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Traffic Study

Opus One Winery P14-00177
Planning Commission Hearing Date May18, 2016

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ENGINEERING SOLUTIONS

February 12, 2016 (Revised)

Mr. Gary Caravantes
Opus One Winery
P.O. Box 6
Oakville, CA 94562

Subject: ***Focused Traffic Analysis for the Proposed Opus One Use Modification Project - Located at 7900 St. Helena Highway (Oakville) in Napa County***

Dear Mr. Caravantes:

This report provides a focused traffic analysis for proposed use permit modifications associated with the Opus One Winery located at 7900 St. Helena Highway in Oakville (Napa County). As part of the overall use modification proposal, the existing winery would increase production from 170,590 to 250,000 gallons and would slightly increase overall employment from current levels. In addition, there would be a moderate increase in current guest visitation levels from 1,200 to 1,450 per week. It is noted that winery staff indicates there has been no significant fluctuation in weekly guest or visitation levels (± 10%) based on applicant visitation data over the past several years. This study reflects our discussions with County Planning staff regarding the project analysis approach and other adjacent approved/pending projects in the study area.[1] Some of the key issues evaluated in this study include the following:

- Existing and future weekday PM and weekend mid-day peak hour operations on St. Helena Highway (State Route 29) and Oakville Cross Road at the Opus One Access driveways and the Oakville Cross Road/State Route 29 intersection;
- Near-term (Year 2016) traffic conditions reflecting other approved/pending projects in the study area;
- Project trip generation relative to any increases related to proposed winery production, visitation, and employment levels;
- Project site circulation and vehicle access at the State Route 29 and Oakville Cross Road access driveways;
- Cumulative year 2030 (no project) conditions along State Route 29 based on the Napa County General Plan Update EIR;

The following sections outline existing and future traffic conditions with and without the proposed Opus One project. Where necessary, measures have been recommended to ensure acceptable traffic flow, circulation, and/or fair share contribution to regional cumulative traffic improvements along State Route 29.

[1] *Ms. Shaveta Sharma, Associate Planner, County of Napa, Initial review of transportation scope-of-work (Opus One Winery), Personal communication on September 22, 2014.*

1. Existing Traffic Conditions

Roadways

The proposed Opus One project site is located at 7900 St. Helena Highway (SR-29) just north of Oakville Cross Road in Napa County (see Figure 1—Project Vicinity Map). There are two access driveways; the main visitor driveway that extends east from SR-29 for approximately 1,400 feet and a second "service entrance" driveway that extends north from Oakville Cross Road for approximately 680 feet to the winery grounds/building located at the far end of the driveways. The access driveways connect to an internal drive that links visitor parking areas on the south side of the winery and employee/delivery parking areas on the north side of the winery building. Oakville Cross Road intersects State Route 29 (St. Helena Highway) approximately 900 feet south of the main access driveway. State Route 29 is the primary north-south facility through the Napa Valley. A brief description of each roadway follows:

St. Helena Highway (SR-29) extends in a north-south direction between Oakville and Rutherford in the project study area. In this area, SR-29 is classified as a two-lane rural arterial based on the Napa County General Plan and a minor arterial roadway in Caltrans roadway classification chart. SR-29 provides access north to Rutherford and St. Helena and beyond. To the south, the highway provides access to Yountville, Napa, American Canyon and Vallejo. In the immediate project site area, SR-29 has one travel lane in each direction separated by a two-way-left-turn lane (TWLTL) that extends from 250 feet north of the Opus One main driveway through Oakville Cross Road to 250 feet south of Oakville Grade Road. The speed limit on SR-29 is 50 mph in the project area.

Oakville Cross Road extends in an east-west direction between SR-29 and Silverado Trail. West of SR-29, the roadway extends as Walnut Lane. A two-lane roadway, Oakville Cross Road provides access to commercial areas adjacent to the SR-29; agricultural (winery) uses, and selected residences as it extends east towards Silverado Trail. Oakville Cross Road is designated as a Class III bike route and has limited shoulder areas (4-5 feet).

Existing Roadway/Intersection Volumes

SR-29 acts as the primary north-south regional route through the Napa Valley and provides direct access to the project site. Based on the most recent Caltrans daily traffic counts conducted along SR-29 (between Oakville Grade Road and Rutherford Road), SR-29 has a current annual average daily traffic volume of 23,400 vehicles.[2] During the peak month, the roadway carries 25,500 ADT. Based on Napa County roadway segment level-of-service (LOS) thresholds, these ADT volumes represent LOS F conditions for a two-lane rural arterial roadway.[3] Oakville Cross Road carries approximately 1,770 ADT (west of Money Road) based on Napa County count data and this would represent LOS B conditions consistent with a two-lane collector street.[4]

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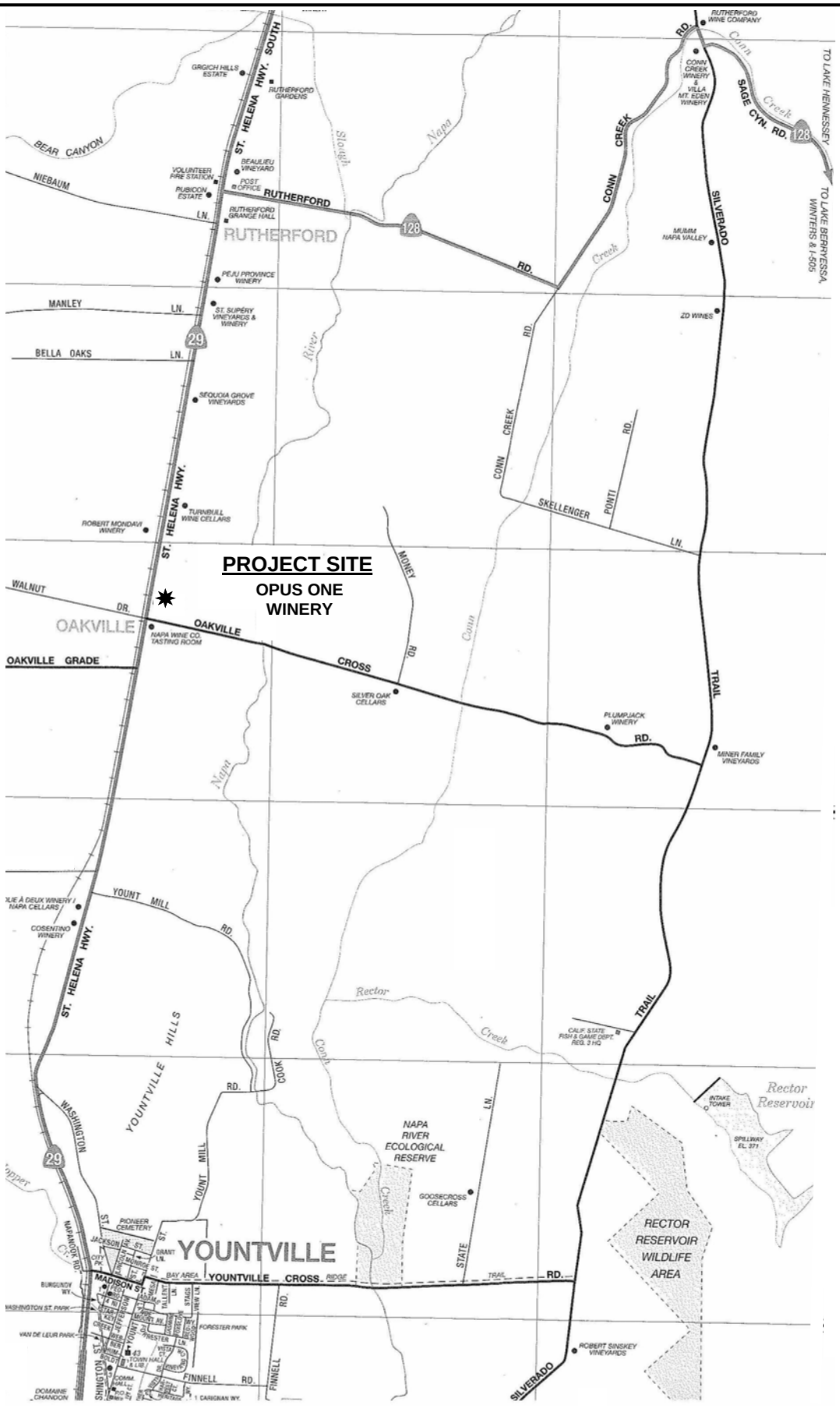
[2] *Caltrans, 2013 Traffic Volumes Book, State Route 29 average annual daily traffic (AADT) and peak month average daily traffic (ADT between Oakville Grade Road and Rutherford Road).*
[3] *Napa County Baseline Data Report, Table 11-1; Napa County Roadway Segment Daily LOS Volume Thresholds, Transportation and Circulation, November 2005.*
[4] *Napa County, Department of Public Works, Traffic Volumes, Oakville Cross Road, Average Daily Traffic (ADT), West of Money Road, 2008.*



Project Vicinity Map

North

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figure 1

As a part of this study, intersection turning movement counts were conducted at the Opus One access driveways at SR-29 and Oakville Cross Road as well as at the Oakville Cross Road/SR-29 intersection during a weekday PM peak commute period (4-6 PM) and the Saturday afternoon peak period (1-3 PM).[5] Proposed winery visitor activity is expected to be highest during a Saturday afternoon. In addition, focused ADT counts on the project's driveways were also collected to gauge visitor/employee activities. From peak period intersection counts, the "peak hour" of traffic flow was derived to calculate existing vehicle delays. For SR-29, these counts indicate a weekday PM peak hour two-way flow of 1,888 vehicles and 1,988 vehicles on a peak hour Saturday afternoon. The counted peak hour volumes are consistent with expected typical day peak hour flow based on Caltrans data. In fact, these volumes were collected during the peak harvest/crush period for the Napa Valley (September/October, 2014) and reflect "peak month" volumes.

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

Existing Access Driveway Operations

As previously outlined, Opus One has two access driveways; the main visitor driveway that extends east from SR-29 for approximately 1,400 feet and a second "service entrance" driveway that extends north from Oakville Cross Road for approximately 680 feet to the winery grounds/building located at the far end of the driveways. The access driveways connect to an internal drive that links visitor parking areas on the south side of the winery and employee/delivery parking areas on the north side of the winery building (limited access). The Oakville Cross Road access driveway also provides access to a winery/service building located just east of driveway (rear entrance). Access to this property can be gained directly from Oakville Cross Road via a gated driveway located 320 east of the Opus One access driveway.

Based on peak hour and ADT count data, winery traffic activity is focused primary at the project's main driveway to/from SR-29. During this study's peak period counts, 53 vehicle trips in/out of this access driveway occurred during the weekday PM peak hour and 99 vehicle trips in/out of the driveway occurred during the weekend mid-day peak hour. ADT volumes on the main driveway currently average 440 vehicles. Overall volumes on the project's Oakville Cross Road driveway are lower; three (3) vehicle trips in/out during the PM peak hour and one (1) vehicle trip during in/out during the weekend mid-day peak hour. ADT volumes on the driveway average 135 vehicles.

Existing Intersection Operation

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

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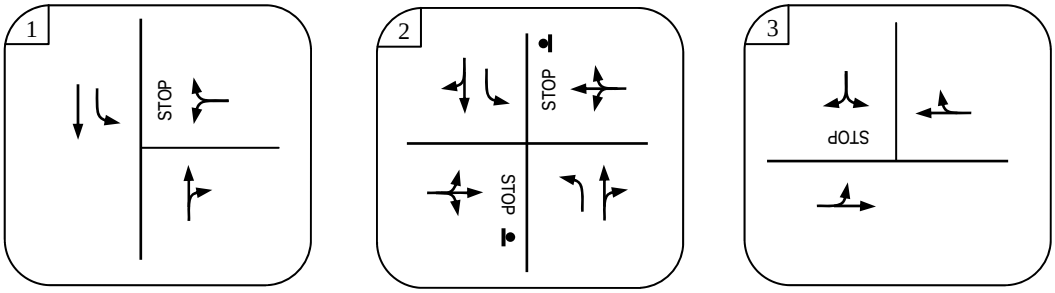
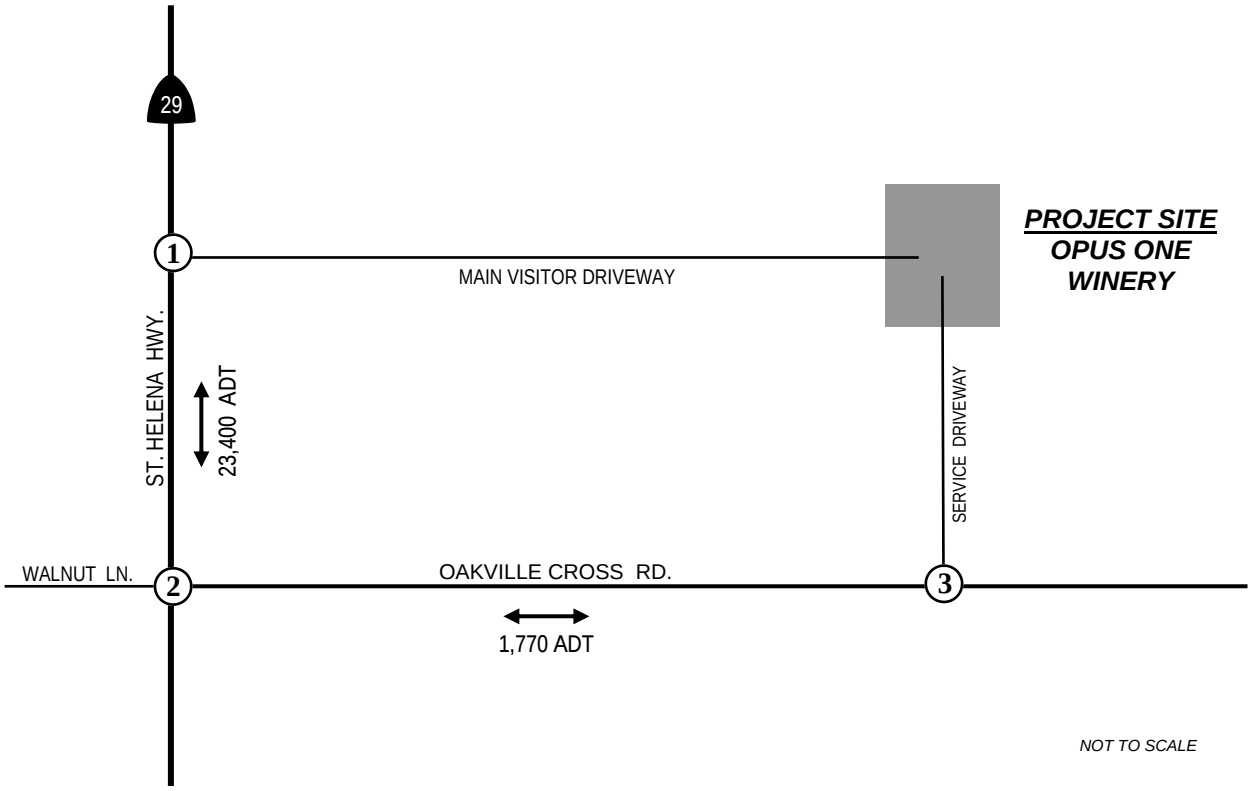
[5] *Baymetrics Traffic Resources, Weekday PM peak period (4:00-6:00 p.m.) and weekend mid-day peak period (1:00-3:00 p.m.) intersection turning movement counts, Opus One Access driveways at SR-29 and Oakville Cross Road and Oakville Cross Road/SR-29 intersection, October 23 & 25, 2014.*

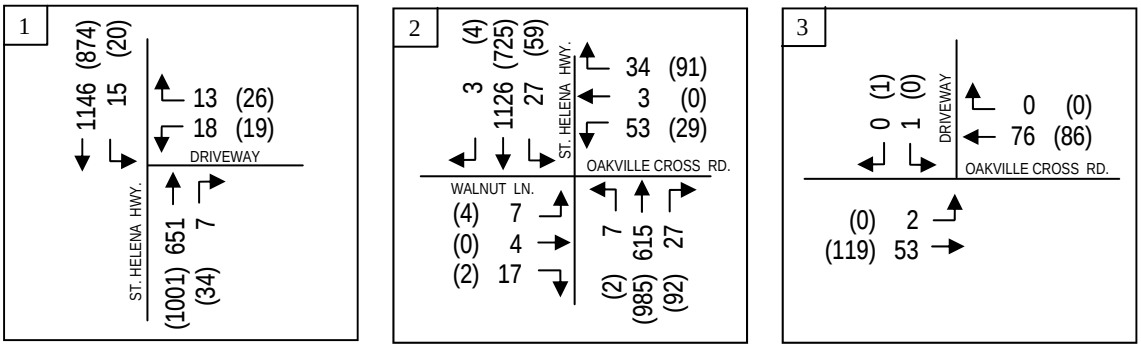
GEOMETRIES / CONTROLS:



Existing Geometries Assumed For All Future Scenarios



PEAK HOUR VOLUMES:



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

North

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figure 2

The three project study intersections evaluated for this analysis are as follows:

1. Opus One Driveway/State Route 29 (St. Helena Highway)
2. Opus One Driveway/Oakville Cross Road
3. Oakville Cross Road/State Route 29 (St. Helena Highway)

All project study intersections are unsignalized, minor-street stop-sign controlled intersections (minor street and/or two-way-stop-control). Based on the Highway Capacity Manual (*HCM 2010*) operations methodology for unsignalized intersections, existing weekday PM peak and weekend mid-day peak hour existing (no project) level-of-service has been shown in Table 1. As calculated, the Opus One Driveway/SR-29 intersection is operating at LOS C during both the weekday PM peak hour and during the weekend (Saturday) mid-day peak hour. The Opus One Driveway/Oakville Cross Road intersection is operating at LOS A during the same time periods. Finally, the Oakville Cross Road/SR-29 intersection is operating at LOS F during both the weekday PM peak and weekend mid-day peak hours. It is noted that stated intersection LOS at the Oakville Cross Road/SR-29 intersection refers to the stop-sign controlled eastbound-westbound turn movements from either Oakville Cross Road or Walnut Lane onto SR-29.

Based on the California Manual on Uniform Traffic Control Devices (CAMUTCD) peak hour signal warrant criteria, all three unsignalized intersections were evaluated for signalization.[6] The peak hour warrants are one of several standards to help determine if installation of a traffic signal is appropriate. Qualifying for signalization using the peak hour warrants does not necessarily mean a signal should be installed. In rural areas, the minimum minor street stop-sign controlled volume that would qualify for signalization requires 75 peak hour vehicles (approach volume). At this time, the Oakville Cross Road/SR-29 intersection would qualify for peak hour signal warrants based CAMUTCD standards (the warrant graphs are provided in the Appendix). The Opus One access driveways at SR-29 and Oakville Cross Road do not qualify for peak hour signalization under existing conditions.

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

			Wkdy. PM LOS/Delay		Wknd. Mid-Day LOS/Delay	
#	Intersection	Control Type	Existing (No Project)	Near-Term (No Project)	Existing (No Project)	Near-Term (No Project)
1	Opus One Driveway/SR-29	Stop	C 21.1	C 23.5	C 24.4	D 27.4
2.	Oakville Cross Rd./SR-29	Stop	F >50.0	F >50.0	F >50.0	F>50.0
3.	Opus One Driveway/Oakville Cross Road	Stop	A 9.3	A 9.7	A 8.7	A 8.9

Based on Highway Capacity Manual (HCM) 2010, Operations methodology for stop-sign controlled (unsignalized) intersections using Synchro-Simtraffic 8.0 software. Intersection calculation yields an LOS and vehicle delay in seconds. Stated LOS refers to the minor street (stop-sign) controlled movement. The Oakville Cross Road/SR-29 intersection LOS stated for minor streets reflects delays exceeding 150 seconds.

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

Existing Vehicle Speeds/Sight Distance

The primary issues for access design are the vehicle visibility and operation relative to vehicles traveling on SR-29 and Oakville Cross Road and vehicles turning in/out of the winery driveways. The required vehicle visibility or "corner sight distance" is a function of the travel speeds on SR-29 and Oakville Cross Road. Caltrans design standards indicate that for appropriate corner sight distance, "a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the cross road and the driver of an approaching vehicle in the right lane of the main highway." [7] Based on radar surveys conducted as a part of this study, the "critical" vehicle speeds (85% of all surveyed vehicles travel at or below the critical speed) along SR-29 at the existing access driveway was recorded at 53 miles per hour (mph) or less during the weekday PM peak period and the Saturday afternoon peak period. Based on Caltrans design standards, these vehicle speeds require a sight distance of approximately 465 feet, measured along the travel lanes on SR-29. [8] As measured, existing vehicle sight distance from the access driveway looking south on SR-29 exceeds 465 feet (900 feet) and is adequate. Vehicle sight distance to the north is unrestricted measuring over 1,500 feet. Corner sight distance was also evaluated for the Opus One driveway on Oakville Cross Road. Based on radar speed surveys, the critical speed on Oakville Cross Road is 49 miles per hour and would require a sight distance of 430 feet. As measured, existing vehicle sight distance from the driveway looking west is 1,670 feet. Sight distance to the east is approximately 700 feet. It is noted that site distance to the east on Oakville Cross Road can be affected by utility poles and existing row trees along the north side of the road that partially obstruct the view from the standard driveway setback. However, the sight distance remains intact and the view is unobstructed within six (6) feet of the driveway's intersection with Oakville Cross Road.

Existing Bicycle/Pedestrian Access

Existing bicycle and pedestrian facilities in the project site vicinity are minimal with the exception of wide, striped shoulders on both SR-29 and Oakville Crossroad. Existing shoulder widths (paved) on SR-29 are approximately 8-10 in width. Existing shoulder widths on the Oakville Crossroad are approximately 5-6 feet in width. During field data collection, it was observed that there was no pedestrian/bicycle traffic at the proposed project's SR-29 driveway or Oakville Crossroad driveway. Pedestrian activity in the study area is primarily focused at the Oakville Crossroad/SR-29 intersection where there is a mix of commercial-retail, winery, and residential uses on the four quadrants of the intersection.

The Napa Countywide Bicycle Plan indicates that both SR-29 and Oakville Crossroad are "proposed" Class II bike facilities. Currently, Oakville Crossroad is established as a Class III bike route and is signed as such in an east-west direction between SR-29 and Silverado Trail. Pedestrian/bike access is always available via the project site's main SR-29 driveway during normal operating hours and can easily be gained from the Oakville Crossroad access driveway when gates allow.

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[7] *Caltrans, Highway Design Manual, Chapter 200, Topic 201—Sight Distance, March 7, 2014.*
[8] *Omni-Means Engineers & Planners, Field observations and radar speed surveys on SR-29 and Oakville Cross December 18, 2014.*

2. Near-Term (No Project) Conditions

Near-Term (Approved/Pending Projects)

Near-term (no project) conditions represent a reasonable period of time in which approved and/or pending projects in the study area could be constructed. Based on discussions with County Planning staff, a two-year period to the year 2018 has been established for near-term (no project) conditions representing all approved/pending projects within the study area. To generate near-term (no project) conditions, approved and pending projects provided by Napa County Planning staff in the area have been used. These approved/pending projects are either new wineries or existing wineries applying for use permit modifications to increase production, employees, visitors, and/or marketing events. These projects are located both north and south of the project site off of State Route 29 and east of the project site off of Oakville Cross Road, and are described as follows:

Napa County:	**Approved/Proposed Use Modification(s):**	
B Cellars Winery	Production:	45,000 gallons per year
701 Oakville Rd.	Visitors:	420 visitors/week
Oakville, CA 94562	Employees:	13 full-time
Neverember Winery	Production:	10,000 gallons per year
711 Oakville Rd.	Visitors:	24 visitors/week
Napa, CA 94562	Employees:	3 full-time
Swanson Winery	Production:	100,000 gallons per year
6075A St. Helena Hwy.	Visitors:	1,400 visitors/week
Oakville, CA 94562	Employees:	30 full-time
Lincoln Ranch Winery	Production:	50,000 gallons per year
7544 St. Helena Hwy.	Visitors:	300 visitors/week
Oakville, CA 94562	Employees:	14 full-time
Chow Family Winery	Production:	20,000 gallons
8301 St. Helena Hwy.	Visitors:	100 visitors/week
Oakville, CA 94562	Employees:	4 full-time

Near-Term (No Project) Trip Generation

For all approved/pending winery projects, daily and peak hour trip generation was calculated using employee peaking factors, auto occupancy rates for visitors, and production ratios based on recent winery research conducted by the Napa County Conservation, Development, and Planning Department. Near-term projects would generate 161 weekday PM peak hour trips and 123 mid-day weekend peak hour trips. On a daily basis, near-term projects would generate 451 ADT and 426 ADT on a weekday and weekend, respectively.

In addition to local projects (listed above), there would also be background traffic growth on SR-29 reflecting near-term and cumulative development. The following section describes this expected traffic growth.

Near-Term (No Project) Traffic Growth on SR-29

Both near-term (no project) and cumulative (year 2030) volume projections for SR-29 were derived from the Napa County Transportation and Planning Agency's traffic volume forecasts found in the Napa County General Plan Update EIR.[9] The forecast increase in volume-to-capacity (v/c) ratio from Year 2003 to Year 2030 on SR-29 between Oakville Grade Road and Rutherford Road was applied to the Year 2003 peak hour two-way volumes (2,037 vehicles). This yielded a future volume of 3,740 weekday PM peak hour vehicles on SR-29 in the Year 2030. This would equate to an increase in traffic volumes of 3.7% per year to the Year 2030 on the highway.

With regard to near-term (no project) conditions, the project applicant indicates a two-year window to the Year 2016 would allow for proposed project completion (production, staffing, marketing plan). Based on this time period, weekday PM peak hour vehicle traffic would increase by 7.4% on SR-29 between Oakville Grade Road and Rutherford Road. It is noted that no future volume projections are provided for the weekend (Saturday) mid-day peak hour. Therefore, weekend mid-day peak hour volumes on SR-29 were increased uniformly by the same annual growth rate.

No long range traffic growth projections are available for Oakville Cross Road. Therefore, increases in daily and peak hour traffic in the project study area would represent increases in winery activities as provided by County staff.

Near-term (no project) local/regional daily and peak hour volumes for the weekday and weekend have been added to existing intersection volumes on State Route 29 based on existing traffic flows and previous transportation analyses conducted in the area. Near-term (no project) volumes for weekday PM peak hour and weekend mid-day peak hour have been shown in Figure 3.

Near-Term (No Project) Intersection/Roadway Operation

With near-term (no project) volumes, study intersection LOS has been calculated and is shown in Table 1. As calculated, the Opus One Driveway/SR-29 intersection is operating at LOS C during the weekday PM peak hour and LOS D during the weekend (Saturday) mid-day peak hour. The Opus One Driveway/Oakville Cross Road intersection is operating at LOS A during the same time periods. The Oakville Cross Road/SR-29 intersection would continue to operate at LOS F during both the weekday PM peak and weekend mid-day peak hours. Intersection LOS at the Oakville Cross Road/SR-29 intersection refers to the stop-sign controlled eastbound-westbound turn movements from either Oakville Cross Road or Walnut Lane onto SR-29.

Based on CAMUTCD peak hour signal warrant criteria (Warrant #3), the Oakville Cross Road/SR-29 intersection would continue to qualify for signalization with near-term (no project) volumes. The Opus One driveway intersections at SR-29 and Oakville Cross Road would not qualify for signalization under peak hour criteria.

AADT volumes on SR-29 would increase from 23,400 to 25,243 vehicles under near-term (no project) conditions. Based on Napa County roadway thresholds, this would continue to represent LOS F conditions. ADT volumes on Oakville Cross Road would increase from 1,770 vehicles to 1,980 vehicles and the roadway would continue to operate at LOS B.

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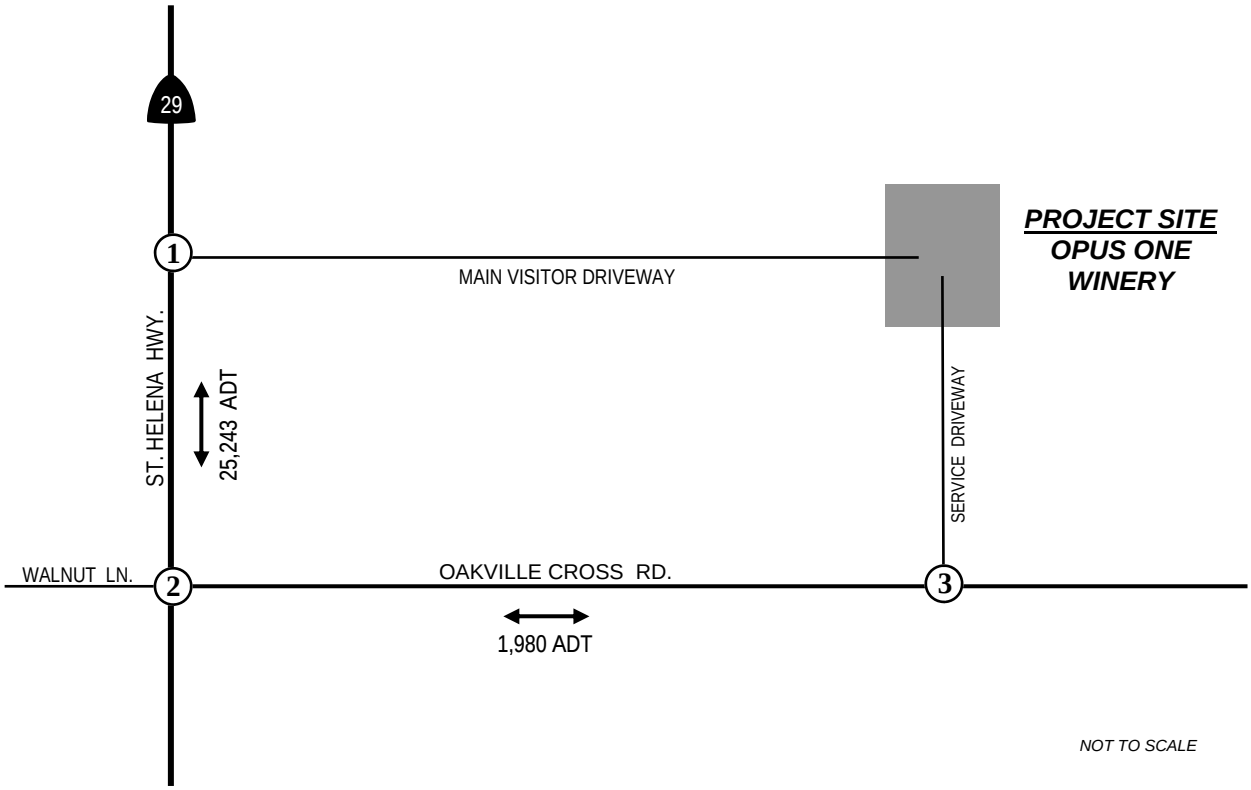
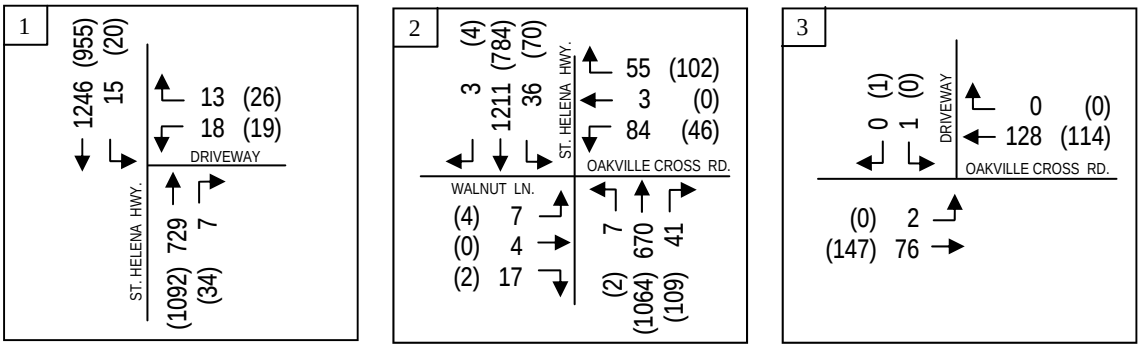
[9] *Dowling Associates, Napa County General Plan Update, Technical Memorandum for Traffic and Circulation Supporting the Findings and Recommendations, February 9, 2007.*



PEAK HOUR VOLUMES:



Near Term Without Project
Weekday P.M. and (Weekend Mid-day) Peak Hour Volumes

North

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figure 3

3. Napa County Significance Criteria

The County of Napa's significance criteria has been based on a review of the Napa County Transportation and Planning Agency and Napa County General Plan documentation on roadway and intersection operations. Specifically, the Circulation Element of the County's General Plan outlines the following significance criteria specific to intersection operation:

Intersections

- The County shall seek to maintain a Level of Service D or better at all intersections, except where the level of service already exceeds this standard (i.e. Level of Service E or F) and where increased intersection capacity is not feasible without substantial additional right-of-way.

- No single level of service standard is appropriate for un-signalized intersections, which shall be evaluated on a case-by-case basis to determine if signal warrants are met.

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

- Cause an increase in traffic which is substantial in relation to existing traffic load and capacity of the street system (i.e. result in a substantial increase in either the number of vehicle trips, the volume capacity ratio on roads, or congestion at intersections);

- Exceed either individually or cumulatively, an LOS standard established by the county congestion management agency for designated roads or highways;

- Result in a change of traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

- Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment);

- Result in inadequate emergency vehicle access;

- Project site or internal circulation on the site is not adequate to accommodate pedestrians and bicycles;

4. Proposed Project Impacts

Site Trip Generation

To determine the total increases in project trip generation and net increase in roadway trips, overall trip generation has been estimated for the following two scenarios:

- Existing Uses
- Proposed Uses

The winery's current use permit (2008) allows 64 full-time and four (4) part-time employees during normal weekday operations and seven (7) full-time and two (2) part-time employees during the weekend. Visitation is not limited by previous use-permits and is currently at 500 visitors on the busiest day with an average of 1,200 visitors per week. Winery production is limited to 110,000 gallons. The existing use permit has no information on specific marketing events, but the winery has historically held marketing events and participated in the Auction Napa Valley each year.

Related to existing uses at the winery; the winery currently averages approximately 155-165 visitors per day and 500 visitors on its very busiest day based on Opus One attendance history. In addition, employment at the winery has increased to an average of 65 weekday employees (53 full-time and12 part-time) and 25 weekend employees (20 full-time, 5 part-time). The weekday total of 65 employees is just one more employee than the County approved limit of 64 full-time employees as allowed by the 2008 use permit document. Employment reflects a combination of cellar, administrative, and tasting room employees.

Both daily and peak hour traffic counts conducted for this study reflect existing employment, visitation, and production levels occurring today. Therefore, increases in daily and peak hour net new roadway trips as a result of proposed use modifications would represent the differences between these existing levels and ultimate use modifications being proposed.

Project Components

Existing and proposed use levels have been summarized (below). The proposed daily use modifications listed below reflect Opus One weekly modifications to wine production, visitation, employment, and small marketing events throughout the year. The proposed modifications do not reflect the minor increases associated with part-time employment and truck traffic (during the crush/harvest season) nor larger marketing event traffic that do not occur on weekly basis throughout the year. Proposed uses associated with crush/harvest activities and marketing events are analyzed in future report sections. Project components can be described as follows: [10]

		Existing	***Proposed***
Production	Annual:	170,590 gallons	250,000 gallons
Employees:	Weekday:	53 F-T, 12 P-T	65 F-T, 10 P-T
	Weekend:	20 F-T, 5 P-T	20 F-T, 5 F-T
Visitors:	Weekday:	165 visitors	200 visitors
	Weekend:	500 visitors	500 visitors
Trucks:	Weekday:	3 trucks/day	4 trucks per day
	Weekend:	3 trucks/day	4 trucks per day

Daily operations for the proposed Opus One Winery project would involve an all on-site winery operation with a maximum annual production of 250,000 gallons. All fruit (250,000 gallons of production) would be processed on-site during the harvest/crush season. Approximately 70% of the fruit is brought in from off-site (on-haul) and 30% is processed from on-site fruit. Visitors (by appointment only) would occur at a maximum of 200 daily visitors on a typical weekday and a maximum 500 daily visitors on weekends. Employment is expected to be 65 full-time employees and 10 part-time employees on a weekday with 20 full-time and five (5) part-time employees on a

[10] *Dickenson, Peatman, & Fogarty, Project Statement Use Modification Opus One, 7900 St. Helena Highway, Oakville, CA, October, 2014.*

weekend. Winery operations for staff would occur between 7:00 a.m. – 9:00 p.m. Actual tours and tastings would occur between 10:00 a.m. and 4:00 p.m.

Crush/Harvest Activities

With the six-week crush/harvest season, proposed winery activities would increase slightly related to part-time employment and truck trips compared to typical Saturday winery operations. Proposed crush activity uses for Saturday would be as follows:

		Proposed
Production:	Annual:	250,000 gallons
Employees:	Weekend:	20 F-T, 10 P-T
Visitors:	Weekend:	500 visitors
Trucks:	Weekend:	7 trucks per day

As noted previously in the project component description, there would be slight increase in part-time employees (5) from typical Saturday conditions to assist in the crush activities associated with the harvest period. In addition, the maximum production of 250,000 gallons would be approximately equal to 1,674 tons of fruit (based on applicant data). With 70% of the fruit coming from off-site (on-haul), this would represent approximately 1,172 tons of fruit. Based on 6.63 tons per truck and a 36-day crush period, this would equal five trucks per day or 10 truck trips. However, the project applicant indicates it is possible for the winery to process up to 45 tons of fruit during peak crush days. Should 45 tons of fruit be processed, than a maximum of seven trucks or 14 truck trips could be expected on peak crush day. It is noted that the harvesting of fruit related to truck traffic is a bit like a bell curve; the number of trucks typically starts around 1-2 trucks per day and then gradually increases to peak production/yields, then diminishes accordingly. In discussing the crush operation with winemakers, the majority of these truck trips occur during the very early morning hours or during the late evening night/hours outside of the peak traffic commute periods. These harvest methods ensure the quality of the harvest and keeps the fruit cool. (For a complete discussion of crush/harvest activities and related trip generation, please see Section 5; Site Access/Design Parameters: Crush/Harvest).

Winery Marketing Plan

The existing marketing plan would consist of up to a maximum of 35 annual events and these can be described as follows:

- 10 annual events with up to 10 guests;
- 10 annual events with up to 25 guests;
- 10 annual events with up to 100 guests;
- 5 annual events with up to 300 guests;
- Participation in Auction Napa Valley.

Based on marketing data supplied by project applicant staff, the Opus One Winery currently averages 18 marketing events per year with a maximum of 21 events during the last three recorded calendar years.[11] As planned, more than half of the 35 marketing events would consist of 25 guests or less. In addition, the largest event(s) of up to 300 guests do not currently occur five

[11] *Mr. Gary Caravantes, Opus One, Opus One Winery marketing data, Daytime and evening marketing events, 2012, 2013, and 2014.*

times annually. Special event activity would be scheduled to minimize the arrival of guests between the weekday PM peak period (4:00-6:00 p.m.) travel periods and all event activity would be concluded by 10:00 p.m. (For a complete discussion of marketing events, related trip generation, and travel periods please see Section 5; Site Access/Design Parameters: Marketing Events).

Project Trip Generation/Distribution

The proposed project's typical weekday and weekend peak hour and daily traffic volumes have been calculated and are shown in Table 2 (please see Appendices for winery trip generation sheets).

TABLE 2
PROJECT TRIP GENERATION COMPARISON
DAILY AND PEAK HOUR

Scenario	Weekday Trips		Weekend Trips	
	Daily	PM Peak	Daily	Mid-Day Peak
Existing Uses	315	120	428	107
Proposed Uses	376	143	428	107

Daily and peak hour calculations based on County of Napa, Conservation, Development, and Planning Department, "Use Permit Application Package," Napa County Winery Traffic Generation Characteristics, 2015.

Overall trip generation calculations have been based on employee peaking factors and auto occupancy rates for event visitors based on recent winery research conducted by the Napa County Conservation, Development, and Planning Department and existing driveway volumes.[12] Overall trip generation calculations represent the increase in production, visitation, and employment activities from existing uses to ultimate use modification levels. The proposed project would be expected to generate 376 daily weekday trips with 143 PM peak hour trips. During a typical weekend, the project would be expected to generate 428 daily trips with 107 mid-day peak hour trips. Please note, overall project trip generation shown in Table 2 does not include temporary activities associated with crush/harvest activities and large marketing events (>25 guests). These activities are address in Section 5: Site Access/Design Parameters.

With regard to the total increase in traffic volumes on the roadway network, the proposed project is expected to generate 61 daily trips with 23 trips during the weekday PM peak hour. These trips totals represent the differences between existing levels and proposed levels as shown in Table 3. On a weekend, the project would not add any additional trips to the roadway beyond today's existing levels. The primary reason for these minor increases in project traffic on the roadway network is due to proposed employment levels staying virtually unchanged from existing conditions and visitation levels experiencing a moderate increase over today's levels.

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

TABLE 3
NET INCREASE IN PROJECT TRIP GENERATION
WEEKDAY AND WEEKEND PEAK HOUR

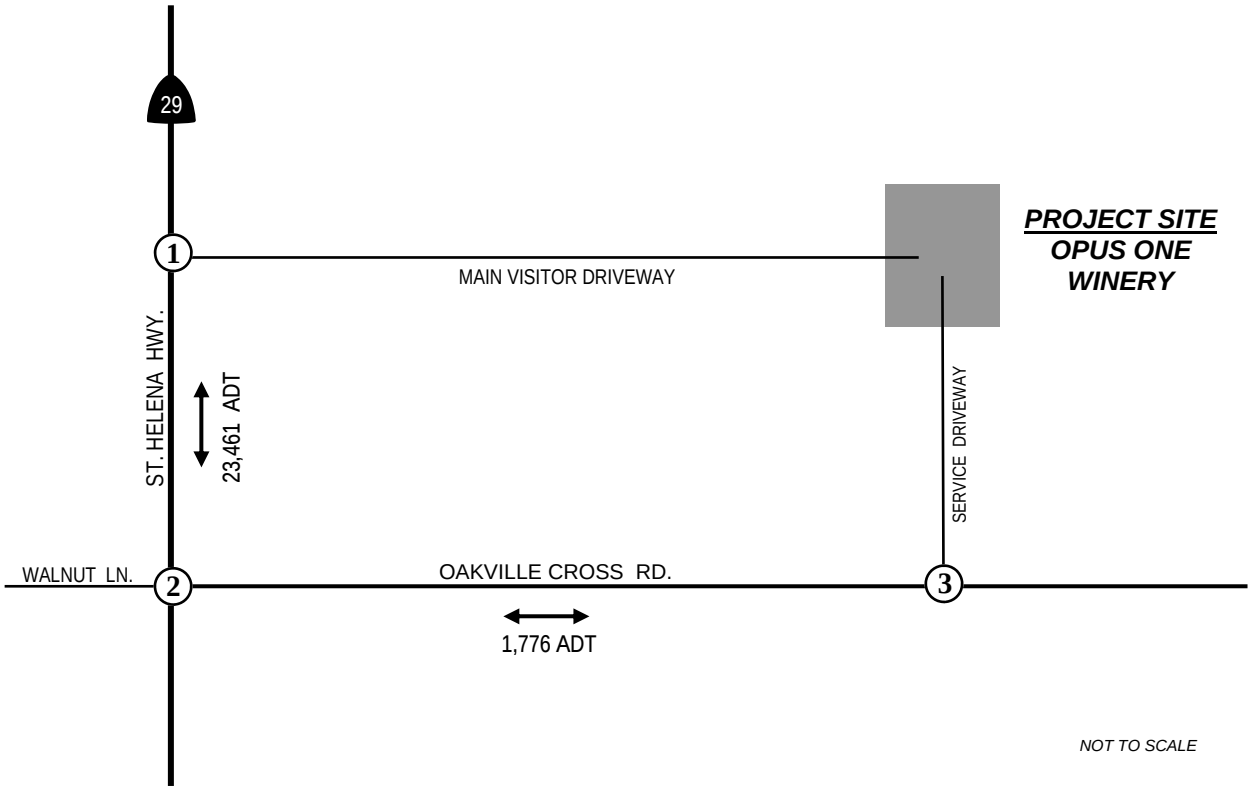
Scenario	Daily Trips Wkdy.	Wknd	Weekday PM Trips Trips	Weekday PM Trips In/Out	Weekend Trips Trips	Weekend Trips In/Out
Net Increase on Roadways						
Proposed Uses	376	398	143	36 / 107	107	54 / 53
Existing Uses	315	398	120	30 / 90	107	54 / 53
Total Net New Roadway Trips	**61**	**0**	**23**	**6 / 17**	**0**	**0 / 0**

Daily and peak hour calculations based on County of Napa, Conservation, Development, and Planning Department, "Use Permit Application Package," Napa County Winery Traffic Generation Characteristics, 2015. Please see Appendices for Existing and Proposed winery trip generation sheets. Existing Use trips (shown parenthetically) represent vehicle trips already on the street network.

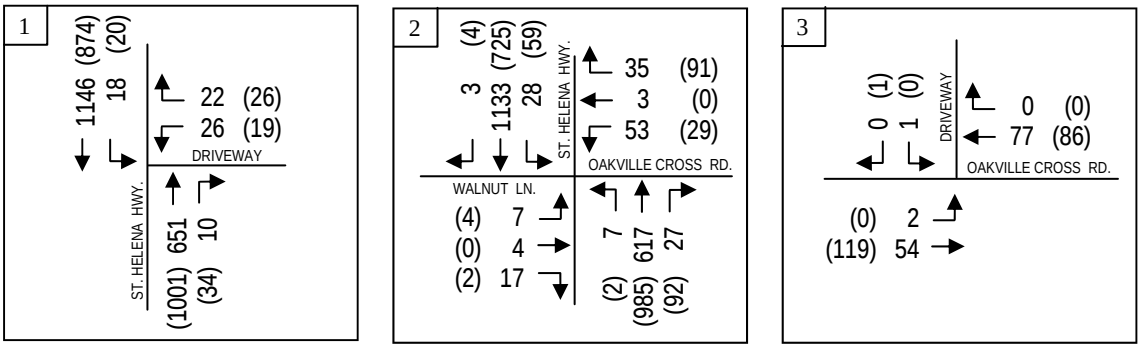
To determine traffic conditions with the proposed project, total net new roadway trips were added to existing volumes. Based on observed turning percentages at the main visitor access driveway, the project trips were distributed 50% to/from the north on SR-29 and 50% to/from the south on the same roadway. It is noted that Opus One encourages all guests/visitors to use the main access driveway to/from SR-29 rather than the existing driveway from Oakville Cross Road. The existing Opus One driveway to/from Oakville Cross Road is categorized as a "Service Entrance" and indicates "Guests please use main gate on Highway 29." While it is possible for visitors to use this driveway, the electronic gate can be closed at times and typically this driveway is used only for deliveries and/or employee access. This evidenced by the very low traffic volumes in/out of the driveway during weekday and weekend peak periods (three vehicles or less). Therefore, all net new roadway project trips were assigned to/from the main Opus One Driveway at SR-29 a conservative analysis. Existing plus project and near-term plus project volumes have been shown in Figure 4 and 5.

It is noted that surveys of existing daily and peak hour trip generation at the existing Opus One Winery indicate the use of transit services. Specifically, of the surveyed visitor groups to the winery on a Thursday, Friday, and Saturday approximately 8-10% carpooled, and/or used Hire Car (limousines, Escalades, Vans, etc.) to access the winery.[13] The use of hire car to/from the winery has helped to reduce overall vehicle trip generation. Based on discussions with the applicant, the use of transit will continue and expand with proposed use modification levels and is being directly marketed to reduce vehicle miles traveled (VMT), vehicle trip generation, and improved guest demographics.

[13] *Gary Caravantes, Opus One, Daily visitation data for Opus One Winery, October 23, 24, 25, 2014.*



PEAK HOUR VOLUMES:

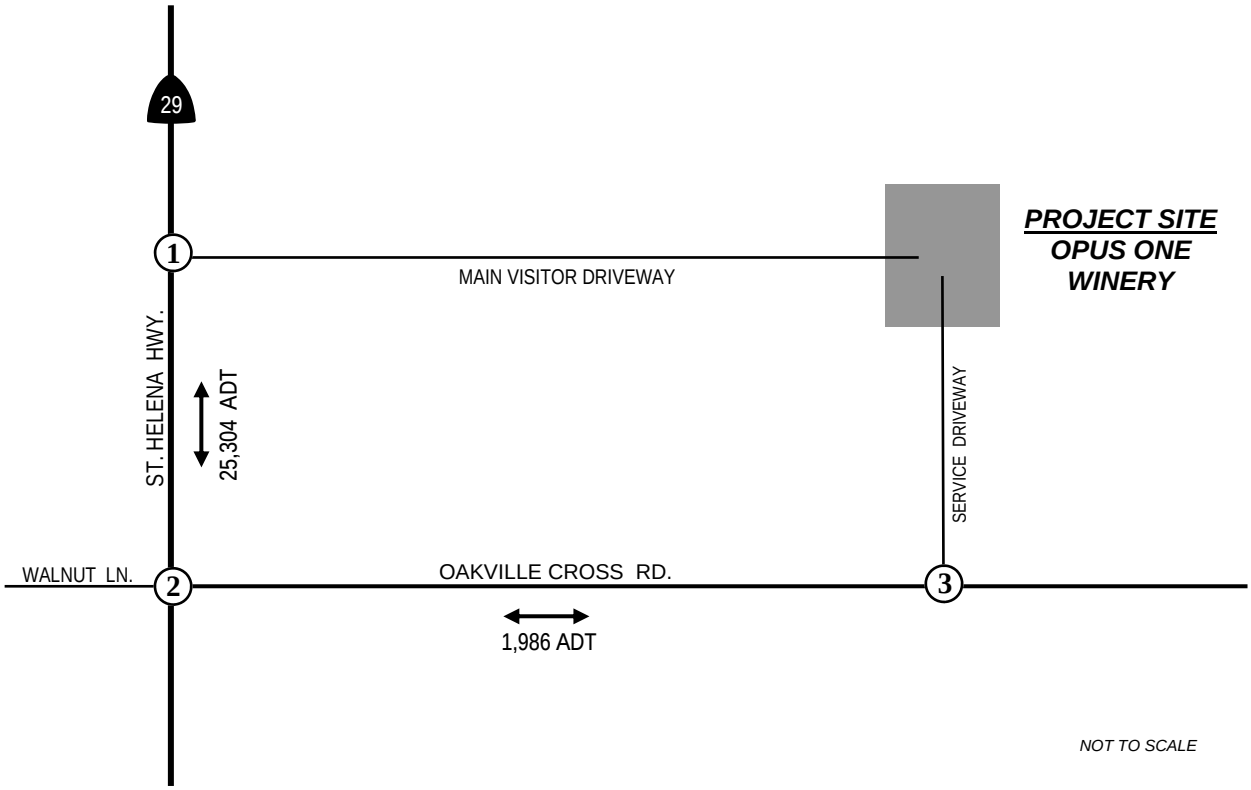


Existing Plus Project
Weekday P.M. and (Weekend Mid-day) Peak Hour Volumes

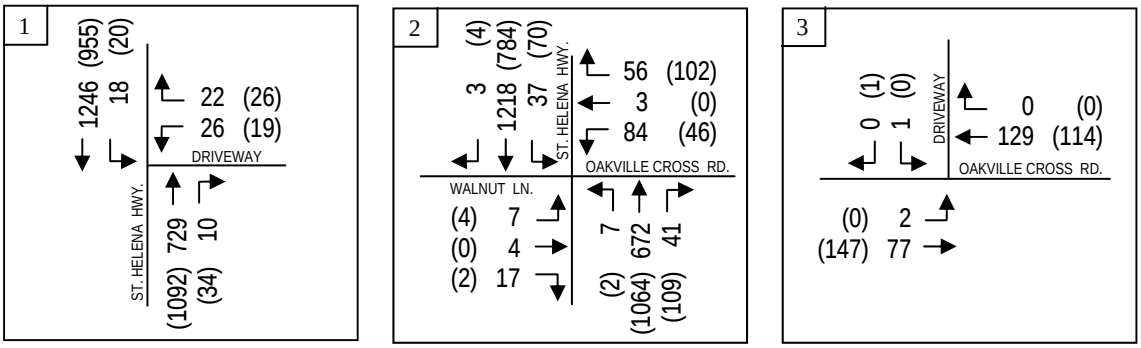
North

omni-means

figure 4



PEAK HOUR VOLUMES:



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

North

omni-means

figure 5

Project Effects on Roadway/Intersection Operation

A. Existing Plus Project Conditions

The project would be expected to add approximately 61 weekday daily trips to the access driveway and State Route 29. This would represent an addition of less than 1 percent (0.003) to the daily volumes on the highway. The combined existing plus project volume of 23,461 daily trips would remain at LOS F operating conditions for a two-lane rural arterial highway based on established County thresholds.

During the peak winery activity periods, the project would generate 23 weekday PM peak hour trips and zero (0) Saturday mid-day peak hour trips. The primary reason for these small increases in roadway trips is due to the very small increase in employment levels and moderate increase in visitation levels during both the weekday and weekend periods. Weekday PM peak hour and weekend mid-day peak hour intersection levels of service were evaluated with proposed project traffic and are shown in Table 4.

As calculated, the Opus One Driveway/SR-29 intersection would continue to operate at LOS C during both the weekday PM peak hour and during the weekend (Saturday) mid-day peak hour with proposed project traffic. The Opus One Driveway/Oakville Cross Road intersection would operate at LOS A during the same time periods. The Oakville Cross Road/SR-29 intersection would continue to operate at LOS F during both the weekday PM peak and weekend mid-day peak hours.

Based on the California Manual on Uniform Traffic Control Devices (CAMUTCD) peak hour signal warrant criteria, all three unsignalized intersections were evaluated for signalization.[14] With proposed project traffic, the Oakville Cross Road/SR-29 intersection would continue to qualify for peak hour signal warrants based CAMUTCD standards (the warrant graphs are provided in the Appendix). The Opus One access driveways at SR-29 and Oakville Cross Road do not qualify for peak hour signalization under existing plus project conditions.

B. Near-Term Plus Project Conditions

Similar to existing plus project conditions, the project would add approximately 61 daily trips to the main access driveway at SR-29. This would represent an addition of less than 1 percent (0.002) to the daily volumes on the highway. The combined near-term plus project volume of 25,304 daily trips would remain at LOS F operating conditions for a two-lane rural arterial highway based on established County thresholds.

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

TABLE 4
EXISTING PLUS PROJECT AND NEAR-TERM PLUS PROJECT CONDITIONS:
INTERSECTION LEVELS-OF-SERVICE
WEEKDAY PM PEAK AND WEEKEND MID-DAY PEAK HOUR

#	Intersection	Control Type	Wkdy. PM LOS/Delay		Wknd. Mid-Day LOS/Delay	
			Existing + Project	Near-Term + Project	Existing + Project	Near-Term + Project
1	Opus One Driveway/SR-29	Stop	C 21.6	C 24.5	C 24.4	D 27.4
2.	Oakville Cross Rd./SR-29	Stop	F >50.0	F >50.0	F >50.0	F>50.0
3.	Opus One Driveway/Oakville Cross Road	Stop	A 9.3	A 9.8	A 8.7	A 8.9

Based on Highway Capacity Manual (HCM) 2000, Operations methodology for stop-sign controlled (unsignalized) intersections using Synchro-Simtraffic software. Intersection calculation yields an LOS and vehicle delay in seconds. Stated LOS refers to the minor street (stop-sign) controlled movement.

With near-term plus project volumes, study intersection LOS has been calculated and is shown in Table 4. As calculated, the Opus One Driveway/SR-29 intersection would continue to operate at LOS C during the weekday PM peak hour and LOS D during the weekend (Saturday) mid-day peak hour. The Opus One Driveway/Oakville Cross Road intersection continues to operate at LOS A during the same time periods. The Oakville Cross Road/SR-29 intersection would continue to operate at LOS F during both the weekday PM peak and weekend mid-day peak hours with near-term plus project volumes.

Based on CAMUTCD peak hour signal warrant criteria (Warrant #3), the Oakville Cross Road/SR-29 intersection would continue to qualify for signalization with near-term plus project volumes. The Opus One driveway intersections at SR-29 and Oakville Cross Road would not qualify for signalization under peak hour criteria.

5. Site Access/Design Parameters

Sight Distance

As noted in the discussion of existing conditions, the primary issues for access design are the vehicle visibility and operation relative to vehicles traveling on SR-29 and Oakville Cross Road and vehicles turning in/out of the winery driveways. The required vehicle visibility or "corner sight distance" is a function of the travel speeds on SR-29 and Oakville Cross Road[15] Based on radar surveys conducted as a part of this study, the "critical" vehicle speeds (85% of all surveyed vehicles travel at or below the critical speed) along SR-29 at the existing access driveway was recorded at 53 miles per hour (mph) or less during the weekday PM peak period and the Saturday afternoon peak period. Based on Caltrans design standards, these vehicle speeds require a sight distance of approximately 465 feet, measured along the travel lanes on SR-29. [16] As measured, existing vehicle sight distance from the access driveway looking south on SR-29 exceeds 465 feet (900 feet) and is adequate. Vehicle sight distance to the north is unrestricted measuring over 1,500 feet. Corner sight distance was also evaluated for the Opus One driveway on Oakville Cross Road. Based on radar speed surveys, the critical speed on Oakville Cross Road is 49 miles per hour and would require a sight distance of 430 feet. As measured, existing vehicle sight distance from the driveway looking west is 1,670 feet. Sight distance to the east is approximately 700 feet.

[15] *Caltrans, Highway Design Manual, Chapter 200, Topic 201—Sight Distance, March 7, 2014.*
[16] *Omni-Means Engineers & Planners, Field observations and radar speed surveys on SR-29 and Oakville Cross December 18, 2014.*

It is noted that site distance to the east on Oakville Cross Road can be affected by utility poles and existing row trees along the north side of the road that partially obstruct the view from the standard driveway setback. However, the sight distance remains intact and the view is unobstructed within six (6) feet of the driveway's intersection with Oakville Cross Road and is considered less-than-significant in nature.

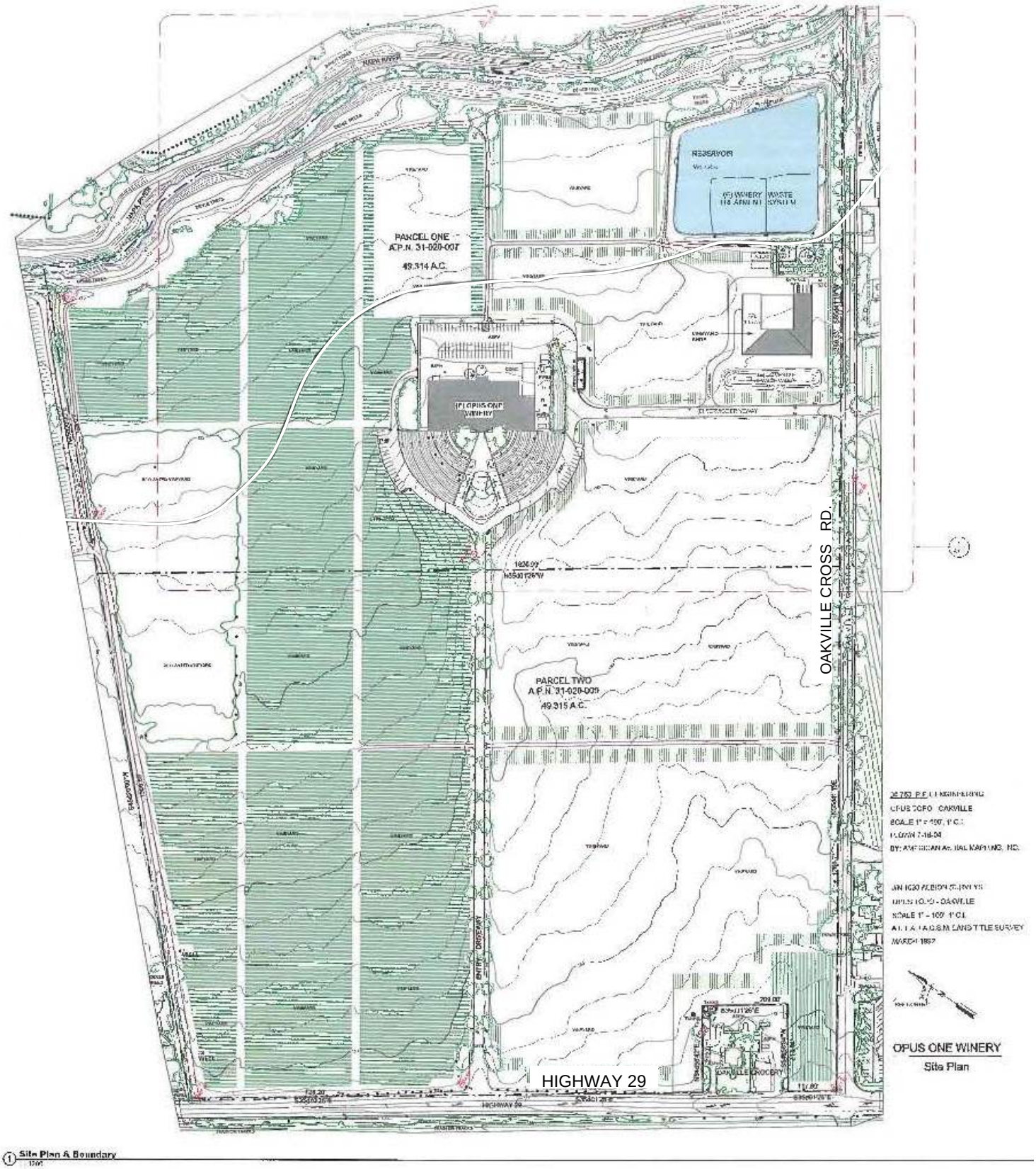
Project Access and Circulation

Based on the project site plan, the driveways providing access to the Opus One Winery from SR-29 and Oakville Cross Road exceed the County's minimum standard for driveway widths (18-feet) averaging 22-24 feet in width (or greater). A southbound left-turn lane has been installed on SR-29 at the Opus One driveway to allow for safe ingress/egress from the winery. As shown in Figure 6 (Project Site Plan), visitors would travel east from SR-29 along the main driveway approximately 1,375 feet to parking fields located both north and south along the circular internal drive aisle surrounding the Opus One Winery. There are 13 parking spaces in the southeast field and 15 parking spaces in the northeast field. The circular drive aisle continues around the winery building to the rear employee and production areas. However, visitors and guests are typically not permitted in these areas and are prevented from entering via a gate on the north side of the winery and signing on the south side of the winery building. Continuing through the southeast parking area, the internal circular drive aisle connects with the Opus One driveway to/from Oakville Cross Road. This driveway extends south from the winery approximately 650 feet to Oakville Cross Road and is 24-feet wide. As noted, this driveway is controlled by an electronic gate and is used primarily for deliveries and employee use during the workday hours. All guest/visitors are instructed to use the main Opus One driveway to/from SR-29 to access the winery grounds.

Left-Turn Lane/Right-Turn Lane Warrants

A complete southbound taper, left-turn lane, and two-way-left-turn lane extend from north of the main Opus One Winery driveway at SR-29 all the way through Oakville Cross Road and beyond. Therefore, a left-turn lane warrant evaluation is not required for this driveway location. The Opus One Winery driveway at Oakville Cross Road would not be used by visitors and guests to access the winery. In addition, this driveway has an electronic gate which is often closed for intermittent periods of the week when deliveries are not anticipated. Since the applicant has already installed a left-turn lane on SR-29 at the County's request at their primary driveway, no evaluation of the Opus One Winery service driveway at Oakville Cross Road has been conducted.

The main Opus One Winery driveway at SR-29 has wide turning radius/tapers where it intersects with SR-29. In addition, there is a wide paved shoulder area (11 feet) delineated by a dashed white line that extends approximately 100 feet south of the driveway to indicate vehicle activity and highways and near-term plus project volumes, only a right-turn taper would be required. Since this feature already exists, inbound vehicle access for the northbound right-turn movement would be adequate.



1 Site Plan & Boundary

Project Site Plan

North

omni-means

figure 6

Crush/Harvest

Activities associated with crush/harvest season typically occur over a six-week period in the late summer and/or early fall season. Over the past four calendar years, the Opus One Winery has processed approximately 3,944 tons of fruit or an average of 986 tons per year. Based on the maximum proposed production of 250,000 gallons; this would allow the processing of 1,674 tons of fruit. As noted, 70% of the fruit would be from off-site sources representing 1,172 tons. The winery can process up to 45 tons per day during peak crush periods. This would represent 7 truck loads or 14 truck trips per day during peak operations (based on 6.63 tons per truck and a 36 day crush period).. Combined with other bottling and delivery activities, there would be another three trucks or six truck trips.

Combined with proposed employment and visitation levels on a Saturday during the crush/harvest period, the proposed project is expected to generate an average of 458 Saturday daily trips and 115 mid-day peak hour trips. This daily trip total would represent 500 visitors, 20 full-time and 10 part-time employees on-site during weekend periods, 250,000 gallons of wine production, and 1,172 tons of grapes (on-haul). Please refer to appendices for Winery Traffic Information/Trip Generation Sheet—"Traffic during a Crush Saturday."

Marketing Events

The planned marketing events as identified in the project component section are listed as follows:

- 10 annual events with up to 10 guests;
- 10 annual events with up to 25 guests;
- 10 annual events with up to 100 guests;
- 5 annual events with up to 300 guests;
- Participation in Auction Napa Valley.

Based on Napa County daily and peak hour trip generation factors for guest traffic, the marketing events trip generation has been summarized in Table 5 below:

TABLE 5
MARKETING EVENT TRIP GENERATION
DAILY VEHICLE TRIPS

		Event Staff/Trucks		Daily Trips	
Marketing Event-Frequency	**Guests**	**Staff**	**Trucks**	**Trips**	**In/Out**
10 Annual	10	0	0	4	2 / 2
10 Annual	25	0	0	9	5 / 4
10 Annual	100	8	1	54	27 / 27
5 Annual	300	25	4	272	136 / 136

Daily and peak hour calculations based on County of Napa, Conservation, Development, and Planning Department, "Use Permit Application Package," Napa County Winery Traffic Generation Characteristics, 2015. Auto occupancy of 2.8 guests/vehicle. Large events (100+ guests) include staff and catering trucks.

As calculated in Table 5, the smaller marketing events of 25 guests or less would have very low trip generation of nine (9) daily trips or less. Discussions with Opus One Winery staff indicate that smaller events of 25 or less rarely require additional staff from off-site.[17] The events are catered from on-site staff and are typically "tasting events" rather than entertainment oriented (which could require additional staff). The larger marketing events that include 100 guests or more would generate 54 daily trips or a maximum of 272 daily trips (300 guests). With regard to the largest event of 300 guests; the project applicant indicates that these would be an all day event typically on a weekend. This event involves visitors arriving and departing throughout the entire day. The event is scheduled to ensure that the majority of visitor arrivals and/or departures would not coincide with the Saturday afternoon peak hour background traffic flows on SR-29. These events are typically of sufficient duration in length that the inbound and outbound trips occur in separate hours, thus the number of trips on the street network at one time are half of the total volume.

Based on further discussions with Opus One marketing event coordinator staff, fully 80% of all current/planned marketing events would typically occur outside the peak weekday and weekend travel periods.[18] Specifically, marketing events are scheduled to occur between the later evening hours of 6:00 and 10:00 p.m. The remaining 20% of the marketing events would occur mid-day between 12:00 and 2:00 p.m. These mid-day events would not affect the peak weekday travel period between 4:00 to 6:00 p.m. However, mid-day marketing events could affect the weekend peak travel periods typically between 1:00 and 4:00 p.m. Therefore, it is recommended that these mid-day marketing events be held on a weekday whenever possible. Opus One staff indicates that with rare exceptions, they strive to schedule all marketing events outside the peak travel demand periods.

Pedestrian/Bicycle Circulation

Field observations indicate that pedestrian/bicycle traffic is very light on SR-29 and Oakville Crossroad in the vicinity of the access driveways. Assuming that most of the pedestrian/bicycle trips are originating on Silverado Trail or SR-29, it is recommended that the proposed project's main SR-29 access driveway be designated as the main access point for pedestrian/bicyclist visiting the winery. This is consistent with current directions on the Opus One website. In addition, the Oakville Crossroad access driveway is controlled by an electronic gate and experiences consistent traffic from truck deliveries and winery farm equipment. This winery-related traffic is exacerbated during the harvest/crush season. Due to safety concerns and limited access, it is recommended that bicyclists not use the Oakville Crossroad access driveway. SR-29 is well served with five-six foot shoulders in the project study area. The winery could also provide on-site bicycle parking signs as indicated by CAMUTCD sign G93C-CA, (attached). Currently, bicycle parking is provided adjacent to the front north visitors parking area.

6. Cumulative Conditions

Cumulative Year 2030 Projections

As outlined in near-term (no project) conditions, cumulative (Year 2030) volume projections on St. Helena Highway (SR-29) were derived from the Napa County Transportation & Planning

[17] *Gary Caravantes, Opus One Winery, Discussions with Opus One marketing event coordinator related to small marketing events (25 guests or less) and staff requirements, February, 9, 2016.*
[18] *Gary Caravantes, Opus One Winery, Discussions with Opus One marketing event coordinator related to schedules and hours of operation, Personal communication, January 6, 2016.*

Agency's traffic volume forecasts in the Napa County General Plan Update EIR. The forecast increase in volume-to-capacity (v/c) ratio from Year 2003 to Year 2030 on SR-29 between Oakville Grade Road and Rutherford Road was applied to the Year 2003 peak hour two-way volumes (2,037 vehicles). This yielded a future volume of 3,740 weekday PM peak hour vehicles on SR-29 in the Year 2030. This would equate to an increase in traffic volumes of 3.7% per year to the Year 2030 on the highway. It is noted that no future volume projections are provided for the weekend (Saturday) mid-day peak hour. Therefore, weekend mid-day peak hour volumes on SR-29 were increased uniformly by the same annual growth rate.

No long range traffic growth projections are available for Oakville Cross Road. Therefore, increases in daily and peak hour traffic in the project study area would represent increases in winery activities as provided by County staff.

Historical Data

For comparison of the County's General Plan Update cumulative volume projections and actual traffic growth on SR-29, average annual daily traffic volumes on SR-29 between Oakville Grade Road and Rutherford Road over the previous 22 years were reviewed. The average annual daily traffic (AADT) on SR-29 in 1992 was 15,300 trips. By comparison, the AADT on SR-29 in 2013 was 23,400 trips. Daily volumes were highest in the year 2007, reaching 26,000 AADT. Daily volumes on SR-29 have since declined and are lower today than they were in 2007. Increases in daily volumes between year 1992 and year of 2013 equates to an annual increase of 1.95% per year (compounded) on SR-29 in the project vicinity. Applying the same annual increase to the current ADT on SR-29 of 23,400 results in about 30,245 ADT in year 2030 (1.95% per year added for 15 years).

Cumulative volumes based on historical data are approximately 80% of the model forecast volumes on SR-29. The difference between the model numbers and historical growth trends indicates volumes are not increasing to the model's forecasted levels. However, in order to proactively address potential traffic volumes under cumulative conditions, the County has adopted several measures identified in the General Plan to improve the street network and also reduce vehicle trips.

Cumulative Operating Conditions

Cumulative Year 2030 (no project) volumes are very conservative, and forecast volumes would yield unacceptable LOS F conditions on SR-29. Applying the same weekday PM peak hour increase to daily traffic volumes (as a conservative measure), existing ADT on SR-29 would increase from 23,400 trips to 36,387 daily trips (LOS F). Cumulative projections are not available for Oakville Cross Road. However, assuming the same conservative increases in traffic growth, existing ADT on Washington Street would increase from 1,770 trips to 2,745 daily trips (LOS B).

With regard to weekday PM peak hour and weekend mid-day peak hour intersection operation under cumulative year 2030 (no project) conditions, both project study intersections on SR-29 (Opus One Driveway/SR-29 & Oakville Cross Road/SR-29) would operate at unacceptable conditions (LOS F) using County volume projections. With proposed project traffic, the intersections would continue to operate at LOS F during the weekday PM peak hour and weekend mid-day peak hour. The primary cause of poor operating conditions at these intersections is the increase in through-traffic on SR-29 based on the Napa County General

Plan Update EIR volume projections. The intersections would be operating at LOS F with or without proposed project traffic.

The Opus One Driveway/Oakville Cross Road intersection would be operating at LOS A during both the weekday PM and weekend mid-day peak hour under cumulative year 2030 (no project) conditions. These operations would remain unchanged with proposed project traffic.

Additional improvements to the street network are anticipated and have been included in the General Plan's Improved 2030 Network model. As noted, the County has also adopted several measures identified in the General Plan to reduce vehicle trips through public transit and Transportation Demand Management (TDM) strategies: "The project should support programs to reduce single occupant vehicle use and encourage alternative travel modes."

- In keeping with the policy, the winery project provides bicycle racks for visitors and employees who may arrive by bike (front north visitor parking area). The project should also promote the use of public transportation and carpooling of employees (by adjusting work schedules, etc.) to facilitate the use of other transportation modes.

- As previously summarized, surveys of existing daily and peak hour trip generation at the existing Opus One Winery indicate the use of transit services. Specifically, of the surveyed visitor groups to the winery on a Thursday, Friday, and Saturday approximately 8-10% carpooled, and/or used Hire Car (limousines, Escalades, Vans, etc.) to access the winery.[19] The use of hire car to/from the winery has helped to reduce overall vehicle trip generation. Based on discussions with the applicant, the use of transit will continue and expand with proposed use modification levels and is being directly marketed to reduce vehicle miles traveled (VMT), vehicle trip generation, and improved guest demographics.

Finally, County Public Works have indicated in recent correspondence that proposed project contributions to overall cumulative daily volumes on SR-29 should be less than one percent. Related to a previous project proposal, County staff indicated "the study (traffic) should be updated to indicate whether the revised project will represent no greater than 1%, which would constitute a significant cumulative impact to traffic in the vicinity.[20] The proposed Opus One project would be adding significantly less than one percent to overall Year 2030 cumulative volumes on SR-29.

7. Summary and Conclusions

Daily and Peak Hour Operations

The proposed Opus One Winery use modification project would generate 61 net new daily trips during the weekday and zero (0) net new daily trips during the weekend periods (respectively) based on normal weekday and weekend operations. There would be an increase of 23 weekday PM peak hour trips and zero weekend mid-day peak hour trips with proposed project uses. This increase in daily and peak hour net new roadway trips represents the difference between existing traffic operations (that reflect current winery activities) with ultimate use modification requests. Currently, the winery is averaging approximately 165 visitors a day and 500 visitors on its busiest

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[19] *Gary Caravantes, Opus One, Daily visitation data for Opus One Winery, October 23, 24, 25, 2014.*
[20] *Rick Marshall, Deputy Director of Public Works, Napa County, Re: Flynnville Wine Company, Use Permit Application P15-00225, to PBES staff, July 28, 2015.*

day (Saturday). The proposed use modification would increase these visitation levels to approximately 200 visitors on average on a weekday for daily tours and tastings with weekend visitation unchanged at 500 visitors on its busiest day (maximum). Employment levels would increase slightly during the weekdays from an average of 65 employees per day to 75 per day (employment would remain unchanged on the weekend). Overall production would increase from 170,590 gallons to 250,000 gallons (annually). Proposed winery activities associated with the six-week crush/harvest period and larger proposed marketing events (>25 guests) are not included in these overall trip generation totals. Overall crush/harvest operations and large marketing events are addressed separately since these activities only occur during selected periods during the calendar year.

With the proposed project expected to add approximately 61 daily trips to State Route 29, this would represent an addition of less than 1 percent (0.003) to the daily volumes on the highway. The combined existing plus project volume of 23,461 daily trips would remain at LOS F operating conditions for a two-lane rural arterial highway based on established County thresholds. ADT on Oakville Cross Road would remain virtually unchanged at 1,776 vehicles with proposed project activity and would continue to operate at LOS A conditions.

With near-term plus project conditions, daily traffic volumes on State Route 29 would increase to 25,304 ADT. Again, this would represent LOS F conditions for a two-lane, rural arterial highway based on County thresholds. ADT on Oakville Cross Road would remain at 1,986 vehicles (the same as near-term [no project] conditions). This would represent LOS B conditions based on County thresholds.

Both the Opus One driveway intersections at SR-29 and Oakville Cross Road would operate at acceptable levels with existing plus project and near-term plus project traffic volumes. The Opus One Driveway/SR-29 intersection would operate at LOS C under existing plus project conditions during both the weekday and weekend peak periods. With near-term plus project traffic, the intersection would operate at LOS C during the weekday PM peak hour and LOS D during the weekend mid-day peak hour. The Opus One Driveway/Oakville Cross Road intersection would operate at LOS A during both the weekday and weekend peak periods under both existing plus project and near-term plus project conditions.

The Oakville Cross Road/SR-29 intersection would continue to operate at LOS F during both weekday PM and weekend mid-day peak hour conditions (with or without project).

Based on the CAMUTCD peak hour signal warrant criteria (peak hour #3), neither of the Opus One driveway intersections at SR-29 or Oakville Cross Road would qualify for signalization under existing plus project or near-term plus project conditions. The Oakville Cross Road/SR-29 intersection would qualify for signalization under existing (no project) conditions. Should the County require future signalization of the Oakville Cross Road/SR-29 intersection, the proposed project's proportional share would be based on the existing and proposed peak hour trips traveling through the intersection. Based on near-term plus project conditions, this would equate to 53 trips or 2.4% (53/2,187—weekend mid-day peak hour).

Warrant and Vehicle Sight Distance

A complete southbound taper, left-turn lane, and two-way-left-turn lane extend from north of the main Opus One Winery driveway at SR-29 all the way through Oakville Cross Road and beyond. Therefore, a left-turn lane warrant evaluation is not required for this driveway location. The Opus

One Winery driveway at Oakville Cross Road would not be used by visitors and guests to access the winery. In addition, this driveway has an electronic gate which is often closed for intermittent periods of the week when deliveries are not anticipated. Since the applicant has already installed a left-turn lane on SR-29 at the County's request at their primary driveway, no evaluation of the Opus One Winery service driveway at Oakville Cross Road has been conducted.

The projected right turn volumes at the site driveway are well below minimum thresholds at which right turn lane would be required (right turn lane warrant graphs are included in the Appendix).[21]

As noted in the discussion of existing conditions, the primary issues for access design are the vehicle visibility and operation relative to vehicles traveling on SR-29 and Oakville Cross Road and vehicles turning in/out of the winery driveways. The required vehicle visibility or "corner sight distance" is a function of the travel speeds on SR-29 and Oakville Cross Road[22] Based on radar surveys conducted as a part of this study, the "critical" vehicle speeds (85% of all surveyed vehicles travel at or below the critical speed) along SR-29 at the existing access driveway was recorded at 53 miles per hour (mph) or less during the weekday PM peak period and the Saturday afternoon peak period. Based on Caltrans design standards, these vehicle speeds require a sight distance of approximately 465 feet, measured along the travel lanes on SR-29. [23] As measured, existing vehicle sight distance from the access driveway looking south on SR-29 exceeds 465 feet (900 feet) and is adequate. Vehicle sight distance to the north is unrestricted measuring over 1,500 feet. Corner sight distance was also evaluated for the Opus One driveway on Oakville Cross Road. Based on radar speed surveys, the critical speed on Oakville Cross Road is 49 miles per hour and would require a sight distance of 430 feet. As measured, existing vehicle sight distance from the driveway looking west is 1,670 feet. Sight distance to the east is approximately 700 feet. It is noted that site distance to the east on Oakville Cross Road can be affected by utility poles and existing row trees along the north side of the road that partially obstruct the view from the standard driveway setback. However, the sight distance remains intact and the view is unobstructed within six (6) feet of the driveway's intersection with Oakville Cross Road and is considered less-than-significant in nature.

Project Access and Circulation

Based on the project site plan, the driveways providing access to the Opus One Winery from SR-29 and Oakville Cross Road exceed the County's minimum standard for driveway widths (18-feet) averaging 22-24 feet in width (or greater). A southbound left-turn lane has been installed on SR-29 at the Opus One driveway to allow for safe ingress/egress from the winery. As shown in Figure 6 (Project Site Plan), visitors would travel east from SR-29 along the main driveway approximately 1,375 feet to parking fields located both north and south along the circular internal drive aisle surrounding the Opus One Winery. Currently, there are 13 parking spaces in the southeast field and 15 parking spaces in the northeast field. The circular drive aisle continues around the winery building to the rear employee and production areas. However, visitors and guests are typically not permitted in these areas and are prevented from entering via a gate on the north side of the winery and signing on the south side of the winery building. Continuing through the southeast parking area, the internal circular drive aisle connects with the Opus One driveway to/from Oakville Cross

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[21] *Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide," November, 1985.*
[22] *Caltrans, Highway Design Manual, Chapter 200, Topic 201—Sight Distance, March 7, 2014.*
[23] *Omni-Means Engineers & Planners, Field observations and radar speed surveys on SR-29 and Oakville Cross December 18, 2014.*

Road. This driveway extends south from the winery approximately 650 feet to Oakville Cross Road and is 24-feet wide. As noted, this driveway is controlled by an electronic gate and is used primarily for deliveries and employee use during the workday hours. All guest/visitors are instructed to use the main Opus One driveway to/from SR-29 to access the winery grounds.

Crush/Harvest Activities

Activities associated with crush/harvest season typically occur over a six-week period in the late summer and/or early fall season. Over the past four calendar years, the Opus One Winery has processed approximately 3,944 tons of fruit or an average of 986 tons per year. Based on the maximum proposed production of 250,000 gallons; this would allow the processing of 1,674 tons of fruit. As noted, 70% of the fruit would be from off-site sources representing 1,172 tons. The winery can process up to 45 tons per day during peak crush periods. This would represent 7 truck loads or 14 truck trips per day during peak operations (based on 6.63 tons per truck and a 36 day crush period).. Combined with other bottling and delivery activities, there would be another three trucks or six truck trips.

Combined with proposed employment and visitation levels on a Saturday during the crush/harvest period, the proposed project is expected to generate an average of 458 Saturday daily trips and 115 mid-day peak hour trips. This daily trip total would represent 500 visitors, 20 full-time and 10 part-time employees on-site during weekend periods, 250,000 gallons of wine production, and 1,172 tons of grapes (on-haul). Please refer to appendices for Winery Traffic Information/Trip Generation Sheet—"Traffic during a Crush Saturday."

Marketing Events

The planned marketing events as identified in the project component section are listed as follows:

- 10 annual events with up to 10 guests;
- 10 annual events with up to 25 guests;
- 10 annual events with up to 100 guests;
- 5 annual events with up to 300 guests;
- Participation in Auction Napa Valley.

The smaller marketing events of 25 guests or less would have very low trip generation of nine (9) daily trips or less. Discussions with Opus One Winery staff indicate that smaller events of 25 or less rarely require additional staff from off-site.[24] The events are catered from on-site staff and are typically "tasting events" rather than entertainment oriented (which could require additional staff).The larger marketing events that include 100 guests or more would generate 54 daily trips or a maximum of 272 daily trips (300 guests). With regard to the largest event of 300 guests; the project applicant indicates that these would be an all day event typically on a weekend. This event involves visitors arriving and departing throughout the entire day. The event is scheduled to ensure that the majority of visitor arrivals and/or departures would not coincide with the Saturday afternoon peak hour background traffic flows on SR-29. These events are typically of sufficient duration in length that the inbound and outbound trips occur in separate hours, thus the number of trips on the street network at one time are half of the total volume.

[24] *Gary Caravantes, Opus One Winery, Discussions with Opus One marketing event coordinator related to small marketing events (25 guests or less) and staff requirements, February, 9, 2016.*

Based on further discussions with Opus One marketing event coordinator staff, fully 80% of all current/planned marketing events would typically occur outside the peak weekday and weekend travel periods.[25] Specifically, marketing events are scheduled to occur between the later evening hours of 6:00 and 10:00 p.m. The remaining 20% of the marketing events would occur mid-day between 12:00 and 2:00 p.m. These mid-day events would not affect the peak weekday travel period between 4:00 to 6:00 p.m. However, mid-day marketing events could affect the weekend peak travel periods typically between 1:00 and 4:00 p.m. Therefore, it is recommended that these mid-day marketing events be held on a weekday whenever possible. Opus One staff indicates that with rare exceptions, they strive to schedule all marketing events outside the peak travel demand periods.

Based on discussions with the applicant, the use of transit will continue and expand with proposed use modification levels and is being directly marketed to reduce vehicle trip generation and improved guest demographics. Transit use will be encouraged for large events to reduce traffic levels to the extent possible.

Cumulative Year 2030 Conditions

Cumulative Year 2030 (no project) volumes are very conservative, and forecast volumes would yield unacceptable LOS F conditions on SR-29. Applying the same weekday PM peak hour increase to daily traffic volumes (as a conservative measure), existing ADT on SR-29 would increase from 23,400 trips to 36,387 daily trips (LOS F). Cumulative projections are not available for Oakville Cross Road. However, assuming the same conservative increases in traffic growth, existing ADT on Oakville Cross Road would increase from 1770 trips to 2,745 daily trips (LOS B).

With regard to weekday PM peak hour and weekend mid-day peak hour intersection operation under cumulative year 2030 (no project) conditions, both project study intersections on SR-29 (Opus One Driveway/SR-29 & Oakville Cross Road/SR-29) would operate at unacceptable conditions (LOS F) using County volume projections. With proposed project traffic, the intersections would continue to operate at LOS F during the weekday PM peak hour and weekend mid-day peak hour. The primary cause of poor operating conditions at these intersections is the increase in through-traffic on SR-29 based on the Napa County General Plan Update EIR volume projections. The intersections would be operating at LOS F with or without proposed project traffic.

The Opus One Driveway/Oakville Cross Road intersection would be operating at LOS A during both the weekday PM and weekend mid-day peak hour under cumulative year 2030 (no project) conditions. These operations would remain unchanged with proposed project traffic.

As previously noted, the forecast cumulative year 2030 volume increases on SR-29 are quite large. In addition to minor street/driveways likely operating at LOS E-F, overall cumulative volumes on SR-29 would likely warrant left turn lanes at all side streets and driveways exceeding twenty daily trips. A traffic impact fee may be adopted by the County to fund the General Plan improvements or other projects, such as a continuous two-way left turn lane on SR-29. The project's contribution to cumulative ADT volumes on SR-29 would equate to less than 1% of the projected volumes. If a TIF program were enacted, the proposed project could contribute a "fair share" towards such future

[25] *Gary Caravantes, Opus One Winery, Discussions with Opus One marketing event coordinator related to schedules and hours of operation, Personal communication, January 6, 2016.*

circulation improvements. The project's total net new project trip generation as a result of propose use modifications (61 daily trips) would represent 0.0016% of the forecast cumulative ADT volumes on SR-29.

Cumulative Mitigation

A 0.0016% increase in cumulative traffic volumes from the proposed project would not be cumulatively considerable in many other districts/agencies throughout the Bay Area. A typical traffic significance threshold is recognized by the amount of overall traffic added to a location and/or amount of vehicle delay. As previously stated, the County's General Plan Update does not identify specific circulation improvements for SR-29 or traffic impact fees which could help to reduce overall project impacts to less-than-significant levels. However, County Public Works have indicated in recent correspondence that proposed project contributions to overall cumulative daily volumes on SR-29 should be less than one percent to be considered less-than-significant. Related to a previous project proposal, County staff indicated "the study (traffic) should be updated to indicate whether the revised project will represent no greater than 1%, which would constitute a significant cumulative impact to traffic in the vicinity.[26] The proposed Opus One project would be adding significantly less than one percent to overall Year 2030 cumulative volumes on SR-29 (.0016%).

I trust that this report responds to your needs. Please review this information and call me with any questions or comments.

Sincerely,

Peter J. Galloway

Peter J. Galloway, Transportation Planner
OMNI-MEANS, Ltd. Engineers & Planners

Cc: George W. Nickelson, P.E., Omni-Means, Ltd,
Mark Phillips, Dickenson, Peatman, and Fogarty (DP&F)

Attachments: Appendices
R1937TIA008.docx/35-5093-01

[26] *Rick Marshall, Deputy Director of Public Works, Napa County, Re: Flynnville Wine Company, Use Permit Application P15-00225, to PBES staff, July 28, 2015.*

APPENDIX

Level of Service Definitions

Level of Service Calculations

Signal Warrant Sheets

Radar Speed Surveys (SR-29 & Oakville Cross Road)

Right-Turn Lane Warrant Sheet

Opus One Winery; Employment & Visitation

Winery Traffic Information/Trip Generation Sheets

ADT Count Sheets; Opus One Project Driveways

LEVEL-OF-SERVICE CRITERIA FOR INTERSECTIONS

Level of Service	Type of Flow	Delay	Maneuverability	Control Delay (seconds/vehicle)		
				Signalized	Unsignalized	All-Way Stop
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	≤ 10.0 secs.	≤ 10.0	≤ 10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10 and ≤ 20.0 secs.	>10 and ≤ 15.0	>10 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 and ≤ 35.0 secs.	>15 and ≤ 25.0	>15 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 of stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35 and ≤ 55.0 secs.	>25 and ≤ 35.0	>25 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 and ≤ 80.0 secs.	>35 and ≤ 50.0	>35 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 secs.	> 50.0	> 50.0

References: 1. Highway Capacity Manual, Fourth Edition, Transportation Research Board, 2000,

Intersection	
Intersection Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	18	13	651	7	15	1146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	20	693	16	20	1206
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow All	1947	701	0	0	708	0
Stage 1	701	-	-	-	-	-
Stage 2	1246	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	71	439	-	-	891	-
Stage 1	492	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	69	439	-	-	891	-
Mov Capacity-2 Maneuver	185	-	-	-	-	-
Stage 1	492	-	-	-	-	-
Stage 2	265	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.1	0	0.1
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	185	439	891	-
HCM Control Delay, s	-	-	27.3	13.6	9.133	-
HCM Lane V/C Ratio	-	-	0.13	0.05	0.02	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th-tile Q, veh	-	-	0.4	0.1	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	23.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	4	17	53	3	34	7	615	27	27	1122	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	4	18	58	3	37	8	668	29	29	1220	3
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	1984	1964	1221	1975	1966	668	1223	0	0	668	0	0
Stage 1	1280	1280	-	684	684	-	-	-	-	-	-	-
Stage 2	704	684	-	1291	1282	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	46	63	219	# 46	63	458	570	-	-	922	-	-
Stage 1	204	236	-	439	449	-	-	-	-	-	-	-
Stage 2	428	449	-	201	236	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	39	60	219	# 38	60	458	570	-	-	922	-	-
Mov Capacity-2 Maneuver	39	60	-	# 38	60	-	-	-	-	-	-	-
Stage 1	201	229	-	433	443	-	-	-	-	-	-	-
Stage 2	385	443	-	175	229	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	68.2	$ 473.8	0.1	0.2
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	570	-	-	86	59	922	-	-
HCM Control Delay, s	11.401	-	-	68.2	$ 473.8	9.033	-	-
HCM Lane V/C Ratio	0.01	-	-	0.35	1.66	0.03	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th-tile Q, veh	0.0	-	-	1.4	9.0	0.1	-	-

Notes

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Intersection	
Intersection Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	53	76	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	58	83	0	1	0
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	83	0	-	0	145	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	62	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1514	-	-	-	847	976
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	961	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1514	-	-	-	846	976
Mov Capacity-2 Maneuver	-	-	-	-	846	-
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	960	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.3
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1514	-	-	-	846
HCM Control Delay, s	7.381	0	-	-	9.3
HCM Lane V/C Ratio	0.00	-	-	-	0.00
HCM Lane LOS	A	A	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

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Intersection	
Intersection Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	19	26	1001	34	20	874
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	40	1065	77	27	920
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	2077	1104	0	0	1142	0
Stage 1	1104	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	59	257	-	-	612	-
Stage 1	317	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	56	257	-	-	612	-
Mov Capacity-2 Maneuver	177	-	-	-	-	-
Stage 1	317	-	-	-	-	-
Stage 2	350	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.4	0	0.3
HCM LOS	C	-	

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	177	257	612	-
HCM Control Delay, s	-	-	28.7	21.6	11.15	-
HCM Lane V/C Ratio	-	-	0.14	0.16	0.04	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th-tile Q, veh	-	-	0.5	0.5	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	12.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	0	2	29	0	91	2	985	92	59	725	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	2	32	0	99	2	1071	100	64	788	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	2042	1993	790	1995	1996	1071	792	0	0	1071	0	0
Stage 1	918	918	-	1075	1075	-	-	-	-	-	-	-
Stage 2	1124	1075	-	920	921	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	42	60	390	45	60	268	829	-	-	651	-	-
Stage 1	326	350	-	266	296	-	-	-	-	-	-	-
Stage 2	249	296	-	325	349	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	24	54	390	41	54	268	829	-	-	651	-	-
Mov Capacity-2 Maneuver	24	54	-	41	54	-	-	-	-	-	-	-
Stage 1	325	316	-	265	295	-	-	-	-	-	-	-
Stage 2	157	295	-	291	315	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	130.1	196.5	0	0.8
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	829	-	-	35	115	651	-	-
HCM Control Delay, s	9.354	-	-	130.1	196.5	11.133	-	-
HCM Lane V/C Ratio	0.00	-	-	0.19	1.13	0.10	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th-tile Q, veh	0.0	-	-	0.6	8.0	0.3	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	119	86	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	129	93	0	0	1
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	93	0	-	0	222	93
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	129	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1501	-	-	-	766	964
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	897	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1501	-	-	-	766	964
Mov Capacity-2 Maneuver	-	-	-	-	766	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	897	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1501	-	-	-	964
HCM Control Delay, s	0	-	-	-	8.7
HCM Lane V/C Ratio	-	-	-	-	0.00
HCM Lane LOS	A	-	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	18	13	729	7	15	1246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	20	776	16	20	1312
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow All	2135	783	0	0	791	0
Stage 1	783	-	-	-	-	-
Stage 2	1352	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	54	394	-	-	829	-
Stage 1	450	-	-	-	-	-
Stage 2	241	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	53	394	-	-	829	-
Mov Capacity-2 Maneuver	162	-	-	-	-	-
Stage 1	450	-	-	-	-	-
Stage 2	235	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.5	0	0.1
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	162	394	829	-
HCM Control Delay, s	-	-	31	14.6	9.45	-
HCM Lane V/C Ratio	-	-	0.15	0.05	0.02	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th-tile Q, veh	-	-	0.5	0.2	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	89.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	4	17	84	3	55	7	670	41	36	1211	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	4	18	91	3	60	8	728	45	39	1316	3
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	2171	2139	1318	2151	2141	728	1320	0	0	728	0	0
Stage 1	1396	1396	-	743	743	-	-	-	-	-	-	-
Stage 2	775	743	-	1408	1398	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	34	49	192	# 35	49	423	524	-	-	876	-	-
Stage 1	175	208	-	407	422	-	-	-	-	-	-	-
Stage 2	391	422	-	172	207	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	26	46	192	# 28	46	423	524	-	-	876	-	-
Mov Capacity-2 Maneuver	26	46	-	# 28	46	-	-	-	-	-	-	-
Stage 1	172	199	-	401	416	-	-	-	-	-	-	-
Stage 2	328	416	-	145	198	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	106.9	$ 1320.1	0.1	0.3
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	524	-	-	63	44	876	-	-
HCM Control Delay, s	11.971	-	-	106.9	$ 1320.1	9.302	-	-
HCM Lane V/C Ratio	0.01	-	-	0.48	3.51	0.04	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th-tile Q, veh	0.0	-	-	1.9	17.2	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	76	128	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	83	139	0	1	0
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	139	0	-	0	226	139
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	87	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1445	-	-	-	762	909
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	936	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1445	-	-	-	761	909
Mov Capacity-2 Maneuver	-	-	-	-	761	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	935	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.7
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1445	-	-	-	761
HCM Control Delay, s	7.495	0	-	-	9.7
HCM Lane V/C Ratio	0.00	-	-	-	0.00
HCM Lane LOS	A	A	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	19	26	1092	34	20	955
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	40	1162	77	27	1005
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	2259	1200	0	0	1239	0
Stage 1	1200	-	-	-	-	-
Stage 2	1059	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	45	226	-	-	562	-
Stage 1	285	-	-	-	-	-
Stage 2	333	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	43	226	-	-	562	-
Mov Capacity-2 Maneuver	157	-	-	-	-	-
Stage 1	285	-	-	-	-	-
Stage 2	317	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.4	0	0.3
HCM LOS	D	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	157	226	562	-
HCM Control Delay, s	-	-	32.3	24.3	11.725	-
HCM Lane V/C Ratio	-	-	0.16	0.18	0.05	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th-tile Q, veh	-	-	0.6	0.6	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	43.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	0	2	46	0	102	2	1064	109	70	784	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	2	50	0	111	2	1157	118	76	852	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	2223	2168	854	2169	2170	1157	857	0	0	1157	0	0
Stage 1	1007	1007	-	1161	1161	-	-	-	-	-	-	-
Stage 2	1216	1161	-	1008	1009	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	31	47	358	# 34	47	239	783	-	-	604	-	-
Stage 1	290	319	-	238	270	-	-	-	-	-	-	-
Stage 2	221	270	-	290	318	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	15	41	358	# 30	41	239	783	-	-	604	-	-
Mov Capacity-2 Maneuver	15	41	-	# 30	41	-	-	-	-	-	-	-
Stage 1	289	279	-	237	269	-	-	-	-	-	-	-
Stage 2	118	269	-	252	278	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	226.9	$ 632.6	0	1
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	783	-	-	22	76	604	-	-
HCM Control Delay, s	9.611	-	-	226.9	$ 632.6	11.817	-	-
HCM Lane V/C Ratio	0.00	-	-	0.30	2.12	0.13	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th-tile Q, veh	0.0	-	-	0.9	14.7	0.4	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	147	114	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	160	124	0	0	1
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	124	0	-	0	284	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	160	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1463	-	-	-	706	927
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	869	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1463	-	-	-	706	927
Mov Capacity-2 Maneuver	-	-	-	-	706	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	869	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1463	-	-	-	927
HCM Control Delay, s	0	-	-	-	8.9
HCM Lane V/C Ratio	-	-	-	-	0.00
HCM Lane LOS	A	-	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	26	22	651	10	18	1146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	34	693	23	24	1206
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow All	1958	704	0	0	715	0
Stage 1	704	-	-	-	-	-
Stage 2	1254	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	70	437	-	-	885	-
Stage 1	490	-	-	-	-	-
Stage 2	269	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	68	437	-	-	885	-
Mov Capacity-2 Maneuver	183	-	-	-	-	-
Stage 1	490	-	-	-	-	-
Stage 2	262	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	0.2
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	183	437	885	-
HCM Control Delay, s	-	-	29.2	13.9	9.181	-
HCM Lane V/C Ratio	-	-	0.19	0.08	0.03	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th-tile Q, veh	-	-	0.7	0.3	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	24.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	4	17	53	3	36	7	617	27	28	1133	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	4	18	58	3	39	8	671	29	30	1232	3
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	2001	1980	1233	1991	1982	671	1235	0	0	671	0	0
Stage 1	1294	1294	-	686	686	-	-	-	-	-	-	-
Stage 2	707	686	-	1305	1296	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	45	62	216	# 45	61	456	564	-	-	919	-	-
Stage 1	200	233	-	438	448	-	-	-	-	-	-	-
Stage 2	426	448	-	197	232	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	38	59	216	# 37	58	456	564	-	-	919	-	-
Mov Capacity-2 Maneuver	38	59	-	# 37	58	-	-	-	-	-	-	-
Stage 1	197	225	-	432	442	-	-	-	-	-	-	-
Stage 2	381	442	-	171	224	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	69.3	$ 488.8	0.1	0.2
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	564	-	-	85	59	919	-	-
HCM Control Delay, s	11.47	-	-	69.3	$ 488.8	9.051	-	-
HCM Lane V/C Ratio	0.01	-	-	0.36	1.70	0.03	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th-tile Q, veh	0.0	-	-	1.4	9.2	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	54	77	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	59	84	0	1	0
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	84	0	-	0	147	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	63	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1513	-	-	-	845	975
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	960	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1513	-	-	-	844	975
Mov Capacity-2 Maneuver	-	-	-	-	844	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	959	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.3
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1513	-	-	-	844
HCM Control Delay, s	7.383	0	-	-	9.3
HCM Lane V/C Ratio	0.00	-	-	-	0.00
HCM Lane LOS	A	A	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	26	22	729	10	18	1246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	34	776	23	24	1312
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	2147	787	0	0	798	0
Stage 1	787	-	-	-	-	-
Stage 2	1360	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	53	392	-	-	824	-
Stage 1	449	-	-	-	-	-
Stage 2	239	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	51	392	-	-	824	-
Mov Capacity-2 Maneuver	160	-	-	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	232	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.5	0	0.2
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	160	392	824	-
HCM Control Delay, s	-	-	33.6	15.1	9.5	-
HCM Lane V/C Ratio	-	-	0.22	0.09	0.03	-
HCM Lane LOS	-	-	D	C	A	-
HCM 95th-tile Q, veh	-	-	0.8	0.3	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	92.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	4	17	84	3	56	7	672	41	37	1218	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	4	18	91	3	61	8	730	45	40	1324	3
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	2184	2152	1326	2163	2154	730	1327	0	0	730	0	0
Stage 1	1406	1406	-	746	746	-	-	-	-	-	-	-
Stage 2	778	746	-	1417	1408	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	33	48	190	# 34	48	422	520	-	-	874	-	-
Stage 1	172	206	-	405	421	-	-	-	-	-	-	-
Stage 2	389	421	-	170	205	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	25	45	190	# 27	45	422	520	-	-	874	-	-
Mov Capacity-2 Maneuver	25	45	-	# 27	45	-	-	-	-	-	-	-
Stage 1	169	197	-	399	415	-	-	-	-	-	-	-
Stage 2	325	415	-	143	196	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	112.4	$ 1371.5	0.1	0.3
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	520	-	-	61	43	874	-	-
HCM Control Delay, s	12.026	-	-	112.4	$ 1371.5	9.318	-	-
HCM Lane V/C Ratio	0.01	-	-	0.50	3.62	0.05	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th-tile Q, veh	0.0	-	-	2.0	17.4	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	77	129	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	84	140	0	1	0
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	140	0	-	0	228	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	88	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1443	-	-	-	760	908
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	935	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1443	-	-	-	759	908
Mov Capacity-2 Maneuver	-	-	-	-	759	-
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	934	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.8
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1443	-	-	-	759
HCM Control Delay, s	7.499	0	-	-	9.8
HCM Lane V/C Ratio	0.00	-	-	-	0.00
HCM Lane LOS	A	A	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	19	26	1001	34	20	874
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	40	1065	77	27	920
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	2077	1104	0	0	1142	0
Stage 1	1104	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	59	257	-	-	612	-
Stage 1	317	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	56	257	-	-	612	-
Mov Capacity-2 Maneuver	177	-	-	-	-	-
Stage 1	317	-	-	-	-	-
Stage 2	350	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.4	0	0.3
HCM LOS	C	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	177	257	612	-
HCM Control Delay, s	-	-	28.7	21.6	11.15	-
HCM Lane V/C Ratio	-	-	0.14	0.16	0.04	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th-tile Q, veh	-	-	0.5	0.5	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	12.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	0	2	29	0	91	2	985	92	59	725	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	2	32	0	99	2	1071	100	64	788	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	2042	1993	790	1995	1996	1071	792	0	0	1071	0	0
Stage 1	918	918	-	1075	1075	-	-	-	-	-	-	-
Stage 2	1124	1075	-	920	921	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	42	60	390	45	60	268	829	-	-	651	-	-
Stage 1	326	350	-	266	296	-	-	-	-	-	-	-
Stage 2	249	296	-	325	349	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	24	54	390	41	54	268	829	-	-	651	-	-
Mov Capacity-2 Maneuver	24	54	-	41	54	-	-	-	-	-	-	-
Stage 1	325	316	-	265	295	-	-	-	-	-	-	-
Stage 2	157	295	-	291	315	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	130.1	196.5	0	0.8
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	829	-	-	35	115	651	-	-
HCM Control Delay, s	9.354	-	-	130.1	196.5	11.133	-	-
HCM Lane V/C Ratio	0.00	-	-	0.19	1.13	0.10	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th-tile Q, veh	0.0	-	-	0.6	8.0	0.3	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	119	86	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	129	93	0	0	1
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	93	0	-	0	222	93
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	129	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1501	-	-	-	766	964
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	897	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1501	-	-	-	766	964
Mov Capacity-2 Maneuver	-	-	-	-	766	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	897	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1501	-	-	-	964
HCM Control Delay, s	0	-	-	-	8.7
HCM Lane V/C Ratio	-	-	-	-	0.00
HCM Lane LOS	A	-	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	19	26	1092	34	20	955
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	40	1162	77	27	1005
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow All	2259	1200	0	0	1239	0
Stage 1	1200	-	-	-	-	-
Stage 2	1059	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	45	226	-	-	562	-
Stage 1	285	-	-	-	-	-
Stage 2	333	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	43	226	-	-	562	-
Mov Capacity-2 Maneuver	157	-	-	-	-	-
Stage 1	285	-	-	-	-	-
Stage 2	317	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.4	0	0.3
HCM LOS	D	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	157	226	562	-
HCM Control Delay, s	-	-	32.3	24.3	11.725	-
HCM Lane V/C Ratio	-	-	0.16	0.18	0.05	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th-tile Q, veh	-	-	0.6	0.6	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	43.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	0	2	46	0	102	2	1064	109	70	784	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	2	50	0	111	2	1157	118	76	852	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	2223	2168	854	2169	2170	1157	857	0	0	1157	0	0
Stage 1	1007	1007	-	1161	1161	-	-	-	-	-	-	-
Stage 2	1216	1161	-	1008	1009	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	31	47	358	# 34	47	239	783	-	-	604	-	-
Stage 1	290	319	-	238	270	-	-	-	-	-	-	-
Stage 2	221	270	-	290	318	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	15	41	358	# 30	41	239	783	-	-	604	-	-
Mov Capacity-2 Maneuver	15	41	-	# 30	41	-	-	-	-	-	-	-
Stage 1	289	279	-	237	269	-	-	-	-	-	-	-
Stage 2	118	269	-	252	278	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	226.9	$ 632.6	0	1
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	783	-	-	22	76	604	-	-
HCM Control Delay, s	9.611	-	-	226.9	$ 632.6	11.817	-	-
HCM Lane V/C Ratio	0.00	-	-	0.30	2.12	0.13	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th-tile Q, veh	0.0	-	-	0.9	14.7	0.4	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	147	114	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	160	124	0	0	1
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	124	0	-	0	284	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	160	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1463	-	-	-	706	927
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	869	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1463	-	-	-	706	927
Mov Capacity-2 Maneuver	-	-	-	-	706	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	869	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1463	-	-	-	927
HCM Control Delay, s	0	-	-	-	8.9
HCM Lane V/C Ratio	-	-	-	-	0.00
HCM Lane LOS	A	-	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	18	13	1009	7	15	1776
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	20	1073	16	20	1869
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow All	2990	1081	0	0	1089	0
Stage 1	1081	-	-	-	-	-
Stage 2	1909	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	# 15	265	-	-	641	-
Stage 1	326	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	# 15	265	-	-	641	-
Mov Capacity-2 Maneuver	87	-	-	-	-	-
Stage 1	326	-	-	-	-	-
Stage 2	124	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	42.4	0	0.1
HCM LOS	E	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	87	265	641	-
HCM Control Delay, s	-	-	61.4	19.7	10.797	-
HCM Lane V/C Ratio	-	-	0.28	0.07	0.03	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th-tile Q, veh	-	-	1.0	0.2	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	$ 519.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	4	17	84	3	55	7	953	27	27	1739	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	4	18	91	3	60	8	1036	29	29	1890	3
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	3034	3002	1892	3013	3003	1036	1893	0	0	1036	0	0
Stage 1	1951	1951	-	1051	1051	-	-	-	-	-	-	-
Stage 2	1083	1051	-	1962	1952	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	8	14	87	# 8	14	281	315	-	-	671	-	-
Stage 1	83	110	-	274	304	-	-	-	-	-	-	-
Stage 2	263	304	-	# 82	110	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 5	13	87	# 4	13	281	315	-	-	671	-	-
Mov Capacity-2 Maneuver	# 5	13	-	# 4	13	-	-	-	-	-	-	-
Stage 1	81	105	-	267	296	-	-	-	-	-	-	-
Stage 2	200	296	-	# 59	105	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 998.8	$ 10502.8	0.1	0.2
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	315	-	-	15	7	671	-	-
HCM Control Delay, s	16.711	-	-	$ 10502.8	$ 10502.8	10.61	-	-
HCM Lane V/C Ratio	0.02	-	-	2.03	22.05	0.04	-	-
HCM Lane LOS	C	-	-	F	F	B	-	-
HCM 95th-tile Q, veh	0.1	-	-	4.5	21.2	0.1	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	76	128	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	83	139	0	1	0
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	139	0	-	0	226	139
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	87	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1445	-	-	-	762	909
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	936	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1445	-	-	-	761	909
Mov Capacity-2 Maneuver	-	-	-	-	761	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	935	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.7
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1445	-	-	-	761
HCM Control Delay, s	7.495	0	-	-	9.7
HCM Lane V/C Ratio	0.00	-	-	-	0.00
HCM Lane LOS	A	A	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	19	26	1551	34	20	1354
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	40	1650	77	27	1425
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	3168	1689	0	0	1727	0
Stage 1	1689	-	-	-	-	-
Stage 2	1479	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	# 12	116	-	-	365	-
Stage 1	164	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	# 11	116	-	-	365	-
Mov Capacity-2 Maneuver	86	-	-	-	-	-
Stage 1	164	-	-	-	-	-
Stage 2	194	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	56.2	0	0.3
HCM LOS	F	-	

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	86	116	365	-
HCM Control Delay, s	-	-	63.5	51.6	15.639	-
HCM Lane V/C Ratio	-	-	0.29	0.35	0.07	-
HCM Lane LOS	-	-	F	F	C	-
HCM 95th-tile Q, veh	-	-	1.1	1.4	0.2	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	194.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	0	2	46	0	102	2	1526	92	59	1123	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	2	50	0	111	2	1659	100	64	1221	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	3069	3014	1223	3015	3016	1659	1225	0	0	1659	0	0
Stage 1	1351	1351	-	1663	1663	-	-	-	-	-	-	-
Stage 2	1718	1663	-	1352	1353	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	7	13	219	# 8	13	121	569	-	-	388	-	-
Stage 1	185	219	-	123	154	-	-	-	-	-	-	-
Stage 2	114	154	-	185	218	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 1	11	219	# 7	11	121	569	-	-	388	-	-
Mov Capacity-2 Maneuver	# 1	11	-	# 7	11	-	-	-	-	-	-	-
Stage 1	184	183	-	123	153	-	-	-	-	-	-	-
Stage 2	10	153	-	153	182	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 8327.2	$ 3548.3	0	0.8
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	569	-	-	1	20	388	-	-
HCM Control Delay, s	11.351	-	-	$ 3548.3	$ 3548.3	16.107	-	-
HCM Lane V/C Ratio	0.00	-	-	6.52	8.04	0.17	-	-
HCM Lane LOS	B	-	-	F	F	C	-	-
HCM 95th-tile Q, veh	0.0	-	-	1.9	20.5	0.6	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	147	114	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	160	124	0	0	1
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	124	0	-	0	284	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	160	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1463	-	-	-	706	927
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	869	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1463	-	-	-	706	927
Mov Capacity-2 Maneuver	-	-	-	-	706	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	869	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1463	-	-	-	927
HCM Control Delay, s	0	-	-	-	8.9
HCM Lane V/C Ratio	-	-	-	-	0.00
HCM Lane LOS	A	-	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	26	22	1009	10	18	1776
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	34	1073	23	24	1869
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1		Major 2	
Conflicting Flow All	3002	1085	0	0	1096	0
Stage 1	1085	-	-	-	-	-
Stage 2	1917	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	# 15	263	-	-	637	-
Stage 1	324	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	# 14	263	-	-	637	-
Mov Capacity-2 Maneuver	85	-	-	-	-	-
Stage 1	324	-	-	-	-	-
Stage 2	121	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	47.6	0	0.1
HCM LOS	E	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	85	263	637	-
HCM Control Delay, s	-	-	73.9	20.7	10.873	-
HCM Lane V/C Ratio	-	-	0.41	0.13	0.04	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th-tile Q, veh	-	-	1.6	0.4	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	$ 524.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	4	17	84	3	56	7	956	27	37	1752	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	4	18	91	3	61	8	1039	29	40	1904	3
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	3072	3040	1906	3052	3042	1039	1908	0	0	1039	0	0
Stage 1	1986	1986	-	1054	1054	-	-	-	-	-	-	-
Stage 2	1086	1054	-	1998	1988	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	#7	13	86	#8	13	280	311	-	-	669	-	-
Stage 1	79	106	-	273	303	-	-	-	-	-	-	-
Stage 2	262	303	-	#78	106	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	#4	12	86	#4	12	280	311	-	-	669	-	-
Mov Capacity-2 Maneuver	#4	12	-	#4	12	-	-	-	-	-	-	-
Stage 1	77	100	-	266	295	-	-	-	-	-	-	-
Stage 2	198	295	-	#55	100	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 1330.3	$ 10572.7	0.1	0.2
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	311	-	-	12	7	669	-	-
HCM Control Delay, s	16.866	-	-	$ 10572.7	$ 10572.7	10.725	-	-
HCM Lane V/C Ratio	0.02	-	-	2.54	22.21	0.06	-	-
HCM Lane LOS	C	-	-	F	F	B	-	-
HCM 95th-tile Q, veh	0.1	-	-	4.7	21.3	0.2	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	77	129	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	84	140	0	1	0
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	140	0	-	0	228	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	88	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1443	-	-	-	760	908
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	935	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1443	-	-	-	759	908
Mov Capacity-2 Maneuver	-	-	-	-	759	-
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	934	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.8
HCM LOS	-	-	A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1443	-	-	-	759
HCM Control Delay, s	7.499	0	-	-	9.8
HCM Lane V/C Ratio	0.00	-	-	-	0.00
HCM Lane LOS	A	A	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	19	26	1551	34	20	1354
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	100		0	200	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.75	0.65	0.94	0.44	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	40	1650	77	27	1425
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow All	3168	1689	0	0	1727	0
Stage 1	1689	-	-	-	-	-
Stage 2	1479	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	# 12	116	-	-	365	-
Stage 1	164	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	# 11	116	-	-	365	-
Mov Capacity-2 Maneuver	86	-	-	-	-	-
Stage 1	164	-	-	-	-	-
Stage 2	194	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	56.2	0	0.3
HCM LOS	F	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Cap, veh/h	-	-	86	116	365	-
HCM Control Delay, s	-	-	63.5	51.6	15.639	-
HCM Lane V/C Ratio	-	-	0.29	0.35	0.07	-
HCM Lane LOS	-	-	F	F	C	-
HCM 95th-tile Q, veh	-	-	1.1	1.4	0.2	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	194.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	0	2	46	0	102	2	1526	92	59	1123	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None	Free	Free	Free	None	None	None
Storage Length	0		0	0		0	700		0	500		0
Median Width		0			0			12			12	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	2	50	0	111	2	1659	100	64	1221	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow All	3069	3014	1223	3015	3016	1659	1225	0	0	1659	0	0
Stage 1	1351	1351	-	1663	1663	-	-	-	-	-	-	-
Stage 2	1718	1663	-	1352	1353	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	7	13	219	# 8	13	121	569	-	-	388	-	-
Stage 1	185	219	-	123	154	-	-	-	-	-	-	-
Stage 2	114	154	-	185	218	-	-	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	# 1	11	219	# 7	11	121	569	-	-	388	-	-
Mov Capacity-2 Maneuver	# 1	11	-	# 7	11	-	-	-	-	-	-	-
Stage 1	184	183	-	123	153	-	-	-	-	-	-	-
Stage 2	10	153	-	153	182	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 8327.2	$ 3548.3	0	0.8
HCM LOS	F	F	-	-

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Cap, veh/h	569	-	-	1	20	388	-	-
HCM Control Delay, s	11.351	-	-	$ 3548.3	$ 3548.3	16.107	-	-
HCM Lane V/C Ratio	0.00	-	-	6.52	8.04	0.17	-	-
HCM Lane LOS	B	-	-	F	F	C	-	-
HCM 95th-tile Q, veh	0.0	-	-	1.9	20.5	0.6	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	147	114	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade, %		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	160	124	0	0	1
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow All	124	0	-	0	284	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	160	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1463	-	-	-	706	927
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	869	-
Time blocked-Platoon, %	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1463	-	-	-	706	927
Mov Capacity-2 Maneuver	-	-	-	-	706	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	869	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS	-	-	A

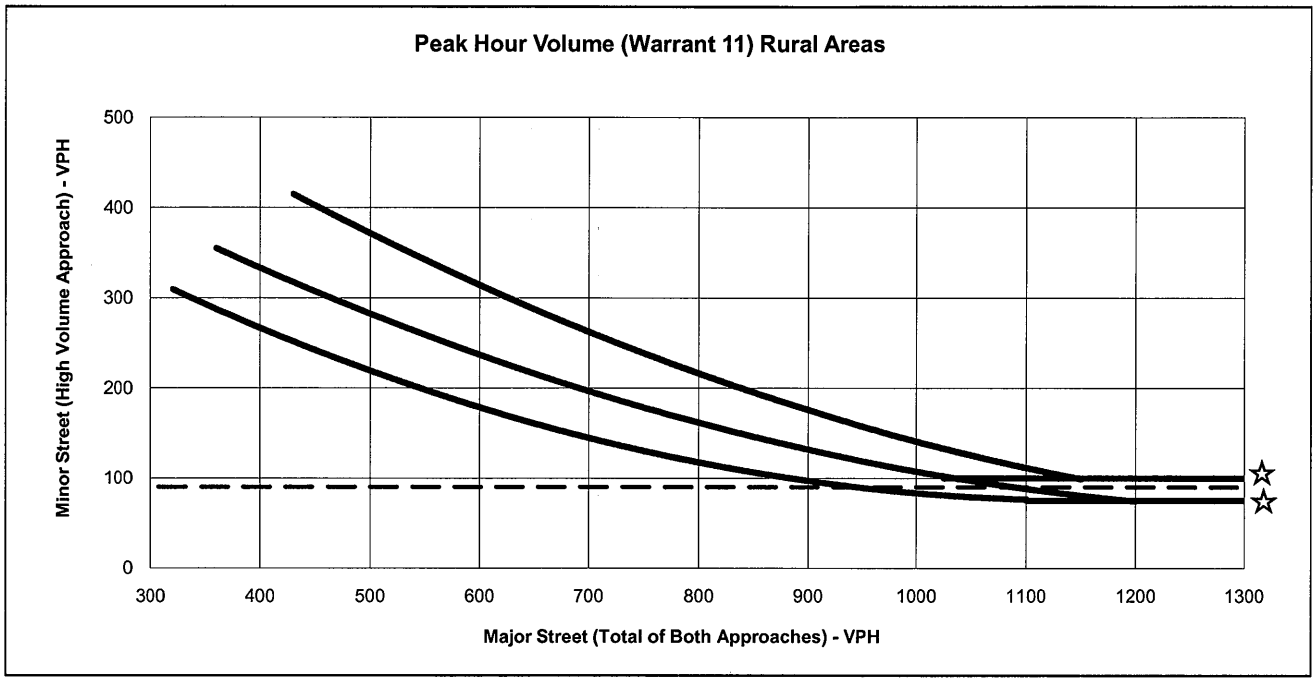
Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Cap, veh/h	1463	-	-	-	927
HCM Control Delay, s	0	-	-	-	8.9
HCM Lane V/C Ratio	-	-	-	-	0.00
HCM Lane LOS	A	-	-	-	A
HCM 95th-tile Q, veh	0.0	-	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

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
370	280				
400	270	460	297	430	410
500	215	500	290	500	380
600	185	600	230	600	310
700	140	700	198	700	265
800	115	800	170	800	210
900	99	900	125	900	180
1000	85	1000	105	1000	140
1100	75	1100	90	1100	110
1200	75	1200	75	1150	100
1300	75	1300	75	1300	100

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

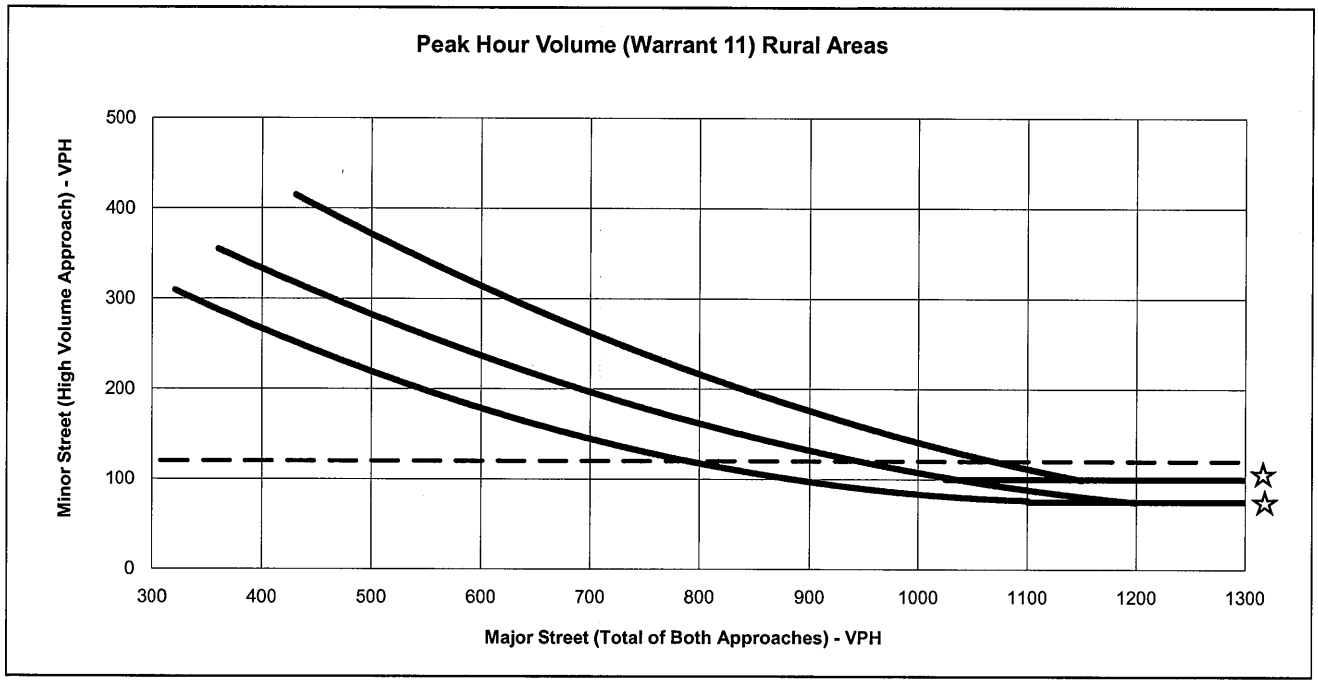


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	Oakville Cross Road / SR-29
Scenario:	Existing PM Peak Hour Weekday Conditions
Minor St. Volume:	90
Major St. Volume:	1801
Warrant Met?:	**YES**

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
370	280				
400	270	460	297	430	410
500	215	500	290	500	380
600	185	600	230	600	310
700	140	700	198	700	265
800	115	800	170	800	210
900	99	900	125	900	180
1000	85	1000	105	1000	140
1100	75	1100	90	1100	110
1200	75	1200	75	1150	100
1300	75	1300	75	1300	100

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

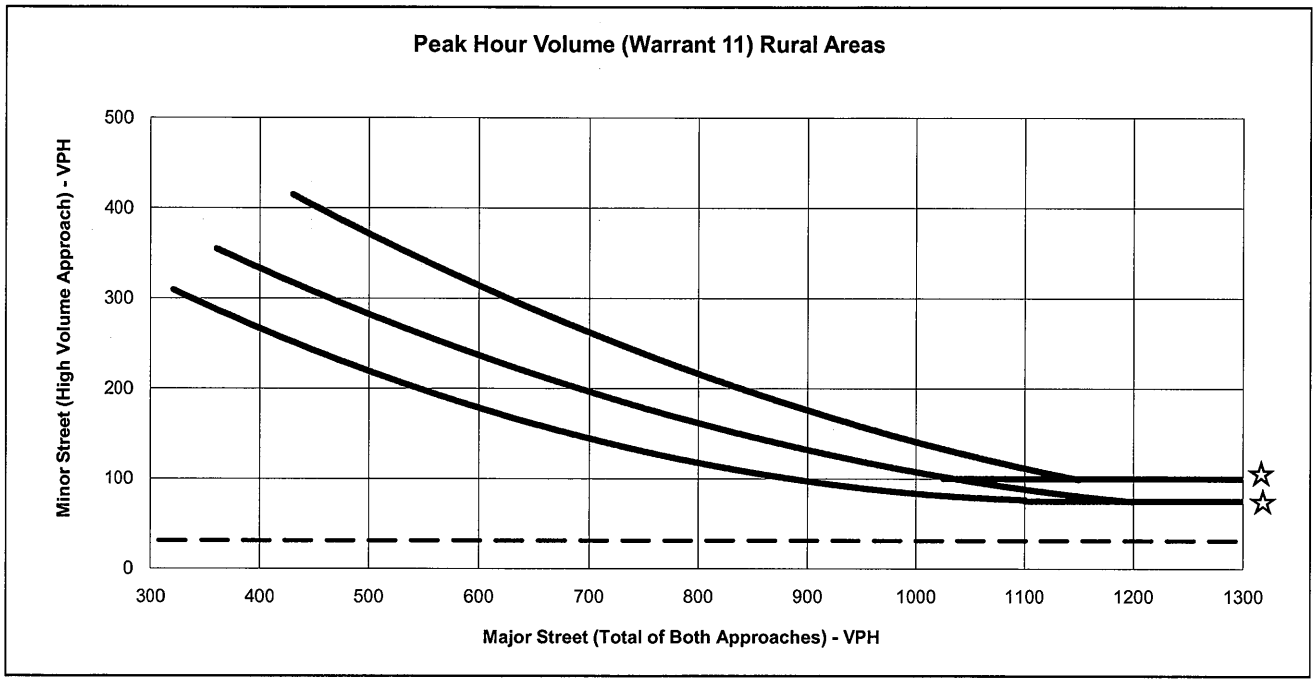


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	Oakville Cross Road / SR-29
Scenario:	Existing Mid-Day Peak Hour Weekend Conditions
Minor St. Volume:	120
Major St. Volume:	1867
Warrant Met?:	**YES**

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
370	280				
400	270	460	297	430	410
500	215	500	290	500	380
600	185	600	230	600	310
700	140	700	198	700	265
800	115	800	170	800	210
900	99	900	125	900	180
1000	85	1000	105	1000	140
1100	75	1100	90	1100	110
1200	75	1200	75	1150	100
1300	75	1300	75	1300	100

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

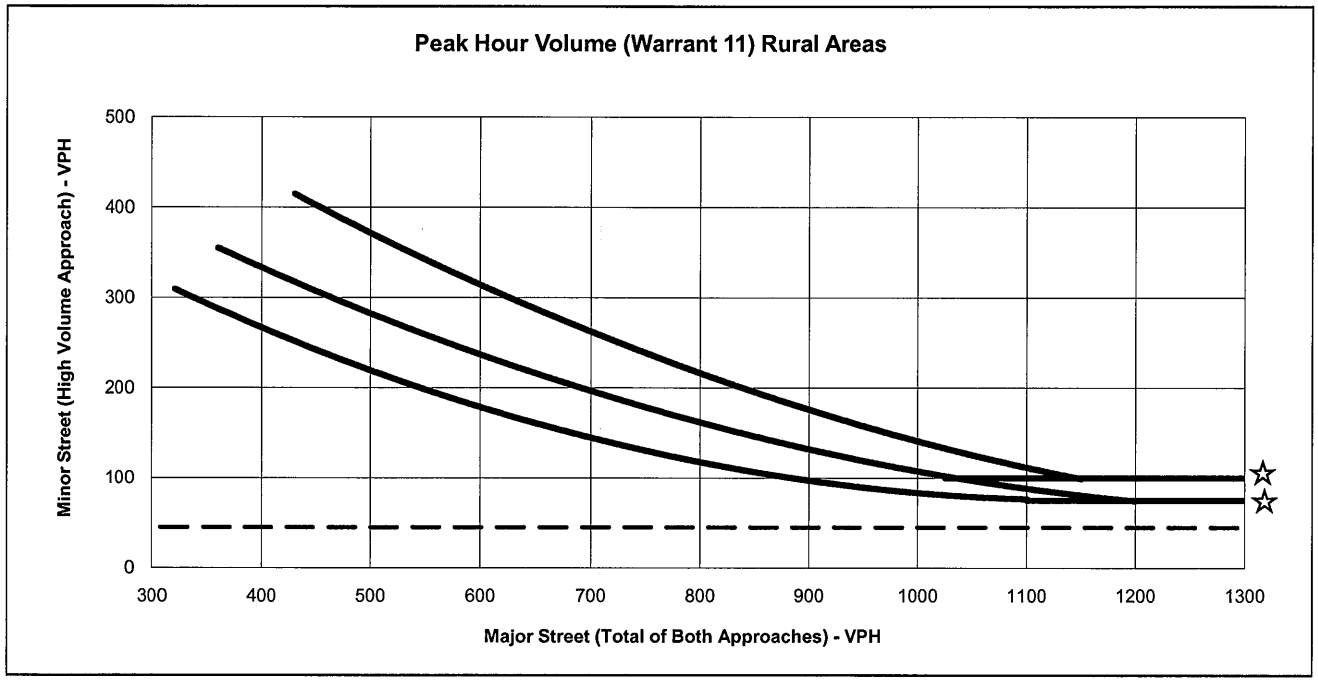


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	Opus One / SR-29
Scenario:	Existing PM Peak Hour Weekday Conditions
Minor St. Volume:	31
Major St. Volume:	1832
Warrant Met?:	**NO**

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
370	280				
400	270	460	297	430	410
500	215	500	290	500	380
600	185	600	230	600	310
700	140	700	198	700	265
800	115	800	170	800	210
900	99	900	125	900	180
1000	85	1000	105	1000	140
1100	75	1100	90	1100	110
1200	75	1200	75	1150	100
1300	75	1300	75	1300	100

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

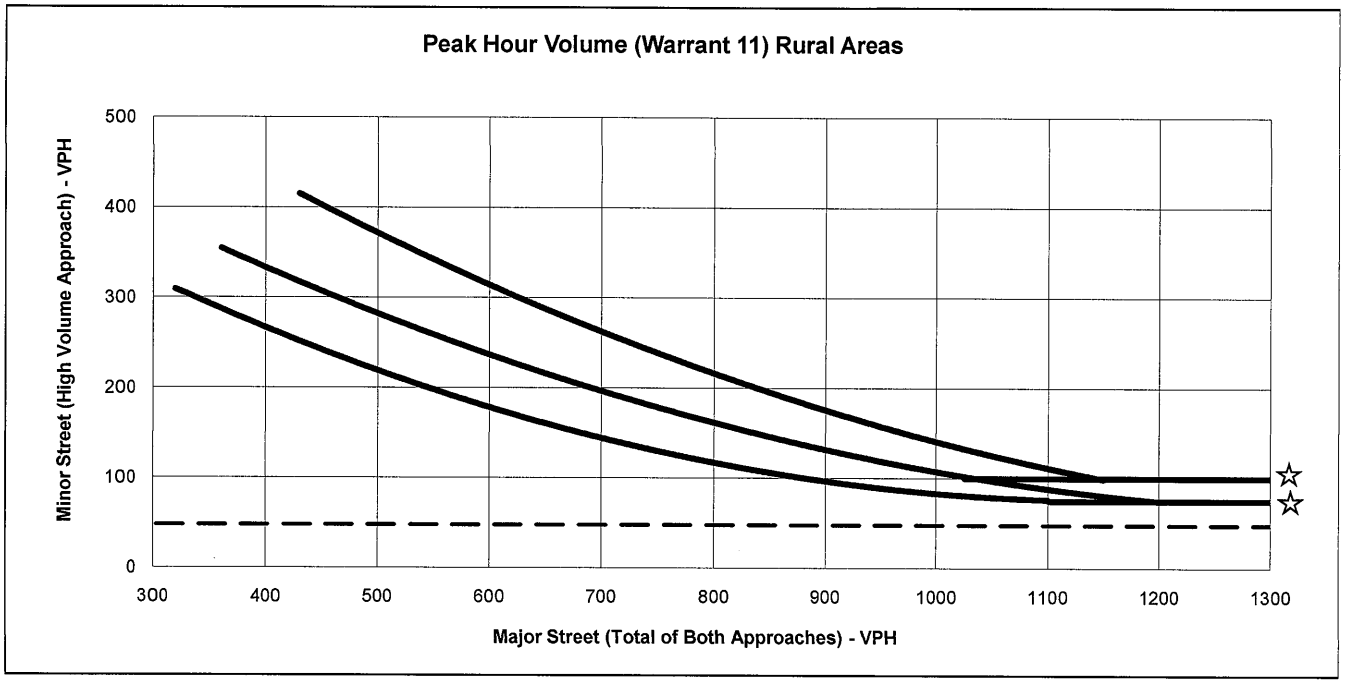


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	Opus One / SR-29
Scenario:	Existing Mid-Day Peak Hour Weekend Conditions
Minor St. Volume:	45
Major St. Volume:	1929
Warrant Met?:	**NO**

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
370	280				
400	270	460	297	430	410
500	215	500	290	500	380
600	185	600	230	600	310
700	140	700	198	700	265
800	115	800	170	800	210
900	99	900	125	900	180
1000	85	1000	105	1000	140
1100	75	1100	90	1100	110
1200	75	1200	75	1150	100
1300	75	1300	75	1300	100

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

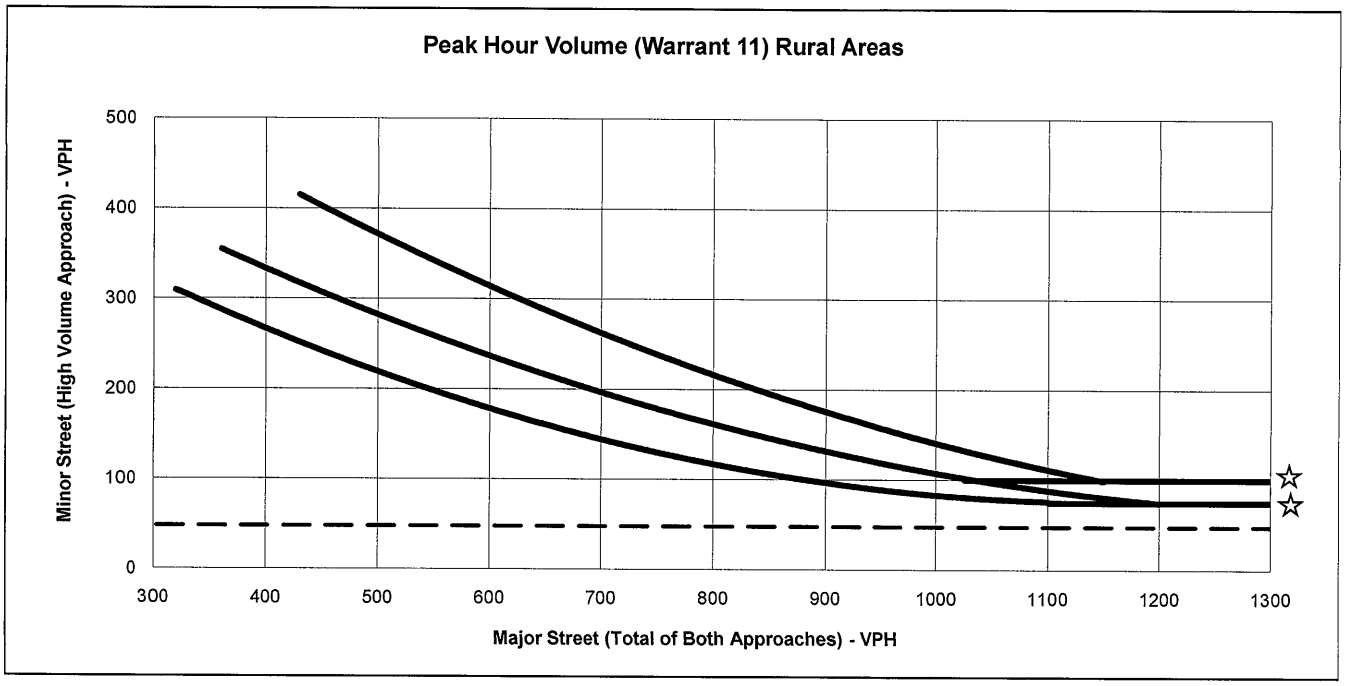


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	Opus One / SR-29
Scenario:	Existing + Project PM Peak Hour Weekday Conditions
Minor St. Volume:	48
Major St. Volume:	1825
Warrant Met?:	**NO**

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
370	280				
400	270	460	297	430	410
500	215	500	290	500	380
600	185	600	230	600	310
700	140	700	198	700	265
800	115	800	170	800	210
900	99	900	125	900	180
1000	85	1000	105	1000	140
1100	75	1100	90	1100	110
1200	75	1200	75	1150	100
1300	75	1300	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.

Intersection: Opus One / SR-29
Scenario: Near Term + Project PM Peak Hour Weekday Conditions
Minor St. Volume: 48
Major St. Volume: 2003
Warrant Met?: **NO**

RADAR SPEED SURVEY

OMNI-MEANS LTD.

Oakville Cross Road approaching Opus One

DATE: 12/18/14 TIME START: 12:15pm TIME END: 1:35pm WEATHER: Dry ROAD TYPE: 2 lanes

DIRECTION: Both SPEED LIMIT: Not Posted OBSERVER: o-m CALIBRATION TEST: Yes

SPEED	FREQUENCY	ACUM %	PERCENTAGE BREAKDOWN
34	1	1.0	*
35	1	2.0	**
36	0	2.0	**
37	1	3.0	***
38	2	5.0	****5
39	2	7.0	****5**
40	7	14.0	****5****1****
41	7	21.0	****5****1****5****2*
42	6	27.0	****5****1****5****2****5**
43	8	35.0	****5****1****5****2****5****3****5
44	9	44.0	****5****1****5****2****5****3****5****4****
45	12	56.0	****5****1****5****2****5****3****5****4****5****5****5*
46	10	66.0	****5****1****5****2****5****3****5****4****5****5****5****6****5*
47	8	74.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****
48	7	81.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8*
49	6	87.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5**
50	4	91.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9*
51	4	95.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5
52	1	96.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5*
53	1	97.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5**
54	0	97.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5**
55	1	98.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
56	1	99.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5****
57	1	100.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5****0

100

AVERAGE SPEED = 45
50th PERCENTILE = 44.5
85th PERCENTILE = 48.6
90th PERCENTILE = 49.7
95th PERCENTILE = 51

PACE = 40 - 49
% IN PACE = 80
VEHICLES IN PACE = 80

SAMPLE VARIANCE = 17.7773
STANDARD DEVIATION = 4.216314
RANGE 1*S = 73
RANGE 2*S = 95
RANGE 3*S = 100

RADAR SPEED SURVEY

OMNI—MEANS LTD.

State Route 29 approaching Opus One

DATE: 12/18/14 TIME START: 1:45pm TIME END: 2:45pm WEATHER: Dry ROAD TYPE: 2 lanes

DIRECTION: Both SPEED LIMIT: 50 mph OBSERVER: o-m CALIBRATION TEST: Yes

SPEED	FREQUENCY	ACUM %	PERCENTAGE BREAKDOWN
42	1	0.5	*
43	4	2.5	**
44	3	4.0	****
45	7	7.5	****5**
46	8	11.5	****5****1*
47	16	19.5	****5****1****5****
48	22	30.5	****5****1****5****2****5****3
49	21	41.0	****5****1****5****2****5****3****5****4*
50	26	54.0	****5****1****5****2****5****3****5****4****5****5****
51	20	64.0	****5****1****5****2****5****3****5****4****5****5****5****
52	18	73.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7***
53	17	81.5	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8*
54	13	88.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5***
55	7	91.5	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9*
56	11	97.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5**
57	4	99.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5****
58	0	99.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5****
59	2	100.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5****0

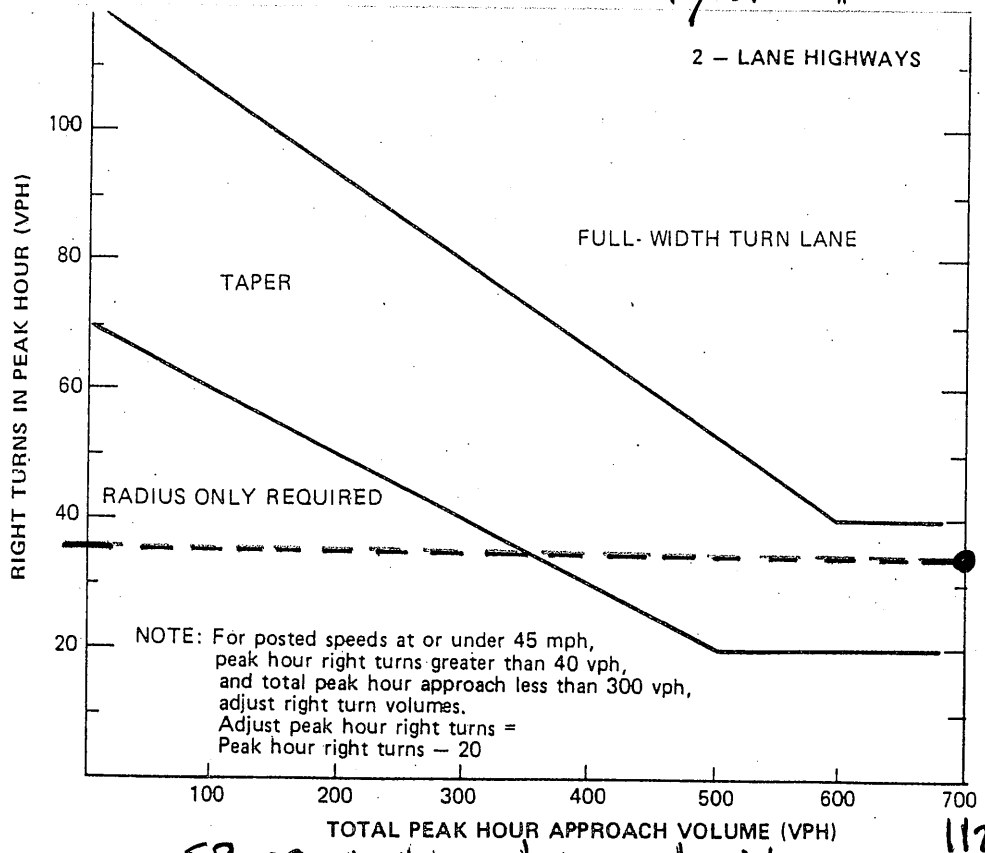
200

AVERAGE SPEED = 50.3
50th PERCENTILE = 49.6
85th PERCENTILE = 53.5
90th PERCENTILE = 54.5
95th PERCENTILE = 55.6

PACE = 47 - 56
% IN PACE = 85.5
VEHICLES IN PACE = 171

SAMPLE VARIANCE = 11.45776
STANDARD DEVIATION = 3.384931
RANGE 1*S = 70
RANGE 2*S = 96.5
RANGE 3*S = 100

OPUS ONE DRIVEWAY / SR-29



Opus One Driveway 34

1126

SR-29 Northbound Approach Volume

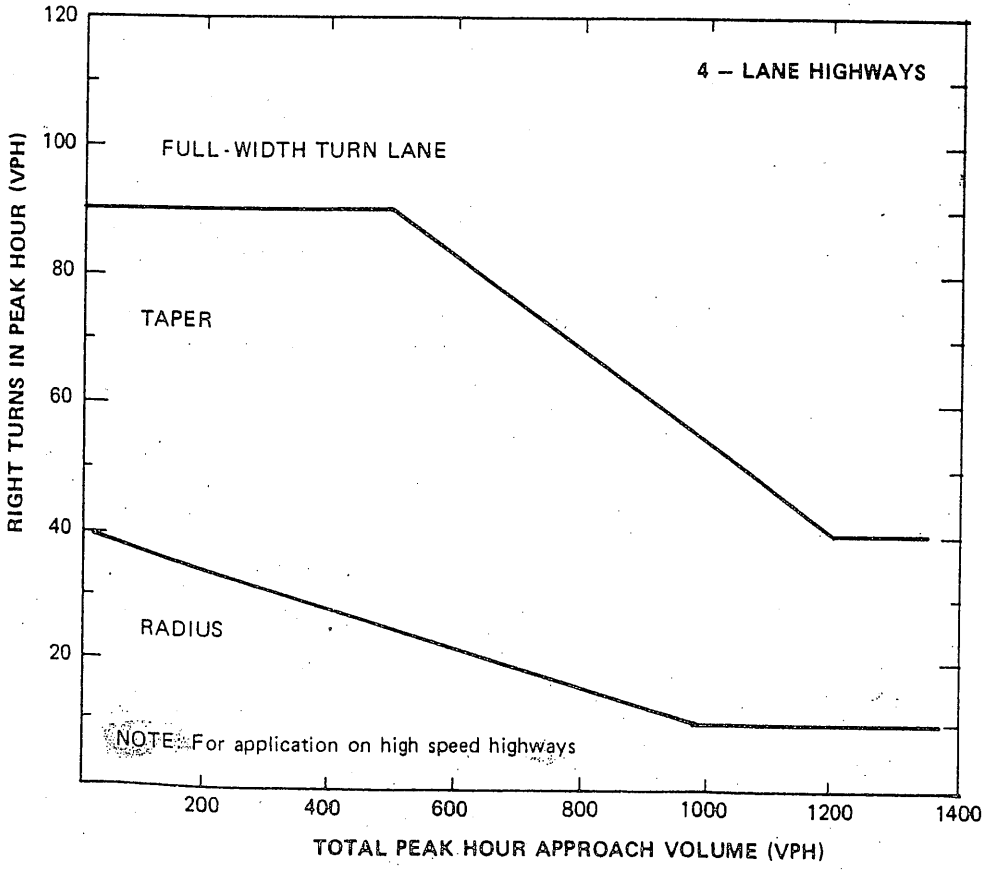


Figure 4-23. Traffic volume guidelines for design of right-turn lanes. (Source: Ref. *4-11*)

Opus One Employee Attendance

First Name	Last Name	10/23/2014	10/24/2014	10/25/2014
Susan	Mitchell	1	1	-
Kelli	Cybulski	1	1	-
Michael	Silacci	1	1	-
Nathalie	Buckland	1	1	-
Aimee	Baker	1	1	-
Alberto	Aguayo	1	1	-
Juan Pablo	Hernandez	1	1	-
Alejandro	Martinez	1	1	-
Fernando	Ochoa	1	1	-
Athanasios	Georgilas	1	1	-
Miguel	Medina	1	1	-
Steve	Jessup	1	1	-
Quinn	Zirkle	1	1	-
Sui Wah	Mak	1	1	-
Camerina	Garibay Vazquez	-	1	1
Carlos	Vargas	1	1	-
Reginald	Morant	1	1	-
Charles	Hughes	1	1	-
Gary	Caravantes	1	1	-
Kelly	Lanford	1	1	-
Kaitlin	O'Brien	1	1	-
Sabino	Ramos	1	1	-
Anna	Mantheakis	1	1	-
Saul	Solorio	1	1	-
Jorge	Mendoza	1	1	-
Santos	Trejo Lozano	1	1	-
Humberto	Torres	1	1	-
Efren	Muniz	1	1	-
Eloy	Paniagua-Zamudio	1	1	-
Inocencio	Casas	1	1	-
Abel	Cejudo	1	1	-
Ignacio	Cendejas	1	1	-
Amador	Alvarez	1	1	-
Ismael	Apolinar	1	1	-
Hector	Gutierrez-Canchola	1	1	-
Maximiano	Hernandez	1	1	-
Alfredo	Llamas	1	1	-
Eulalio	Manzo	1	1	-
Jesus	Martinez	1	-	-
Miguel	Martinez	1	1	-
Juan	Martinez	1	1	-
Randolph	Zavala	1	1	-
Jose	Hernandez	1	1	-
Christian	Pascale	1	-	-
Cheryl	Troupe	1	1	-
Tracy	Ware	1	1	-
Marie	Wood	1	1	-
Dana	Garaventa	1	1	-
Christopher	Dillon	1	1	-
Robert	Fowles	1	1	-
Cheryl	Zammataro	1	1	-
Monica	Nagy	1	1	-
David	Pearson	1	1	-
Caleb	Pena	1	1	-
Michael	Morrison	1	1	-
Robert	Roux	1	1	-
Kelly	Hyatt	1	1	-
Jane	Posener	-	-	-
Gina	Voci	-	-	-
Karen	D'Amour	-	-	-
Steve	Palumbo	-	-	-
Yasuko	Cadby	-	-	-
Caleb	Dial	1	1	-
Susan	French	-	-	-
Mark	Chon	1	-	-
Henry	Kaspar	1	1	1
Vicki	Lacroix-Kaspar	-	1	-
Tonia	McCutchan	1	1	1
Nancy	Morrell	-	-	-
Estelle	Pernot Lane	-	-	-
Adrian	Rincon	-	1	1
Sandy	Zuckerman	-	1	1
Kevin	Deschamps	-	-	1
Stephanie	Bohanna	-	-	1
Rosa	Cuevas	1	1	-
Nancy	Hawks Miller	1	-	-
Kara	Decaires	-	-	-
Fumiko	Seguchi	1	-	-
Clyde	Hall	1	1	1
Morgan	Tageson	-	1	-
Diana	Ochoa	-	-	-
Yuki	Moore	-	-	-
Frances	Merkley	1	1	1
Kelly	Dressler	1	1	-
Kaede	Hilbert	-	1	1
Cole	Cattelan	-	-	1
Naomi	Lam	-	1	1
Nicole	Jensen	-	-	1
Christopher	Barefoot	1	1	-
James	Nicolette	1	-	-
Sylvie	Montuis	-	1	1
Keith	Baumetz	1	-	-
Juli	Barron	1	1	-
Totals Employee Vehicles		**70**	**71**	**14**
Assume 2.25 entrances/exits per employee per day		2.25	2.25	2.25
= Total traffic generated by employees		158	160	32

9-23-15 EXISTING OPUS ONE

Winery Traffic Information / Trip Generation Sheet

Traffic during a Typical Weekday

Number of FT employees: 53 x 3.05 one-way trips per employee = 162 daily trips.

Number of PT employees: 12 x 1.90 one-way trips per employee = 23 daily trips.

Average number of weekday visitors: 165 / 2.6 visitors per vehicle x 2 one-way trips = 127 daily trips.

Gallons of production: 170,590 / 1,000 x .009 truck trips daily[3] x 2 one-way trips = 3 daily trips.

Total = 315 **daily trips.**

Number of total weekday trips x .38 = 120 (30, 90) **PM peak trips.**

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 20 x 3.05 one-way trips per employee = 61 daily trips.

Number of PT employees (on Saturdays): 5 x 1.90 one-way trips per employee = 10 daily trips.

Average number of weekend visitors: 500 / 2.8 visitors per vehicle x 2 one-way trips = 357 daily trips.

Total = 428 **daily trips.**

Number of total Saturday trips x .57 = 107 (54, 53) **PM peak trips.**

Traffic during a Crush Saturday

Number of FT employees (during crush): _____ x 3.05 one-way trips per employee = _____ daily trips.

Number of PT employees (during crush): _____ x 1.90 one-way trips per employee = _____ daily trips.

Average number of weekend visitors: _____ / 2.8 visitors per vehicle x 2 one-way trips = _____ daily trips.

Gallons of production: _____ / 1,000 x .009 truck trips daily x 2 one-way trips = _____ daily trips.

Avg. annual tons of grape on-haul: _____ x .11 truck trips daily [4] x 2 one-way trips = _____ daily trips.

Total = _____ **daily trips.**

Number of total Saturday trips x .57 = _____ **PM peak trips.**

Largest Marketing Event- Additional Traffic

Number of event staff (largest event): _____ x 2 one-way trips per staff person = _____ trips.

Number of visitors (largest event): _____ / 2.8 visitors per vehicle x 2 one-way trips = _____ trips.

Number of special event truck trips (largest event): _____ x 2 one-way trips = _____ trips.

[3] Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).

[4] Assumes 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).

2-12-16 PROPOSED OPUS ONE

Winery Traffic Information / Trip Generation Sheet

Traffic during a Typical Weekday

Number of FT employees: 65 x 3.05 one-way trips per employee = 198 daily trips.

Number of PT employees: 10 x 1.90 one-way trips per employee = 19 daily trips.

Average number of weekday visitors: 200 / 2.6 visitors per vehicle x 2 one-way trips = 154 daily trips.

Gallons of production: 250,000 / 1,000 x .009 truck trips daily[3] x 2 one-way trips = 5 daily trips.

Total = 376 **daily trips.**

Number of total weekday trips x .38 = 143 (36,107) **PM peak trips.**

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 20 x 3.05 one-way trips per employee = 61 daily trips.

Number of PT employees (on Saturdays): 5 x 1.90 one-way trips per employee = 10 daily trips.

Average number of weekend visitors: 500 / 2.8 visitors per vehicle x 2 one-way trips = 357 daily trips.

Total = 428 **daily trips.**

Number of total Saturday trips x ~~.57~~ .25 = 107 (54,53) **PM peak trips.**

Traffic during a Crush Saturday

Number of FT employees (during crush): 20 x 3.05 one-way trips per employee = 61 daily trips.

Number of PT employees (during crush): 10 x 1.90 one-way trips per employee = 19 daily trips.

Average number of weekend visitors: 500 / 2.8 visitors per vehicle x 2 one-way trips = 357 daily trips.

Gallons of production: 250,000 / 1,000 x .009 truck trips daily x 2 one-way trips = 5 daily trips.

Avg. annual tons of grape on-haul: 1,172 x .11 truck trips daily [4] x 2 one-way trips = 16 daily trips.

Total = 458 **daily trips.**

Number of total Saturday trips x ~~.57~~ .25 = 115 (57,58) **PM peak trips.**

Largest Marketing Event- Additional Traffic

Number of event staff (largest event): 25 x 2 one-way trips per staff person = 50 trips.

Number of visitors (largest event): 300 / 2.8 visitors per vehicle x 2 one-way trips = 214 trips.

Number of special event truck trips (largest event): 4 x 2 one-way trips = 8 trips.

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[3] Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).

[4] Assumes 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).

B A Y M E T R I C S

OPUS ONE WINERY ADT

Date	*23-Oct-14*	*Thurday*			*24-Oct-14*	*Friday*			*25-Oct-14*	*Saturday*			*23-Oct-14*	*Thurday*			*24-Oct-14*	*Friday*			*25-Oct-14*	*Saturday*		
Location	**1. ON OPUS ONE DRIVEWAY, EAST OF SR-29**												**2. ON OPUSONE DRIVEWAY, NORTH OF OAKVILLE CROSS ROAD**											
Direction	*EB*		*WB*		*EB*		*WB*		*EB*		*WB*		*NB*		*SB*		*NB*		*SB*		*NB*		*SB*	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0
215	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0
230	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
245	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0
300	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0
315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
445	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
515	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	1	1	1	1	2	2	0	1
530	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	3	2	3	2	3	0	2	0	1
545	0	0	0	0	0	0	0	0	0	0	0	0	1	4	2	5	2	5	2	5	0	2	0	1
600	0	0	0	0	0	0	0	0	0	0	0	0	1	5	1	6	0	5	1	6	2	4	0	0
615	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	4	0	5	0	2	1	1
630	0	0	0	0	0	0	0	0	0	0	0	0	2	4	2	5	1	3	3	6	0	2	0	1
645	0	0	0	0	0	0	0	0	0	0	0	0	1	4	2	5	2	3	1	5	0	2	0	1
700	0	0	0	0	0	0	0	0	0	0	0	0	2	5	2	6	1	4	3	7	0	0	0	1
715	0	0	0	0	0	0	0	0	0	0	0	0	2	7	1	7	2	6	0	7	0	0	0	0
730	0	0	0	0	0	0	1	1	0	0	0	0	1	6	1	6	3	8	1	5	0	0	0	0
745	1	1	0	0	1	1	0	1	0	0	0	0	3	8	0	4	2	8	0	4	0	0	0	0
800	1	2	1	1	0	1	0	1	0	0	0	0	2	8	4	6	4	11	6	7	2	2	4	4
815	1	3	2	3	2	3	3	4	0	0	0	0	4	10	3	8	3	12	2	9	1	3	0	4
830	2	5	1	4	2	5	2	5	0	0	1	1	4	13	3	10	3	12	4	12	0	3	1	5
845	2	6	1	5	2	6	0	5	1	1	0	1	2	12	0	10	4	14	1	13	1	4	0	5
900	1	6	0	4	2	8	1	6	1	2	0	1	3	13	2	8	2	12	0	7	2	4	0	1
915	2	7	1	3	1	7	0	3	0	2	0	1	0	9	0	5	0	9	1	6	0	3	0	1
930	2	7	1	3	1	6	2	3	0	2	0	0	1	6	1	3	0	6	1	3	0	3	0	0
945	2	7	1	3	3	7	1	4	0	1	0	0	1	5	0	3	2	4	0	2	0	2	0	0
1000	1	7	0	3	0	5	1	4	6	6	0	0	0	2	1	2	0	2	2	4	0	0	0	0
1015	3	8	2	4	4	8	0	4	3	9	0	0	3	5	2	4	3	5	1	4	1	1	0	0
1030	3	9	1	4	5	12	3	5	4	13	3	3	2	6	2	5	2	7	3	6	1	2	1	1
1045	5	12	2	5	3	12	2	6	6	19	1	4	0	5	0	5	1	6	1	7	0	2	1	2
1100	9	20	3	8	5	17	2	7	6	19	12	16	2	7	2	6	1	7	4	9	0	2	1	3
1115	11	28	2	8	20	33	5	12	7	23	0	16	1	5	1	5	2	6	0	8	0	1	1	4
1130	10	35	5	12	8	36	1	10	4	23	2	15	1	4	0	3	0	4	0	5	1	1	3	6
1145	4	34	7	17	9	42	10	18	13	30	5	19	0	4	2	5	0	3	1	5	0	1	1	6
1200	7	32	9	23	2	39	12	28	14	38	7	14	0	2	1	4	0	2	2	3	1	2	2	7
1215	6	27	9	30	5	24	8	31	12	43	8	22	0	1	2	5	1	1	2	5	0	2	1	7
1230	8	25	7	32	9	25	9	39	3	42	11	31	2	2	2	7	1	2	2	7	0	1	0	4
1245	8	29	8	33	7	23	14	43	10	39	11	37	2	4	3	8	2	4	0	6	0	1	1	4
1300	6	28	9	33	7	28	9	40	14	39	11	41	2	6	2	9	1	5	5	9	0	0	0	2
1315	7	29	8	32	6	29	3	35	12	39	11	44	1	7	1	8	2	6	2	9	2	2	2	3
1330	5	26	6	31	11	31	4	30	11	47	12	45	2	7	3	9	3	8	4	11	0	2	1	4
1345	7	25	4	27	9	33	5	21	5	42	5	39	3	8	3	9	2	8	2	13	0	2	0	3
1400	10	29	5	23	9	35	5	17	17	45	9	37	0	6	1	8	0	7	2	10	0	2	0	3
1415	8	30	7	22	6	35	9	23	11	44	9	35	0	5	2	9	0	5	2	10	1	1	3	4
1430	5	30	9	25	7	31	11	30	14	47	8	31	0	3	0	6	0	2	0	6	0	1	1	4
1445	7	30	8	29	6	28	6	31	15	57	15	41	0	0	2	5	0	0	3	7	1	2	4	8
1500	3	23	6	30	7	26	6	32	13	53	13	45	0	0	3	7	0	0	4	9	0	2	1	9
1515	2	17	9	32	5	25	8	31	16	58	8	44	0	0	1	6	1	1	3	10	0	1	1	7
1530	2	14	10	33	13	31	5	25	14	58	10	46	3	3	3	9	1	2	4	14	1	2	1	7
1545	6	13	8	33	5	30	12	31	6	49	15	46	1	4	2	9	0	2	3	14	0	1	0	3
1600	10	20	7	34	6	29	6	31	5	41	12	45	0	4	1	7	0	2	1	11	1	2	3	5
1615	7	25	8	33	4	28	9	32	8	33	14	51	0	4	0	6	0	1	0	8	0	2	0	4
1630	1	24	5	28	1	16	11	38	2	21	7	48	2	3	1	4	1	1	1	5	0	1	1	4
1645	2	20	4	24	1	12	1	27	2	17	4	37	0	2	0	2	1	2	5	7	0	1	0	4
1700	0	10	2	19	3	9	2	23	2	14	3	28	0	2	0	1	3	5	2	8	0	0	0	1
1715	2	5	2	13	1	6	4	18	0	6	1	15	0	2	5	6	0	5	1	9	0	0	0	1
1730	3	7	17	25	1	6	0	7	3	7	9	17	1	1	5	10	0	4	0	8	0	0	1	1
1745	0	5	3	24	0	5	0	6	0	5	1	14	0	1	0	10	0	3	1	4	0	0	0	1
1800	0	5	2	24	2	4	0	4	0	3	2	13	1	2	1	11	0	0	1	3	1	1	0	1
1815	0	3	2	24	0	3	0	0	1	4	0	12	0	2	0	6	0	0	4	6	0	1	0	1
1830	0	0	0	7	0	2	0	0	0	1	0	3	1	2	0	1	0	0	2	8	0	1	0	0
1845	0	0	0	4	1	3	6	6	1	2	0	2	0	2	1	2	1	1	2	9	0	1	0	0
1900	0	0	0	2	1	2	0	6	1	3	0	0	1	2	0	1	0	1	0	8	0	0	0	0
1915	0	0	1	1	2	4	3	9	1	3	2	2	0	2	0	1	0	1	3	7	0	0	0	0
1930	0	0	0	1	0	4	0	9	0	3	0	2	0	1	0	1	1	2	4	9	0	0	0	0
1945	0	0	0	1	1	4	1	4	0	2	0	2	0	1	0	0	1	2	2	9	0	0	0	0
2000	0	0	0	1	3	6	1	5	0	1	0	2	0	0	0	0	0	2	1	10	0	0	0	0
2015	0	0	0	0	1	5	2	4	0	0	0	0	0	0	0	0	0	2	2	9	0	0	0	0
2030	0	0	0	0	0	5	0	4	0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	0
2045	0	0	0	0	1	5	1	4	0	0	0	0	0	0	0	0	1	1	1	4	0	0	0	0
2100	0	0	0	0	0	2	1	4	0	0	0	0	0	0	0	0	1	2	3	6	0	0	0	0
2115	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	1	3	2	6	0	0	0	0
2130	0	0	0	0	0	1	1	3	0	0	0	0	0	0	0	0	0	3	0	6	0	0	0	0
2145	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	5	0	0	0	0
2200	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0
2215	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
2230	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
2245	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
2300	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
2315	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
2330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
2345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1
TOTAL	182	N/A	206	N/A	212	N/A	209	N/A	264	N/A	242	N/A	64	N/A	86	N/A	69	N/A	124	N/A	22	N/A	39	N/A
AM		7		5		8		6		2		1		13		10		14		13		4		5
NOON		35		33		42		43		57		45		8		9		8		13		2		8
PM		25		34		31		38		58		51		4		11		5		14		2		9
EVEN		0		1		6		5		1		2		0		2		3		10		0		1

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