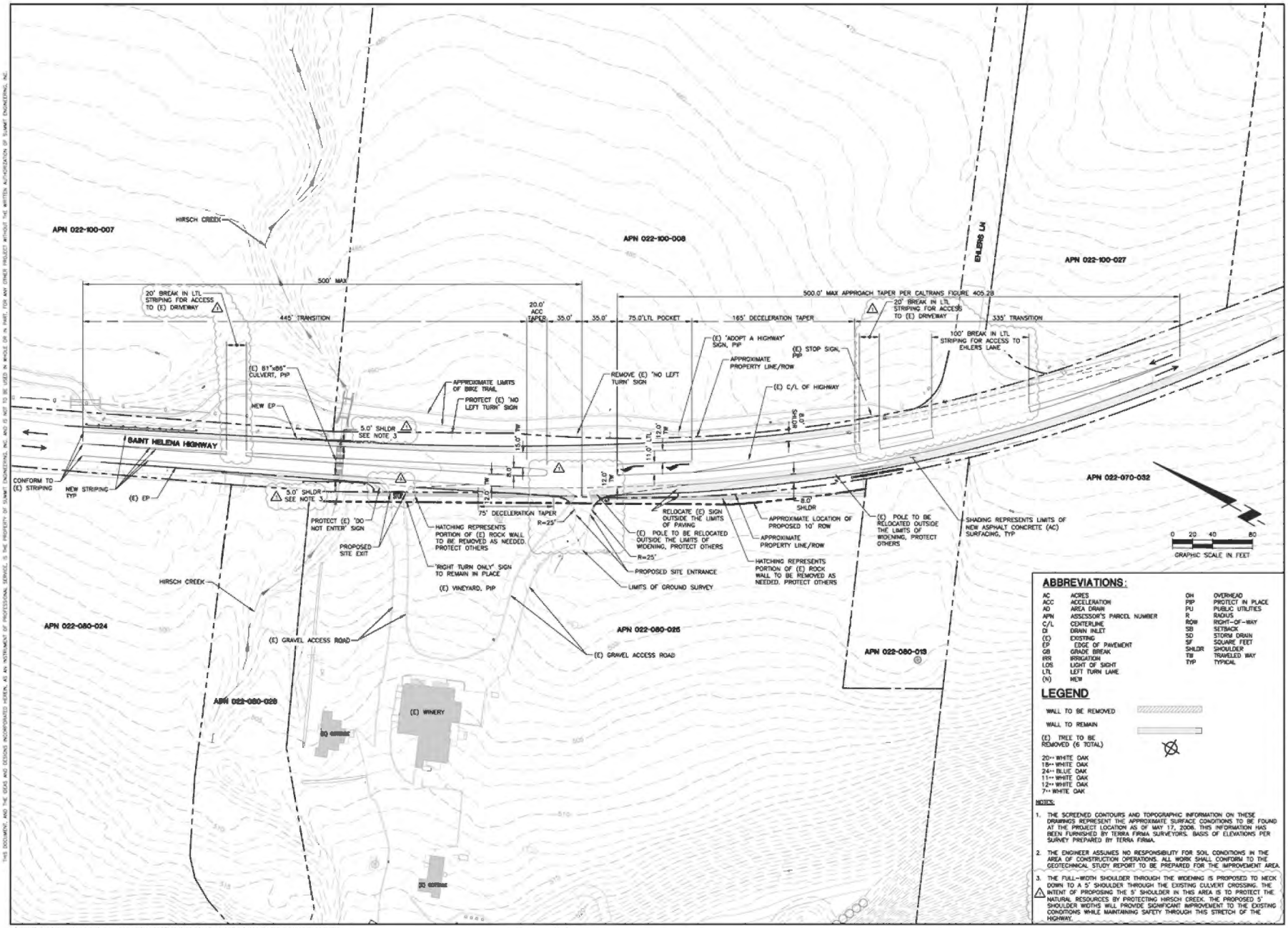
The five-year collision analysis conducted for the segment of State Route 29 adjacent to proposed project driveways indicates that there is not a vehicle collision issue associated with vehicle access to/from the highway. The roadway segment collision analysis evaluated SR 29 1,000 feet north and south of the AXR Napa Valley driveways. As shown in **Table 2.3,** the roadway segment experienced one (1) collision over the past five years with a calculated collision rate below the State average. The recorded collision was a "broadside" on the east side of the highway where a motorist was off the shoulder of the highway and was pulling back into through-traffic when the collision occurred. This type of maneuver would be difficult to resolve. However, the installation of a new left-turn lane at the project's south driveway will improve vehicle safety on SR 29 by removing left-turning vehicles into the project site from northbound through-traffic on St. Helena Highway as shown in **Figure 7.1.**

7.1.2 Left-Turn Lane Warrant Analysis

At the County's request, a left-turn lane warrant analysis was conducted for the proposed project's southern driveway at State Route 29. (As noted, the proposed project will install a dedicated northbound left-turn lane at this driveway). Based on Napa County's Road and Street Standards for left-turn lane installation, the left-turn lane warrant evaluated for the south project driveway was based on average daily traffic (ADT) volumes generated at the proposed project driveway verses ADT volumes on State Route 29. Based on these Napa County ADT warrant graph criteria, a project will meet the left-turn lane warrant when the volumes fall above the plotted graph line on the chart. In the case of the proposed project, focused project ADT generated at the inbound south driveway would equal 116 daily trips with 15,700 daily trips on Deer Park Road and fall above the minimum ADT volumes for installation of a left-turn lane (see Napa County Left-Turn Lane Warrant Analysis—**Appendix F**).

7.1.3 Vehicle Sight Distance

Vehicle sight distance for the existing AXR Napa Valley driveways (north and south) were evaluated as part of field work associated with the transportation analysis for the proposed project (GHD*, June 2023*). The required vehicle visibility or "corner sight distance" is a function of travel speeds on SR 29 (St. Helena Highway). Caltrans design standards indicate that for appropriate corner sight distance, "a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle in the right lane of the



ABBREVIATIONS:

AC	ACRES	OH	OVERHEAD
ACC	ACCELERATION	PIP	PROTECT IN PLACE
AD	AREA DRAIN	PU	PUBLIC UTILITIES
APN	ASSESSOR'S PARCEL NUMBER	R	RADIUS
C/L	CENTERLINE	ROW	RIGHT-OF-WAY
DI	DRAIN INLET	SB	SETBACK
(E)	EXISTING	SD	STORM DRAIN
EP	EDGE OF PAVEMENT	SF	SQUARE FEET
GB	GRADE BREAK	SHLDR	SHOULDER
IRR	IRRIGATION	TW	TRAVELED WAY
LOS	LIGHT OF SIGHT	TYP	TYPICAL
LTL	LEFT TURN LANE		
(N)	NEW		

LEGEND

WALL TO BE REMOVED

WALL TO REMAIN

(E) TREE TO BE REMOVED (6 TOTAL)

20"± WHITE OAK
18"± WHITE OAK
24"± BLUE OAK
11"± WHITE OAK
12"± WHITE OAK
7"± WHITE OAK

NOTES:

1. THE SCREENED CONTOURS AND TOPOGRAPHIC INFORMATION ON THESE DRAWINGS REPRESENT THE APPROXIMATE SURFACE CONDITIONS TO BE FOUND AT THE PROJECT LOCATION AS OF MAY 17, 2006. THIS INFORMATION HAS BEEN FURNISHED BY TERRA FIRMA SURVEYORS. BASIS OF ELEVATIONS PER SURVEY PREPARED BY TERRA FIRMA.
2. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR SOIL CONDITIONS IN THE AREA OF CONSTRUCTION OPERATIONS. ALL WORK SHALL CONFORM TO THE GEOTECHNICAL STUDY REPORT TO BE PREPARED FOR THE IMPROVEMENT AREA.
3. ⚠ THE FULL-WIDTH SHOULDER THROUGH THE WIDENING IS PROPOSED TO NECK DOWN TO A 5' SHOULDER THROUGH THE EXISTING CULVERT CROSSING. THE INTENT OF PROPOSING THE 5' SHOULDER IN THIS AREA IS TO PROTECT THE NATURAL RESOURCES BY PROTECTING HIRSCH CREEK. THE PROPOSED 5' SHOULDER WIDTHS WILL PROVIDE SIGNIFICANT IMPROVEMENT TO THE EXISTING CONDITIONS WHILE MAINTAINING SAFETY THROUGH THIS STRETCH OF THE HIGHWAY.

SUMMIT

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AXR NAPA VALLEY
3199 ST HELENA HIGHWAY NORTH
SAINT HELENA, CA 94574
APN 022-080-025

LEFT TURN LANE CONCEPT

PRELIMINARY LAYOUT PLAN
STRIPING AND SIGNAGE PLAN

2/11/25	ISSUED FOR CLIENT REVIEW
4/03/25	ISSUED FOR CLIENT REVIEW
6/12/25	PLAN CHECK RESPONSE

DATE: 2025-02-13
JOB NO: 2021183
SCALE: AS SHOWN
DRAWN: BV
CHECKED: MS
SHEET: C1
TOP 3

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P:\2021\2021183 AXR NAPA LIP MOD FEASIBILITY\CAD\CIVIL\LTL CONCEPT\21183 LTL CONCEPT-V2.DWG

PLOTTED ON: 6/12/2025 1:33 PM

GHD

Left Turn Lane Concept

Project No. 12610827

FIGURE 7.1

main highway". However, Caltrans design guidelines also indicate that the minimum corner sight distance “shall be equal to the stopping sight distance” where possible.

Radar speed surveys on SR 29 were conducted for the roadway in the project area.[17] The "critical" vehicle speed (the speed at which 85% of all surveyed vehicles travel at or below) along SR 29 was measured at 45 mph at the project driveway. It is noted that during the period of data collection (June 2023), ongoing construction along SR 29 (shoulder/culvert) temporarily reduced the existing speed limit by covering roadway speed limit signs and indicating 40-45 mph in certain segments of SR 29. However, the posted speed limit in the project driveway area is 50-mph in the segment adjacent to AXR Napa Valley. Caltrans’ design standards indicate that measured vehicle speeds require a stopping sight distance of 430-feet both north and south of the driveway measured along the travel lanes of St. Helena Highway based on a 50-mph speed limit.[18] Based on field measurements, sight distance from the AXR Napa Valley driveways to the north on the St. Helena Highway is approximately 520 feet (north driveway) and 700 feet (south driveway). Sight distance from the existing driveways to the south is in excess of 600 feet. Therefore, the sight distance recommendations would be met for the speed limit and measured vehicle speeds.

7.1.4 Internal Circulation

The existing AXR Napa Valley project driveways from St. Helena Highway provide vehicle access east-westinbound/outbound) to the Winery tasting and production buildings (**see Figure 6.1—Project Site Plan**). The inbound south driveway extends a short distance (250-feet) in a northwest direction from the highway through vineyard areas to the main AXR Napa Valley building (tours and tastings). A large ADA parking space is located on the south side of the main Winery building. The south AXR Napa Valley driveway forms a circular connection with the outbound north AXR Napa Valley driveway immediately north of the main building. Guests can be picked-up/dropped-off from the driveway area in front of the main Winery building, but no vehicle parking is allowed in this area. The outbound north AXR Napa Valley driveway extends west past the main Winery building to provide access to the Winery production building (Barn) and parking areas. Vehicle parking is provided off the north project driveway as well as between the two Winery buildings.

The Napa Countywide Bicycle Plan has been completed and adopted by the Napa Valley Transportation Authority (NVTA) and the County.[19] The plan encourages new developments to incorporate bicycle friendly designs. As noted, St. Helena Highway is proposed as a Class II bike lane past the proposed project site. It is expected that some visitors may occasionally arrive by bicycle to access the proposed project. The project would provide bicycle racks for visitors to the proposed winery.

7.1.5 Caltrans Review

Recent Caltrans review of the proposed project has focused on the placement of recommended driveway signing as well as the overall design exception request of the planned northbound left-turn on SR 29 at the site’s south driveway (*Luana Chen, Caltrans District 4, Local Development Review, 9-9-25*). As a result, an encroachment permit will be submitted to Caltrans that will include the following two design components as follows:

- The location of the “Do Not Enter” sign for internal traffic flow at the south project driveway will be depicted on the drawings/plans submitted as part of the Caltrans encroachment permit application.
- A Design Standards Decision Document (DSDD) to justify any nonstandard features of the northbound left-turn lane design on SR 29 at the south project driveway will be submitted with the Caltrans encroachment permit application.

[17] GHD Inc, Radar vehicle speed surveys, St. Helena Highway (SR 29), June 10, 2023.
[18] Caltrans, Highway Design Manual, Table 405.1A, Corner (Stopping) Sight Distance, Table 201.1, Sight Distance Standards, July 1, 2020.
[19] Napa County, Countywide Bicycle Plan (2012), Planning Area-North Valley, May 2012.

8. Vehicle Miles Traveled (VMT)

The following VMT guidelines and recommendations are sited directly from the Napa County Traffic Study (TIS) Guidelines (*Attachment C—VMT Analysis Approach for Development Projects in Napa County*).[20]

8.1.1 VMT Policies

The County's General Plan Circulation Element contains a policy statement (Policy CIR-7) indicating that the County expects development projects to achieve a 15% reduction in project-generated VMT to avoid triggering a significant environmental impact. Specifically, the policy directs project applicants to identify feasible measures that would reduce their project's VMT and to estimate the amount of VMT reduction that could be expected from each measure. The policy states that "projects for which the specified VMT reduction measures would not reduce unmitigated VMT by 15 or more percent shall be considered to have a significant environmental impact."

That policy is followed by an action item (CIR-7.1) directing the County to update its CEQA procedures to develop screening criteria for projects that "would not be considered to have a significant impact to VMT" and that could therefore be exempted from VMT reduction requirements. The approach outlined here includes a set of screening criteria intended to comply with this action item.

8.1.2 Baseline VMT Screening Process

It is common that an existing facility, whether a winery or another type of use, may apply to the County for some type of modification. Modifications may involve expansion of operating hours or of production quantities, changes to the number of events or visitors permitted, construction of new or expanded buildings, modifications to existing buildings to allow for more intensive use, and so on. In many cases, the requested modification would trigger more vehicle trips to/from the project site.

For the purposes of VMT analysis, the County will consider the baseline trip generation for all existing facilities to be the trip generation of the facility under entitled operating characteristics as of January 1,2022. When an existing facility applies for a modification, the trip generation associated with that modification will be calculated as the change between the facility's entitled operations on January 1, 2022and the expected operations once the proposed modification is complete.

At any point in the future, if the facility has added more than 110 daily passenger vehicle trips, during any period beyond the level of its trip generation on January 1, 2022, then it will be subject to the "VMT Analysis Requirements for Projects Based on Trip Generation" described below. Please note that crossing this threshold of adding 110 daily passenger vehicle trips may occur in the first project modification requested after January 1, 2022, or it may occur after multiple project modifications which will be treated cumulatively.

Given the largely rural nature of Napa County, a reasonable screening approach is to apply a combination of the concepts and guidelines expressed in both the OPR Technical Advisory and the Napa County TIS Guidelines. Development projects proposed in Napa County can use the following structure to determine what level of VMT analysis will be required:

A Project modifying an existing facility that would generate additional trips where the net cumulative result of all project modifications after January 1, 2022 would generate less than 110 net new daily passenger vehicle and truck trips.

a. Project is not required to prepare a TIS

b. Project is presumed to have a less-than-significant environmental impact for VMT

[20] Napa County PBES, Napa County Traffic Impact Study Guidelines, Attachment J, February 2022.

c. Applicant is encouraged to describe the measures they are taking and/or plan to take that would reduce the Project's trip generation and/or VMT

Based on the above Napa County VMT analysis and criteria, the proposed project is calculated to generate 92 net new daily trips on a weekday (maximum) and satisfies all requirements to be screened out and not require VMT analysis.

9. Transportation Demand Management (TDM)

TDM Plan

The following measures are suggested and/or occurring to further reduce the demand of vehicles to/from the site. Given the nature of the proposed Use Modification with moderate increases in visitation, employment, and marketing events, large-scale TDM measures are not practical given the overall size of the Winery operations. However, specific AXR Napa Valley-focused TDM measures are described in some detail below.

Visitor Tours and Tastings/Marketing Events:

- When smaller marketing events are being held at the Winery (25 guests), the combination of tours/tastings and marketing events shall not exceed 60 daily visitors.
- When large marketing events occur seven times per year (75-150 guests), tours/tasting visitors shall not be allowed on those days.
- To the maximum extent feasible, scheduling of tours and tastings shall not occur during peak weekday travel times between 4:00-6:00 p.m.
- When making appointments for all guests and visitors, indicate the existing Caltrans access restrictions at the SR 29--AXR Napa Valley north project driveway (right-turn outbound only) with inbound flow only at the south project driveway. Refer them to Winery's website for directions and instructions.

Shuttles, Hire Car, Limousines

- To the maximum extent possible, shuttle and other high occupancy vehicles shall transport guests to marketing events or tours and tastings for groups of 25 persons or more, with all vehicles parking on-site in designated areas.

Employees:

In addition to the employee TDM measures currently embedded in Winery operations, the following is suggested:

- Staggered/Flextime employee work hours: The winery will make efforts to have employees who do not live on-site arrive and/or depart the premises outside of the peak commute periods. For example, wine production employees would be encouraged to arrive prior to 7:00 a.m. and to depart before 3:00 p.m. (before 12:00 p.m. on the weekends). The exception would be during the crush/harvest season. Employees working in the visitor-serving capacities would be encouraged to arrive after 9:00 a.m. and depart after 6:00 p.m. (after 4:00 p.m. on weekends);
- Carpool/Vanpool (Bay Area Commuter Benefits Program): Winery enrolls in program and notifies employees and subsidizes carpooling activities per program details;
- Provide and Maintain Bicycle Racks for Employees/Visitors: Provide and maintain bicycle racks for use by employees/visitors. Provide other resources associated with bicycle uses;
- Delivery Off-Peak Scheduling: The Winery will endeavor to schedule deliveries during off-peak commute times.
-

General:

- Ride Share/Car Free Operations: The winery will make efforts to encourage ride shares and “car free” tourism as described in the program of the Napa Valley Destination Council and Napa Valley Transportation Agency.
- Napa Valley Forward Program: The Winery can enter into an agreement with the agency’s designated commuting hub platform to provide information to the Winery’s traffic reduction efforts.

Appendix A

Traffic Count Data

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Napa
N/S: St Helena Highway
E/W: Bale Lane
Weather: Clear

File Name : 01_CNP_St H_Bale 6-9
Site Code : 22323578
Start Date : 6/9/2023
Page No : 1

Groups Printed- Total Volume

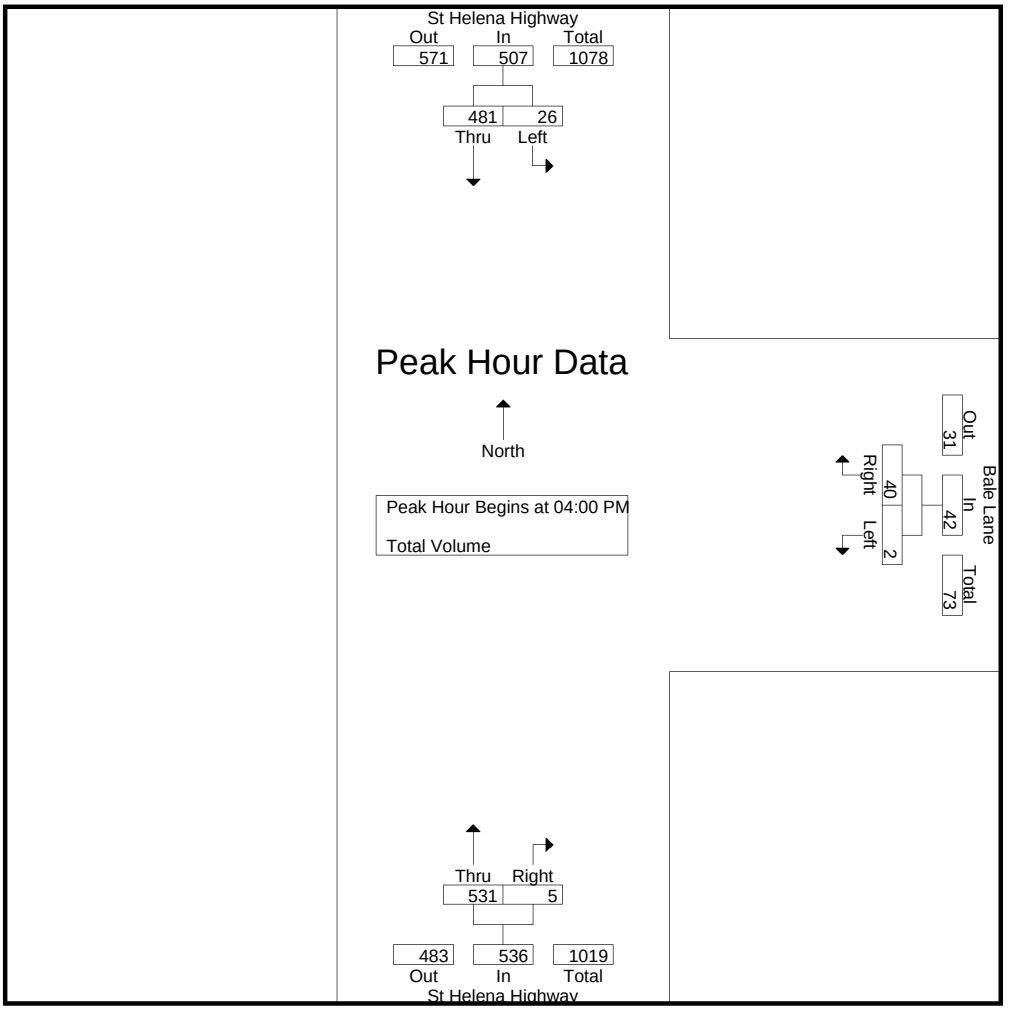
	St Helena Highway Southbound			Bale Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	7	119	126	0	14	14	141	1	142	282
04:15 PM	2	116	118	1	7	8	133	1	134	260
04:30 PM	7	115	122	0	7	7	127	2	129	258
04:45 PM	10	131	141	1	12	13	130	1	131	285
Total	26	481	507	2	40	42	531	5	536	1085
05:00 PM	8	103	111	0	4	4	134	1	135	250
05:15 PM	6	112	118	0	14	14	137	0	137	269
05:30 PM	6	91	97	1	9	10	101	0	101	208
05:45 PM	11	104	115	2	6	8	112	2	114	237
Total	31	410	441	3	33	36	484	3	487	964
Grand Total	57	891	948	5	73	78	1015	8	1023	2049
Apprch %	6	94		6.4	93.6		99.2	0.8		
Total %	2.8	43.5	46.3	0.2	3.6	3.8	49.5	0.4	49.9	

	St Helena Highway Southbound			Bale Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	7	119	126	0	**14**	**14**	**141**	1	**142**	282
04:15 PM	2	116	118	**1**	7	8	133	1	134	260
04:30 PM	7	115	122	0	7	7	127	**2**	129	258
04:45 PM	**10**	**131**	**141**	1	12	13	130	1	131	**285**
Total Volume	26	481	507	2	40	42	531	5	536	1085
% App. Total	5.1	94.9		4.8	95.2		99.1	0.9		
PHF	.650	.918	.899	.500	.714	.750	.941	.625	.944	.952

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County of Napa
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Weather: Clear

File Name : 01_CNP_St H_Bale 6-9
Site Code : 22323578
Start Date : 6/9/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	7	119	126	0	**14**	**14**	**141**	1	**142**
+15 mins.	2	116	118	**1**	7	8	133	1	134
+30 mins.	7	115	122	0	7	7	127	**2**	129
+45 mins.	**10**	**131**	**141**	1	12	13	130	1	131
Total Volume	26	481	507	2	40	42	531	5	536
% App. Total	5.1	94.9		4.8	95.2		99.1	0.9	
PHF	.650	.918	.899	.500	.714	.750	.941	.625	.944

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County of Napa
N/S: St Helena Highway
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File Name : 01_CNP_St H_Bale 6-10
Site Code : 22323578
Start Date : 6/10/2023
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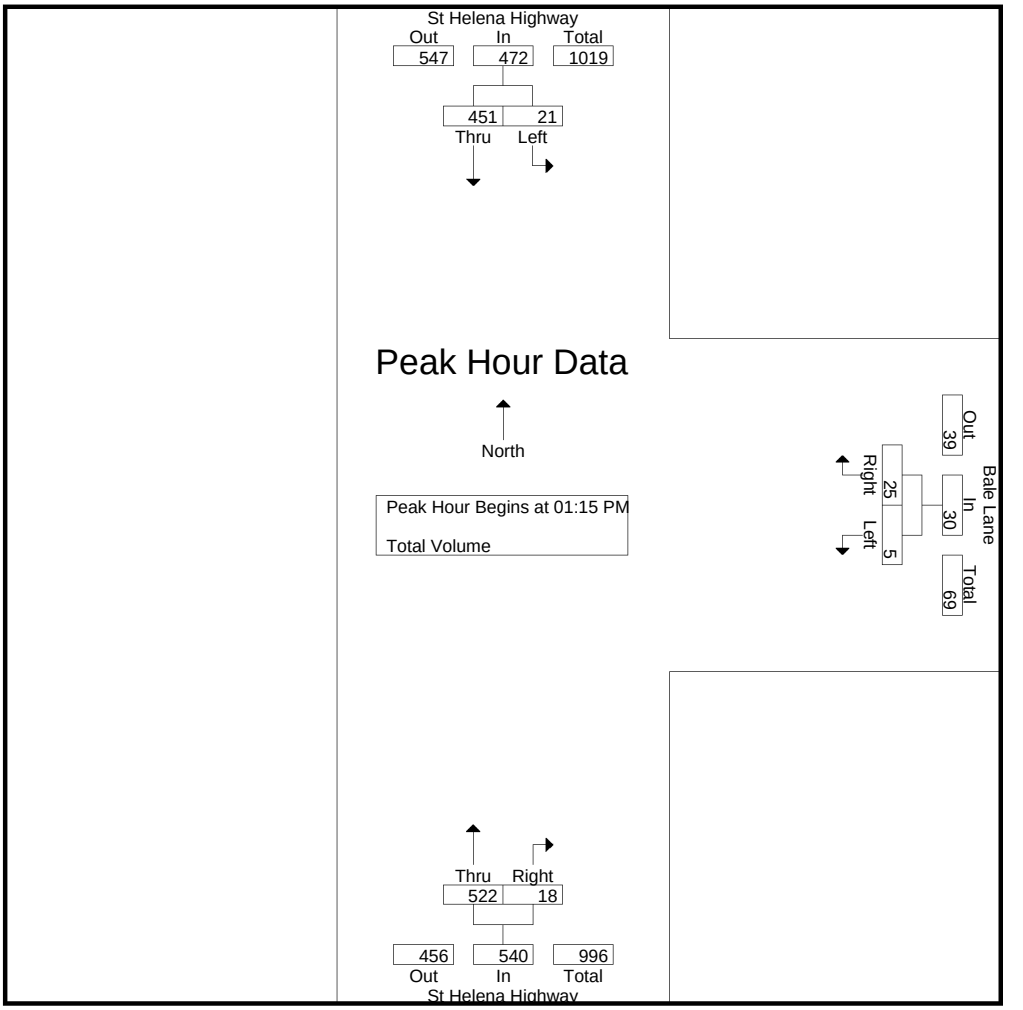
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01:15 PM	5	117	122	0	6	6	128	5	133	261
01:30 PM	4	119	123	1	8	9	137	5	142	274
01:45 PM	7	107	114	0	6	6	124	4	128	248
Total	19	436	455	1	26	27	501	14	515	997
02:00 PM	5	108	113	4	5	9	133	4	137	259
02:15 PM	3	114	117	1	6	7	119	0	119	243
02:30 PM	3	107	110	0	9	9	130	1	131	250
02:45 PM	4	119	123	1	7	8	122	1	123	254
Total	15	448	463	6	27	33	504	6	510	1006
Grand Total	34	884	918	7	53	60	1005	20	1025	2003
Apprch %	3.7	96.3		11.7	88.3		98	2		
Total %	1.7	44.1	45.8	0.3	2.6	3	50.2	1	51.2	

	St Helena Highway Southbound			Bale Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 01:15 PM										
01:15 PM	5	117	122	0	6	6	128	**5**	133	261
01:30 PM	4	**119**	**123**	1	**8**	**9**	**137**	5	**142**	**274**
01:45 PM	**7**	107	114	0	6	6	124	4	128	248
02:00 PM	5	108	113	**4**	5	9	133	4	137	259
Total Volume	21	451	472	5	25	30	522	18	540	1042
% App. Total	4.4	95.6		16.7	83.3		96.7	3.3		
PHF	.750	.947	.959	.313	.781	.833	.953	.900	.951	.951

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County of Napa
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File Name : 01_CNP_St H_Bale 6-10
Site Code : 22323578
Start Date : 6/10/2023
Page No : 2



Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	01:15 PM			02:00 PM			01:15 PM		
+0 mins.	5	117	122	**4**	5	**9**	128	**5**	133
+15 mins.	4	**119**	**123**	1	6	7	**137**	5	**142**
+30 mins.	**7**	107	114	0	**9**	9	124	4	128
+45 mins.	5	108	113	1	7	8	133	4	137
Total Volume	21	451	472	6	27	33	522	18	540
% App. Total	4.4	95.6		18.2	81.8		96.7	3.3	
PHF	.750	.947	.959	.375	.750	.917	.953	.900	.951

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E/W: Bale Lane
Weather: Clear

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Start Date : 6/16/2023
Page No : 1

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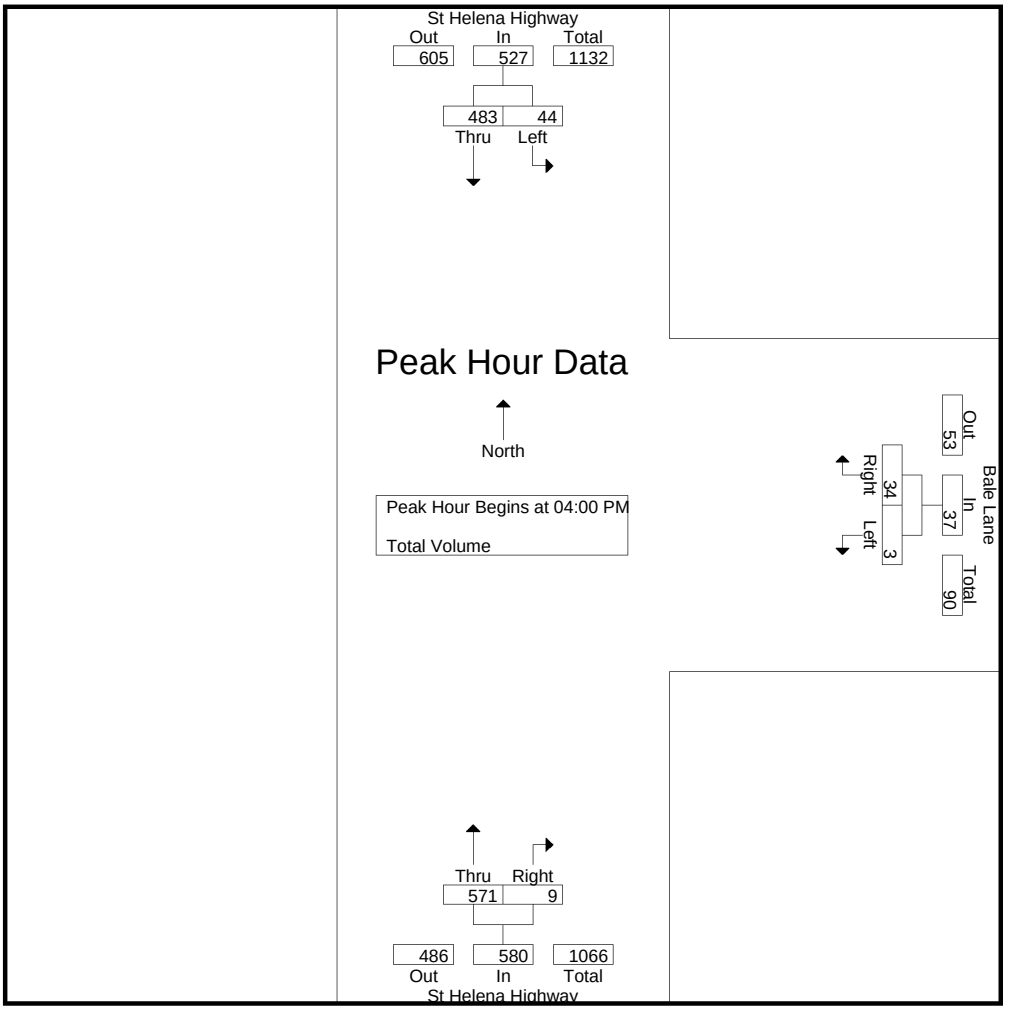
	St Helena Highway Southbound			Bale Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	15	145	160	3	12	15	139	3	142	317
04:15 PM	7	103	110	0	12	12	162	3	165	287
04:30 PM	11	116	127	0	6	6	134	2	136	269
04:45 PM	11	119	130	0	4	4	136	1	137	271
Total	44	483	527	3	34	37	571	9	580	1144
05:00 PM	3	126	129	1	7	8	149	0	149	286
05:15 PM	12	121	133	1	7	8	145	5	150	291
05:30 PM	7	98	105	0	8	8	136	3	139	252
05:45 PM	6	110	116	1	7	8	115	6	121	245
Total	28	455	483	3	29	32	545	14	559	1074
Grand Total	72	938	1010	6	63	69	1116	23	1139	2218
Apprch %	7.1	92.9		8.7	91.3		98	2		
Total %	3.2	42.3	45.5	0.3	2.8	3.1	50.3	1	51.4	

	St Helena Highway Southbound			Bale Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**15**	**145**	**160**	**3**	**12**	**15**	139	**3**	142	**317**
04:15 PM	7	103	110	0	12	12	**162**	3	**165**	287
04:30 PM	11	116	127	0	6	6	134	2	136	269
04:45 PM	11	119	130	0	4	4	136	1	137	271
Total Volume	44	483	527	3	34	37	571	9	580	1144
% App. Total	8.3	91.7		8.1	91.9		98.4	1.6		
PHF	.733	.833	.823	.250	.708	.617	.881	.750	.879	.902

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N/S: St Helena Highway
E/W: Bale Lane
Weather: Clear

File Name : 01_CNP_St H_Bale 6-16
Site Code : 22323578
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:15 PM		
+0 mins.	**15**	**145**	**160**	**3**	**12**	**15**	**162**	**3**	**165**
+15 mins.	7	103	110	0	12	12	134	2	136
+30 mins.	11	116	127	0	6	6	136	1	137
+45 mins.	11	119	130	0	4	4	149	0	149
Total Volume	44	483	527	3	34	37	581	6	587
% App. Total	8.3	91.7		8.1	91.9		99	1	
PHF	.733	.833	.823	.250	.708	.617	.897	.500	.889

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County of Napa
N/S: St Helena Highway
E/W: Bale Lane
Weather: Clear

File Name : 01_CNP_St H_Bale 6-17
Site Code : 22323578
Start Date : 6/17/2023
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Groups Printed- Total Volume

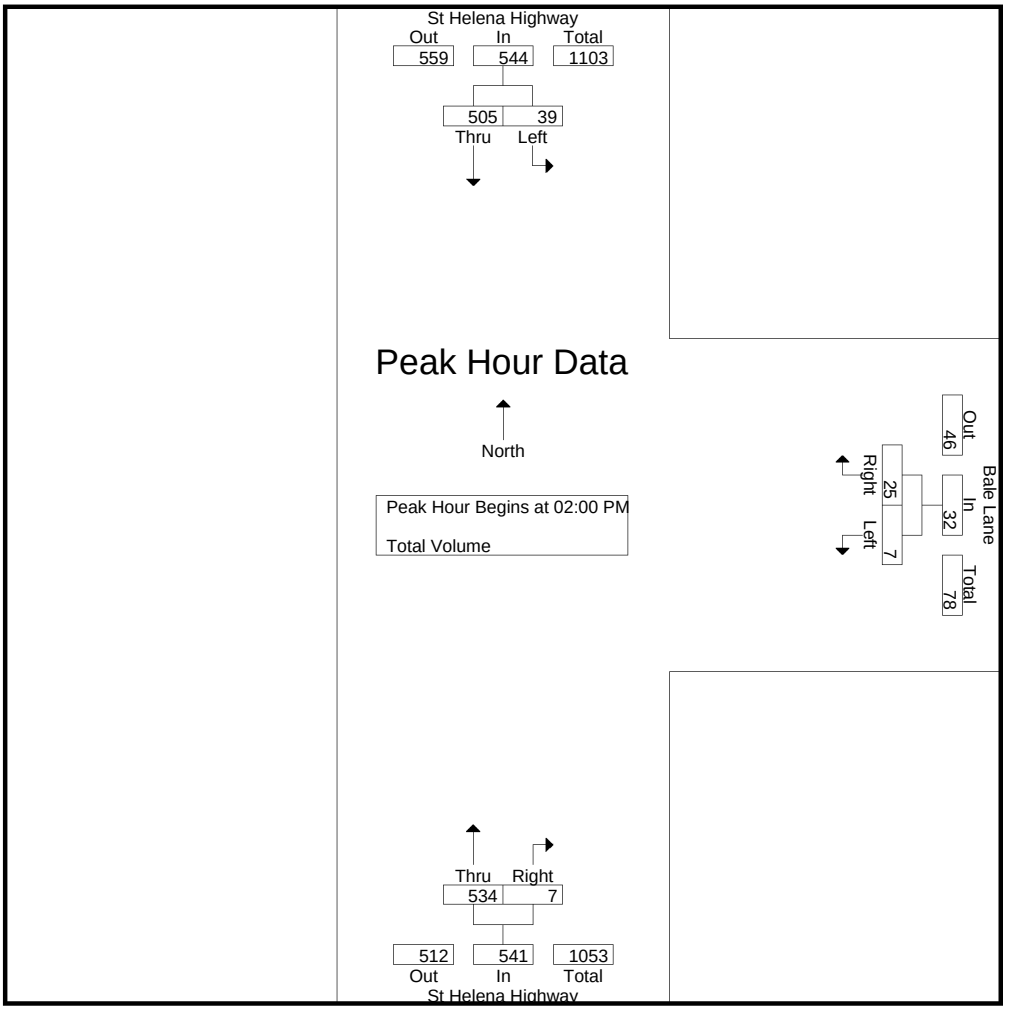
	St Helena Highway Southbound			Bale Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
01:00 PM	3	119	122	1	10	11	117	2	119	252
01:15 PM	3	118	121	4	11	15	120	1	121	257
01:30 PM	7	127	134	1	10	11	127	1	128	273
01:45 PM	7	107	114	1	7	8	120	1	121	243
Total	20	471	491	7	38	45	484	5	489	1025
02:00 PM	3	124	127	0	9	9	140	2	142	278
02:15 PM	13	123	136	2	7	9	113	2	115	260
02:30 PM	10	131	141	2	3	5	145	1	146	292
02:45 PM	13	127	140	3	6	9	136	2	138	287
Total	39	505	544	7	25	32	534	7	541	1117
Grand Total	59	976	1035	14	63	77	1018	12	1030	2142
Apprch %	5.7	94.3		18.2	81.8		98.8	1.2		
Total %	2.8	45.6	48.3	0.7	2.9	3.6	47.5	0.6	48.1	

	St Helena Highway Southbound			Bale Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:00 PM										
02:00 PM	3	124	127	0	**9**	**9**	140	**2**	142	278
02:15 PM	**13**	123	136	2	7	9	113	2	115	260
02:30 PM	10	**131**	**141**	2	3	5	**145**	1	**146**	**292**
02:45 PM	13	127	140	**3**	6	9	136	2	138	287
Total Volume	39	505	544	7	25	32	534	7	541	1117
% App. Total	7.2	92.8		21.9	78.1		98.7	1.3		
PHF	.750	.964	.965	.583	.694	.889	.921	.875	.926	.956

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County of Napa
N/S: St Helena Highway
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Weather: Clear

File Name : 01_CNP_St H_Bale 6-17
Site Code : 22323578
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Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			01:00 PM			02:00 PM		
+0 mins.	3	124	127	1	10	11	140	**2**	142
+15 mins.	**13**	123	136	**4**	**11**	**15**	113	2	115
+30 mins.	10	**131**	**141**	1	10	11	**145**	1	**146**
+45 mins.	13	127	140	1	7	8	136	2	138
Total Volume	39	505	544	7	38	45	534	7	541
% App. Total	7.2	92.8		15.6	84.4		98.7	1.3	
PHF	.750	.964	.965	.438	.864	.750	.921	.875	.926

Location: County of Napa
N/S: St Helena Highway
E/W: Bale Lane

PEDESTRIANS

Date: 6/9/2023
Day: Friday

	North Leg St Helena Highway Pedestrians	East Leg Bale Lane Pedestrians	South Leg St Helena Highway Pedestrians	West Leg Bale Lane Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Date: 6/10/2023
Day: Saturday

	North Leg St Helena Highway Pedestrians	East Leg Bale Lane Pedestrians	South Leg St Helena Highway Pedestrians	West Leg Bale Lane Pedestrians	
1:00 PM	0	0	0	0	0
1:15 PM	0	0	0	0	0
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	0	0	0	0
2:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Date: 6/16/2023
Day: Friday

	North Leg St Helena Highway Pedestrians	East Leg Bale Lane Pedestrians	South Leg St Helena Highway Pedestrians	West Leg Bale Lane Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Date: 6/17/2023
Day: Saturday

	North Leg St Helena Highway Pedestrians	East Leg Bale Lane Pedestrians	South Leg St Helena Highway Pedestrians	West Leg Bale Lane Pedestrians	
1:00 PM	0	0	0	0	0
1:15 PM	0	0	0	0	0
1:30 PM	0	0	2	0	2
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	0	0	0	0
2:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	2	0	2

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Location: County of Napa
N/S: St Helena Highway
E/W: Bale Lane

BICYCLES

Date: 6/9/2023
Day: Friday

	Southbound St Helena Highway			Westbound Bale Lane			Northbound St Helena Highway			Eastbound Bale Lane			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	0	0	0	0	0	0	0	0	1

Date: 6/10/2023
Day: Saturday

	Southbound St Helena Highway			Westbound Bale Lane			Northbound St Helena Highway			Eastbound Bale Lane			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	1	0	0	0	0	1	0	0	0	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	1	0	1	0	0	0	0	1	0	0	0	3

Date: 6/16/2023
Day: Friday

	Southbound St Helena Highway			Westbound Bale Lane			Northbound St Helena Highway			Eastbound Bale Lane			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	0	0	0	1	0	0	0	0	2

Date: 6/17/2023
Day: Saturday

	Southbound St Helena Highway			Westbound Bale Lane			Northbound St Helena Highway			Eastbound Bale Lane			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	4	0	0	0	0	0	0	0	0	0	0	4
1:30 PM	0	11	0	0	0	0	0	0	0	0	0	0	11
1:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
2:00 PM	0	0	0	0	0	0	0	0	2	0	0	0	2
2:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
TOTAL VOLUMES:	0	16	0	0	0	0	0	3	2	0	0	0	21

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County of Napa
N/S: St Helena Highway
E/W: AXR Winery Driveway
Weather: Clear

File Name : 03_CNP_St H_DW 6-9
Site Code : 22323578
Start Date : 6/9/2023
Page No : 1

Groups Printed- Total Volume

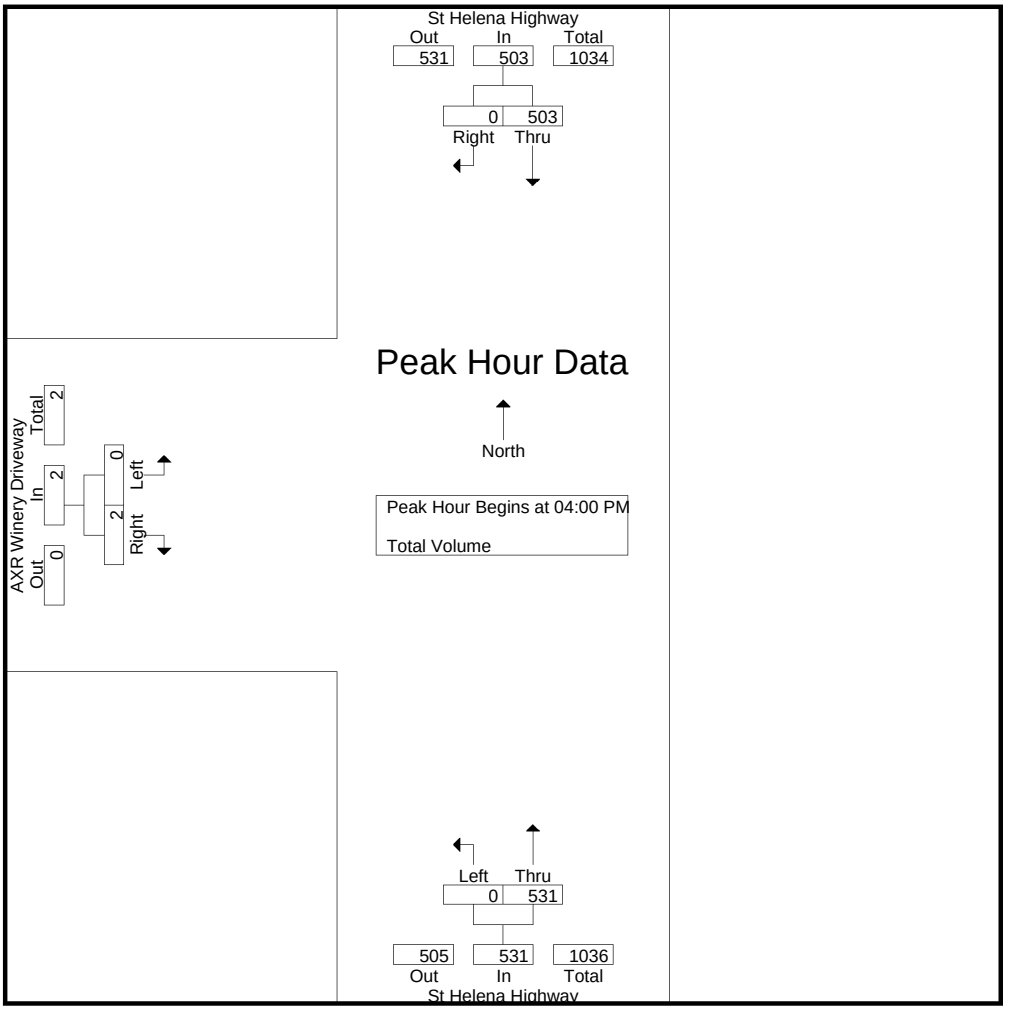
	St Helena Highway Southbound			St Helena Highway Northbound			AXR Winery Driveway Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	135	0	135	0	140	140	0	0	0	275
04:15 PM	120	0	120	0	133	133	0	0	0	253
04:30 PM	115	0	115	0	128	128	0	1	1	244
04:45 PM	133	0	133	0	130	130	0	1	1	264
Total	503	0	503	0	531	531	0	2	2	1036
05:00 PM	120	0	120	0	136	136	0	0	0	256
05:15 PM	108	0	108	1	136	137	0	1	1	246
05:30 PM	101	0	101	0	101	101	0	0	0	202
05:45 PM	112	0	112	0	111	111	0	0	0	223
Total	441	0	441	1	484	485	0	1	1	927
Grand Total	944	0	944	1	1015	1016	0	3	3	1963
Apprch %	100	0		0.1	99.9		0	100		
Total %	48.1	0	48.1	0.1	51.7	51.8	0	0.2	0.2	

	St Helena Highway Southbound			St Helena Highway Northbound			AXR Winery Driveway Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**135**	0	**135**	0	**140**	**140**	0	0	0	**275**
04:15 PM	120	0	120	0	133	133	0	0	0	253
04:30 PM	115	0	115	0	128	128	0	**1**	**1**	244
04:45 PM	133	0	133	0	130	130	0	1	1	264
Total Volume	503	0	503	0	531	531	0	2	2	1036
% App. Total	100	0		0	100		0	100		
PHF	.931	.000	.931	.000	.948	.948	.000	.500	.500	.942

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Weather: Clear

File Name : 03_CNP_St H_DW 6-9
Site Code : 22323578
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:30 PM		
+0 mins.	**135**	0	**135**	0	**140**	**140**	0	**1**	**1**
+15 mins.	120	0	120	0	133	133	0	1	1
+30 mins.	115	0	115	0	128	128	0	0	0
+45 mins.	133	0	133	0	130	130	0	1	1
Total Volume	503	0	503	0	531	531	0	3	3
% App. Total	100	0		0	100		0	100	
PHF	.931	.000	.931	.000	.948	.948	.000	.750	.750

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County of Napa
N/S: St Helena Highway
E/W: AXR Winery Driveway
Weather: Clear

File Name : 03_CNP_St H_DW 6-10
Site Code : 22323578
Start Date : 6/10/2023
Page No : 1

Groups Printed- Total Volume

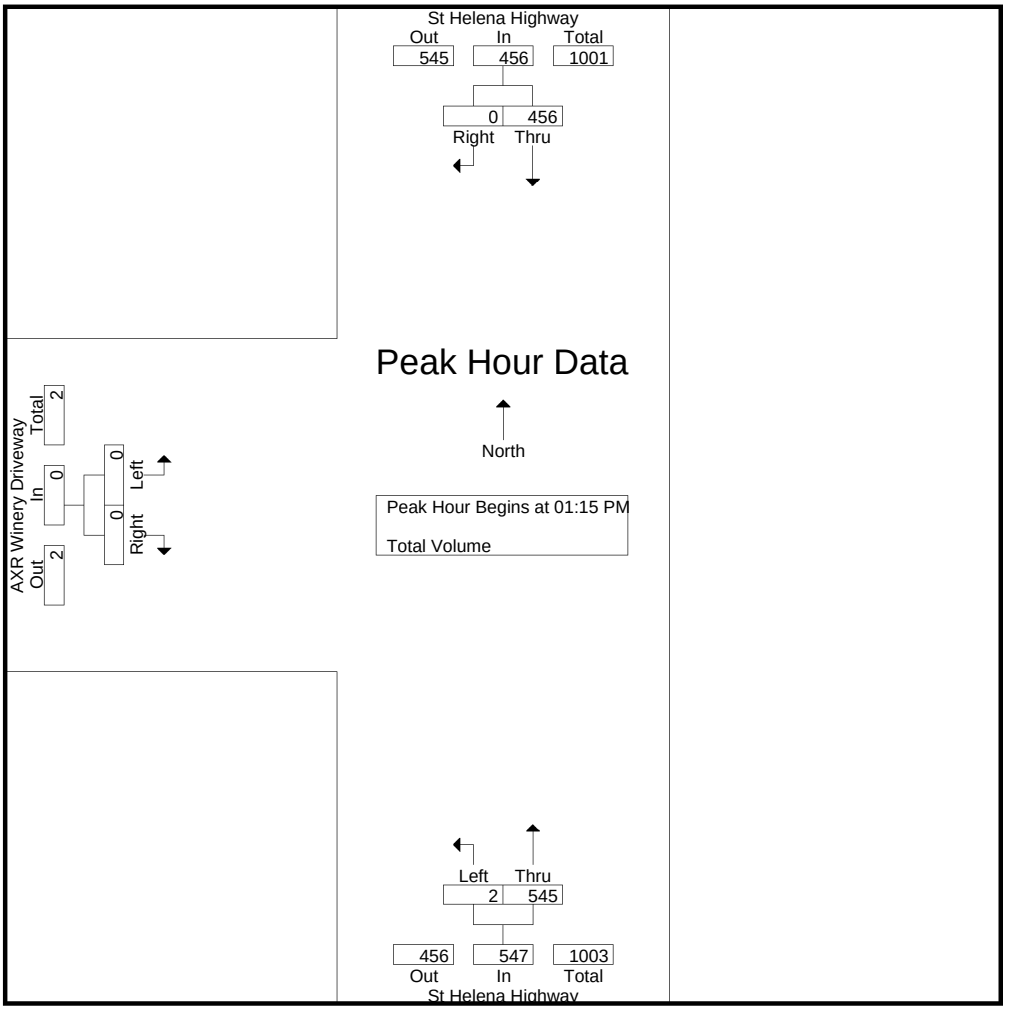
	St Helena Highway Southbound			St Helena Highway Northbound			AXR Winery Driveway Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
01:00 PM	107	1	108	1	116	117	1	0	1	226
01:15 PM	113	0	113	0	136	136	0	0	0	249
01:30 PM	112	0	112	1	142	143	0	0	0	255
01:45 PM	124	0	124	1	129	130	0	0	0	254
Total	456	1	457	3	523	526	1	0	1	984
02:00 PM	107	0	107	0	138	138	0	0	0	245
02:15 PM	107	1	108	0	122	122	0	0	0	230
02:30 PM	124	0	124	1	135	136	0	1	1	261
02:45 PM	115	0	115	0	125	125	0	1	1	241
Total	453	1	454	1	520	521	0	2	2	977
Grand Total	909	2	911	4	1043	1047	1	2	3	1961
Apprch %	99.8	0.2		0.4	99.6		33.3	66.7		
Total %	46.4	0.1	46.5	0.2	53.2	53.4	0.1	0.1	0.2	

	St Helena Highway Southbound			St Helena Highway Northbound			AXR Winery Driveway Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 01:15 PM										
01:15 PM	113	0	113	0	136	136	0	0	0	249
01:30 PM	112	0	112	**1**	**142**	**143**	0	0	0	**255**
01:45 PM	**124**	0	**124**	1	129	130	0	0	0	254
02:00 PM	107	0	107	0	138	138	0	0	0	245
Total Volume	456	0	456	2	545	547	0	0	0	1003
% App. Total	100	0		0.4	99.6		0	0		
PHF	.919	.000	.919	.500	.960	.956	.000	.000	.000	.983

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Weather: Clear

File Name : 03_CNP_St H_DW 6-10
Site Code : 22323578
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Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	01:45 PM			01:15 PM			02:00 PM		
+0 mins.	**124**	0	**124**	0	136	136	0	0	0
+15 mins.	107	0	107	**1**	**142**	**143**	0	0	0
+30 mins.	107	**1**	108	1	129	130	0	**1**	**1**
+45 mins.	124	0	124	0	138	138	0	1	1
Total Volume	462	1	463	2	545	547	0	2	2
% App. Total	99.8	0.2		0.4	99.6		0	100	
PHF	.931	.250	.933	.500	.960	.956	.000	.500	.500

Location: County of Napa
N/S: St Helena Highway
E/W: AXR Winery Driveway

PEDESTRIANS

Date: 6/9/2023
Day: Friday

	North Leg St Helena Highway	East Leg Dead End	South Leg St Helena Highway	West Leg AXR Winery Driveway	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Date: 6/10/2023
Day: Saturday

	North Leg St Helena Highway	East Leg Dead End	South Leg St Helena Highway	West Leg AXR Winery Driveway	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
1:00 PM	0	0	0	0	0
1:15 PM	0	0	0	0	0
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	0	0	0	0
2:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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Location: County of Napa
N/S: St Helena Highway
E/W: AXR Winery Driveway

BICYCLES

Date: 6/9/2023
Day: Friday

	Southbound St Helena Highway			Westbound Dead End			Northbound St Helena Highway			Eastbound AXR Winery Driveway			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	0	0	0	0	0	0	0	0	1

Date: 6/10/2023
Day: Saturday

	Southbound St Helena Highway			Westbound Dead End			Northbound St Helena Highway			Eastbound AXR Winery Driveway			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	1	0	0	0	0	1

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County of Napa
N/S: St Helena Highway
E/W: Lodi Lane
Weather: Clear

File Name : 02_CNP_St H_Lodi 6-9
Site Code : 22323578
Start Date : 6/9/2023
Page No : 1

Groups Printed- Total Volume

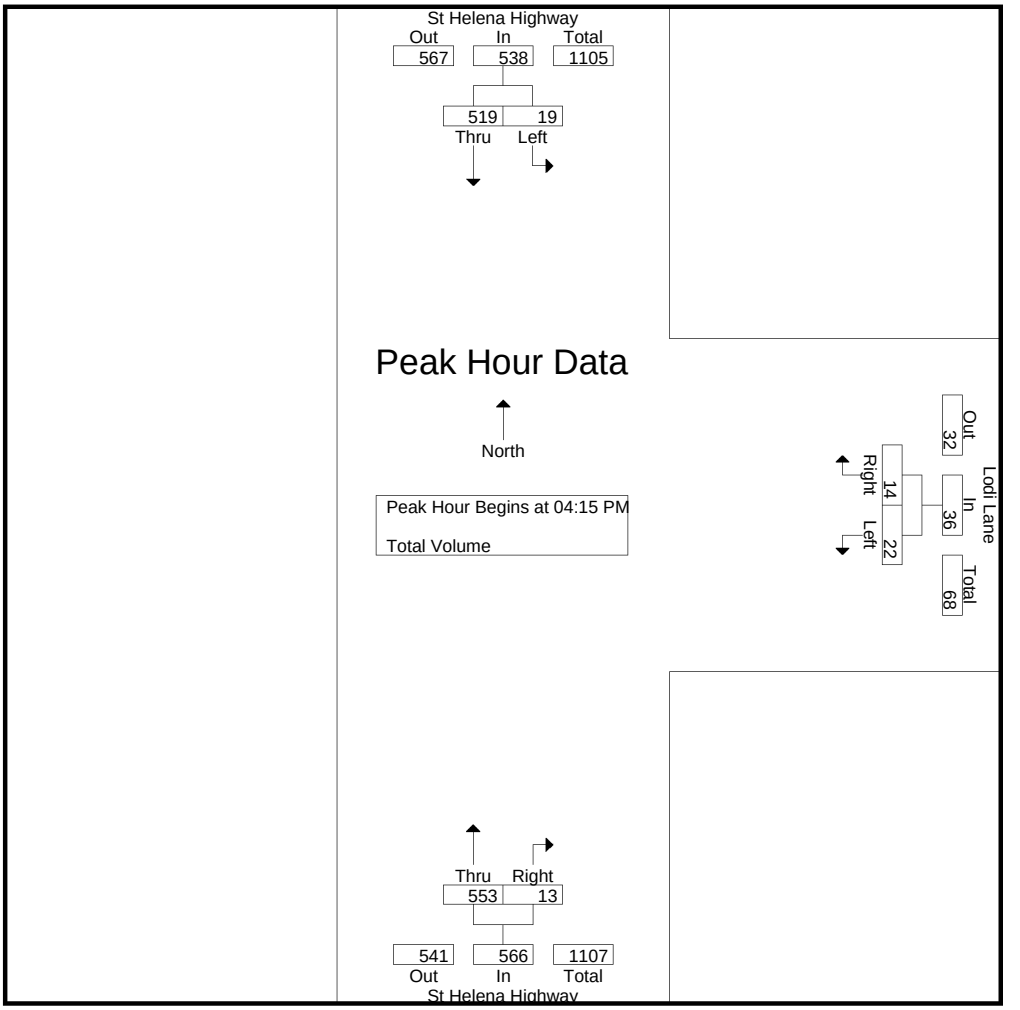
	St Helena Highway Southbound			Lodi Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	4	137	141	3	5	8	125	1	126	275
04:15 PM	2	131	133	7	2	9	145	3	148	290
04:30 PM	5	126	131	3	2	5	135	4	139	275
04:45 PM	5	136	141	5	6	11	131	4	135	287
Total	16	530	546	18	15	33	536	12	548	1127
05:00 PM	7	126	133	7	4	11	142	2	144	288
05:15 PM	2	131	133	4	3	7	121	2	123	263
05:30 PM	0	107	107	4	1	5	108	5	113	225
05:45 PM	1	112	113	4	2	6	111	3	114	233
Total	10	476	486	19	10	29	482	12	494	1009
Grand Total	26	1006	1032	37	25	62	1018	24	1042	2136
Apprch %	2.5	97.5		59.7	40.3		97.7	2.3		
Total %	1.2	47.1	48.3	1.7	1.2	2.9	47.7	1.1	48.8	

	St Helena Highway Southbound			Lodi Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	2	131	133	**7**	2	9	**145**	3	**148**	**290**
04:30 PM	5	126	131	3	2	5	135	**4**	139	275
04:45 PM	5	**136**	**141**	5	**6**	**11**	131	4	135	287
05:00 PM	**7**	126	133	7	4	11	142	2	144	288
Total Volume	19	519	538	22	14	36	553	13	566	1140
% App. Total	3.5	96.5		61.1	38.9		97.7	2.3		
PHF	.679	.954	.954	.786	.583	.818	.953	.813	.956	.983

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County of Napa
N/S: St Helena Highway
E/W: Lodi Lane
Weather: Clear

File Name : 02_CNP_St H_Lodi 6-9
Site Code : 22323578
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:15 PM			04:15 PM		
+0 mins.	4	**137**	**141**	**7**	2	9	**145**	3	**148**
+15 mins.	2	131	133	3	2	5	135	**4**	139
+30 mins.	**5**	126	131	5	**6**	**11**	131	4	135
+45 mins.	5	136	141	7	4	11	142	2	144
Total Volume	16	530	546	22	14	36	553	13	566
% App. Total	2.9	97.1		61.1	38.9		97.7	2.3	
PHF	.800	.967	.968	.786	.583	.818	.953	.813	.956

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County of Napa
N/S: St Helena Highway
E/W: Lodi Lane
Weather: Clear

File Name : 02_CNP_St H_Lodi 6-10
Site Code : 22323578
Start Date : 6/10/2023

Groups Printed- Total Volume

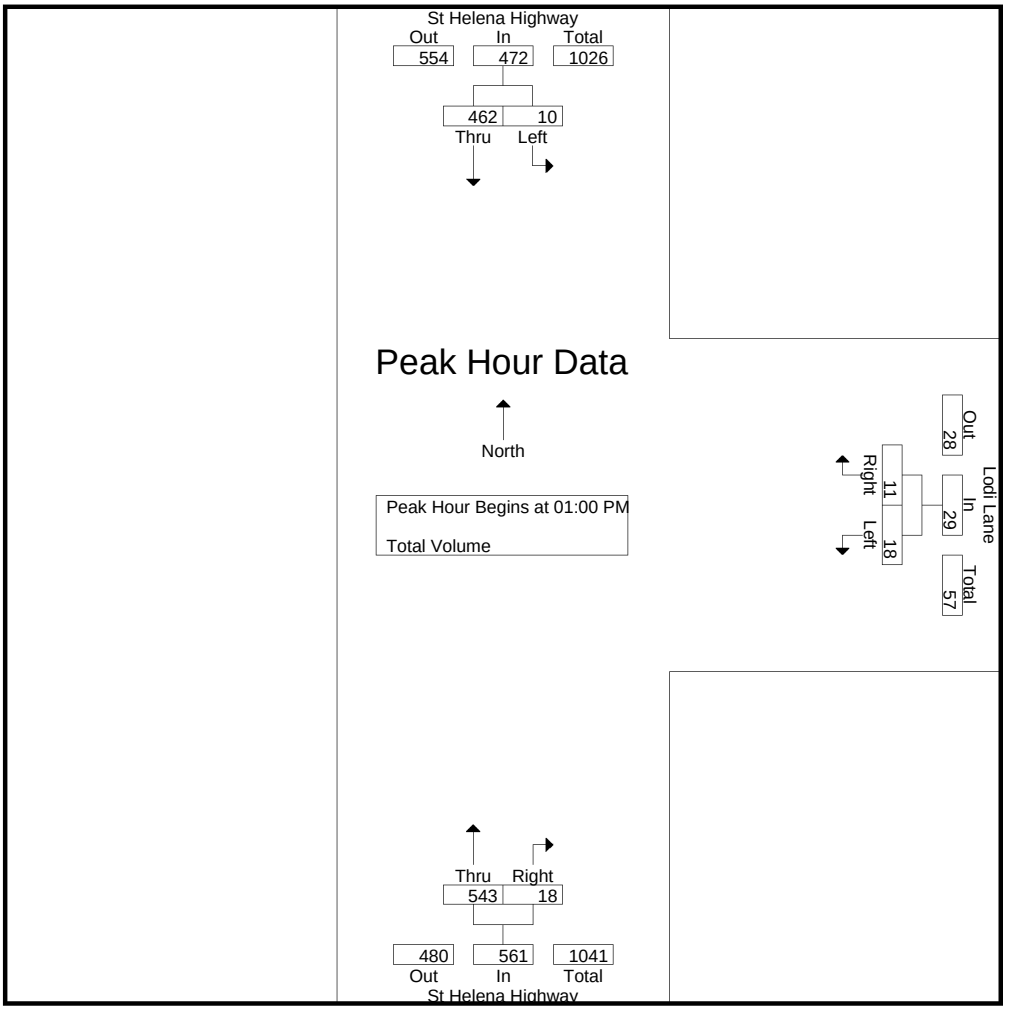
	St Helena Highway Southbound			Lodi Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
01:00 PM	3	122	125	6	4	10	119	8	127	262
01:15 PM	2	111	113	3	2	5	138	3	141	259
01:30 PM	1	110	111	6	3	9	144	4	148	268
01:45 PM	4	119	123	3	2	5	142	3	145	273
Total	10	462	472	18	11	29	543	18	561	1062
02:00 PM	3	109	112	3	2	5	135	2	137	254
02:15 PM	3	114	117	2	2	4	133	4	137	258
02:30 PM	2	130	132	3	2	5	131	2	133	270
02:45 PM	2	128	130	2	5	7	138	5	143	280
Total	10	481	491	10	11	21	537	13	550	1062
Grand Total	20	943	963	28	22	50	1080	31	1111	2124
Apprch %	2.1	97.9		56	44		97.2	2.8		
Total %	0.9	44.4	45.3	1.3	1	2.4	50.8	1.5	52.3	

	St Helena Highway Southbound			Lodi Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 01:00 PM										
01:00 PM	3	**122**	**125**	**6**	**4**	**10**	119	**8**	127	262
01:15 PM	2	111	113	3	2	5	138	3	141	259
01:30 PM	1	110	111	6	3	9	**144**	4	**148**	268
01:45 PM	**4**	119	123	3	2	5	142	3	145	**273**
Total Volume	10	462	472	18	11	29	543	18	561	1062
% App. Total	2.1	97.9		62.1	37.9		96.8	3.2		
PHF	.625	.947	.944	.750	.688	.725	.943	.563	.948	.973

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County of Napa
N/S: St Helena Highway
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Weather: Clear

File Name : 02_CNP_St H_Lodi 6-10
Site Code : 22323578
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Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			01:00 PM			01:15 PM		
+0 mins.	**3**	109	112	**6**	**4**	**10**	138	3	141
+15 mins.	3	114	117	3	2	5	**144**	**4**	**148**
+30 mins.	2	**130**	**132**	6	3	9	142	3	145
+45 mins.	2	128	130	3	2	5	135	2	137
Total Volume	10	481	491	18	11	29	559	12	571
% App. Total	2	98		62.1	37.9		97.9	2.1	
PHF	.833	.925	.930	.750	.688	.725	.970	.750	.965

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County of Napa
N/S: St Helena Highway
E/W: Lodi Lane
Weather: Clear

File Name : 02_CNP_St H_Lodi 6-16
Site Code : 22323578
Start Date : 6/16/2023
Page No : 1

Groups Printed- Total Volume

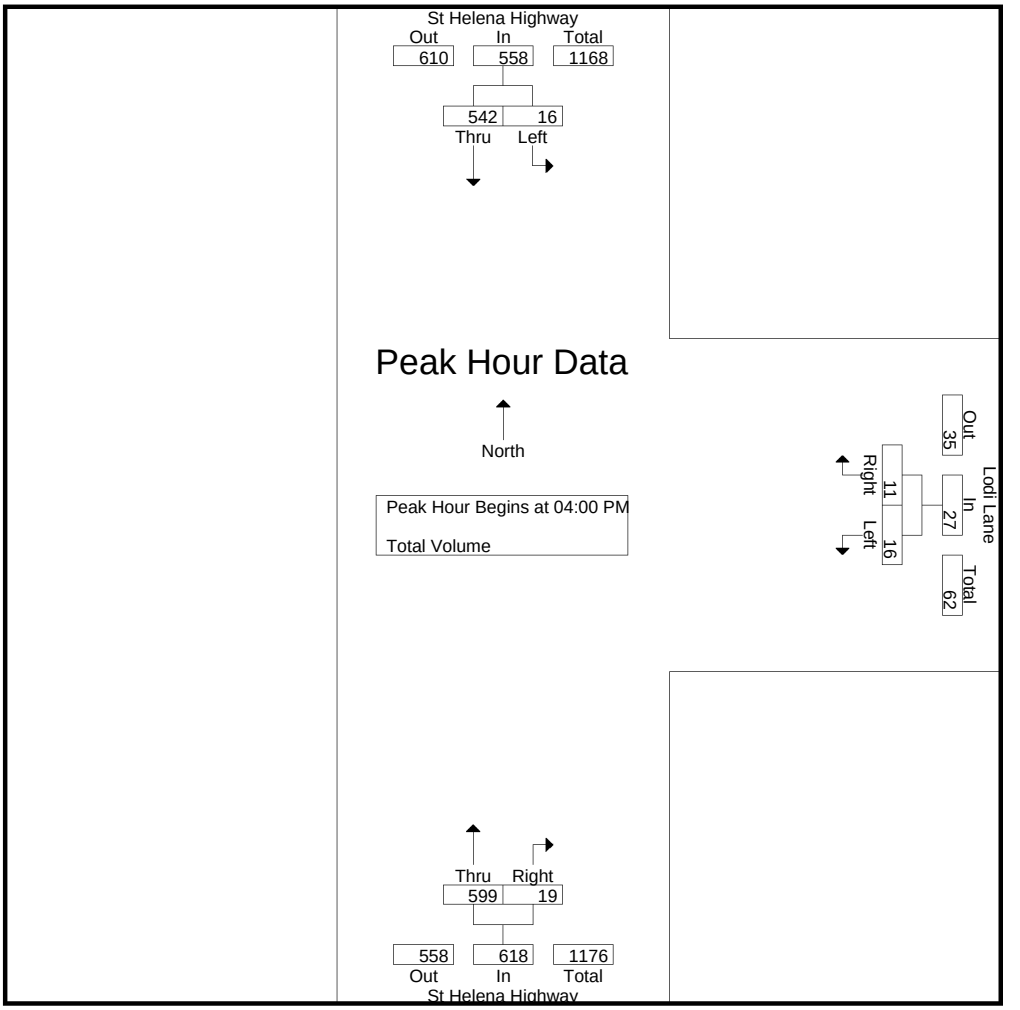
	St Helena Highway Southbound			Lodi Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	4	154	158	4	1	5	146	5	151	314
04:15 PM	1	136	137	2	3	5	162	6	168	310
04:30 PM	5	125	130	6	1	7	145	5	150	287
04:45 PM	6	127	133	4	6	10	146	3	149	292
Total	16	542	558	16	11	27	599	19	618	1203
05:00 PM	2	124	126	3	5	8	138	3	141	275
05:15 PM	0	142	142	3	5	8	143	4	147	297
05:30 PM	4	120	124	4	1	5	145	3	148	277
05:45 PM	0	114	114	0	2	2	125	6	131	247
Total	6	500	506	10	13	23	551	16	567	1096
Grand Total	22	1042	1064	26	24	50	1150	35	1185	2299
Apprch %	2.1	97.9		52	48		97	3		
Total %	1	45.3	46.3	1.1	1	2.2	50	1.5	51.5	

	St Helena Highway Southbound			Lodi Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	4	**154**	**158**	4	1	5	146	5	151	**314**
04:15 PM	1	136	137	2	3	5	**162**	**6**	**168**	310
04:30 PM	5	125	130	**6**	1	7	145	5	150	287
04:45 PM	**6**	127	133	4	**6**	**10**	146	3	149	292
Total Volume	16	542	558	16	11	27	599	19	618	1203
% App. Total	2.9	97.1		59.3	40.7		96.9	3.1		
PHF	.667	.880	.883	.667	.458	.675	.924	.792	.920	.958

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County of Napa
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E/W: Lodi Lane
Weather: Clear

File Name : 02_CNP_St H_Lodi 6-16
Site Code : 22323578
Start Date : 6/16/2023
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:30 PM			04:00 PM		
+0 mins.	4	**154**	**158**	**6**	1	7	146	5	151
+15 mins.	1	136	137	4	**6**	**10**	**162**	**6**	**168**
+30 mins.	5	125	130	3	5	8	145	5	150
+45 mins.	**6**	127	133	3	5	8	146	3	149
Total Volume	16	542	558	16	17	33	599	19	618
% App. Total	2.9	97.1		48.5	51.5		96.9	3.1	
PHF	.667	.880	.883	.667	.708	.825	.924	.792	.920

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County of Napa
N/S: St Helena Highway
E/W: Lodi Lane
Weather: Clear

File Name : 02_CNP_St H_Lodi 6-17
Site Code : 22323578
Start Date : 6/17/2023
Page No : 1

Groups Printed- Total Volume

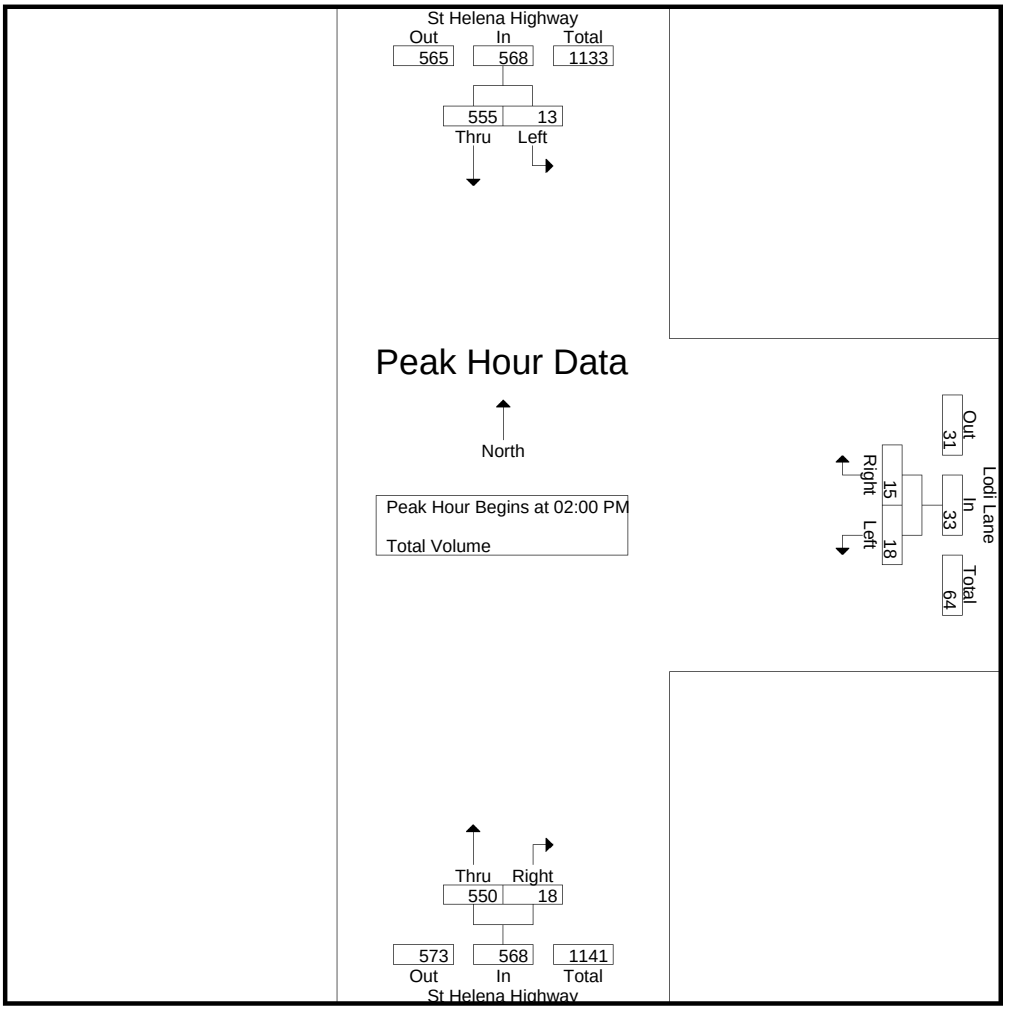
	St Helena Highway Southbound			Lodi Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
01:00 PM	7	113	120	4	5	9	136	4	140	269
01:15 PM	5	122	127	3	2	5	129	3	132	264
01:30 PM	5	127	132	5	4	9	125	6	131	272
01:45 PM	6	129	135	4	3	7	129	3	132	274
Total	23	491	514	16	14	30	519	16	535	1079
02:00 PM	5	109	114	2	2	4	136	3	139	257
02:15 PM	1	145	146	3	4	7	130	3	133	286
02:30 PM	3	162	165	3	4	7	135	4	139	311
02:45 PM	4	139	143	10	5	15	149	8	157	315
Total	13	555	568	18	15	33	550	18	568	1169
Grand Total	36	1046	1082	34	29	63	1069	34	1103	2248
Apprch %	3.3	96.7		54	46		96.9	3.1		
Total %	1.6	46.5	48.1	1.5	1.3	2.8	47.6	1.5	49.1	

	St Helena Highway Southbound			Lodi Lane Westbound			St Helena Highway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:00 PM										
02:00 PM	**5**	109	114	2	2	4	136	3	139	257
02:15 PM	1	145	146	3	4	7	130	3	133	286
02:30 PM	3	**162**	**165**	3	4	7	135	4	139	311
02:45 PM	4	139	143	**10**	**5**	**15**	**149**	**8**	**157**	**315**
Total Volume	13	555	568	18	15	33	550	18	568	1169
% App. Total	2.3	97.7		54.5	45.5		96.8	3.2		
PHF	.650	.856	.861	.450	.750	.550	.923	.563	.904	.928

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N/S: St Helena Highway
E/W: Lodi Lane
Weather: Clear

File Name : 02_CNP_St H_Lodi 6-17
Site Code : 22323578
Start Date : 6/17/2023
Page No : 2



Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			02:00 PM			02:00 PM		
+0 mins.	**5**	109	114	2	2	4	136	3	139
+15 mins.	1	145	146	3	4	7	130	3	133
+30 mins.	3	**162**	**165**	3	4	7	135	4	139
+45 mins.	4	139	143	**10**	**5**	**15**	**149**	**8**	**157**
Total Volume	13	555	568	18	15	33	550	18	568
% App. Total	2.3	97.7		54.5	45.5		96.8	3.2	
PHF	.650	.856	.861	.450	.750	.550	.923	.563	.904

Location: County of Napa
N/S: St Helena Highway
E/W: Lodi Lane

PEDESTRIANS

Date: 6/9/2023
Day: Friday

	North Leg St Helena Highway Pedestrians	East Leg Lodi Lane Pedestrians	South Leg St Helena Highway Pedestrians	West Leg Lodi Lane Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Date: 6/10/2023
Day: Saturday

	North Leg St Helena Highway Pedestrians	East Leg Lodi Lane Pedestrians	South Leg St Helena Highway Pedestrians	West Leg Lodi Lane Pedestrians	
1:00 PM	0	0	0	0	0
1:15 PM	0	0	0	0	0
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	0	0	0	0
2:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Date: 6/16/2023
Day: Friday

	North Leg St Helena Highway Pedestrians	East Leg Lodi Lane Pedestrians	South Leg St Helena Highway Pedestrians	West Leg Lodi Lane Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Date: 6/17/2023
Day: Saturday

	North Leg St Helena Highway Pedestrians	East Leg Lodi Lane Pedestrians	South Leg St Helena Highway Pedestrians	West Leg Lodi Lane Pedestrians	
1:00 PM	0	0	0	0	0
1:15 PM	0	0	0	0	0
1:30 PM	0	0	0	1	1
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	0	0	0	0
2:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	1	1

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Location: County of Napa
N/S: St Helena Highway
E/W: Lodi Lane

BICYCLES

Date: 6/9/2023
Day: Friday

	Southbound St Helena Highway			Westbound Lodi Lane			Northbound St Helena Highway			Eastbound Lodi Lane			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	0	0	0	0	0	0	0	0	1

Date: 6/10/2023
Day: Saturday

	Southbound St Helena Highway			Westbound Lodi Lane			Northbound St Helena Highway			Eastbound Lodi Lane			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	1	0	0	0	0	1

Date: 6/16/2023
Day: Friday

	Southbound St Helena Highway			Westbound Lodi Lane			Northbound St Helena Highway			Eastbound Lodi Lane			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	0	0	0	1	0	0	0	0	2

Date: 6/17/2023
Day: Saturday

	Southbound St Helena Highway			Westbound Lodi Lane			Northbound St Helena Highway			Eastbound Lodi Lane			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	14	0	0	0	0	0	0	0	0	0	0	14
1:45 PM	0	0	0	0	0	0	0	3	0	0	0	0	3
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	16	0	0	0	0	0	5	0	0	0	0	21

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County of Napa
Bale Lane
E/ State Route 29
24 Hour Directional Volume Count

CNP001A
Site Code: 223-23578

Start Time	6/9/23 Fri	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	13			1	7				
12:15		2	12			0	7				
12:30		0	8			0	8				
12:45		1	5	3	38	0	10	1	32	4	70
01:00		1	8			1	11				
01:15		1	3			1	10				
01:30		0	8			0	6				
01:45		1	9	3	28	0	19	2	46	5	74
02:00		0	15			0	16				
02:15		0	6			0	13				
02:30		1	10			1	13				
02:45		0	7	1	38	0	**28**	1	70	2	108
03:00		0	**10**			0	**23**				
03:15		1	**9**			1	**17**				
03:30		0	**12**			1	**18**				
03:45		2	**16**	3	47	0	9	2	67	5	114
04:00		1	4			1	11				
04:15		0	8			0	13				
04:30		1	6			1	7				
04:45		0	9	2	27	3	9	5	40	7	67
05:00		8	9			1	6				
05:15		14	8			2	9				
05:30		16	6			2	14				
05:45		17	7	55	30	2	8	7	37	62	67
06:00		10	12			4	8				
06:15		7	11			4	7				
06:30		17	4			5	6				
06:45		15	6	49	33	8	0	21	21	70	54
07:00		9	3			**8**	3				
07:15		7	5			**10**	8				
07:30		11	6			**12**	1				
07:45		**22**	3	49	17	**12**	6	42	18	91	35
08:00		**13**	2			5	5				
08:15		**12**	2			10	1				
08:30		**19**	2			7	4				
08:45		12	4	56	10	5	1	27	11	83	21
09:00		4	3			7	0				
09:15		15	5			7	4				
09:30		7	7			9	2				
09:45		9	5	35	20	9	1	32	7	67	27
10:00		4	3			11	1				
10:15		10	4			7	1				
10:30		9	2			7	0				
10:45		11	2	34	11	11	1	36	3	70	14
11:00		9	1			9	1				
11:15		7	1			7	1				
11:30		5	1			7	2				
11:45		11	0	32	3	13	3	36	7	68	10
Total		322	302	322	302	212	359	212	359	534	661
Combined Total		624		624		571		571		1195	
AM Peak	-	07:45	-	-	-	07:00	-	-	-	-	-
Vol.	-	66	-	-	-	42	-	-	-	-	-
P.H.F.		0.750				0.875					
PM Peak	-	-	03:00	-	-	-	02:45	-	-	-	-
Vol.	-	-	47	-	-	-	86	-	-	-	-
P.H.F.			0.734				0.768				
Percentage		51.6%	48.4%			37.1%	62.9%				

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County of Napa
Bale Lane
E/ State Route 29
24 Hour Directional Volume Count

CNP001A
Site Code: 223-23578

Start Time	6/10/23 Sat	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	3			1	5				
12:15		0	10			1	5				
12:30		1	9			0	8				
12:45		0	6	1	28	0	12	2	30	3	58
01:00		0	5			0	12				
01:15		1	6			0	3				
01:30		1	**14**			0	12				
01:45		0	**7**	2	32	0	6	0	33	2	65
02:00		0	**10**			1	11				
02:15		1	**9**			0	9				
02:30		1	1			0	6				
02:45		0	5	2	25	0	7	1	33	3	58
03:00		0	7			1	9				
03:15		0	11			0	10				
03:30		0	6			1	3				
03:45		0	10	0	34	0	9	2	31	2	65
04:00		0	6			1	4				
04:15		0	10			0	**12**				
04:30		1	7			0	**9**				
04:45		1	3	2	26	0	**9**	1	34	3	60
05:00		2	9			0	**13**				
05:15		4	3			0	11				
05:30		6	6			1	7				
05:45		7	1	19	19	1	2	2	33	21	52
06:00		8	8			2	10				
06:15		5	6			2	8				
06:30		5	7			2	6				
06:45		8	5	26	26	2	3	8	27	34	53
07:00		4	9			4	5				
07:15		2	3			6	4				
07:30		8	5			3	4				
07:45		5	5	19	22	1	5	14	18	33	40
08:00		4	3			4	4				
08:15		4	5			4	1				
08:30		2	5			6	5				
08:45		4	7	14	20	3	5	17	15	31	35
09:00		7	4			8	3				
09:15		4	0			5	3				
09:30		10	2			1	2				
09:45		7	4	28	10	5	0	19	8	47	18
10:00		7	6			4	1				
10:15		7	3			5	2				
10:30		**12**	2			4	2				
10:45		**6**	1	32	12	8	0	21	5	53	17
11:00		**7**	3			**5**	1				
11:15		**11**	1			**7**	1				
11:30		4	0			**6**	2				
11:45		6	2	28	6	**14**	1	32	5	60	11
Total		173	260	173	260	119	272	119	272	292	532
Combined Total		433		433		391		391		824	
AM Peak	-	10:30	-	-	-	11:00	-	-	-	-	-
Vol.	-	36	-	-	-	32	-	-	-	-	-
P.H.F.		0.750				0.571					
PM Peak	-	-	01:30	-	-	-	04:15	-	-	-	-
Vol.	-	-	40	-	-	-	43	-	-	-	-
P.H.F.			0.714				0.827				
Percentage		40.0%	60.0%			30.4%	69.6%				
ADT/AADT		ADT 1,010		AADT 1,010							

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County of Napa
Bale Lane
E/ State Route 29
24 Hour Directional Volume Count

CNP001B
Site Code: 223-23578

Start Time	6/16/23 Fri	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		2	12			1	9				
12:15		1	6			1	15				
12:30		1	11			1	9				
12:45		0	8	4	37	0	12	3	45	7	82
01:00		1	14			0	15				
01:15		1	5			1	10				
01:30		1	14			0	16				
01:45		1	10	4	43	0	13	1	54	5	97
02:00		0	7			0	10				
02:15		1	10			1	**19**				
02:30		1	10			0	**20**				
02:45		1	13	3	40	2	**18**	3	67	6	107
03:00		0	6			0	**14**				
03:15		0	16			0	17				
03:30		0	10			0	11				
03:45		0	**12**	0	44	0	13	0	55	0	99
04:00		0	**10**			2	12				
04:15		3	**16**			0	18				
04:30		1	**15**			0	8				
04:45		2	11	6	52	3	4	5	42	11	94
05:00		3	5			1	5				
05:15		4	10			3	10				
05:30		12	11			3	8				
05:45		14	8	33	34	7	11	14	34	47	68
06:00		10	9			5	7				
06:15		13	7			5	5				
06:30		8	3			8	4				
06:45		12	12	43	31	5	1	23	17	66	48
07:00		7	2			6	1				
07:15		**13**	7			**11**	8				
07:30		**13**	5			**12**	6				
07:45		**17**	4	50	18	**13**	3	42	18	92	36
08:00		**9**	2			**9**	0				
08:15		4	2			5	7				
08:30		7	5			8	4				
08:45		15	4	35	13	8	0	30	11	65	24
09:00		14	5			11	1				
09:15		12	7			6	3				
09:30		9	2			7	1				
09:45		4	2	39	16	3	1	27	6	66	22
10:00		3	6			3	1				
10:15		9	2			10	3				
10:30		10	2			6	2				
10:45		3	2	25	12	14	3	33	9	58	21
11:00		8	6			9	0				
11:15		8	3			13	1				
11:30		7	0			7	3				
11:45		14	0	37	9	8	3	37	7	74	16
Total		279	349	279	349	218	365	218	365	497	714
Combined Total		628		628		583		583		1211	
AM Peak	-	07:15	-	-	-	07:15	-	-	-	-	-
Vol.	-	52	-	-	-	45	-	-	-	-	-
P.H.F.		0.765				0.865					
PM Peak	-	-	03:45	-	-	-	02:15	-	-	-	-
Vol.	-	-	53	-	-	-	71	-	-	-	-
P.H.F.			0.828				0.888				
Percentage		44.4%	55.6%			37.4%	62.6%				

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County of Napa
Bale Lane
E/ State Route 29
24 Hour Directional Volume Count

CNP001B
Site Code: 223-23578

Start Time	6/17/23 Sat	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		2	10			0	14				
12:15		0	6			0	2				
12:30		2	6			1	**10**				
12:45		0	10	4	32	1	**14**	2	40	6	72
01:00		1	2			0	**13**				
01:15		0	5			2	**11**				
01:30		1	5			0	10				
01:45		0	7	2	19	0	10	2	44	4	63
02:00		2	10			0	10				
02:15		0	**12**			0	10				
02:30		0	**9**			0	4				
02:45		0	**15**	2	46	0	4	0	28	2	74
03:00		0	**19**			0	12				
03:15		0	8			0	4				
03:30		0	8			0	9				
03:45		0	7	0	42	1	10	1	35	1	77
04:00		0	5			1	5				
04:15		0	6			0	6				
04:30		0	9			0	11				
04:45		3	9	3	29	0	6	1	28	4	57
05:00		3	4			1	3				
05:15		3	2			0	7				
05:30		4	5			1	13				
05:45		8	3	18	14	1	17	3	40	21	54
06:00		3	4			1	11				
06:15		6	7			2	4				
06:30		0	3			5	5				
06:45		9	4	18	18	1	7	9	27	27	45
07:00		2	2			4	8				
07:15		2	14			6	7				
07:30		3	5			1	5				
07:45		6	5	13	26	2	4	13	24	26	50
08:00		2	3			3	3				
08:15		8	3			2	3				
08:30		2	1			5	3				
08:45		6	5	18	12	5	2	15	11	33	23
09:00		4	4			6	3				
09:15		3	1			5	4				
09:30		3	3			8	0				
09:45		6	4	16	12	3	2	22	9	38	21
10:00		5	1			**10**	3				
10:15		5	4			**10**	3				
10:30		6	3			**6**	2				
10:45		8	1	24	9	**7**	0	33	8	57	17
11:00		**4**	0			3	3				
11:15		**8**	3			9	0				
11:30		**6**	2			6	1				
11:45		**9**	0	27	5	9	5	27	9	54	14
Total		145	264	145	264	128	303	128	303	273	567
Combined Total		409		409		431		431		840	
AM Peak	-	11:00	-	-	-	10:00	-	-	-	-	-
Vol.	-	27	-	-	-	33	-	-	-	-	-
P.H.F.		0.750				0.825					
PM Peak	-	-	02:15	-	-	-	00:30	-	-	-	-
Vol.	-	-	55	-	-	-	48	-	-	-	-
P.H.F.			0.724				0.857				
Percentage		35.5%	64.5%			29.7%	70.3%				
ADT/AADT		ADT 1,026		AADT 1,026							

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County of Napa
Lodi Lane
E/ State Route 29
24 Hour Directional Volume Count

CNP002A
Site Code: 223-23578

Start Time	6/9/23 Fri	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	1			0	0				
12:15		0	6			0	18				
12:30		0	5			0	8				
12:45		0	14	0	26	0	8	0	34	0	60
01:00		0	4			1	11				
01:15		0	3			0	8				
01:30		1	6			1	11				
01:45		1	5	2	18	0	13	2	43	4	61
02:00		0	6			0	10				
02:15		0	7			0	13				
02:30		0	7			0	4				
02:45		0	12	0	32	0	14	0	41	0	73
03:00		1	5			0	**11**				
03:15		0	3			0	**14**				
03:30		0	6			0	**12**				
03:45		0	4	1	18	0	**16**	0	53	1	71
04:00		0	**11**			0	10				
04:15		0	**10**			0	9				
04:30		0	**3**			0	8				
04:45		0	**9**	0	33	0	7	0	34	0	67
05:00		1	4			1	10				
05:15		0	9			0	9				
05:30		5	4			7	6				
05:45		5	5	11	22	5	4	13	29	24	51
06:00		2	2			4	7				
06:15		3	5			2	2				
06:30		4	6			3	9				
06:45		5	8	14	21	5	3	14	21	28	42
07:00		6	4			5	7				
07:15		3	5			4	3				
07:30		8	3			4	3				
07:45		6	1	23	13	7	2	20	15	43	28
08:00		9	4			4	2				
08:15		3	8			7	2				
08:30		2	0			8	1				
08:45		9	5	23	17	9	2	28	7	51	24
09:00		9	3			**19**	1				
09:15		7	2			**6**	1				
09:30		6	6			**11**	1				
09:45		6	2	28	13	**10**	2	46	5	74	18
10:00		**11**	2			9	2				
10:15		**7**	3			9	1				
10:30		**9**	4			10	1				
10:45		**8**	1	35	10	5	1	33	5	68	15
11:00		6	3			11	3				
11:15		6	1			13	2				
11:30		9	3			10	0				
11:45		9	1	30	8	10	0	44	5	74	13
Total		167	231	167	231	200	292	200	292	367	523
Combined Total		398		398		492		492		890	
AM Peak	-	10:00	-	-	-	09:00	-	-	-	-	-
Vol.	-	35	-	-	-	46	-	-	-	-	-
P.H.F.		0.795				0.605					
PM Peak	-	-	04:00	-	-	-	03:00	-	-	-	-
Vol.	-	-	33	-	-	-	53	-	-	-	-
P.H.F.			0.688				0.828				
Percentage		42.0%	58.0%			40.7%	59.3%				

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County of Napa
Lodi Lane
E/ State Route 29
24 Hour Directional Volume Count

CNP002A
Site Code: 223-23578

Start Time	6/10/23 Sat	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		2	6			1	**14**				
12:15		0	5			0	**9**				
12:30		0	4			1	**7**				
12:45		0	5	2	20	0	**10**	2	40	4	60
01:00		0	12			0	12				
01:15		0	4			1	8				
01:30		0	4			0	7				
01:45		0	9	0	29	0	5	1	32	1	61
02:00		0	5			0	5				
02:15		0	6			0	3				
02:30		1	5			0	6				
02:45		1	5	2	21	0	6	0	20	2	41
03:00		0	5			0	8				
03:15		0	4			0	4				
03:30		1	3			1	8				
03:45		0	8	1	20	0	6	1	26	2	46
04:00		0	2			0	15				
04:15		0	6			0	7				
04:30		1	**11**			0	6				
04:45		1	**6**	2	25	0	6	0	34	2	59
05:00		1	**8**			1	12				
05:15		1	**7**			2	5				
05:30		1	5			1	10				
05:45		2	5	5	25	3	12	7	39	12	64
06:00		2	7			2	7				
06:15		2	5			0	4				
06:30		2	2			3	8				
06:45		2	8	8	22	1	5	6	24	14	46
07:00		0	5			2	6				
07:15		1	4			2	2				
07:30		2	3			5	3				
07:45		2	1	5	13	1	1	10	12	15	25
08:00		1	3			3	3				
08:15		**5**	1			4	2				
08:30		**5**	2			6	3				
08:45		**15**	3	26	9	3	0	16	8	42	17
09:00		**4**	6			**15**	3				
09:15		2	2			**8**	1				
09:30		6	4			**6**	1				
09:45		3	0	15	12	**7**	3	36	8	51	20
10:00		5	2			7	2				
10:15		3	9			7	1				
10:30		6	4			3	0				
10:45		7	3	21	18	5	1	22	4	43	22
11:00		7	1			10	1				
11:15		6	0			6	1				
11:30		3	0			6	1				
11:45		6	0	22	1	4	0	26	3	48	4
Total		109	215	109	215	127	250	127	250	236	465
Combined Total		324		324		377		377		701	
AM Peak	-	08:15	-	-	-	09:00	-	-	-	-	-
Vol.	-	29	-	-	-	36	-	-	-	-	-
P.H.F.		0.483				0.600					
PM Peak	-	-	04:30	-	-	-	12:00	-	-	-	-
Vol.	-	-	32	-	-	-	40	-	-	-	-
P.H.F.			0.727				0.714				
Percentage		33.6%	66.4%			33.7%	66.3%				
ADT/AADT		ADT 796		AADT 796							

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County of Napa
Lodi Lane
E/ State Route 29
24 Hour Directional Volume Count

CNP002B
Site Code: 223-23578

Start Time	6/16/23 Fri	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		1	10			0	10				
12:15		0	8			0	6				
12:30		1	6			0	12				
12:45		0	13	2	37	0	7	0	35	2	72
01:00		1	5			0	7				
01:15		0	6			0	7				
01:30		0	3			0	7				
01:45		0	11	1	25	0	12	0	33	1	58
02:00		0	9			0	11				
02:15		0	3			1	12				
02:30		0	6			0	**11**				
02:45		0	12	0	30	0	**13**	1	47	1	77
03:00		0	5			0	**11**				
03:15		0	4			0	**14**				
03:30		0	10			2	6				
03:45		0	6	0	25	0	10	2	41	2	66
04:00		1	**13**			0	8				
04:15		0	**5**			0	3				
04:30		1	**12**			1	4				
04:45		0	**8**	2	38	0	11	1	26	3	64
05:00		0	10			0	15				
05:15		2	3			2	7				
05:30		6	10			4	6				
05:45		6	3	14	26	2	3	8	31	22	57
06:00		1	9			2	2				
06:15		2	7			0	2				
06:30		2	4			2	9				
06:45		7	4	12	24	7	7	11	20	23	44
07:00		6	3			5	10				
07:15		7	3			8	1				
07:30		3	3			3	4				
07:45		5	7	21	16	10	5	26	20	47	36
08:00		3	3			6	0				
08:15		**8**	3			**10**	7				
08:30		**6**	0			**5**	0				
08:45		**11**	2	28	8	**10**	1	31	8	59	16
09:00		**7**	2			**12**	2				
09:15		4	5			8	1				
09:30		6	4			3	1				
09:45		6	4	23	15	11	0	34	4	57	19
10:00		3	2			8	2				
10:15		6	2			10	3				
10:30		6	4			6	2				
10:45		5	0	20	8	8	0	32	7	52	15
11:00		7	4			7	0				
11:15		6	0			6	1				
11:30		7	1			12	0				
11:45		6	0	26	5	10	0	35	1	61	6
Total		149	257	149	257	181	273	181	273	330	530
Combined Total		406		406		454		454		860	
AM Peak	-	08:15	-	-	-	08:15	-	-	-	-	-
Vol.	-	32	-	-	-	37	-	-	-	-	-
P.H.F.		0.727				0.771					
PM Peak	-	-	04:00	-	-	-	02:30	-	-	-	-
Vol.	-	-	38	-	-	-	49	-	-	-	-
P.H.F.			0.731				0.875				
Percentage		36.7%	63.3%			39.9%	60.1%				

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County of Napa
Lodi Lane
E/ State Route 29
24 Hour Directional Volume Count

CNP002B
Site Code: 223-23578

Start Time	6/17/23 Sat	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		1	6			0	11				
12:15		1	2			0	5				
12:30		0	5			0	8				
12:45		0	5	2	18	0	11	0	35	2	53
01:00		0	10			0	12				
01:15		0	**11**			0	3				
01:30		1	**11**			1	9				
01:45		0	**6**	1	38	0	7	1	31	2	69
02:00		0	**11**			0	4				
02:15		0	9			1	9				
02:30		1	5			0	**6**				
02:45		0	9	1	34	0	**13**	1	32	2	66
03:00		0	8			0	**8**				
03:15		0	7			0	**10**				
03:30		0	5			0	4				
03:45		0	4	0	24	0	4	0	26	0	50
04:00		0	11			0	3				
04:15		0	5			0	8				
04:30		0	10			0	1				
04:45		0	7	0	33	0	8	0	20	0	53
05:00		0	1			0	9				
05:15		1	8			2	8				
05:30		0	3			3	7				
05:45		0	8	1	20	3	2	8	26	9	46
06:00		1	4			1	4				
06:15		0	2			0	3				
06:30		0	7			1	4				
06:45		3	3	4	16	0	4	2	15	6	31
07:00		4	4			1	8				
07:15		0	2			1	2				
07:30		1	3			4	1				
07:45		2	2	7	11	1	5	7	16	14	27
08:00		2	4			2	1				
08:15		1	4			2	4				
08:30		4	4			7	4				
08:45		**9**	1	16	13	5	1	16	10	32	23
09:00		**5**	5			9	5				
09:15		**4**	3			3	1				
09:30		**5**	8			5	1				
09:45		6	2	20	18	4	0	21	7	41	25
10:00		3	1			8	1				
10:15		5	5			5	3				
10:30		5	2			6	1				
10:45		3	3	16	11	7	0	26	5	42	16
11:00		5	2			**4**	0				
11:15		8	1			**6**	3				
11:30		3	1			**13**	0				
11:45		3	3	19	7	**10**	0	33	3	52	10
Total		87	243	87	243	115	226	115	226	202	469
Combined Total		330		330		341		341		671	
AM Peak	-	08:45	-	-	-	11:00	-	-	-	-	-
Vol.	-	23	-	-	-	33	-	-	-	-	-
P.H.F.		0.639				0.635					
PM Peak	-	-	01:15	-	-	-	02:30	-	-	-	-
Vol.	-	-	39	-	-	-	37	-	-	-	-
P.H.F.			0.886				0.712				
Percentage		26.4%	73.6%			33.7%	66.3%				
ADT/AADT		ADT 766		AADT 766							

Appendix B

Synchro Intersection LOS Results

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	37	516	589	8	3	40
Future Vol, veh/h	37	516	589	8	3	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	42	580	627	9	3	44

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	636	0	-	0	1296	632
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	664	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	933	-	-	-	176	475
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	506	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	933	-	-	-	168	475
Mov Cap-2 Maneuver	-	-	-	-	168	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	506	-

Approach	SE	NW	SW
HCM Control Delay, s	0.6	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	933	-	421
HCM Lane V/C Ratio	-	-	0.045	-	0.113
HCM Control Delay (s)	-	-	9	-	14.6
HCM Lane LOS	-	-	A	-	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	568	538	1
Future Vol, veh/h	0	1	0	568	538	1
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	617	585	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	586	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	510	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	510	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	510	-	-
HCM Lane V/C Ratio	-	0.002	-	-
HCM Control Delay (s)	-	12.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	0	565	537	2
Future Vol, veh/h	3	2	0	565	537	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	2	0	614	584	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1199	585	-	0	-	0
Stage 1	585	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	205	511	0	-	-	-
Stage 1	557	-	0	-	-	-
Stage 2	540	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	205	511	-	-	-	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	557	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	270	-	-
HCM Lane V/C Ratio	-	0.02	-	-
HCM Control Delay (s)	-	18.6	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	19	567	616	17	20	14
Future Vol, veh/h	19	567	616	17	20	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	20	597	648	18	24	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	666	0	-	0	1294	657
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	637	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	909	-	-	-	177	460
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	909	-	-	-	173	460
Mov Cap-2 Maneuver	-	-	-	-	173	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	521	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	23.8
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	909	-	233
HCM Lane V/C Ratio	-	-	0.022	-	0.178
HCM Control Delay (s)	-	-	9	-	23.8
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.6

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	32	511	565	14	6	27
Future Vol, veh/h	32	511	565	14	6	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	36	574	601	15	7	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	616	0	-	0	1255	609
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	646	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	949	-	-	-	187	490
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	516	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	949	-	-	-	180	490
Mov Cap-2 Maneuver	-	-	-	-	180	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	516	-

Approach	SE	NW	SW
HCM Control Delay, s	0.5	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	949	-	373
HCM Lane V/C Ratio	-	-	0.038	-	0.098
HCM Control Delay (s)	-	-	8.9	-	15.7
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	583	488	3
Future Vol, veh/h	0	2	0	583	488	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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	634	530	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	532	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	547	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	547	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	547	-	-
HCM Lane V/C Ratio	-	0.004	-	-
HCM Control Delay (s)	-	11.6	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	2	0	579	485	5
Future Vol, veh/h	4	2	0	579	485	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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	2	0	629	527	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1159	530	-	0	-	0
Stage 1	530	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	216	549	0	-	-	-
Stage 1	590	-	0	-	-	-
Stage 2	531	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	216	549	-	-	-	-
Mov Cap-2 Maneuver	216	-	-	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	531	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	271	-	-
HCM Lane V/C Ratio	-	0.024	-	-
HCM Control Delay (s)	-	18.6	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	12	544	584	19	19	14
Future Vol, veh/h	12	544	584	19	19	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	13	573	615	20	23	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	635	0	-	0	1224	625
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	599	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	934	-	-	-	195	479
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	543	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	934	-	-	-	192	479
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	543	-

Approach	SE	NW	SW
HCM Control Delay, s	0.2	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	934	-	257
HCM Lane V/C Ratio	-	-	0.014	-	0.157
HCM Control Delay (s)	-	-	8.9	-	21.6
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0.5

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	39	531	606	8	3	42
Future Vol, veh/h	39	531	606	8	3	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	44	597	645	9	3	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	654	0	-	0	1335	650
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	685	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	919	-	-	-	167	464
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	919	-	-	-	159	464
Mov Cap-2 Maneuver	-	-	-	-	159	-
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	495	-

Approach	SE	NW	SW
HCM Control Delay, s	0.6	0	15
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	919	-	411
HCM Lane V/C Ratio	-	-	0.048	-	0.122
HCM Control Delay (s)	-	-	9.1	-	15
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	584	554	1
Future Vol, veh/h	0	1	0	584	554	1
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	635	602	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	603	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	499	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	499	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	499	-	-
HCM Lane V/C Ratio	-	0.002	-	-
HCM Control Delay (s)	-	12.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	0	581	553	2
Future Vol, veh/h	3	2	0	581	553	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	2	0	632	601	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1234	602	-	0	-	0
Stage 1	602	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	195	500	0	-	-	-
Stage 1	547	-	0	-	-	-
Stage 2	530	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	195	500	-	-	-	-
Mov Cap-2 Maneuver	195	-	-	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	530	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	258	-	-
HCM Lane V/C Ratio	-	0.021	-	-
HCM Control Delay (s)	-	19.3	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	24	583	634	24	25	20
Future Vol, veh/h	24	583	634	24	25	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	25	614	667	25	30	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	692	0	-	0	1344	680
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	664	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	889	-	-	-	165	446
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	506	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	889	-	-	-	160	446
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	506	-

Approach	SE	NW	SW
HCM Control Delay, s	0.4	0	26.2
HCM LOS			D

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	889	-	224
HCM Lane V/C Ratio	-	-	0.028	-	0.245
HCM Control Delay (s)	-	-	9.2	-	26.2
HCM Lane LOS	-	-	A	-	D
HCM 95th %tile Q(veh)	-	-	0.1	-	0.9

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	34	526	581	15	6	28
Future Vol, veh/h	34	526	581	15	6	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	38	591	618	16	7	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	634	0	-	0	1293	626
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	667	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	935	-	-	-	177	479
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	935	-	-	-	170	479
Mov Cap-2 Maneuver	-	-	-	-	170	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	505	-

Approach	SE	NW	SW
HCM Control Delay, s	0.5	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	935	-	363
HCM Lane V/C Ratio	-	-	0.041	-	0.104
HCM Control Delay (s)	-	-	9	-	16.1
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	604	502	3
Future Vol, veh/h	0	2	0	604	502	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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	657	546	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	548	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	536	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	536	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	536	-	-
HCM Lane V/C Ratio	-	0.004	-	-
HCM Control Delay (s)	-	11.7	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	2	0	600	499	5
Future Vol, veh/h	4	2	0	600	499	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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	2	0	652	542	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1197	545	-	0	-	0
Stage 1	545	-	-	-	-	-
Stage 2	652	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	205	538	0	-	-	-
Stage 1	581	-	0	-	-	-
Stage 2	518	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	205	538	-	-	-	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	518	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	258	-	-
HCM Lane V/C Ratio	-	0.025	-	-
HCM Control Delay (s)	-	19.3	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	20	560	601	31	26	22
Future Vol, veh/h	20	560	601	31	26	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	21	589	633	33	32	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	666	0	-	0	1281	650
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	909	-	-	-	180	464
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	525	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	909	-	-	-	176	464
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	525	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	24.1
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	909	-	246
HCM Lane V/C Ratio	-	-	0.023	-	0.238
HCM Control Delay (s)	-	-	9.1	-	24.1
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.9

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	39	644	735	8	3	42
Future Vol, veh/h	39	644	735	8	3	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	44	724	782	9	3	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	791	0	-	0	1599	787
Stage 1	-	-	-	-	787	-
Stage 2	-	-	-	-	812	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	816	-	-	-	115	387
Stage 1	-	-	-	-	443	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	816	-	-	-	109	387
Mov Cap-2 Maneuver	-	-	-	-	109	-
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	431	-

Approach	SE	NW	SW
HCM Control Delay, s	0.6	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	816	-	331
HCM Lane V/C Ratio	-	-	0.054	-	0.151
HCM Control Delay (s)	-	-	9.7	-	17.8
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.2	-	0.5

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	709	671	1
Future Vol, veh/h	0	1	0	709	671	1
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	771	729	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	730	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	422	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	422	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	422	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s)	-	13.6	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	0	706	670	2
Future Vol, veh/h	3	2	0	706	670	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	2	0	767	728	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1496	729	-	0	-	0
Stage 1	729	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	135	423	0	-	-	-
Stage 1	477	-	0	-	-	-
Stage 2	458	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	135	423	-	-	-	-
Mov Cap-2 Maneuver	135	-	-	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	458	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	186	-	-
HCM Lane V/C Ratio	-	0.029	-	-
HCM Control Delay (s)	-	24.9	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	24	707	768	24	25	20
Future Vol, veh/h	24	707	768	24	25	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	25	744	808	25	30	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	833	0	-	0	1615	821
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	794	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	787	-	-	-	112	370
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	440	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	787	-	-	-	108	370
Mov Cap-2 Maneuver	-	-	-	-	108	-
Stage 1	-	-	-	-	413	-
Stage 2	-	-	-	-	440	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	39.4
HCM LOS			E

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	787	-	158
HCM Lane V/C Ratio	-	-	0.032	-	0.347
HCM Control Delay (s)	-	-	9.7	-	39.4
HCM Lane LOS	-	-	A	-	E
HCM 95th %tile Q(veh)	-	-	0.1	-	1.4

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	34	638	705	15	6	28
Future Vol, veh/h	34	638	705	15	6	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	38	717	750	16	7	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	766	0	-	0	1551	758
Stage 1	-	-	-	-	758	-
Stage 2	-	-	-	-	793	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	834	-	-	-	123	402
Stage 1	-	-	-	-	457	-
Stage 2	-	-	-	-	440	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	834	-	-	-	117	402
Mov Cap-2 Maneuver	-	-	-	-	117	-
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	440	-

Approach	SE	NW	SW
HCM Control Delay, s	0.5	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	834	-	281
HCM Lane V/C Ratio	-	-	0.046	-	0.134
HCM Control Delay (s)	-	-	9.5	-	19.8
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.5

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	727	609	3
Future Vol, veh/h	0	2	0	727	609	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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	790	662	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	664	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	461	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	461	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	461	-	-
HCM Lane V/C Ratio	-	0.005	-	-
HCM Control Delay (s)	-	12.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	2	0	723	606	5
Future Vol, veh/h	4	2	0	723	606	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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	2	0	786	659	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1448	662	-	0	-	0
Stage 1	662	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	145	462	0	-	-	-
Stage 1	513	-	0	-	-	-
Stage 2	449	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	462	-	-	-	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	513	-	-	-	-	-
Stage 2	449	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	188	-	-
HCM Lane V/C Ratio	-	0.035	-	-
HCM Control Delay (s)	-	24.8	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	20	679	728	31	26	22
Future Vol, veh/h	20	679	728	31	26	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	21	715	766	33	32	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	799	0	-	0	1540	783
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	757	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	811	-	-	-	125	389
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	458	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	811	-	-	-	122	389
Mov Cap-2 Maneuver	-	-	-	-	122	-
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	458	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	34.8
HCM LOS			D

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	811	-	178
HCM Lane V/C Ratio	-	-	0.026	-	0.329
HCM Control Delay (s)	-	-	9.6	-	34.8
HCM Lane LOS	-	-	A	-	D
HCM 95th %tile Q(veh)	-	-	0.1	-	1.3

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	37	519	595	10	4	40
Future Vol, veh/h	37	519	595	10	4	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	42	583	633	11	4	44

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	644	0	-	0	1306	639
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	667	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	927	-	-	-	174	471
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	927	-	-	-	166	471
Mov Cap-2 Maneuver	-	-	-	-	166	-
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	505	-

Approach	SE	NW	SW
HCM Control Delay, s	0.6	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	927	-	404
HCM Lane V/C Ratio	-	-	0.045	-	0.121
HCM Control Delay (s)	-	-	9.1	-	15.1
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	0	573	542	0
Future Vol, veh/h	0	17	0	573	542	0
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	0	623	589	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	589	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	508	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	508	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	508	-
HCM Lane V/C Ratio	-	0.036	-
HCM Control Delay (s)	-	12.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	4	573	555	4
Future Vol, veh/h	0	0	4	573	555	4
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	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	4	623	603	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	605	607	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	498	971	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	498	971	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	971	-	-	-	-
HCM Lane V/C Ratio	0.004	-	-	-	-
HCM Control Delay (s)	8.7	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	20	575	619	17	20	15
Future Vol, veh/h	20	575	619	17	20	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	21	605	652	18	24	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	670	0	-	0	1308	661
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	647	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	906	-	-	-	173	457
Stage 1	-	-	-	-	508	-
Stage 2	-	-	-	-	516	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	906	-	-	-	169	457
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	516	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	24
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	906	-	232
HCM Lane V/C Ratio	-	-	0.023	-	0.184
HCM Control Delay (s)	-	-	9.1	-	24
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.7

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	32	514	568	15	7	27
Future Vol, veh/h	32	514	568	15	7	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	36	578	604	16	8	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	620	0	-	0	1262	612
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	946	-	-	-	185	488
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	514	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	946	-	-	-	178	488
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	514	-

Approach	SE	NW	SW
HCM Control Delay, s	0.5	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	946	-	359
HCM Lane V/C Ratio	-	-	0.038	-	0.105
HCM Control Delay (s)	-	-	9	-	16.2
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	0	583	492	0
Future Vol, veh/h	0	9	0	583	492	0
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	0	634	535	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	535	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	545	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	545	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	545	-
HCM Lane V/C Ratio	-	0.018	-
HCM Control Delay (s)	-	11.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	5	583	497	4
Future Vol, veh/h	0	0	5	583	497	4
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	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	5	634	540	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	542	544	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	540	1025	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	540	1025	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1025	-	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	8.5	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	13	548	588	19	19	15
Future Vol, veh/h	13	548	588	19	19	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	14	577	619	20	23	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	639	0	-	0	1234	629
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	605	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	931	-	-	-	192	477
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	931	-	-	-	189	477
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	539	-

Approach	SE	NW	SW
HCM Control Delay, s	0.2	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	931	-	258
HCM Lane V/C Ratio	-	-	0.015	-	0.161
HCM Control Delay (s)	-	-	8.9	-	21.6
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0.6

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	39	534	612	10	4	42
Future Vol, veh/h	39	534	612	10	4	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	44	600	651	11	4	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	662	0	-	0	1345	657
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	688	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	912	-	-	-	165	460
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	493	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	912	-	-	-	157	460
Mov Cap-2 Maneuver	-	-	-	-	157	-
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	493	-

Approach	SE	NW	SW
HCM Control Delay, s	0.6	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	912	-	394
HCM Lane V/C Ratio	-	-	0.048	-	0.13
HCM Control Delay (s)	-	-	9.1	-	15.5
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.2	-	0.4

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	0	589	558	0
Future Vol, veh/h	0	17	0	589	558	0
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	0	640	607	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	607	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	496	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	496	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	496	-
HCM Lane V/C Ratio	-	0.037	-
HCM Control Delay (s)	-	12.5	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	4	589	558	0
Future Vol, veh/h	0	0	4	589	558	0
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	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	4	640	607	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	607	607	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	496	971	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	496	971	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	971	-	-	-	-
HCM Lane V/C Ratio	0.004	-	-	-	-
HCM Control Delay (s)	8.7	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	25	591	637	24	25	21
Future Vol, veh/h	25	591	637	24	25	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	26	622	671	25	30	26

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	696	0	-	0	1358	684
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	674	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	886	-	-	-	162	444
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	501	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	886	-	-	-	157	444
Mov Cap-2 Maneuver	-	-	-	-	157	-
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	501	-

Approach	SE	NW	SW
HCM Control Delay, s	0.4	0	26.5
HCM LOS			D

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	886	-	223
HCM Lane V/C Ratio	-	-	0.03	-	0.252
HCM Control Delay (s)	-	-	9.2	-	26.5
HCM Lane LOS	-	-	A	-	D
HCM 95th %tile Q(veh)	-	-	0.1	-	1

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	34	529	584	16	7	28
Future Vol, veh/h	34	529	584	16	7	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	38	594	621	17	8	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	638	0	-	0	1300	630
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	670	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	932	-	-	-	175	476
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	503	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	932	-	-	-	168	476
Mov Cap-2 Maneuver	-	-	-	-	168	-
Stage 1	-	-	-	-	503	-
Stage 2	-	-	-	-	503	-

Approach	SE	NW	SW
HCM Control Delay, s	0.5	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	932	-	348
HCM Lane V/C Ratio	-	-	0.041	-	0.112
HCM Control Delay (s)	-	-	9	-	16.6
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	0	604	506	0
Future Vol, veh/h	0	9	0	604	506	0
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	0	657	550	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	550	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	535	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	535	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	535	-
HCM Lane V/C Ratio	-	0.018	-
HCM Control Delay (s)	-	11.9	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	5	604	506	0
Future Vol, veh/h	0	0	5	604	506	0
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	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	5	657	550	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	550	550	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	535	1020	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	535	1020	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1020	-	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	8.5	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	21	564	601	31	26	22
Future Vol, veh/h	21	564	601	31	26	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	22	594	633	33	32	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	666	0	-	0	1288	650
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	638	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	909	-	-	-	178	464
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	909	-	-	-	174	464
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	521	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	24.3
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	909	-	244
HCM Lane V/C Ratio	-	-	0.024	-	0.24
HCM Control Delay (s)	-	-	9.1	-	24.3
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.9

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	39	647	741	10	4	42
Future Vol, veh/h	39	647	741	10	4	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	44	727	788	11	4	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	799	0	-	0	1609	794
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	815	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	811	-	-	-	113	383
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	430	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	811	-	-	-	107	383
Mov Cap-2 Maneuver	-	-	-	-	107	-
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	430	-

Approach	SE	NW	SW
HCM Control Delay, s	0.6	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	811	-	313
HCM Lane V/C Ratio	-	-	0.054	-	0.163
HCM Control Delay (s)	-	-	9.7	-	18.7
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.2	-	0.6

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	0	714	675	0
Future Vol, veh/h	0	17	0	714	675	0
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	0	776	734	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	734	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	420	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	420	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	420	-
HCM Lane V/C Ratio	-	0.044	-
HCM Control Delay (s)	-	14	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	4	714	688	4
Future Vol, veh/h	0	0	4	714	688	4
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	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	4	776	748	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	750	752	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	411	858	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	411	858	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	858	-	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	9.2	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	25	715	771	24	25	21
Future Vol, veh/h	25	715	771	24	25	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	26	753	812	25	30	26

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	837	0	-	0	1630	825
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	805	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	784	-	-	-	110	368
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	435	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	784	-	-	-	106	368
Mov Cap-2 Maneuver	-	-	-	-	106	-
Stage 1	-	-	-	-	411	-
Stage 2	-	-	-	-	435	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	40.2
HCM LOS			E

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	784	-	157
HCM Lane V/C Ratio	-	-	0.034	-	0.357
HCM Control Delay (s)	-	-	9.8	-	40.2
HCM Lane LOS	-	-	A	-	E
HCM 95th %tile Q(veh)	-	-	0.1	-	1.5

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	34	641	708	16	7	28
Future Vol, veh/h	34	641	708	16	7	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	94	94	90	90
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	38	720	753	17	8	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	770	0	-	0	1558	762
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	796	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	831	-	-	-	122	400
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	439	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	831	-	-	-	116	400
Mov Cap-2 Maneuver	-	-	-	-	116	-
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	439	-

Approach	SE	NW	SW
HCM Control Delay, s	0.5	0	20.6
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	831	-	269
HCM Lane V/C Ratio	-	-	0.046	-	0.145
HCM Control Delay (s)	-	-	9.5	-	20.6
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.5

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	0	727	613	0
Future Vol, veh/h	0	9	0	727	613	0
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	0	790	666	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	666	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	459	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	459	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	459	-
HCM Lane V/C Ratio	-	0.021	-
HCM Control Delay (s)	-	13	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	5	727	618	4
Future Vol, veh/h	0	0	5	727	618	4
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	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	5	790	672	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	674	676	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	455	915	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	455	915	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	915	-	-	-	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	9	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	21	683	732	31	26	23
Future Vol, veh/h	21	683	732	31	26	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	82	82
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	22	719	771	33	32	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	804	0	-	0	1551	788
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	763	-
Critical Hdwy	4.15	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.245	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	807	-	-	-	123	386
Stage 1	-	-	-	-	443	-
Stage 2	-	-	-	-	455	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	807	-	-	-	120	386
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	455	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	35.4
HCM LOS			E

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	807	-	177
HCM Lane V/C Ratio	-	-	0.027	-	0.338
HCM Control Delay (s)	-	-	9.6	-	35.4
HCM Lane LOS	-	-	A	-	E
HCM 95th %tile Q(veh)	-	-	0.1	-	1.4

Appendix C

Signal Warrant Sheets

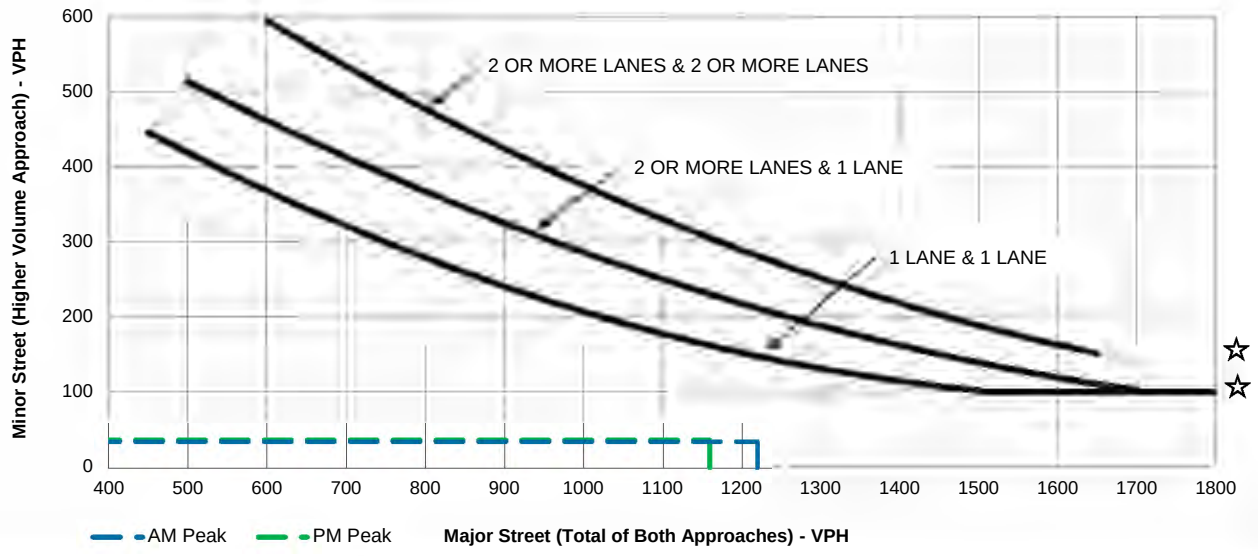
Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*

Warrant 3 | **Peak Hour Volume in Urban Areas**



☆ **NOTE:**
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

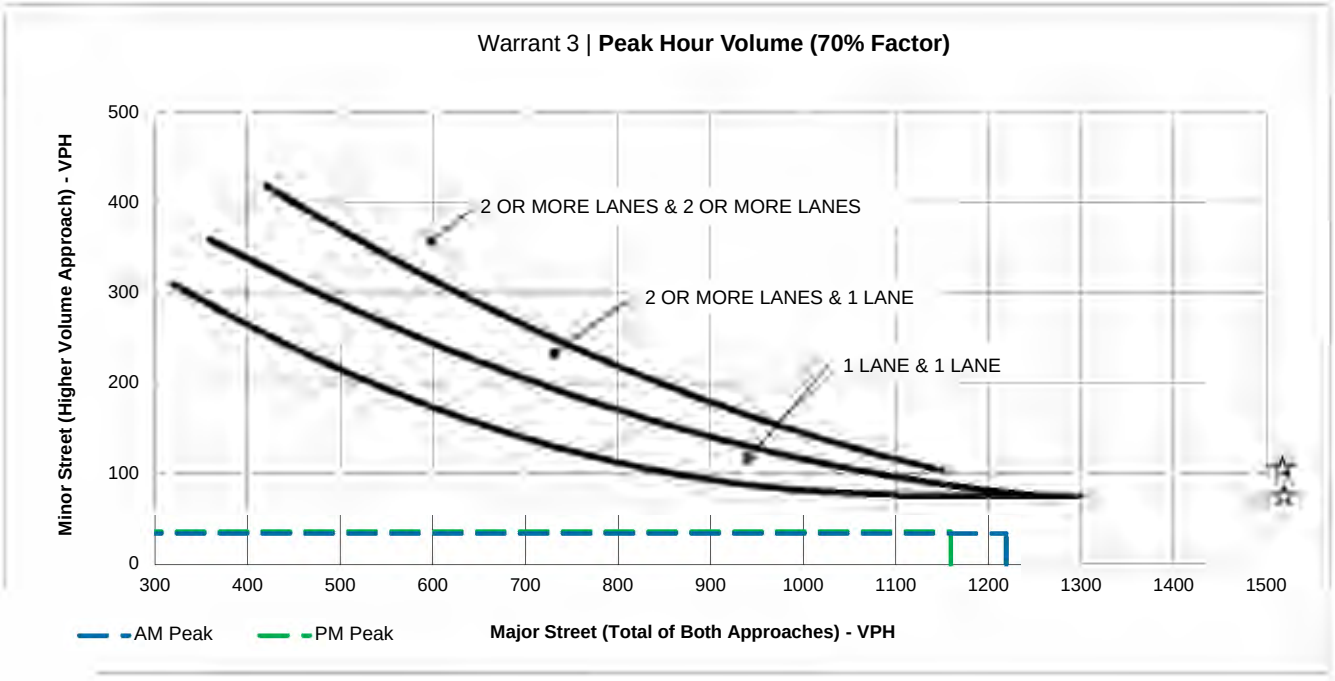
SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29	1	
Minor Approach	Lodi Lane	1	
	Friday PM: Green	Sat. Midday: Blue	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,219	1,159	
Minor St. Volume (higher volume approach):	34	36	
Warrant Met?:	**No**	**No**	

Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR 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.

SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29	1	
Minor Approach	Lodi Lane	1	
	Friday PM: Green	Sat. Midday: Blue	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,219	1,159	
Minor St. Volume (higher volume approach):	34	36	
Warrant Met?:	**NO**	**NO**	

Fig 4C-4 (70% Option)

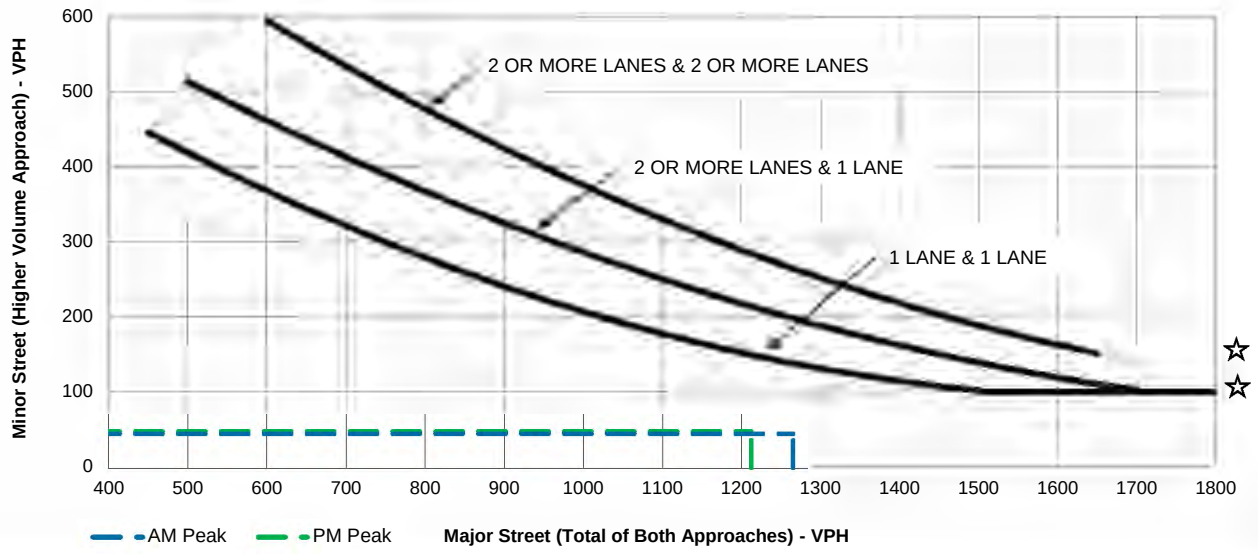
Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*

Warrant 3 | **Peak Hour Volume in Urban Areas**



☆ **NOTE:**
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29 NT	1	
Minor Approach	Lodi Lane NT	1	
	Friday PM: Blue	Sat. Midday: Greeen	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,265	1,212	
Minor St. Volume (higher volume approach):	45	48	
Warrant Met?:	**No**	**No**	

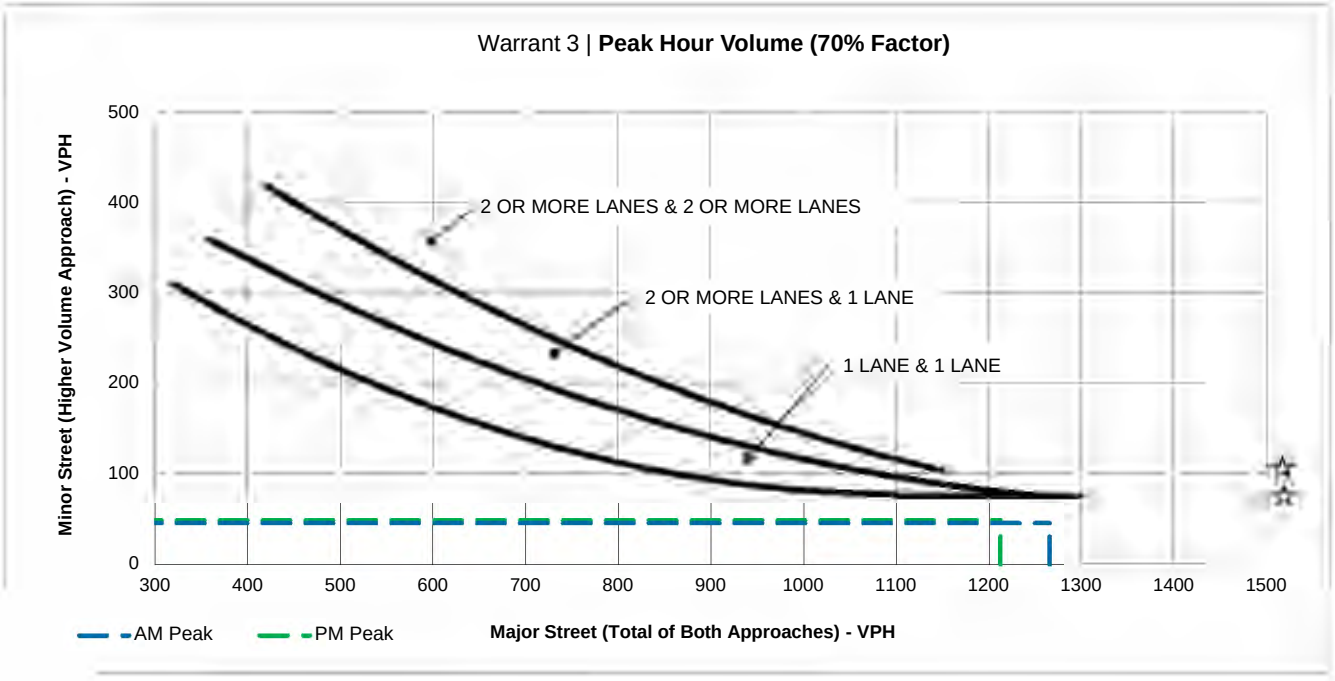
Fig 4C-3 (100% Option)

Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR 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.

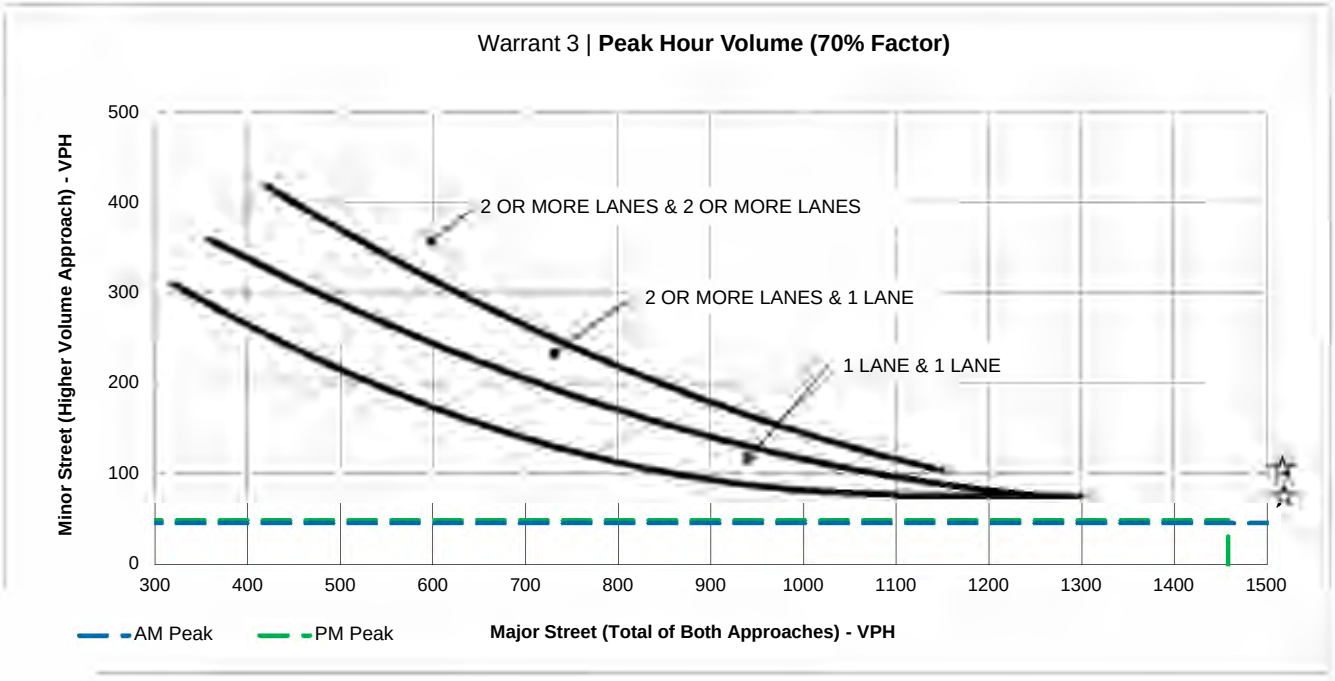
SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29 NT	2	
Minor Approach	Lodi Lane NT	1	
	AM Peak	PM Peak	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,265	1,212	
Minor St. Volume (higher volume approach):	45	48	
Warrant Met?:	**NO**	**NO**	

Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR 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.

SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29 C	1	
Minor Approach	Lodi Ln. C	1	
	Friday PM: Blue	Sat. Midday: Green	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,523	1,458	
Minor St. Volume (higher volume approach):	45	48	
Warrant Met?:	**NO**	**NO**	

Fig 4C-4 (70% Option)

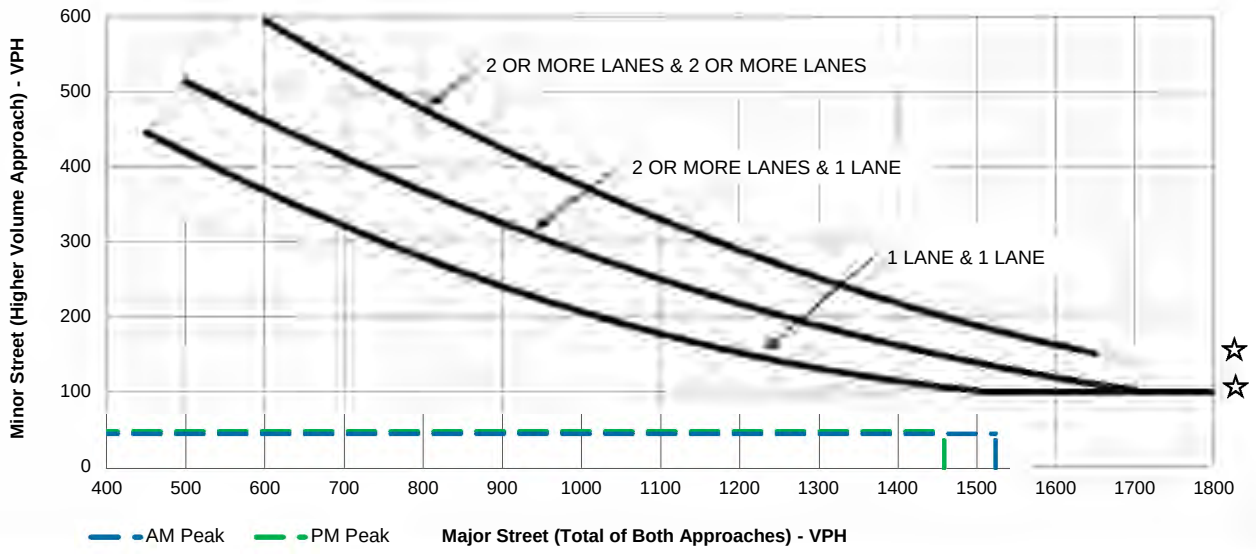
Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*

Warrant 3 | **Peak Hour Volume in Urban Areas**



☆ **NOTE:**
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29 C	1	
Minor Approach	Lodi Lane C	1	
	Friday PM: Blue	Sat. Midday: Green	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,523	1,458	
Minor St. Volume (higher volume approach):	45	48	
Warrant Met?:	**No**	**No**	

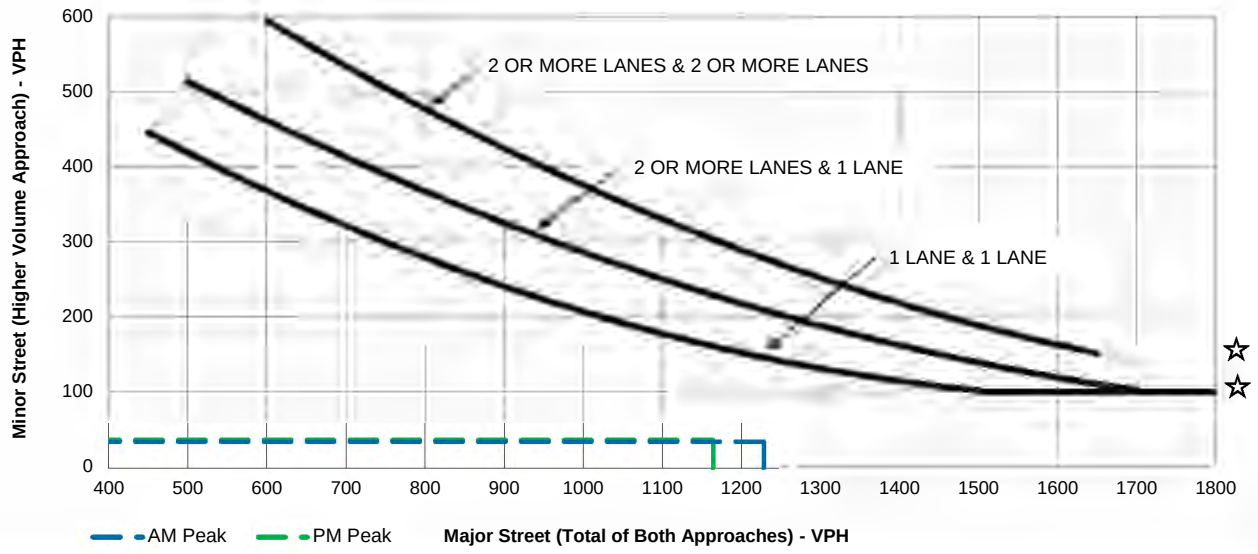
Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*

Warrant 3 | **Peak Hour Volume in Urban Areas**



☆ **NOTE:**
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29 E+Prj	1	
Minor Approach	Lodi Lane E+Prj	1	
	Friday PM: Blue	Sat. Midday: Green	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,228	1,164	
Minor St. Volume (higher volume approach):	34	36	
Warrant Met?:	**No**	**No**	

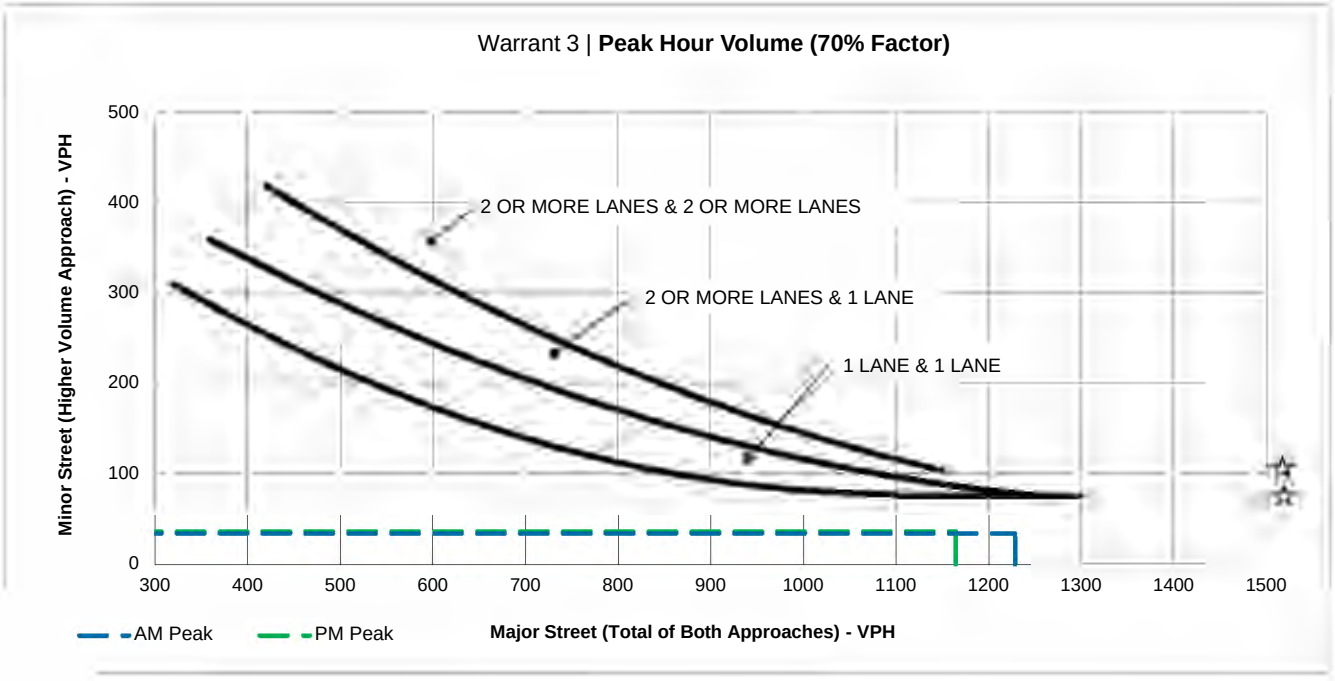
Fig 4C-3 (100% Option)

Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR 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.

SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29 E+Prj.	1	
Minor Approach	:Lodi Ln. E+Prj	1	
	Friday PM: Blue	Sat. Midday: Green	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,228	1,164	
Minor St. Volume (higher volume approach):	34	36	
Warrant Met?:	**NO**	**NO**	

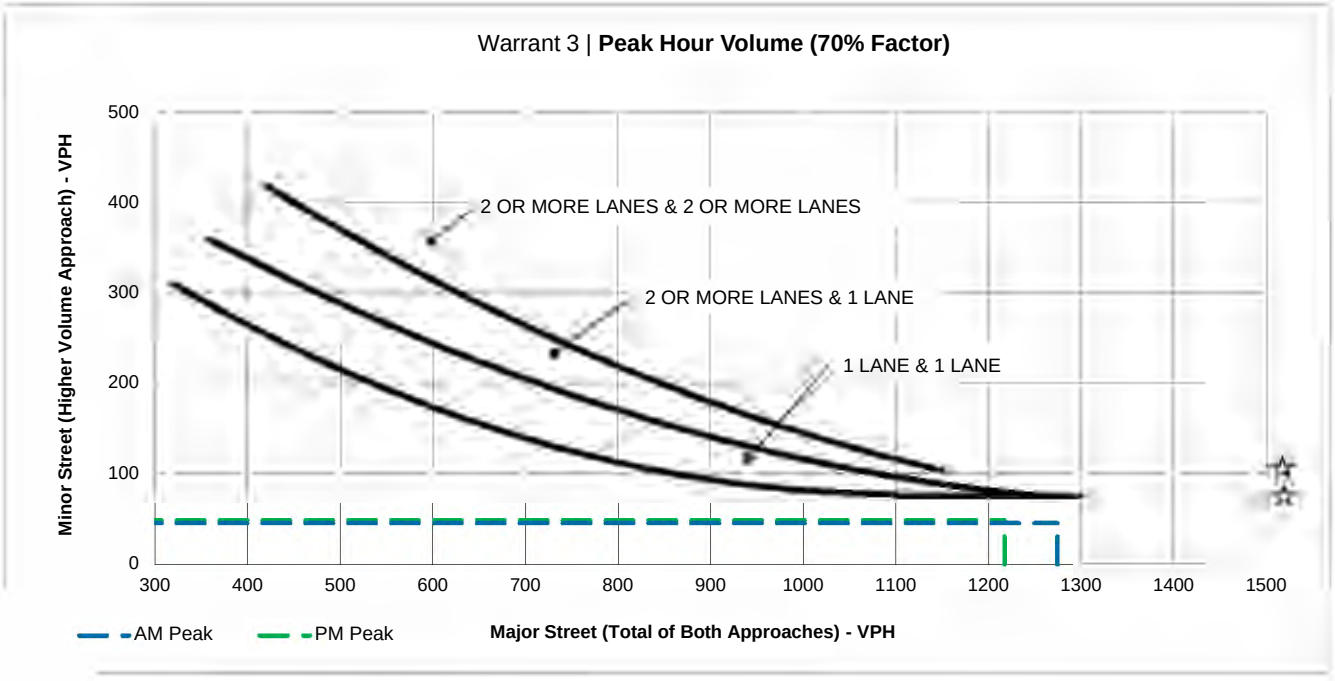
Fig 4C-4 (70% Option)

Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR 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.

SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29 NT+Prj	2	
Minor Approach	Lodi Lane NT+Prj	1	
	Friday PM: Blue	Sat. Midday: Green	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,274	1,217	
Minor St. Volume (higher volume approach):	45	48	
Warrant Met?:	**NO**	**NO**	

Fig 4C-4 (70% Option)

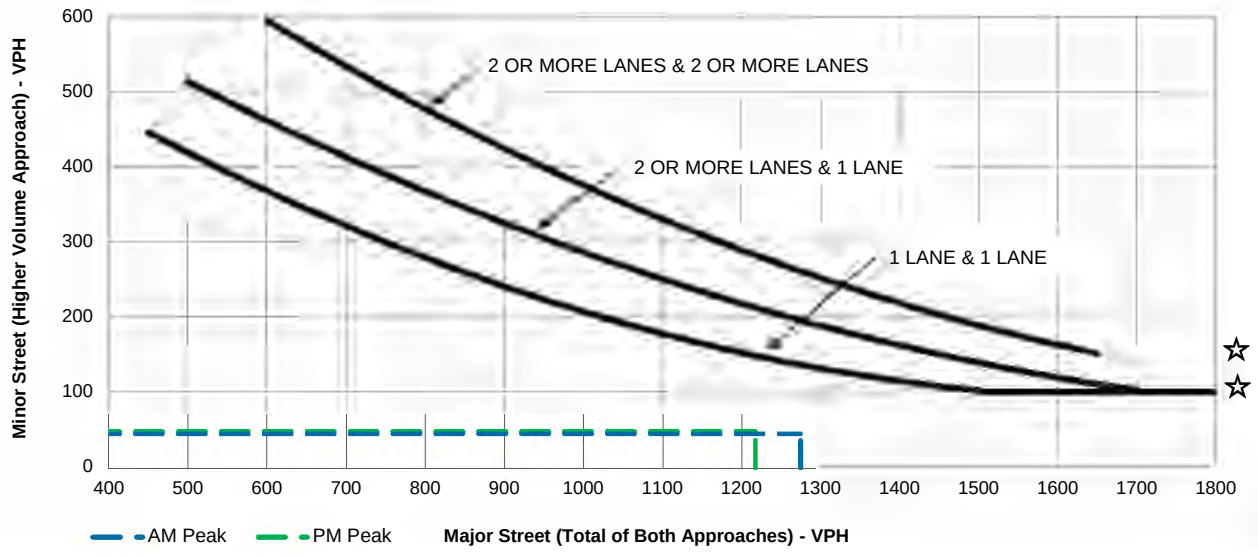
Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*

Warrant 3 | **Peak Hour Volume in Urban Areas**



☆ **NOTE:**
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

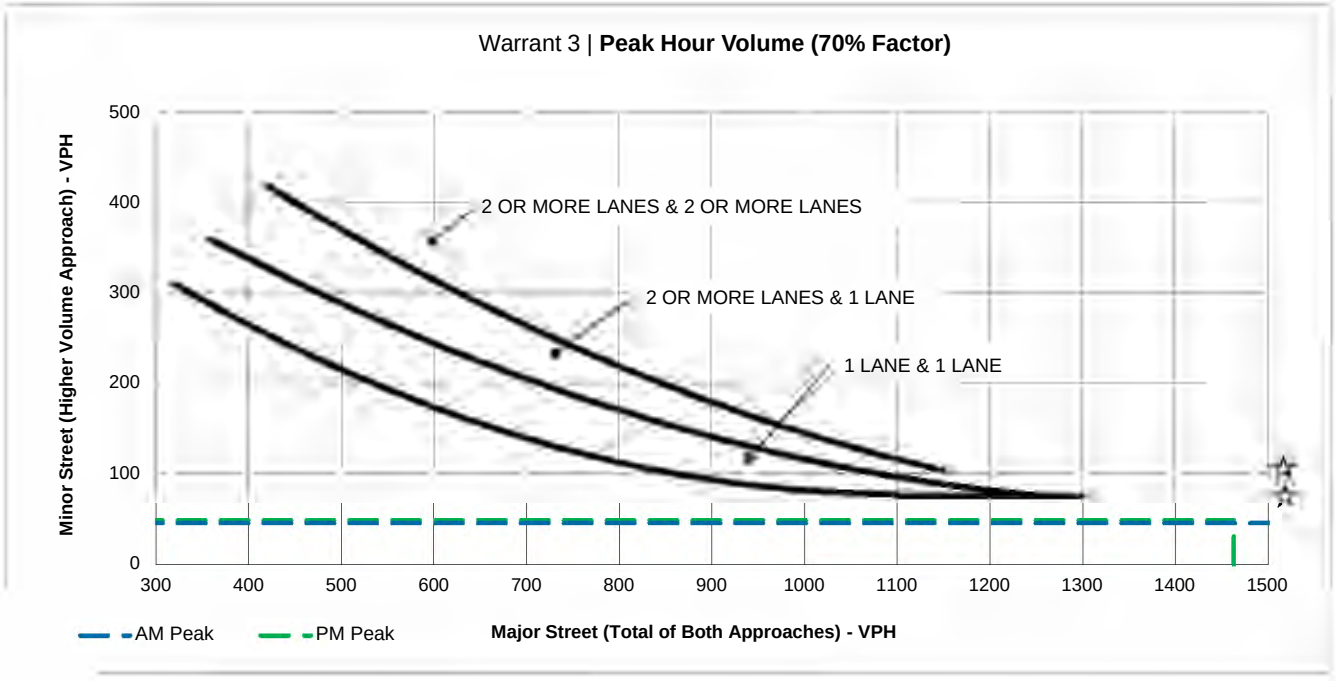
SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29 NT+Prj	1	
Minor Approach	Lodi Lane NT+Prj	1	
	Friday PM: Blue	Sat. Midday: Green	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,274	1,217	
Minor St. Volume (higher volume approach):	45	48	
Warrant Met?:	**No**	**No**	

Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
400	265	400	340	400	N/A
500	210	500	290	500	375
600	180	600	240	600	310
700	150	700	200	700	260
800	90	800	175	800	220
900	100	900	140	900	180
1000	85	1000	120	1000	150
1100	75	1100	95	1150	100
1200	75	1200	80	1200	100
1300	75	1250	75	1300	100

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*



☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR 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.

SCENARIO (AM/PM)		Number of Lanes	
Major Approach	SR 29 C+Prj	1	
Minor Approach	Lodi Lane C+Prj	1	
	Friday PM: Blue	Sat. Midday: Green	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,532	1,463	
Minor St. Volume (higher volume approach):	45	48	
Warrant Met?:	**NO**	**NO**	

Fig 4C-4 (70% Option)

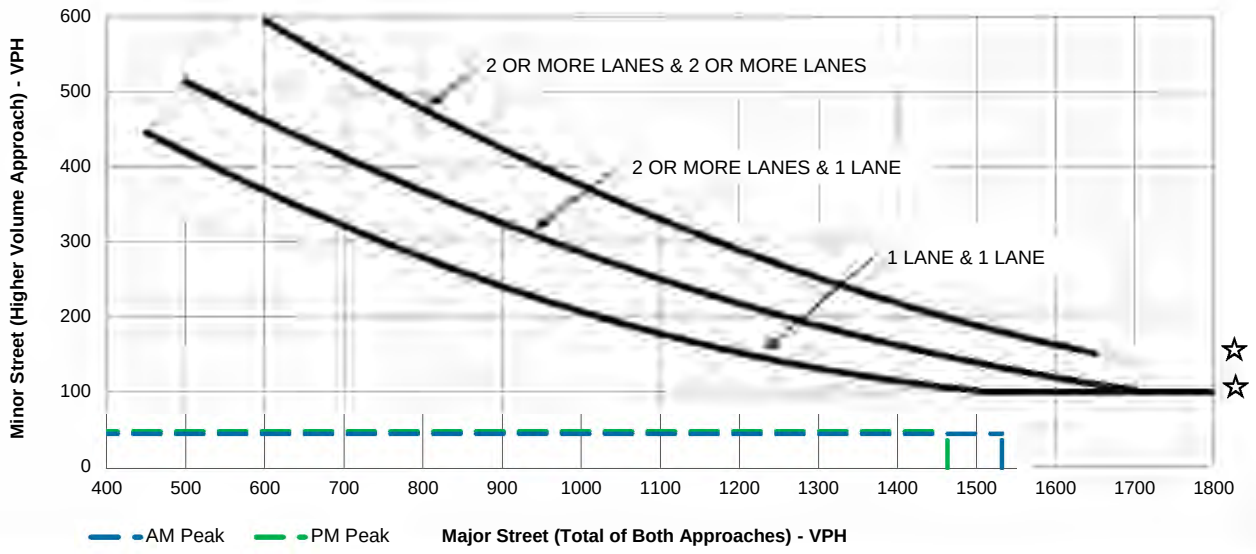
Existing Conditions

Signal Warrant 3: Peak Hour

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

** Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation*

Warrant 3 | **Peak Hour Volume in Urban Areas**



☆ **NOTE:**
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SCENARIO (AM/PM)			
		Number of Lanes	
Major Approach	SR 29 C+Prj	1	
Minor Approach	Lodi Lane C+Prj	1	
	Friday P)M: Blue	Sat. Midday: Green	**Volumes for higher minor street**
Major St. Volume (both approaches):	1,532	1,463	
Minor St. Volume (higher volume approach):	45	48	
Warrant Met?:	**No**	**No**	

Fig 4C-3 (100% Option)

Appendix D

AXR Napa Valley Winery Trip Generation

A Tradition of Stewardship
A Commitment to Service

WINERY TRIP GENERATION WORKSHEET

Planning, Building & Environmental Services
1195 Third Street, Suite 210
Napa, CA 94559-3082
(707) 253-4417

Clear Form

PROJECT DESCRIPTION

Winery Name: AXR Napa Valley **Date Prepared:** 12/19/22

Existing Entitled Winery		Harvest	Non-Harvest
Number of Full Time Employees*	Weekday	2	2
	Weekend	2	2
Number of Part Time Employees*	Weekday	0	2
	Weekend	8	2
Maximum Daily Visitation	Weekday	20	10
	Weekend	20	20
Annual Gallons of Production		20,000	20,000
Annual Tons of Grape Haul		125.0	N/A
Number of Visitors at the Largest Event that occurs two or more times per month, on average	Weekday	0	0
	Weekend	0	0

Proposed Winery		Harvest	Non-Harvest
Number of Full Time Employees*	Weekday	12	12
	Weekend	6	4
Number of Part Time Employees*	Weekday	5	5
	Weekend	2	2
Maximum Daily Visitation	Weekday	60	40
	Weekend	60	40
Annual Gallons of Production		35,000	35,000
Annual Tons of Grape Haul		218.8	N/A
Number of Visitors at the Largest Event that occurs two or more times per month, on average	Weekday	25	25
	Weekend	25	25

*Number of full time and part time employees should represent the max number of employees that will be working on any given day (including all vendors and contractors employed for the largest event that occurs two or more times per month on average).

AXR Napa Valley
TRIP GENERATION

Existing Winery					Harvest	Non-Harvest
Maximum Daily Weekday Traffic (Friday)						
	Harvest	*Non-Harvest*				
FT Employees	2	2	3.05 one way trips/employee	FT Employee Daily Trips	6.1	6.1
PT Employees	0	2	1.9 one way trips/employee	PT Employee Daily Trips	0.0	3.8
Max Visitors	20	10	2.6 visitors/vehicle for 2 one way trips	Max Visitor Daily Trips	15.4	7.7
Max Event	0	0	2.6 visitors/vehicle for 2 one way trips	Max Event Daily Trips	0.0	0.0
Gallons of Production	20,000		0.000018 truck trips	Production Daily Trips	0.4	0.4
Tons of Grape Haul#	125.0		0.013889 truck trips	Grape Haul Daily Trips	1.7	0.0
				Total Weekday Daily Trips	24	18
				Total Weekday Peak Hour Trips*	9	7
Maximum Daily Weekend Traffic (Saturday)						
	Harvest	*Non-Harvest*				
FT Employees	2	2	3.05 one way trips/employee	FT Employee Daily Trips	6.1	6.1
PT Employees	8	2	1.9 one way trips/employee	PT Employee Daily Trips	15.2	3.8
Max Visitors	20	20	2.8 visitors/vehicle for 2 one way trips	Max Visitor Daily Trips	14.3	14.3
Max Event	0	0	2.8 visitors/vehicle for 2 one way trips	Max Event Daily Trips	0.0	0.0
Gallons of Production	20,000		0.000018 truck trips	Production Daily Trips	0.4	0.4
Tons of Grape Haul#	125.0		0.013889 truck trips	Grape Haul Daily Trips	1.7	0.0
				Total Weekend Daily Trips	38	25
				Total Weekend Peak Hour Trips*	16	12
Maximum Annual Traffic						
				Total Annual Trips**	7,914	

Proposed Winery					Harvest	Non-Harvest
Maximum Daily Weekday Traffic (Friday)						
	Harvest	*Non-Harvest*				
FT Employees	12	12	3.05 one way trips/employee	FT Employee Daily Trips	36.6	36.6
PT Employees	5	5	1.9 one way trips/employee	PT Employee Daily Trips	9.5	9.5
Max Visitors	60	40	2.6 visitors/vehicle for 2 one way trips	Max Visitor Daily Trips	46.2	30.8
Max Event	25	25	2.6 visitors/vehicle for 2 one way trips	Max Event Daily Trips	19.2	19.2
Gallons of Production	35,000		0.000018 truck trips	Production Daily Trips	0.6	0.6
Tons of Grape Haul#	218.8		0.013889 truck trips	Grape Haul Daily Trips	3.0	0.0
				Total Weekday Daily Trips	116	97
				Total Weekday Peak Hour Trips*	34	27
Maximum Daily Weekend Traffic (Saturday)						
	Harvest	*Non-Harvest*				
FT Employees	6	4	3.05 one way trips/employee	FT Employee Daily Trips	18.3	12.2
PT Employees	2	2	1.9 one way trips/employee	PT Employee Daily Trips	3.8	3.8
Max Visitors	60	40	2.8 visitors/vehicle for 2 one way trips	Max Visitor Daily Trips	42.9	28.6
Max Event	25	25	2.8 visitors/vehicle for 2 one way trips	Max Event Daily Trips	17.9	17.9
Gallons of Production	35,000		0.000018 truck trips	Production Daily Trips	0.6	0.6
Tons of Grape Haul#	218.8		0.013889 truck trips	Grape Haul Daily Trips	3.0	0.0
				Total Weekend Daily Trips	87	64
				Total Weekend Peak Hour Trips*	34	22
Maximum Annual Traffic						
				Total Annual Trips**	33,524	

Net New Trips		Harvest	Non-Harvest
Maximum Weekday Traffic (Friday)			
If total net new daily trips is greater than 40, a TIS is required	Net New Weekday Daily Trips	92	79
	Net New Weekday Peak Hour Trips*	25	20
Maximum Weekend Traffic (Saturday)			
If total net new daily trips is greater than 40, a TIS is required	Net New Weekend Daily Trips	49	39
	Net New Weekend Peak Hour Trips*	18	10
Maximum Annual Traffic			
Please Prepare a Traffic Impact Study	Net New Annual Trips**	25,610	

#Trips associated with Grape Haul represent harvest season only.

*Weekday peak hour trips are calculated as 38% of daily trips associated with visitors and production plus one trip per employee. Weekend peak hour trips are calculated as 57% of daily trips associated with visitors and production plus one trip per employee.

**Annual trips represent a conservative calculation that assumes 11 weeks of harvest, all weekdays are Fridays, all weekends are Saturdays, and assumes that the largest event that occurs two or more times per month on average occurs every day.

Appendix E

HCS Two-Lane Highway LOS Results

HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Eastbound
Project Description	Existing Conditions: Bale Lane Eastbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	49	Opposing Demand Flow Rate, veh/h	47
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71285	Speed Power Coefficient (p)	0.60374
PF Slope Coefficient (m)	-1.20580	PF Power Coefficient (p)	0.78100
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	10.8
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Peak Friday: Westbound
Project Description	Existing Conditions: Bale Lane Westbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	47	Opposing Demand Flow Rate, veh/h	49
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71448	Speed Power Coefficient (p)	0.60222
PF Slope Coefficient (m)	-1.20725	PF Power Coefficient (p)	0.78062
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	10.5
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Eastbound
Project Description	Existing Conditions: Lodi Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	39	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	14.0
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	5	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Westbound
Project Description	Existing Conditions: Lodi Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	37	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	13.5
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	4	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Northbound
Project Description	Existing Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	617	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.36

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.7
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.0

Vehicle Results

Average Speed, mi/h	50.0	Percent Followers, %	62.1
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	7.7
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	301	0.30	7.7	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Southbound
Project Description	Existing Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	585	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.34

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.0

Vehicle Results

Average Speed, mi/h	50.0	Percent Followers, %	60.7
Segment Travel Time, minutes	2.54	Follower Density (FD), followers/mi/ln	7.1
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	285	0.28	7.1	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Eastbound
Project Description	Existing Conditions: Bale Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	50	Opposing Demand Flow Rate, veh/h	36
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.70407	Speed Power Coefficient (p)	0.61206
PF Slope Coefficient (m)	-1.19793	PF Power Coefficient (p)	0.78303
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	10.8
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Westbound
Project Description	Existing Conditions; Bale Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	36	Opposing Demand Flow Rate, veh/h	50
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71528	Speed Power Coefficient (p)	0.60147
PF Slope Coefficient (m)	-1.20796	PF Power Coefficient (p)	0.78044
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	8.6
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	5	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Eastbound
Project Description	Existing Conditions: Lodi Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	34	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	12.7
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	4	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Westbound
Project Description	Existing Conditions: Lodi Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	37	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	13.5
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	4	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Northbound
Project Description	Existing Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	634	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.37

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	5280	-	-	49.9

Vehicle Results

Average Speed, mi/h	49.9	Percent Followers, %	62.8
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	8.0
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	309	0.31	8.0	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Southbound
Project Description	Existing Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	530	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.31

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.2

Vehicle Results

Average Speed, mi/h	50.2	Percent Followers, %	58.2
Segment Travel Time, minutes	2.54	Follower Density (FD), followers/mi/ln	6.1
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	259	0.24	6.1	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Eastbound
Project Description	Near-Term (NP): Bale Lane Eastbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	51	Opposing Demand Flow Rate, veh/h	49
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71448	Speed Power Coefficient (p)	0.60222
PF Slope Coefficient (m)	-1.20725	PF Power Coefficient (p)	0.78062
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	11.2
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Peak Friday: Westbound
Project Description	Near-Term (NP) Conditions: Bale Lane Westbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	49	Opposing Demand Flow Rate, veh/h	51
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71607	Speed Power Coefficient (p)	0.60074
PF Slope Coefficient (m)	-1.20867	PF Power Coefficient (p)	0.78026
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	10.8
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Eastbound
Project Description	Near-Term (NP) Conditions: Lodi Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	52	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	16.8
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.2
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	6	0.00	0.2	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Westbound
Project Description	Near-Term (NP) Conditions: Lodi Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	49	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	16.1
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.2
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	6	0.00	0.2	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Northbound
Project Description	Near-Term (NP) Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	635	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.37

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	49.9

Vehicle Results

Average Speed, mi/h	49.9	Percent Followers, %	62.8
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	8.0
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	310	0.31	8.0	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Southbound
Project Description	Near-Term (NP) Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	602	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.35

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.4
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.0

Vehicle Results

Average Speed, mi/h	50.0	Percent Followers, %	61.4
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	7.4
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	294	0.29	7.4	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Eastbound
Project Description	Near-Term (NP): Bale Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	53	Opposing Demand Flow Rate, veh/h	37
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.70500	Speed Power Coefficient (p)	0.61117
PF Slope Coefficient (m)	-1.19877	PF Power Coefficient (p)	0.78282
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	11.4
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	8	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Westbound
Project Description	Near-Term (NP) Conditions; Bale Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	37	Opposing Demand Flow Rate, veh/h	53
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71763	Speed Power Coefficient (p)	0.59929
PF Slope Coefficient (m)	-1.21005	PF Power Coefficient (p)	0.77991
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	8.8
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	5	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Eastbound
Project Description	Near-Term (NP) Conditions: Lodi Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	55	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	17.5
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.2
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.2	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Westbound
Project Description	Near-Term (NP): Lodi Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	52	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	16.8
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.2
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	6	0.00	0.2	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Northbound
Project Description	Near-Term (NP) Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	657	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.39

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.4
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	5280	-	-	49.9

Vehicle Results

Average Speed, mi/h	49.9	Percent Followers, %	63.7
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	8.4
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	320	0.33	8.4	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Southbound
Project Description	Near-Term (NP) Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	546	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.32

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.4
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.1

Vehicle Results

Average Speed, mi/h	50.1	Percent Followers, %	58.9
Segment Travel Time, minutes	2.54	Follower Density (FD), followers/mi/ln	6.4
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	266	0.25	6.4	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
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Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Northbound
Project Description	Cumulative (NP) Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	771	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.45

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	10.5
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	49.7

Vehicle Results

Average Speed, mi/h	49.7	Percent Followers, %	67.9
Segment Travel Time, minutes	2.56	Follower Density (FD), followers/mi/ln	10.5
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	376	0.42	10.5	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
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Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Southbound
Project Description	Cumulative (NP) Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	662	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.39

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.5
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	49.9

Vehicle Results

Average Speed, mi/h	49.9	Percent Followers, %	63.9
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	8.5
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	323	0.33	8.5	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Northbound
Project Description	Cumulative (NP) Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	790	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.46

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	10.9
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	5280	-	-	49.6

Vehicle Results

Average Speed, mi/h	49.6	Percent Followers, %	68.5
Segment Travel Time, minutes	2.56	Follower Density (FD), followers/mi/ln	10.9
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	386	0.44	10.9	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Southbound
Project Description	Cumulative (NP) Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	662	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.39

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.5
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	49.9

Vehicle Results

Average Speed, mi/h	49.9	Percent Followers, %	63.9
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	8.5
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	323	0.33	8.5	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Eastbound
Project Description	E+Prj Conditions: Bale Lane Eastbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	49	Opposing Demand Flow Rate, veh/h	51
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71607	Speed Power Coefficient (p)	0.60074
PF Slope Coefficient (m)	-1.20867	PF Power Coefficient (p)	0.78026
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	10.8
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Peak Friday: Westbound
Project Description	E+Prj. Conditions: Bale Lane Westbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	51	Opposing Demand Flow Rate, veh/h	49
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71448	Speed Power Coefficient (p)	0.60222
PF Slope Coefficient (m)	-1.20725	PF Power Coefficient (p)	0.78062
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	11.2
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
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Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Eastbound
Project Description	E+Prj Conditions: Lodi Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	40	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	14.2
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	5	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
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Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Westbound
Project Description	E+Prj Conditions: Lodi Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	37	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	13.5
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	4	0.00	0.1	A

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Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Northbound
Project Description	E+Prj Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	626	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.37

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.8
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.0

Vehicle Results

Average Speed, mi/h	50.0	Percent Followers, %	62.5
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	7.8
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	305	0.31	7.8	C

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Project Information

Analyst	pjg	Date	6/3/2024
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Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Southbound
Project Description	E+Prj. Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	590	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.35

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.0

Vehicle Results

Average Speed, mi/h	50.0	Percent Followers, %	60.9
Segment Travel Time, minutes	2.54	Follower Density (FD), followers/mi/ln	7.2
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	288	0.28	7.2	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Eastbound
Project Description	E+Prj. Conditions: Bale Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	50	Opposing Demand Flow Rate, veh/h	40
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.70772	Speed Power Coefficient (p)	0.60858
PF Slope Coefficient (m)	-1.20122	PF Power Coefficient (p)	0.78218
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	10.9
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Westbound
Project Description	E+Prj. Conditions; Bale Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	40	Opposing Demand Flow Rate, veh/h	50
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71528	Speed Power Coefficient (p)	0.60147
PF Slope Coefficient (m)	-1.20796	PF Power Coefficient (p)	0.78044
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	9.4
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	6	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Eastbound
Project Description	E+Prj. Conditions: Lodi Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	35	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	13.0
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	4	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Westbound
Project Description	E+Prj. Conditions: Lodi Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	39	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	14.0
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	5	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Northbound
Project Description	E+Prj. Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	638	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.38

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	5280	-	-	49.9

Vehicle Results

Average Speed, mi/h	49.9	Percent Followers, %	63.0
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	8.0
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	311	0.32	8.0	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Southbound
Project Description	E+Prj. Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	537	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.32

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.3
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.2

Vehicle Results

Average Speed, mi/h	50.2	Percent Followers, %	58.5
Segment Travel Time, minutes	2.54	Follower Density (FD), followers/mi/ln	6.3
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	262	0.24	6.3	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Eastbound
Project Description	Near-Term + Project: Bale Lane Eastbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	51	Opposing Demand Flow Rate, veh/h	53
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71763	Speed Power Coefficient (p)	0.59929
PF Slope Coefficient (m)	-1.21005	PF Power Coefficient (p)	0.77991
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	11.2
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Peak Friday: Westbound
Project Description	Near-Term + Project Conditions: Bale Lane Westbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	53	Opposing Demand Flow Rate, veh/h	51
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71607	Speed Power Coefficient (p)	0.60074
PF Slope Coefficient (m)	-1.20867	PF Power Coefficient (p)	0.78026
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	11.5
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	8	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Eastbound
Project Description	Near-Term + Project Conditions: Lodi Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	53	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	17.0
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.2
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	6	0.00	0.2	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	PM Friday Peak: Westbound
Project Description	Near-Term + Project Conditions: Lodi Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	49	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	16.1
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.2
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	6	0.00	0.2	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Northbound
Project Description	Near-Term + Project Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	643	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.38

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	49.9

Vehicle Results

Average Speed, mi/h	49.9	Percent Followers, %	63.2
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	8.1
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	314	0.32	8.1	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Southbound
Project Description	Near-Term + Project Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	608	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.36

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.5
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.0

Vehicle Results

Average Speed, mi/h	50.0	Percent Followers, %	61.7
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	7.5
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	296	0.29	7.5	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Eastbound
Project Description	Near-Term + Project: Bale Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	53	Opposing Demand Flow Rate, veh/h	41
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.70860	Speed Power Coefficient (p)	0.60774
PF Slope Coefficient (m)	-1.20201	PF Power Coefficient (p)	0.78198
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	11.4
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	8	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Westbound
Project Description	Near-Term + Project Conditions; Bale Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	3363
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	45	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	41	Opposing Demand Flow Rate, veh/h	53
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	46.2
Speed Slope Coefficient (m)	2.71763	Speed Power Coefficient (p)	0.59929
PF Slope Coefficient (m)	-1.21005	PF Power Coefficient (p)	0.77991
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	3363	-	-	46.2

Vehicle Results

Average Speed, mi/h	46.2	Percent Followers, %	9.6
Segment Travel Time, minutes	0.83	Follower Density (FD), followers/mi/ln	0.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	6	0.00	0.1	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Eastbound
Project Description	Near-Term + Project Conditions: Lodi Lane EB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	57	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	17.7
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.2
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	7	0.00	0.2	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Westbound
Project Description	Near-Term + Project: Lodi Lane WB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2750
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	52	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.03

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	40.5
Speed Slope Coefficient (m)	2.72665	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.43821	PF Power Coefficient (p)	0.69593
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2750	-	-	40.5

Vehicle Results

Average Speed, mi/h	40.5	Percent Followers, %	16.8
Segment Travel Time, minutes	0.77	Follower Density (FD), followers/mi/ln	0.2
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	6	0.00	0.2	A

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Northbound
Project Description	Near-Term + Project Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	661	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.39

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.5
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	5280	-	-	49.9

Vehicle Results

Average Speed, mi/h	49.9	Percent Followers, %	63.9
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	8.5
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	322	0.33	8.5	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Southbound
Project Description	Near-Term + Project Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	552	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.32

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.5
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	50.1

Vehicle Results

Average Speed, mi/h	50.1	Percent Followers, %	59.2
Segment Travel Time, minutes	2.54	Follower Density (FD), followers/mi/ln	6.5
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	269	0.25	6.5	C

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Northbound
Project Description	Cumulative + Project Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	779	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.46

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	10.7
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	49.7

Vehicle Results

Average Speed, mi/h	49.7	Percent Followers, %	68.2
Segment Travel Time, minutes	2.56	Follower Density (FD), followers/mi/ln	10.7
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	380	0.43	10.7	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Friday PM Peak: Southbound
Project Description	Cumulative + Project Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	735	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.43

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	9.8
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	49.7

Vehicle Results

Average Speed, mi/h	49.7	Percent Followers, %	66.6
Segment Travel Time, minutes	2.56	Follower Density (FD), followers/mi/ln	9.8
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	358	0.39	9.8	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Northbound
Project Description	Cumulative + Project Conditions: SR 29 NB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	795	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.47

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	11.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	5280	-	-	49.6

Vehicle Results

Average Speed, mi/h	49.6	Percent Followers, %	68.7
Segment Travel Time, minutes	2.56	Follower Density (FD), followers/mi/ln	11.0
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	388	0.44	11.0	D

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HCS Two-Lane Highway Report

Project Information

Analyst	pjg	Date	6/3/2024
Agency	GHD	Analysis Year	2023
Jurisdiction	Napa County	Time Analyzed	Saturday Midday Peak: Southbound
Project Description	Cumulative + Project Conditions: SR 29 SB	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	11200
Lane Width, ft	12	Shoulder Width, ft	3
Speed Limit, mi/h	50	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	668	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	9.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.39

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	52.6
Speed Slope Coefficient (m)	3.45808	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.36522	PF Power Coefficient (p)	0.70828
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.6
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11200	-	-	49.9

Vehicle Results

Average Speed, mi/h	49.9	Percent Followers, %	64.2
Segment Travel Time, minutes	2.55	Follower Density (FD), followers/mi/ln	8.6
Vehicle LOS	D		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	326	0.34	8.6	D

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Appendix F

Left-Turn Lane Warrant Analysis

Technical Memorandum

October 14, 2025

To	Mark Schratz, Owner/Applicant Don Van Laeken, Owner/Applicant AXR Napa Valley	**Contact No.**	925 262-1903
Copy to	Hannah Spencer, Planner III, Napa County Jeff Redding, Planner Frank Penry, Senior Project Manager, PE, TE, PTOE Ahsan Kazmi, Senior Traffic Engineer, Napa County	**Email**	peter.galloway@ghd.com
From	Peter Galloway Senior Transportation Planner	**Project No.**	12610827
Project Name	AXR Napa Valley Use Modification (P22-00417)		
Subject	**Left-Turn Lane Warrant Analysis**		

Hi Mark and Don,

The following memorandum responds to recent Napa County and Caltrans transportation comments related to the planned project construction of a northbound left-turn lane at the AXR Napa Valley's south driveway. Specifically, comments from the Agencies indicated that no left-turn lane warrant analysis was provided for the planned left-turn lane as part of the updated TIA for the proposed project.[1] [2] In response to these comments, the following left-turn lane warrant information is provided to supplement the updated TIA for the proposed project.

Napa County Left-Turn Lane Warrant Methodology

The Napa County left-turn lane warrant is based on the requirements found in the *Napa County Road and Street Standards* (April 2023) as follows:

> Left-Turn Lane Warrants: Use Permits or modifications thereof shall trigger the application of the following warrants to determine the necessity for a left-turn lane for the proposed use.
>
> (a) Application of the Left-Turn Lane Warrant Graph based on road average daily traffic (ADT) and the projected ADT of the proposed use. The chart is a representation of probable conflict between turning traffic and advancing traffic. Private Road or Driveway ADT is the total average daily traffic utilizing the facility. A left-turn lane will not be considered for uses generating an ADT of 10 or less.

[1] Hannah Spencer, Planner III, Napa County Planning, AXR Napa Valley—Caltrans comments, 10-10-2025.
[2] Luana Chen, Caltrans, Associate Transportation Planner, Local Development Review, District 4, AXR Napa Valley transportation comments, 10-9-2025.

This Technical Memorandum is provided as an interim output under our agreement with AXR Napa Valley. It is provided to foster discussion in relation to technical matters associated with the project.

(b) If the corner sight distance in advancing direction, measured from the driveway, is less than required per Caltrans design standards (usually the posted speed limit multiplied by 11, read in feet) a left-turn lane shall be installed.

(c) If traffic conditions or turning movements pose a considerable threat to public safety, as determined by the Director of Public Works, a left-turn lane shall be installed.

The left-turn lane warrant evaluated for the south project driveway was based on subtask (a) or average daily traffic (ADT) volumes generated at the proposed project driveway verses ADT volumes on State Route 29. Based on these Napa County ADT warrant graph criteria, a project will meet the left-turn lane warrant when the volumes fall above the plotted graph line on the chart. In the case of the proposed project, focused project ADT generated at the inbound south driveway would equal 116 daily trips with 15,700 daily trips on Deer Park Road and fall above the minimum ADT volumes for installation of a left-turn lane (see Napa County Left-Turn Lane Warrant Graph—attached).

Caltrans/AASHTO Methodology:

Looking at other accepted left-turn warrant methodologies, there are two other sources that employ actual left-turn movements in evaluating the need for installation of a left-turn lane and these include the following references:

- **Caltrans:** *Guidelines for Reconstruction of Intersections* (1985);
- **American Association of State Highway Engineers (AASHTO)**, *Policy on the Geometric Design of Highways and Streets* (2018)

The Caltrans reference utilizes the long-established "Hamerlink" left-turn lane graphs that employ the advancing roadway volumes and left-turn lane percentage verses the opposing roadway volumes. More recent AASHTO volume graphs employ a similar methodology with corresponding speed increments for the roadway segment. Both methodologies evaluate the "peak hour" intersection turning movement volume at the subject intersection including the actual left-turn volume turning into the minor street or driveway and are categorized as "volume warrants for left-turn lanes at unsignalized grade intersections." These detailed left-turn lane warrants are typically used on two-lane roadway and highway segments where left-turn movements can impede through-traffic and/or create safety issues related to rear-end collisions. Dependent on the overall volume of left-turn movements (as a percentage of the through-movements), a left-turn lane could be warranted at an unsignalized intersection based on the amount of opposing traffic volumes. The AASHTO left-turn lane warrant methodology accounts for the volume of left-turn movements at the intersection and overall travel speeds on the roadway

AASHTO Warrant Analysis

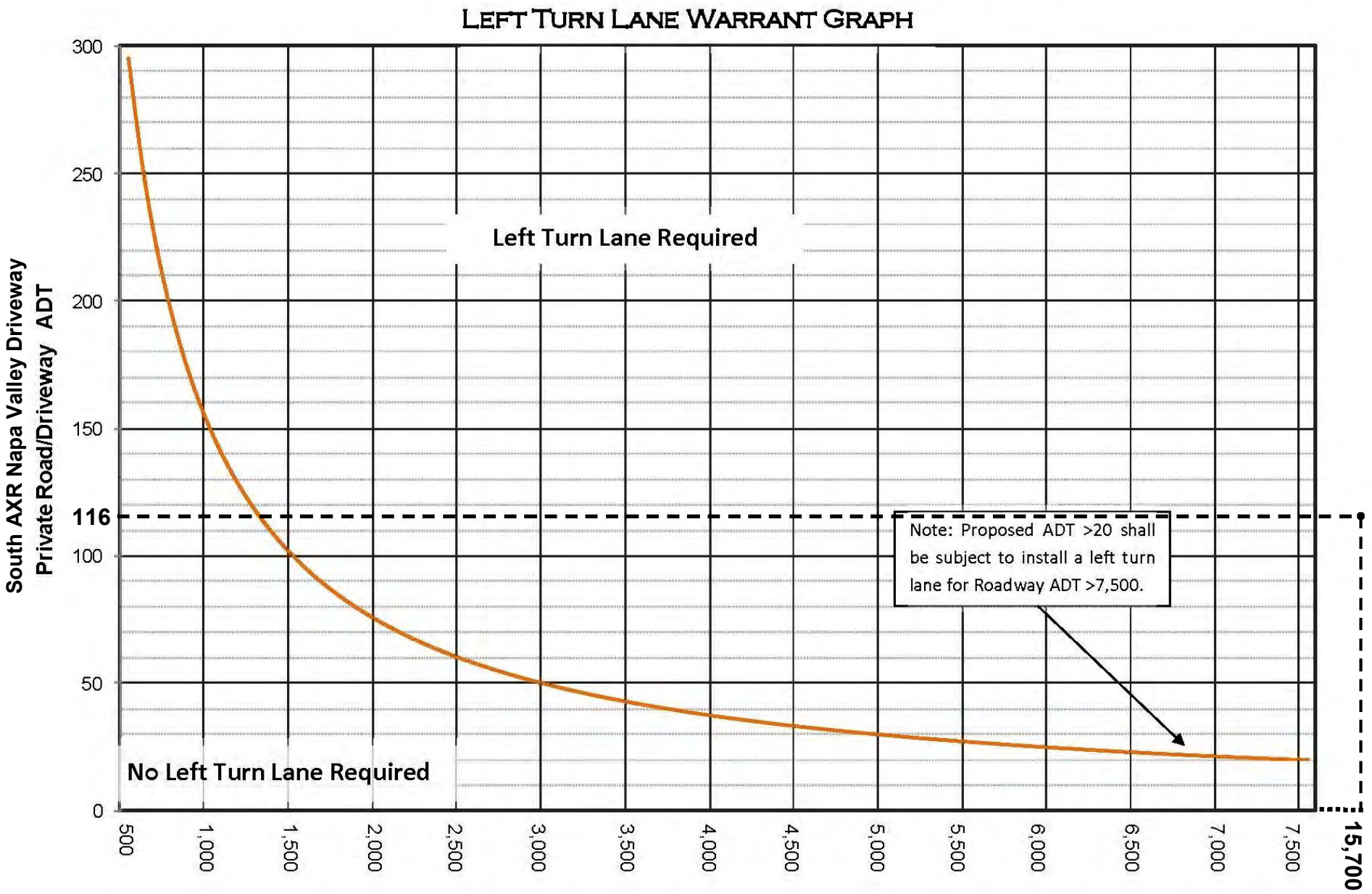
Using Existing plus Proposed project volumes for the weekday PM peak hour and weekend midday peak hour, the left-turn lane warrant for the South AXR Napa Valley Driveway/SR 29 intersection was evaluated using the AASHTO methodology for installation of a left-turn lane. Under Existing plus Project conditions, the installation of a separate northbound left-turn lane at the subject intersection would be warranted under AASHTO guidelines during either the Friday weekday PM peak or Saturday midday peak hours with 50 mph vehicle speeds on SR 29.[3] Currently, opposing (southbound) peak hour volumes on SR 29 at the South AXR Napa Valley Driveway are 559 (weekday) and 509 (weekend). Combined with the northbound left-turn movements at the south project driveway; volumes are well above the 100-vehicle threshold for installation of a left-turn lane using advancing volumes of 577 (weekday) and 588 (weekend)(see ASSHTO Warrant sheets-attached).[4]

[3] AASHTO Guide for Left-Turn Lanes on Two-Lane Highways is based on peak hour intersection volumes. The left-turn movements are categorized as a percentage (5, 10, 20, or 30 percent) of the overall "advancing" or southbound volumes on Deer Park Road. The "opposing" volumes are the northbound volumes on Deer Park Road.

[4] American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, Guide for Left-Turn Lanes on Two-Lane Highways, 7th Edition, 2018.

This Memorandum is provided as an output under our agreement with AXR Napa Valley. It is provided to foster discussion in relation to technical matters associated with the project.

AXR Napa Valley South Driveway
Existing Plus Project Conditions:



AXR Napa Valley Project:
Existing Plus Project Conditions:
Left Turn Lane Is Warranted

State Route 29

Source: Napa County Road & Street Standards, 2023

AXR Napa Valley: South Driveway / SR 29

Existing + Project, Weekday Friday PM Peak Hour

FRIDAY PM PEAK HOUR

Table 9-23 Guide for Left-Turn Lanes on Two-Lane Highways (*10*)

Metric					U.S. Customary				
Opposing Volume (veh/h)	Advancing Volume (veh/h)				Opposing Volume (veh/h)	Advancing Volume (veh/h)			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns		5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
60-km/h Operating Speed					**40-mph Operating Speed**				
800	330	240	180	160	800	330	240	180	160
600	410	305	225	200	600	410	305	225	200
400	510	380	275	245	400	510	380	275	245
200	640	470	350	305	200	640	470	350	305
100	720	515	390	340	100	720	515	390	340
80-km/h Operating Speed					**50-mph Operating Speed**				
800	280	210	165	135	800	280	210	165	135
600	350	260	195	170	600	350	260	195	170
400	430	320	240	210	400	430	320	240	210
200	550	400	300	270	200	550	400	300	270
100	615	445	335	295	100	615	445	335	295
100-km/h Operating Speed					**60-mph Operating Speed**				
800	230	170	125	115	800	230	170	125	115
600	290	210	160	140	600	290	210	160	140
400	365	270	200	175	400	365	270	200	175
200	450	330	250	215	200	450	330	250	215
100	505	370	275	240	100	505	370	275	240

559 opposing volume

577 advancing volume
4 left turns / 577 = 1%

Left-turn Lane Warranted?: YES
Advancing volume of 577 with 1% left turns, and opposing volume of 559,
is above minimum threshold of 100 opposing vehicles.

Source: American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, 7th edition, 2018.

AXR Napa Valley: South Driveway / SR 29

Existing + Project, Weekend Saturday Mid-Day Peak Hour

SATURDAY MID-DAY PEAK HOUR

Table 9-23 Guide for Left-Turn Lanes on Two-Lane Highways (*10*)

Metric					U.S. Customary				
Opposing Volume (veh/h)	Advancing Volume (veh/h)				Opposing Volume (veh/h)	Advancing Volume (veh/h)			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns		5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
60-km/h Operating Speed					**40-mph Operating Speed**				
800	330	240	180	160	800	330	240	180	160
600	410	305	225	200	600	410	305	225	200
400	510	380	275	245	400	510	380	275	245
200	640	470	350	305	200	640	470	350	305
100	720	515	390	340	100	720	515	390	340
80-km/h Operating Speed					**50-mph Operating Speed**				
800	280	210	165	135	800	280	210	165	135
600	350	260	195	170	600	350	260	195	170
400	430	320	240	210	400	430	320	240	210
200	550	400	300	270	200	550	400	300	270
100	615	445	335	295	100	615	445	335	295
100-km/h Operating Speed					**60-mph Operating Speed**				
800	230	170	125	115	800	230	170	125	115
600	290	210	160	140	600	290	210	160	140
400	365	270	200	175	400	365	270	200	175
200	450	330	250	215	200	450	330	250	215
100	505	370	275	240	100	505	370	275	240

501 opposing volume

588 advancing volume
5 left turns / 588 = 1%

Left-turn Lane Warranted?: YES
Advancing volume of 588 with 1% left turns, and opposing volume of 501,
is above minimum threshold of 100 opposing vehicles.

Source: American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, 7th edition, 2018.