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March 4, 2013

Via U.S. Mail and email to charlene.gallina@countyofnapa.org

Charlene Gallina
Supervising Planner
Napa County Conservation, Development & Planning Department
1195 Third Street, Room 210
Napa CA 94559-3092

Re: Coquerel Winery Traffic Analysis (APN 017-160-058, 3180 State Highway 128)

Dear Charlene:

Enclosed please find the updated traffic analysis prepared by Omni Means in response to the comments received on our use permit application, which is the last remaining item needed in response to your September 9, 2012 completeness determination. Additionally, in the course of working with Omni Means on the analysis, it came to our attention that the Application Statement we prepared for the use permit submittal states that there will be 4 full-time and 5 part-time employees present on the site. Please note that these numbers are somewhat misleading, as they represent employee numbers only during harvest and thus are maximum employee numbers. For day-to-day operations throughout the rest of the year, the employee numbers will be 4 full-time and 3 part-time. Please amend our application submittal accordingly.

We appreciate your work with us on this project, and we look forward to our continued

work together as we finalize the package for a May 15th hearing date.

Kind regards,

Katherine Philippakis /rs

Katherine Philippakis

Enclosure

cc: Clay and Brenda Cockerell
Rob Tuma (letter only)
Ilene Dick, Esq.

UPDATED TRAFFIC STUDY
FOR THE PROPOSED

COQUEREL WINERY PROJECT
Napa County, CA

March 1, 2013

Prepared by:
Omni-Means, Ltd.
Engineers & Planners
1901 Olympic Blvd., Suite 120
Walnut Creek, CA 94596

R1597TIA002 / 35-3062-01

omni · means
ENGINEERS · PLANNERS

March 1, 2013

Ms. Ilene Dick, Counsel
Farella Braun Martell
Russ Building
245 Montgomery Street
San Francisco, CA 94104

Subject: ***Updated Traffic Analysis for a Proposed Coquerel Winery - Located at #3180 on State Route 128 in Napa County.***

Dear Ms. Dick:

This report presents a focused traffic analysis for the proposed Coquerel Winery on State Route 128 in Napa County (see Figure 1 for project vicinity map). This report reflects the updated use permit application and comments received on the prior traffic analysis submitted in June, 2012.

The project was calculated to generate 36-40 daily trips and 9-15 peak hour trips during typical weeks of the year. Traffic conditions at the study intersections of SR 128/Winery Access and SR 128/Tubbs Lane would remain satisfactory (Level of Service 'A-B') with short vehicle delays (under 15 seconds) for near term conditions. The project trips would add minimally (about 1%) to daily traffic flows on SR 128 in the project vicinity. The combination of traffic volumes on SR 128 and traffic volumes in/out of the proposed winery would not warrant a left turn lane on SR 128 based on Caltrans standards or Napa County standards. Volumes would also be well below the thresholds at which a right-turn lane would be needed.

Traffic operations were analyzed for cumulative (Year 2030) conditions. Based on the transportation model's forecast volumes on SR 128, operations along the entire SR 128 corridor would be affected. However, historical volume data on SR 128 indicates a substantially smaller rate of growth. Additional measures implemented by the County, including vehicle trip reduction strategies and roadway improvement funding mechanisms, may further enhance actual long term conditions.

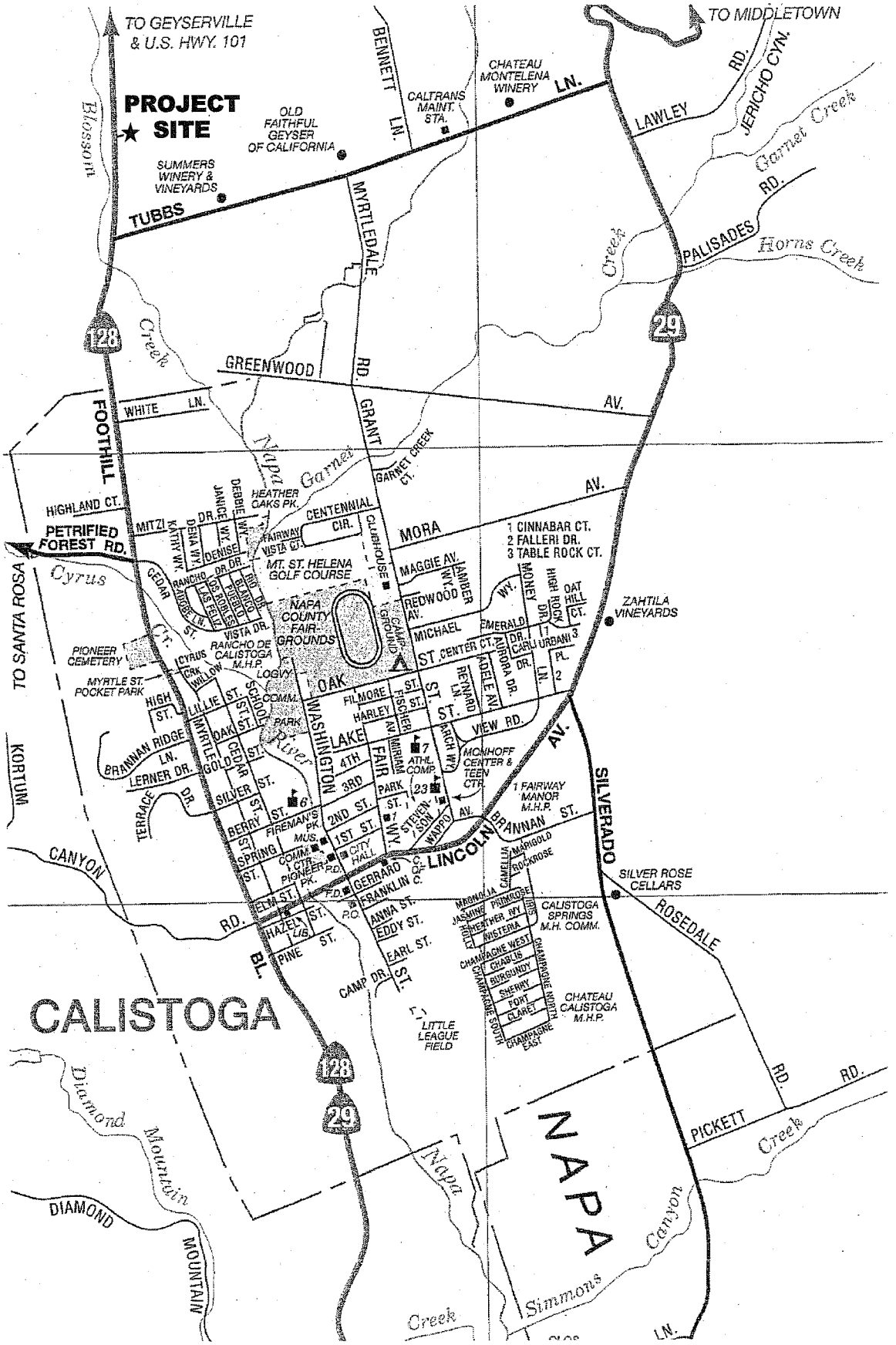
Sight distances at the project driveway would exceed the recommended distances. According to the submitted site plan, the access driveway would meet the County standards for width. We do note that the width at SR 128 should accommodate inbound and outbound truck turn paths.

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

Sincerely,

George Nickelson

George W. Nickelson, P.E.
OMNI-MEANS, Ltd.
Engineers & Planners
rt / R1597TIA002 / 35-3062-01



Project Vicinity Map

North

omni-means

figure 1

1. EXISTING TRAFFIC CONDITIONS

Site Location

The proposed Coquerel Winery would be located on the east side of State Route 128 north of the town of Calistoga in Napa County. Specifically, the property access driveway intersects State Route 128 (SR 128) approximately 1,000 feet north of Tubbs Lane. SR 128 is a primary north-south route through Napa County. Near the project site access SR 128 is a straight, flat, two-lane rural road with unpaved shoulders. Tubbs Lane is a two lane rural road oriented in an east-west direction across the valley connecting SR 128 with SR 29.

Existing Traffic Operations

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.)

Based on Caltrans records, SR 128 north of Tubbs Lane has a current average annual daily traffic volume of 2,900 vehicles and a peak month daily volume of 3,250 vehicles.[(1)] The peak month daily volumes are well within the carrying capacity of a rural two lane highway and indicative of Level-of-Service 'A' conditions (less than 12,000 daily vehicles).

In order to identify peak hour conditions, traffic counts were conducted at the SR 128/existing property access driveway intersection and the SR 128/Tubbs Lane intersection during a weekday PM commute period and a Saturday afternoon.[(2)] Based on Caltran's daily volumes, the peak month volumes (summer season) are approximately 12% higher than average month volumes. The peak hour counts for this study were conducted in April, 2012. Therefore, the count volumes were increased 12% for the analysis as a conservative measure to reflect peak summer season conditions. (Existing volumes are shown in Figure 3).

The existing project site traffic activity is very low. There are no regularly occupied dwellings onsite and there were no vehicle trips counted in or out of the project property during the traffic counts. With no vehicle trips, the intersection operates at LOS 'A' with zero seconds of delay.

The SR 128/Tubbs Lane intersection consists of a single lane stopped approach on Tubbs Lane and a separate left-turn lane on the southbound SR 128 approach. The Tubbs Lane approach operates at LOS 'B' during weekday and Saturday peak hours (with 12.8 and 14.3 seconds of delay, respectively). The SR 128 southbound left turn operates at LOS 'A' (8.2 seconds weekday and 8.0 seconds Saturday). The intersection operates very efficiently with minimal delays and little to no vehicle queuing.

The existing SR 128/Tubbs Lane volumes were applied to California Manual on Uniform Traffic Control Devices (CAMUTCD) peak hour signal warrants.[(3)] 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 signals should be installed. The SR 128/Tubbs Lane intersection does not qualify for signalization under the peak hour warrants using existing volumes. (The warrant graphs are provided in the Appendix).

TABLE 1
EXISTING LEVEL OF SERVICE (LOS) AND SECONDS OF DELAY

Intersection	Weekday PM Peak Hour	Saturday Afternoon Peak Hour
	Existing LOS Delay	Existing LOS Delay
1. SR 128 / Winery Driveway		
Driveway westbound approach	A 0.0"	A 0.0"
SR 128 southbound approach	A 0.0"	A 0.0"
2. SR 128 / Tubbs Lane		
Tubbs Ln. westbound approach	B 12.8"	A 14.3"
SR 128 southbound left turn	A 8.2"	A 8.0"

2. PROPOSED PROJECT

Project Description

The proposed winery operations, developed in two phases, are summarized as follows:

- 75,000 gallons of annual production (approximately 31,500 cases);
- Employees:
  Phase I = 2 employees during non-harvest,
  = 4 employees during harvest.
  Phase II = 7 employees during non-harvest,
  = 9 employees during harvest.
- Up to 25 daily visitors by appointment only;
- Hospitality and Events:
  15-20 people with a meal = 1 per week; 50 people with a meal = 12 per year;
  100 people = 1 per year; 200 people = 2 per year;
- 18 parking spaces, plus bicycle parking racks.

The proposed project would involve a new winery with a maximum annual production of 75,000 gallons (31,513 cases).[(4)] About 13% of the fruit (10,000 gallons of production) would be harvested on-site and the remaining 87% would be delivered from other County vineyards. Visitors (by appointment only) are expected with up to 25 persons on a typical weekday, Saturday, or Sunday. Employment is expected to be seven persons on site after buildout of Phase II. There would be a total of nine employees on site during the harvest season. The facility would include eight offices with a lab and tasting room. Two of the offices would be reserved for use by the winery owners who visit the site infrequently and would not generate employee trips as might otherwise be expected. Table 2 outlines the winery's calculated traffic generation after Phase II for a typical weekday, a typical Saturday, and a Saturday during the harvest season.

Project Trip Generation/Distribution

The traffic generated by the proposed project after Phase II buildout has been calculated in Table 2. On a typical weekday 40 daily trips and 15 peak hour trips (4 in, 11 out) would be expected. On a typical Saturday 36 daily trips and 9 peak hour trips (4 in, 5 out) would be expected and on weekdays 36 daily trips would be expected. During harvest season, 45 daily trips and 11 peak hour trips (5 in, 6 out) would be expected.

The trips were distributed at the project driveway onto SR 128 with 80% to/from the south and 20% to/from the north (based on the existing Tubbs Lane intersection distribution). The project trips are shown in Figure 2.

Napa County Significance Criteria

The County of Napa's significance criteria has been based on a review of the Napa County Transportation & 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.

TABLE 2
DAILY TRIP GENERATION WITH THE
PROPOSED COQUEREL WINERY
75,000 GALLONS ANNUAL PRODUCTION

Typical Weekday Daily Traffic:	
25 visitors/2.6 per vehicle x 2 one-way trips	= 20 daily trips
4 full-time employees x 3.05 one-way trips per employee	= 12 daily trips
3 part-time employees x 1.90 one-way trips per employee	= 6 daily trips
2 truck trips (75,000 gls/1,000 x .009 x 2 o-w trips)	= 2 daily trips
	40 daily trips
Typical Weekday PM Peak Hour Traffic:	
(20 daily visitor trips + 2 daily truck trips) x 0.38	= 8 peak hour trips
7 employees	= 7 peak hour trips
	15 trips (4 in, 11 out)
Typical Saturday Daily Traffic:	
25 visitors/2.8 per vehicle x 2 one-way trips	= 18 daily trips
4 full-time employees x 3.05 one-way trips per employee	= 12 daily trips
3 part-time employees x 1.90 one-way trips per employee	= 6 daily trips
	36 daily trips
Typical Saturday Peak Hour Traffic:	
36 daily Saturday trips x 25%	= **9 trips (4 in, 5 out)**
Daily Saturday Traffic During Harvest Season (6 weeks):	
25 visitors/2.8 per vehicle x 2 one-way trips	= 18 daily trips
4 full-time employees x 3.05 one-way trips per employee	= 12 daily trips
5 part-time employees x 1.90 one-way trips per employee	= 10 daily trips
2 truck trips (75,000 gls./1,000 x .009 x 2 o-w trips)	= 2 daily trips
75,000 glns. x 1.52 trips per 1,000 glns. / 36 days	= 3 daily trips
	45 daily trips
Peak Hour Saturday Traffic During Harvest Season:	
45 daily trips x 25%	= **11 trips (5 in, 6 out)**

Production, visitor, and employee data provided by Ms. Ilene Dick,(project representative) and Use Permit Application.
Trip equations for daily and weekday peak hour derived from Napa County, Conservation, Planning, & Development Department, "Use Permit Application Package", Napa County Winery Traffic Generation Characteristics, 2012.
Trip equation for weekend peak hour based on conservative assumption that 25% of daily trips occur in peak hour.
Truck trips calculation conservatively assumes 100% offsite grapes.

3. EXISTING PLUS PROJECT TRAFFIC CONDITIONS

Existing Plus Project Operating Conditions

The project would be expected to add approximately 29-32 daily trips south of the site and 7-8 daily trips north of the site. The project would add one percent or less to the daily volumes on SR 128 near the site. The existing plus project volume of 3,282 daily trips would remain well within the capacity of a two lane rural road with conditions equivalent to LOS 'A'.

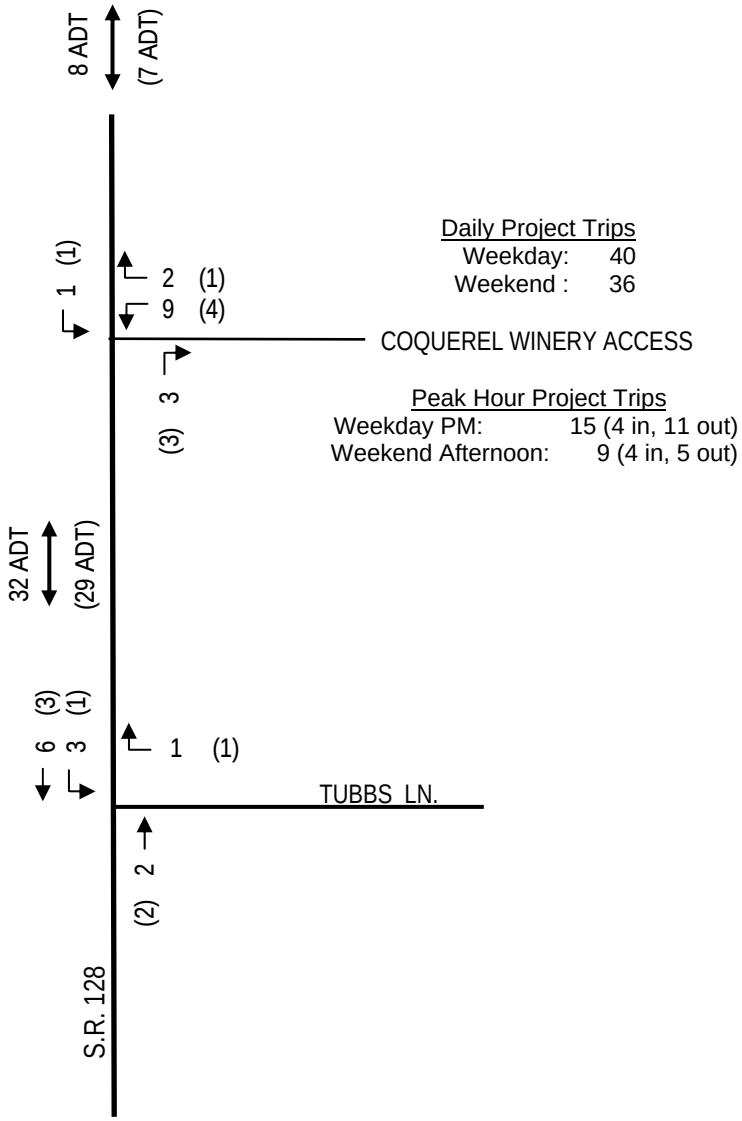
The peak hour intersection levels of service were evaluated. LOS with the project are shown in Table 2. At the SR 128/winery driveway intersection, the outbound driveway approach would function at LOS 'A' (9-10 seconds of delay weekdays and weekends) and the southbound SR 128 left turn into the winery would function at LOS 'A' (less than one second of delay).

At the SR 128/Tubbs Lane intersection, the westbound approach would operate at LOS 'B' (with 13.0 seconds of delay weekdays and 14.5 seconds of delay weekends) and the southbound SR 128 left turn movement would operate at LOS 'A' (with eight seconds of delay) during the weekday and weekend peak hours. At this intersection, conditions would be essentially unchanged from existing conditions, with delays increasing less than one second at the approaches. The existing plus project volumes are shown in Figure 3.

The SR 128/Tubbs Lane volumes were compared to peak hour volume warrants for installing traffic signals. The intersection volumes would remain below the threshold for signalization (warrant graphs are provided in the Appendix).

TABLE 3
EXISTING AND EXISTING + PROJECT PEAK HOUR INTERSECTION OPERATIONS
LEVEL OF SERVICE (LOS) AND SECONDS OF DELAY

Intersection	Weekday PM Peak Hour		Saturday Afternoon Peak Hour	
	Existing LOS Delay	Existing +Project LOS Delay	Existing LOS Delay	Existing +Project LOS Delay
SR 128 / Winery Driveway				
Driveway westbound approach	A 0.0"	A 10.0"	A 0.0"	A 9.8"
SR 128 southbound approach	A 0.0"	A 0.1"	A 0.0"	A 0.1"
SR 128 / Tubbs Lane				
Tubbs Ln. westbound approach	B 12.8"	B 13.0"	B 14.3"	B 14.5"
SR 128 southbound left turn	A 8.2"	A 8.2"	A 8.0"	A 8.0"



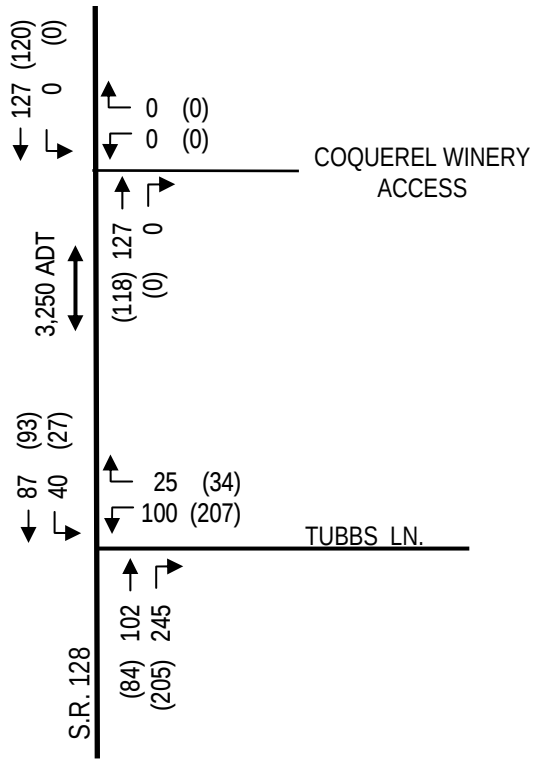
Weekday PM and (Weekend) Peak Hour Project Trips

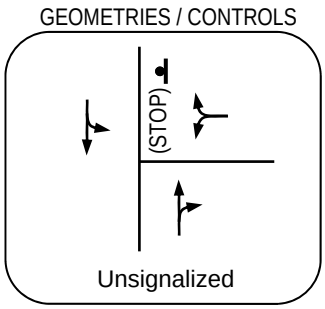
North

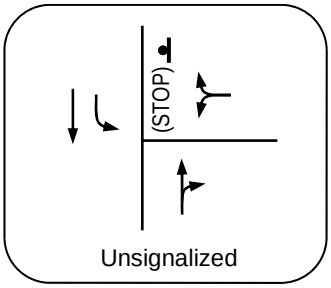
omni-means

figure 2

Existing Peak Hour Volumes:

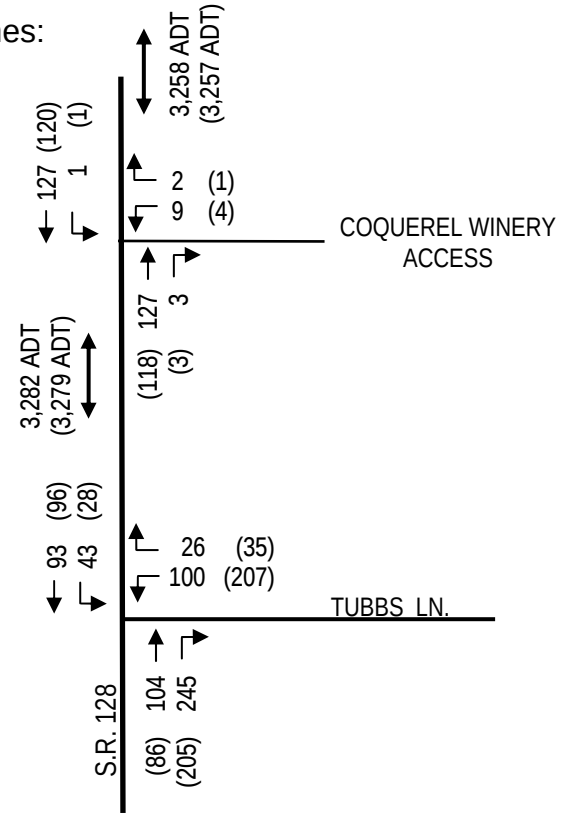






Existing geometries assumed for all future volume scenarios.

Existing + Project Peak Hour Volumes:



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

North

omni-means

figure 3

Turn Lane Warrants (Existing Plus Project Conditions)

The winery driveway would serve all employee, delivery, and visitor trips. The site's driveway intersects SR 128 at a point where no left turn lane exists. The winery access intersection was evaluated for a potential left turn lane on SR 128 based on Caltrans design guidelines.[5] Peak hour traffic volumes are utilized by comparing the advancing and opposing SR 128 volumes with the percentage of left turning vehicles into the access driveway. The volumes associated with the project conditions are well below the Caltrans minimum thresholds. Therefore a left turn lane would not be warranted based on the Caltrans guidelines (left turn lane warrant graphs are provided in the Appendix).

Left turn lane warrants based on County of Napa standards were also evaluated.[6] The Napa County standards utilize daily traffic volumes on the major road and access driveway. Using the conservatively high peak month daily volume on SR 128, the proposed project volumes would be below the Napa County thresholds for a left turn lane (warrant graphs are provided in the Appendix). When the average month daily volume on SR 128 is applied, the project volumes are further below the threshold levels. Therefore a left turn lane would not be warranted based on the County standards.

The projected right turn volumes at the site driveway are also well below minimum thresholds at which right turn lanes would be required (right turn lane warrant graphs are included in the Appendix.)[7]

4. NEAR TERM CONDITIONS

Approved Developments

Near term conditions reflect existing volumes plus any additional volumes expected to be generated by approved developments within the project study area. Approved developments include structures that are built but not fully occupied or are not yet built but are expected to be within the near term future.

The County of Napa and City of Calistoga planning departments each provided a list of approved developments.[8, 9] The vehicle trips for these developments were taken from traffic studies when available or generated based on the type of development and distributed onto the street network. The County identified fifteen developments (all wineries). Seventeen developments within the City of Calistoga were reviewed (including traffic studies of two pending resort developments). (A list of the developments that have calculated trips on SR 128 is provided in the Appendix.)

Near Term Operating Conditions

The approved developments were calculated to generate 142 daily trips on SR 128. Added to the existing volume of 3,250 daily trips results in 3,392 daily trips on Tubbs Lane for near term conditions. It is noted that the approved development volumes are likely conservatively high since they assume all trips are new trips when it is reasonable to assume a portion of the trips are shared trips with other wineries in the area. SR 128 would continue to function at LOS 'A' conditions.

The ratio of peak hour trips to daily trips for the proposed project was applied to the approved development daily volume to obtain near term peak hour volumes. The volumes are shown in Figure 4. The approved developments would add approximately 54 weekday and 36 weekend peak hour trips to SR 128. For near term conditions, the SR 128/Winery Access intersection would operate at LOS 'A' (zero seconds delay with no turning volumes) during the weekday and weekend peak hours. The SR 128/Tubbs Lane intersection westbound approach would operate at LOS 'B' (14.6" delay) during the weekday peak hour and LOS 'C' (16.3" delay) during the weekend peak hour. The SR 128 southbound left turn movement would operate at LOS 'A' (8" delay) during the weekday and weekend peak hours. (LOS are shown in Table 4.)

Near Term Plus Project Operating Conditions

With the project's 36-40 new daily trips distributed onto SR 128 and added to the near term volume of 3,392 daily trips, the near term plus project volume on SR 128 south of the winery would be 3,421-3,424 daily trips. The project traffic would add 1% to the near term daily volumes on SR 128. SR 128 would continue to function at an acceptable level, operating at LOS 'A' (less than 12,000 daily trips).

The peak hour intersection operating conditions were evaluated for near term plus project conditions and are shown in Table 4. During the weekday peak hour, the Winery Access westbound approach would operate at LOS 'B' (10.3 seconds delay) and the SR 128 southbound approach would operate at LOS 'A' (delay remaining less than 1 second). During the weekend peak hour, the Winery Access approach would operate at LOS 'A' (10 seconds delay) and the SR 128 southbound approach would operate at LOS 'A' (less than 1 second delay). At the SR 128/Tubbs Lane intersection, LOS would remain unchanged with the project and delay increases would be less than one second). The westbound Tubbs Lane approach would continue to operate at LOS 'B' during the weekday peak hour and LOS 'C' during the weekend peak hour. The SR 128 southbound left turn would continue to operate at LOS 'A' during both peak hours. Based on the volumes, vehicle queuing at the project access intersection would be expected to be minimal. The near term plus project volumes are shown in Figure 4.

The SR 128/Tubbs Lane volumes were compared to peak hour volume warrants for installing traffic signals. The intersection volumes would remain below the threshold for signalization (warrant graphs are provided in the Appendix).

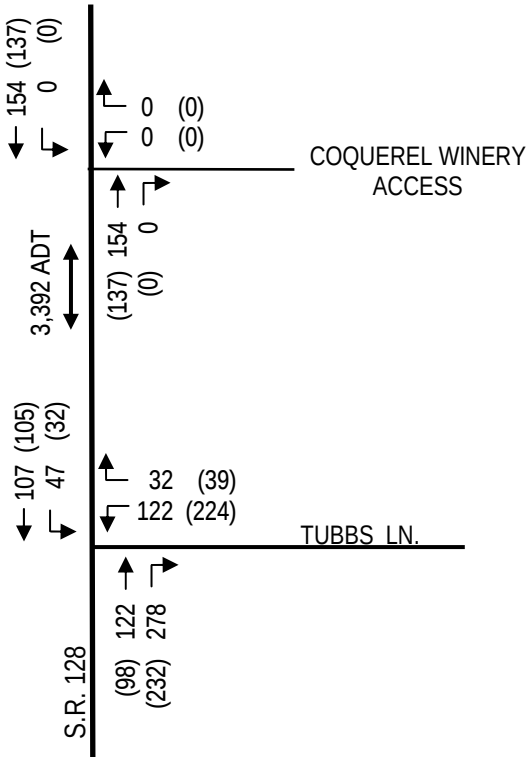
Turn Lane Warrants (Near Term and Near Term Plus Project Conditions)

The near term and near term plus project volumes were compared with the Caltrans and Napa County guidelines for installing a left turn lane in Tubbs Lane. (The warrant graphs for weekday and Saturday conditions are provided in the Appendix.) Under near term conditions with no trips on the access driveway, a left turn lane would not be warranted. With added project traffic of 36-40 trips on the winery access road, the intersection would remain below the Caltrans and Napa County warrants for installation of a left turn lane. The projected right turn volumes at the site driveway would remain well below minimum thresholds at which right turn lanes (deceleration and acceleration) would be required (right turn lane warrant graphs are included in the Appendix.)

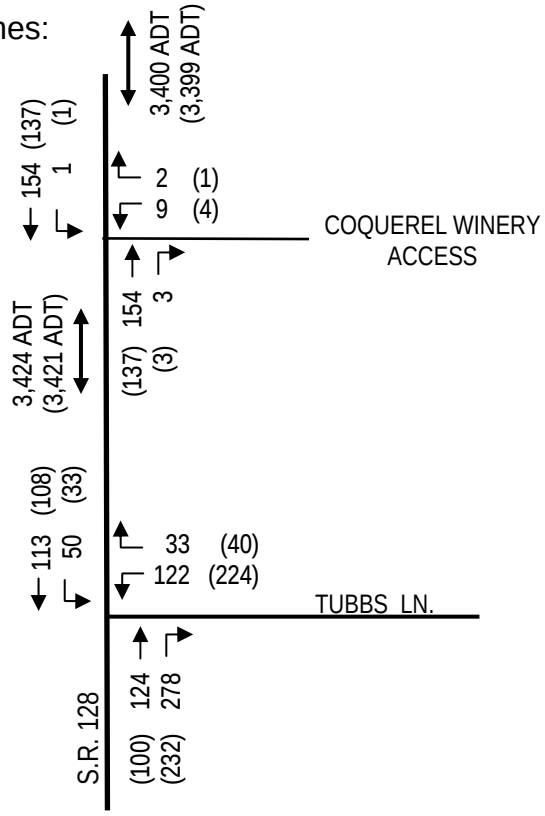
TABLE 4
NEAR TERM AND NEAR TERM + PROJECT PEAK HOUR INTERSECTION OPERATIONS
LEVEL OF SERVICE (LOS) AND SECONDS OF DELAY

Intersection	Weekday PM Peak Hour		Saturday Afternoon Peak Hour	
	Near Term LOS Delay	Near Term +Project LOS Delay	Near Term LOS Delay	Near Term +Project LOS Delay
SR 128 / Winery Driveway				
Driveway westbound approach	A 0.0"	B 10.3"	A 0.0"	A 10.0"
SR 128 southbound approach	A 0.0"	A 0.1"	A 0.0"	A 0.1"
SR 128 / Tubbs Lane				
Tubbs Ln. westbound approach	B 14.6"	B 14.9"	C 16.3"	C 16.5"
SR 128 southbound left turn	A 8.4"	A 8.4"	A 8.1"	A 8.1"

Near Term Peak Hour Volumes:



Near Term + Project Peak Hour Volumes:



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

North

omni-means

figure 4

5. SITE ACCESS / DESIGN PARAMETERS

Sight Distances on SR 128

Vehicle sight distance at the SR 128/winery driveway intersection was evaluated. The required vehicle visibility or "corner sight distance" is a function of travel speeds on SR 128. Caltrans design standards indicate that for appropriate corner sight distance, "a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the cross road and the driver of an approaching vehicle in the right lane of the main highway". Caltrans design guidelines also indicate that at private access intersections the minimum corner sight distance "shall be equal to the stopping sight distance".

There is a posted speed limit of 45 mph on SR 128 at the project access. Radar speed surveys were also conducted as a part of this study which identified an 85th % speed (the speed at which 85% of all surveyed vehicles travel at or below) of 50 mph.[10] Based on Caltrans' design standards, a stopping sight distance of about 430 feet is required along SR 128.[11] The winery access is located on a straight section of SR 128. Field observations indicate the sight distances from the driveway are approximately 2,000 feet to the north and 1,400 feet to the south, which substantially exceed the minimum standards.

Project Access and Circulation

A project site plan is shown in Figure 5. The project site plan indicates the driveway width would match the Napa County standard of 18 feet of pavement plus a 2-foot shoulder for two-way traffic flow.[12] At its intersection with SR 128, the driveway design should also accommodate turn paths for inbound and outbound right-turns by trucks.

Napa County and the Napa County Transportation & Planning Agency (NCTPA) are developing bicycle routes as outlined in the Napa Countywide Bicycle Plan.[13] The plan encourages new developments to incorporate bicycle friendly design. Some visitors may utilize bicycles to access the proposed project. The project proposes to provide bicycle racks for visitors to the winery.

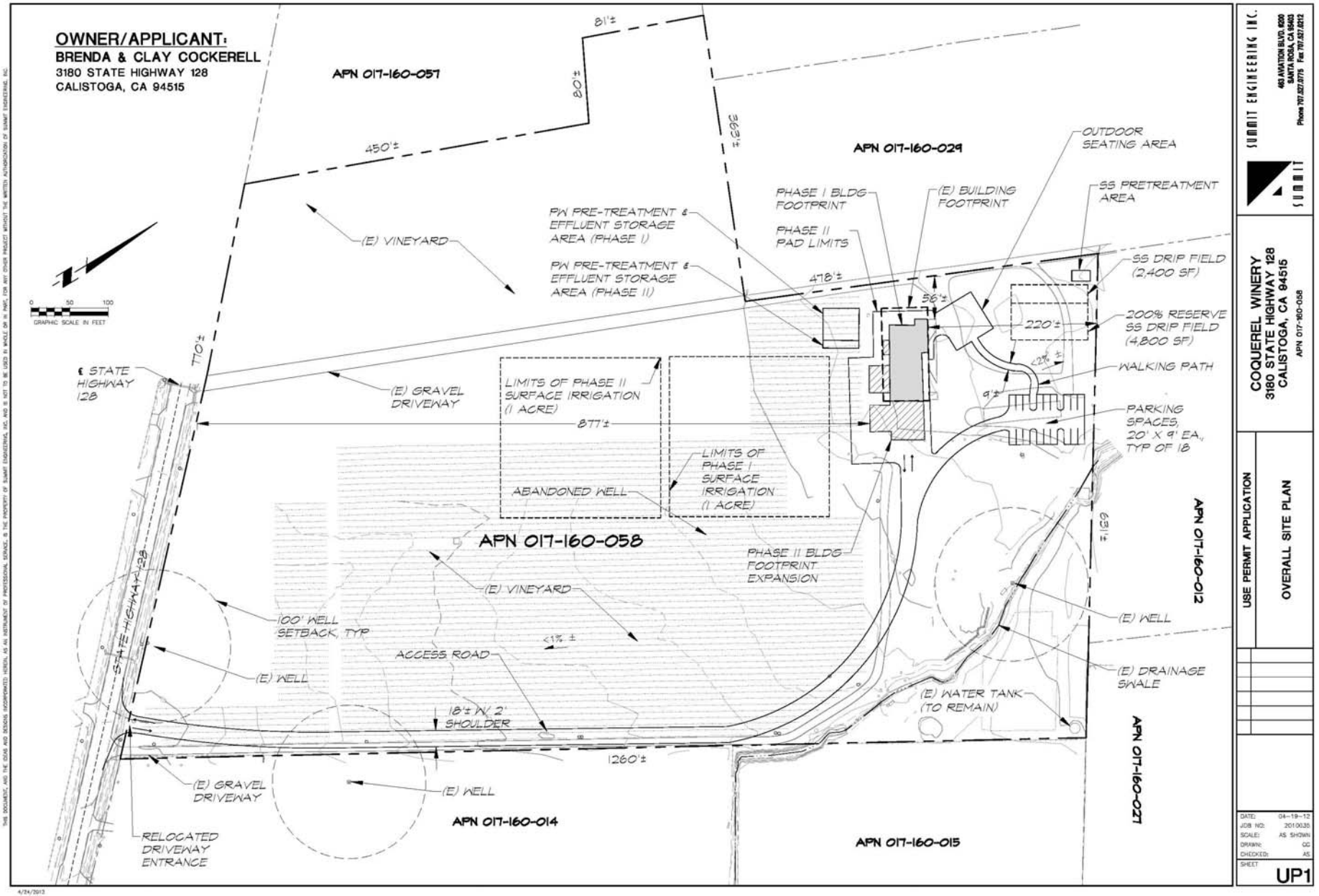
Based on the provided site plan, the project would provide 18 striped parking spaces plus unstriped overflow areas to accommodate larger events. The winery's striped parking supply would meet the daily visitor demand. The unstriped areas would be expected to accommodate the special event demand.

Marketing Events

The winery would host events of various sizes. Events of 15-20 are planned once per week. Events with up to 50 people are planned once per month. Three larger events are planned per year (one with up to 100 people and two with up to 200 people).

The monthly events would likely be scheduled on non-peak days, and as such, would not generate daily trips beyond the maximum visitor traffic levels calculated in Table 1. It is also expected that events would be scheduled so that traffic flows would be outside the peak periods.

The winery's parking would be designed to meet peak visitor day demand and lesser event demand. For the largest events, valet parking would be employed to accommodate all visitor vehicles in striped spaces and other ancillary areas.



Source: Summit Engineering Inc.

Project Site Plan

North

omni-means

figure 5

6. CUMULATIVE CONDITIONS

Cumulative Year 2030 Projections

Model Forecast

Forecasts for Cumulative (Year 2030) volumes on SR 128 were derived from the Napa County Transportation & Planning Agency's traffic model volume projections in the Napa County General Plan Update EIR.[14] The increase in volume-to-capacity (v/c) ratio from Year 2003 to Year 2030 on SR 128 north of Tubbs Lane was applied to the provided Year 2003 peak hour two-way volume (337 trips) on SR 128, yielding a volume of 1,643 weekday PM peak hour trips on SR 128 in Year 2030.

In order to identify weekend cumulative conditions, the General Plan Update provides a ratio of weekday to weekend peak hour volumes on key streets within the valley. The closest street, Highway 29 near Tubbs Lane, had an average ratio of 1, indicating similar volumes during both peak hours. This corresponds with the volumes counted for this study which found weekend peak hour volumes nearly equal to the weekday volumes. Therefore the weekend conditions would be expected to be the same as the weekday conditions.

The projected cumulative volume represents an extremely large (five-fold) increase compared to the existing (Year 2012) peak hour volume of 254 trips. With the forecasted volumes, the existing daily volume on SR 128 would increase from 3,250 trips to 16,430 daily trips.

Historical Data

For comparison, a review of annual daily traffic volumes on SR 128 north of Tubbs Lane over the previous twenty years indicates the peak month ADT in year 1992 was 3,050 trips and is 3,250 in year 2011. The recent volume is 200 trips higher than the year 1992 counts. The volumes were highest in 2006, reaching 4,600 ADT. The daily volumes have declined since then and are lower today than they were in 1996. The increase in volumes between year 1992 and the highest year of 2006 (3,050 ADT vs. 4,600 ADT) equates to an annual increase of 3% per year. Applying the same annual increase to the recent ADT of 3,250 results in about 5,500 ADT in year 2030 (3% per year added for 18 years).

Cumulative volumes based on historical data are one-third of the model forecast volumes. Therefore it is unlikely volumes will increase to the model's forecasted levels (at least within the given timeframe).
However, in keeping with the policies of the General Plan to proactively address potential traffic volumes under cumulative conditions, the County has adopted several measures identified in the General Plan to both improve the street network and reduce vehicle trips through public transit and Transportation Demand Management (TDM) strategies.

Cumulative Operating Conditions

Several improvements to the street network within the valley have been included in the model as part of the General Plan's Improved 2030 Network. The County has also adopted policies identified in the General Plan to reduce vehicle trips and promote alternative means of transportation: "The project should support programs to reduce single occupant vehicle use and encourage alternative travel modes."

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

In addition, the County has identified other mitigation policies, including development of a traffic impact fee (TIF) to be developed in cooperation with the NCTPA (Mitigation Measure 4.4.1C). This would require new projects to pay their "fair share" of countywide traffic improvements they contribute the need for. Examples of such improvements include construction of a two-way left turn lane on SR 128 or signalizing the SR 128/Tubbs Lane intersection. The concept is under development but presumably the fee would be applied on a "per trip" basis if/when implemented.

7. SUMMARY AND CONCLUSIONS

The proposed Coquerel Winery project was calculated to generate 36-40 new daily trips. The volumes would represent an increase of approximately one percent to existing and near term volumes on SR 128 near the project site. The highway would continue to operate at LOS 'A' conditions.

The study intersections would also operate at satisfactory levels-of-service with the proposed winery. The SR 128/Winery Access intersection operates at LOS 'A' under existing and near term peak hour conditions without the project and would operate at LOS 'A-B' with the added project trips (delays of approximately 10 seconds).

The SR 128/Tubbs Lane intersection operates at LOS 'A-B' under existing conditions (delays of 14 seconds or less) and would continue to do so with the added project trips (delays of 15 seconds or less). The intersection would operate at LOS 'B-C' under near term conditions without the project (delays of 16 seconds or less). LOS would remain unchanged with the added project trips (delays of 17 seconds or less).

The winery's volumes would not warrant a left turn lane on SR 128 based on Caltrans design standards or Napa County standards (using peak month or average month volumes). The volumes would also be below the thresholds at which right turn lanes would be needed.

Based on field observations, the available sight distance along SR 128 would be adequate. (The project's Civil Engineer should confirm the adequacy of sight distances along SR 128.)

The winery would be served by an 18-foot wide access road with 2-foot shoulders, which meets the Napa County standard. Therefore, the access road would reflect an adequate width to accommodate the projected traffic flows. At its intersection with SR 128, the design should accommodate turning paths for inbound and outbound trucks.

Cumulative (Year 2030) conditions were assessed using volume forecasts from the Napa County General Plan Update transportation model as well as historical volume data on SR 128. The model forecast volumes are substantially higher than historical volume growth over the past twenty years would indicate. Therefore it is unlikely volumes will increase to the model's forecasted levels.

However, the General Plan seeks to proactively address potential volume increases by implementing planned street improvements and reducing vehicle trips from proposed projects by encouraging alternative transportation modes. In keeping with the policy, the proposed project would provide bicycle racks for visitors who may ride bikes to the winery. The winery should also work with employees to reduce vehicle trips by providing public transit information and allow scheduling options to facilitate carpooling.

A traffic impact fee may be adopted by the County to fund the General Plan improvements or other projects. If a TIF program were enacted, the proposed project could contribute a "fair share" towards such future circulation improvements.

References:

(1) Caltrans, *2010 Volumes on the California State Highway System*, (on-line data base).

(2) Omni-Means Engineers & Planners, traffic counts, speed surveys, and field measurements on April 20, 2012 (4-6 PM) & April 21, 2012 (1-3 PM).

(3) Caltrans, California Manual on Uniform Traffic Control Devices, 2012 Edition.

(4) Production, employee, and visitor data provided by Ms. Ilene Dick, project representative.

(5) Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.

(6) Napa County, *Adopted Road and Street Standards*, revised August 31, 2004.

(7) Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

(8) Napa County, Planning Department, Ms. Charlene Gallina, February 7, 2013.

(9) City of Calistoga, Planning Department, Mr. Erik Lundquist, January 28, 2013.

(10) Omni-Means Engineers & Planners, ibid.

(11) Caltrans, *Highway Design Manual – Fifth Edition*, July 1, 2004.

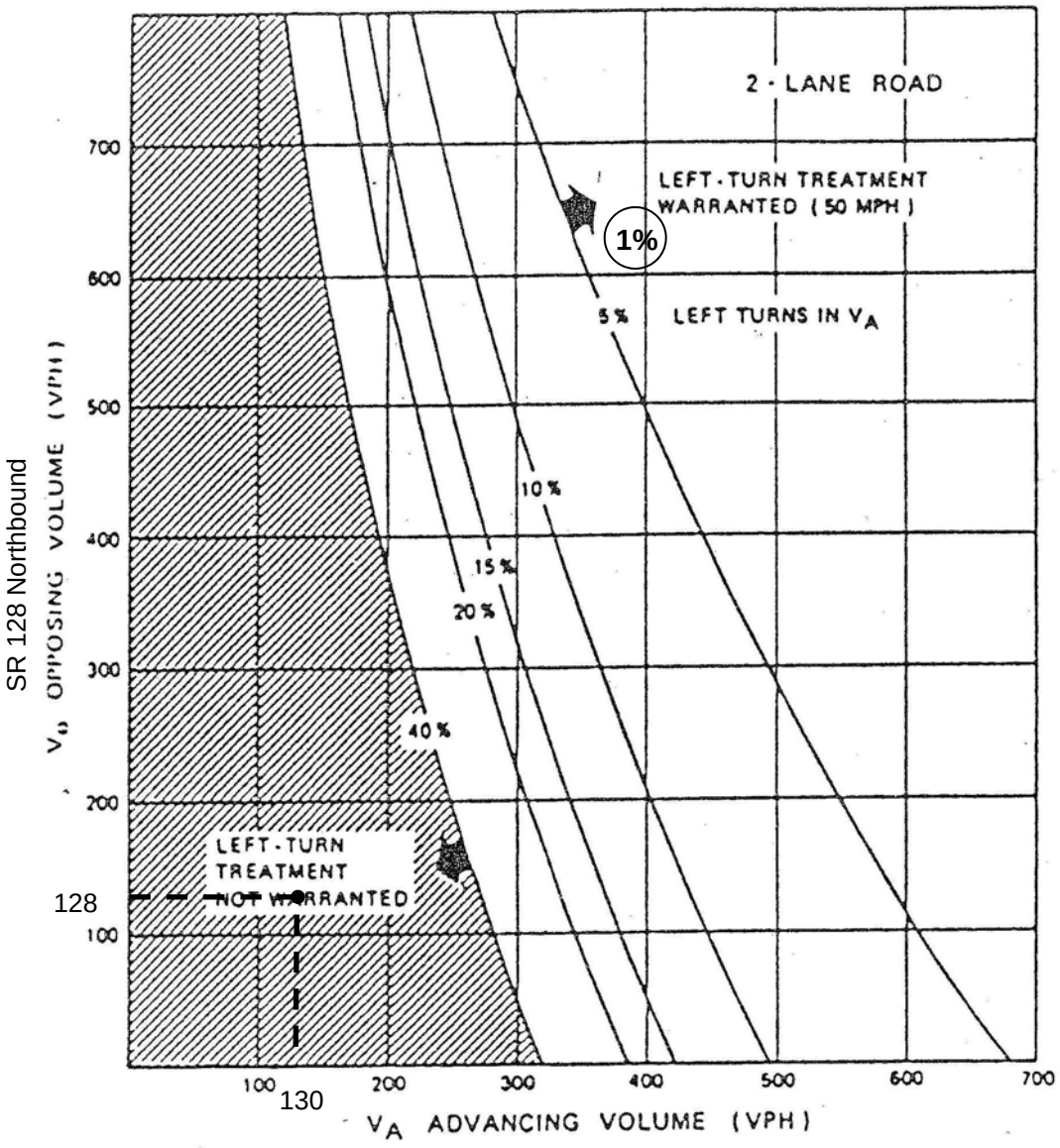
(12) Summit Engineering Inc., Coquerel Winery Overall Site Plan, February 23, 2012, 463 Aviation Blvd. #200, Santa Rosa, CA 95403.

(13) Napa County, Countywide Bicycle Plan (2012), Planning Area-North Valley, May 2012.

APPENDIX

- Turn Lane Warrant Graphs
- Level of Service Definitions
- Level of Service Calculations
- Existing Volume Counts
- Peak Hour Signal Warrants

CALTRANS LEFT TURN LANE WARRANTS



Coquerel Winery Project

SR 128 / Winery Access Intersection

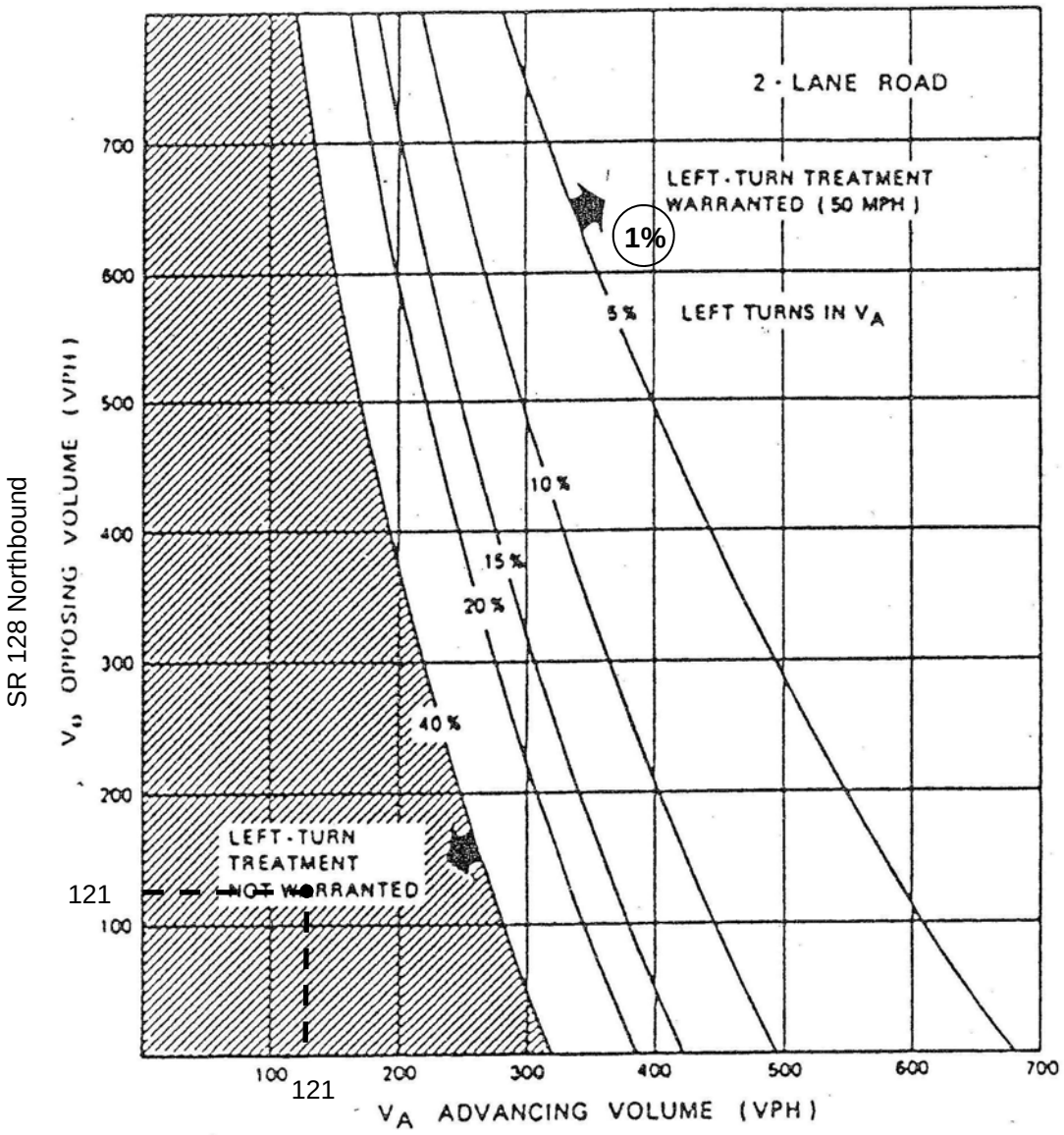
EXISTING + PROJECT WEEKDAY PM PEAK HOUR

V_A = 128 L.T. % = 1/127 = 1% V_o = 130

LEFT TURN LANE NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



SR 128 Southbound

Coquerel Winery Project

SR 128 / Winery Access Intersection

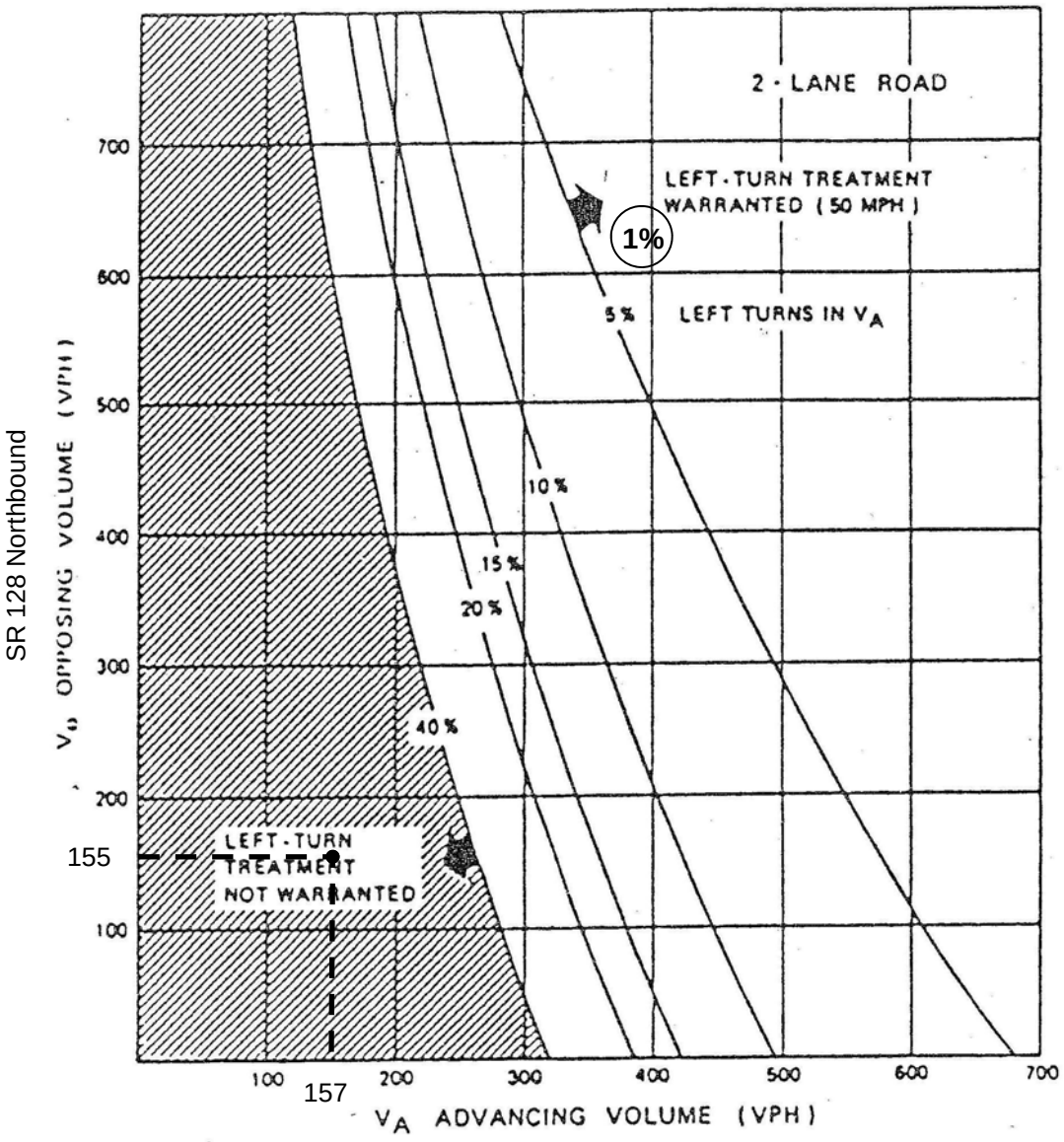
EXISTING + PROJECT WEEKEND PEAK HOUR

V_A = 121 L.T. % = 1/120 = 1% V_o = 121

LEFT TURN LANE NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



SR 128 Northbound

SR 128 Southbound

Coquerel Winery Project

SR 128 / Winery Access Intersection

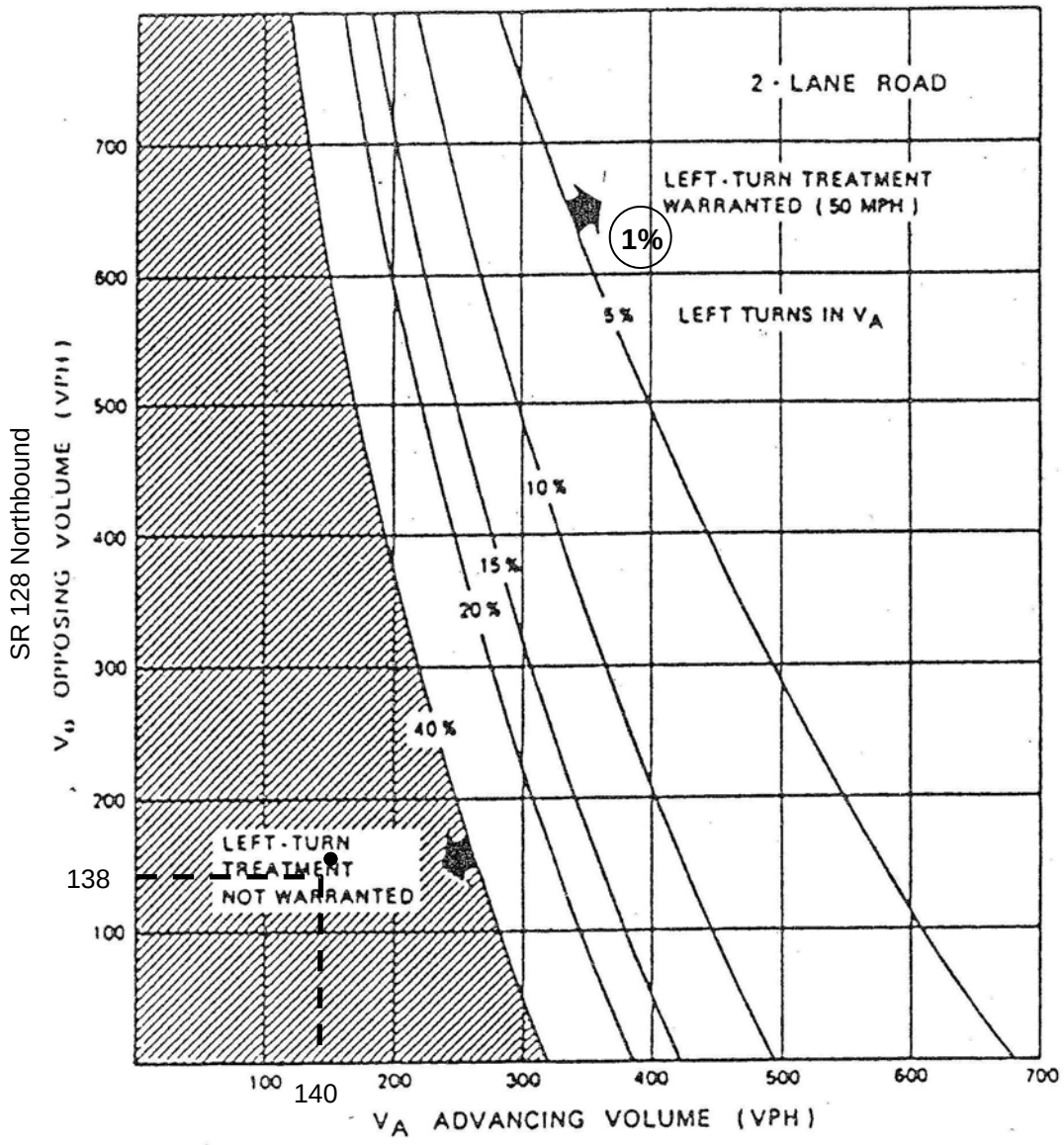
NEAR TERM + PROJECT WEEKDAY PM PEAK HOUR

V_A = 155 L.T. % = 1/154 = 1% V_o = 157

LEFT TURN LANE NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



Coquerel Winery Project

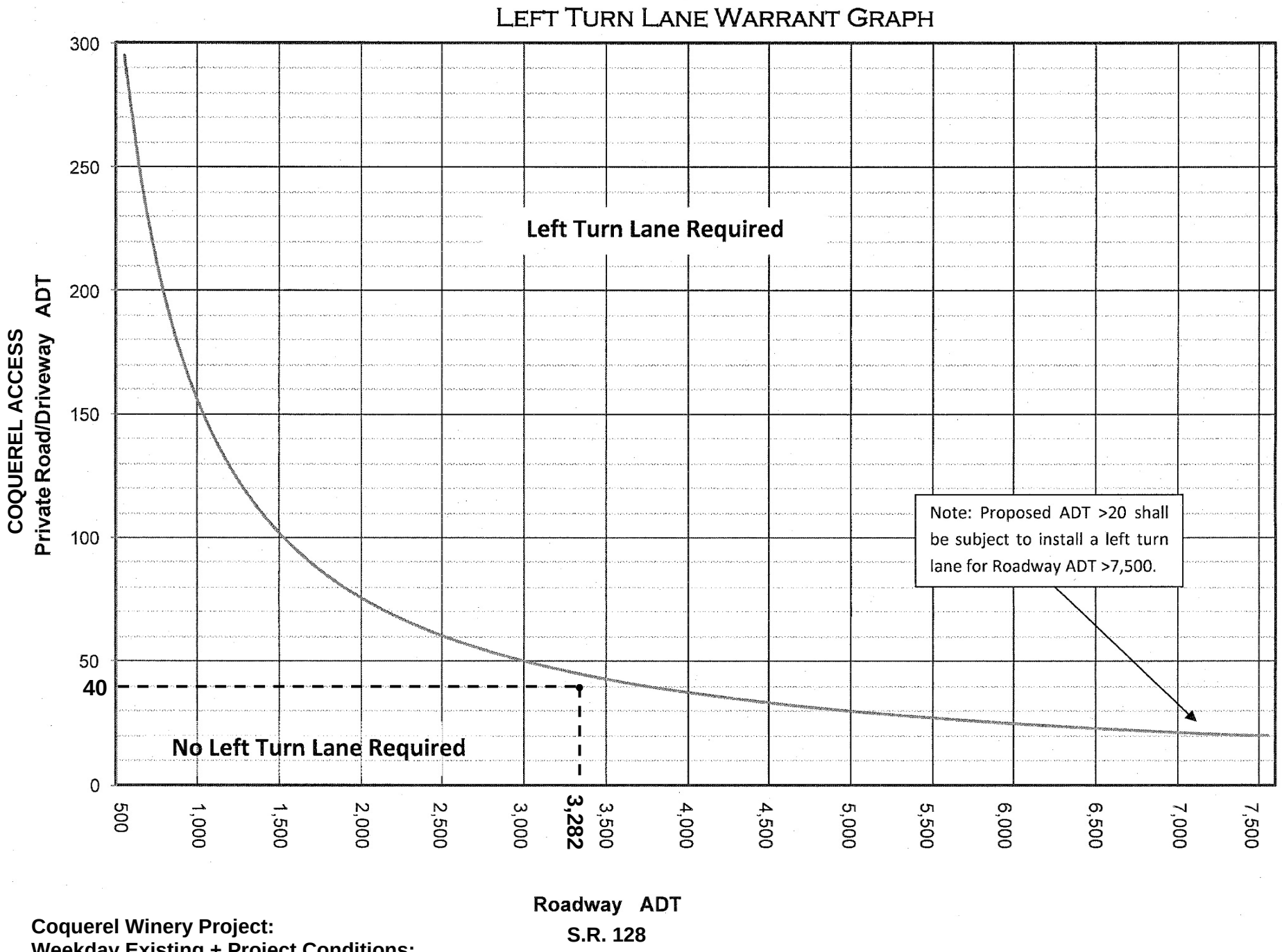
SR 128 / Winery Access Intersection

NEAR TERM + PROJECT WEEKEND PEAK HOUR

V_A = 138 L.T. % = 1/137 = 1% V_o = 140

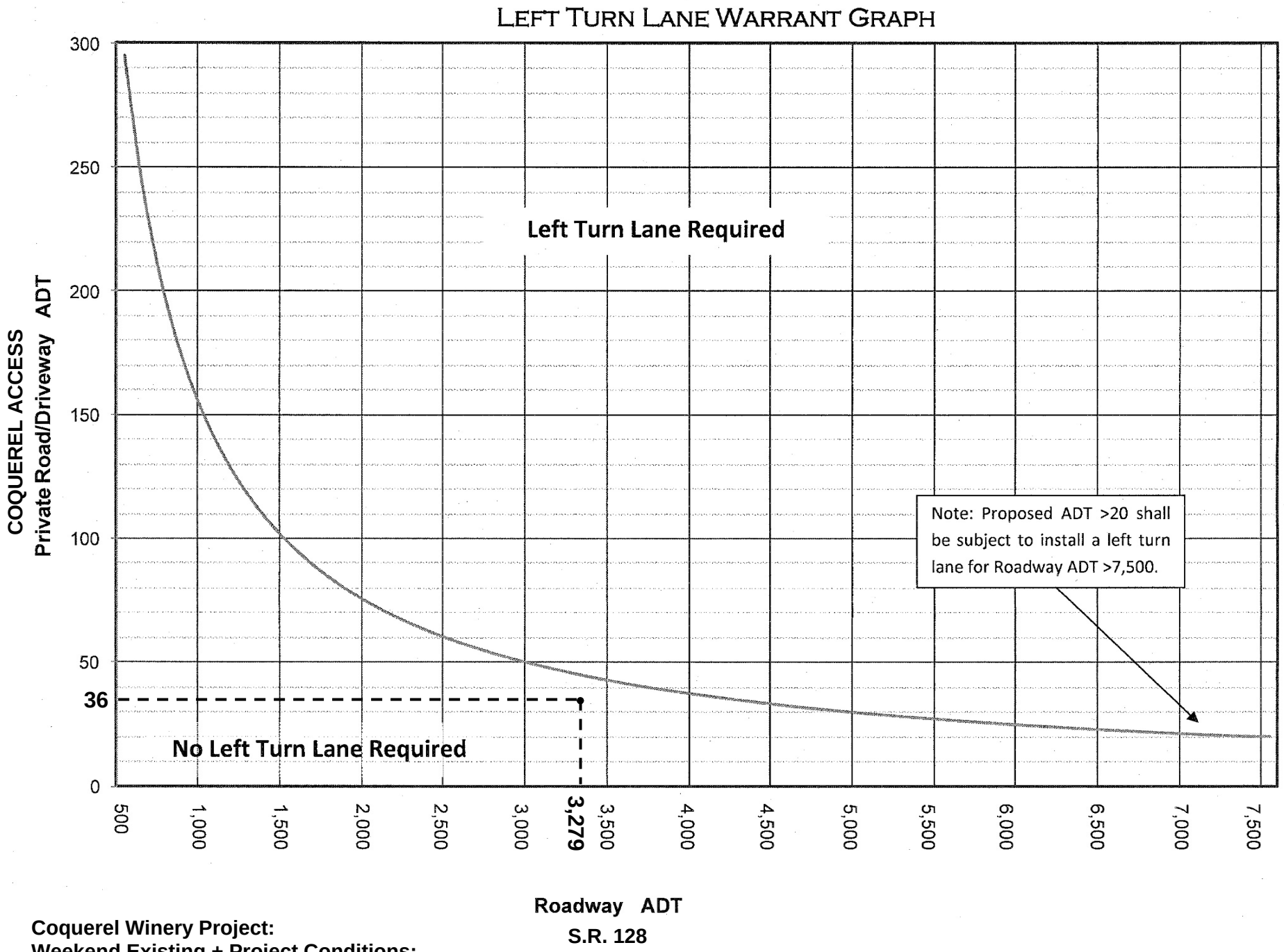
LEFT TURN LANE NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.



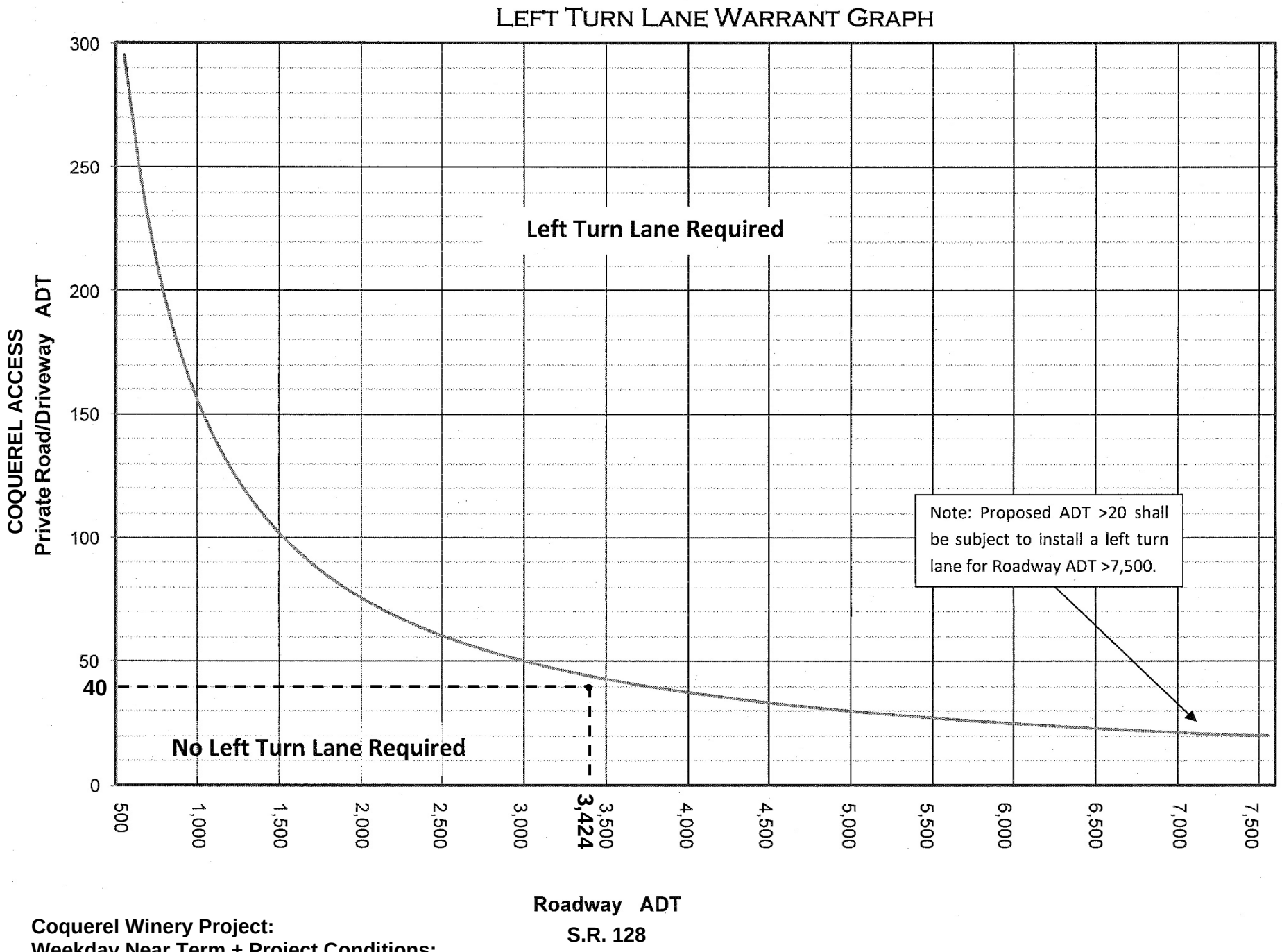
Coquerel Winery Project:
Weekday Existing + Project Conditions:
Left Turn Lane Not Warranted

Napa County, *Adopted Road and Street Standards*, revised August 31, 2004.



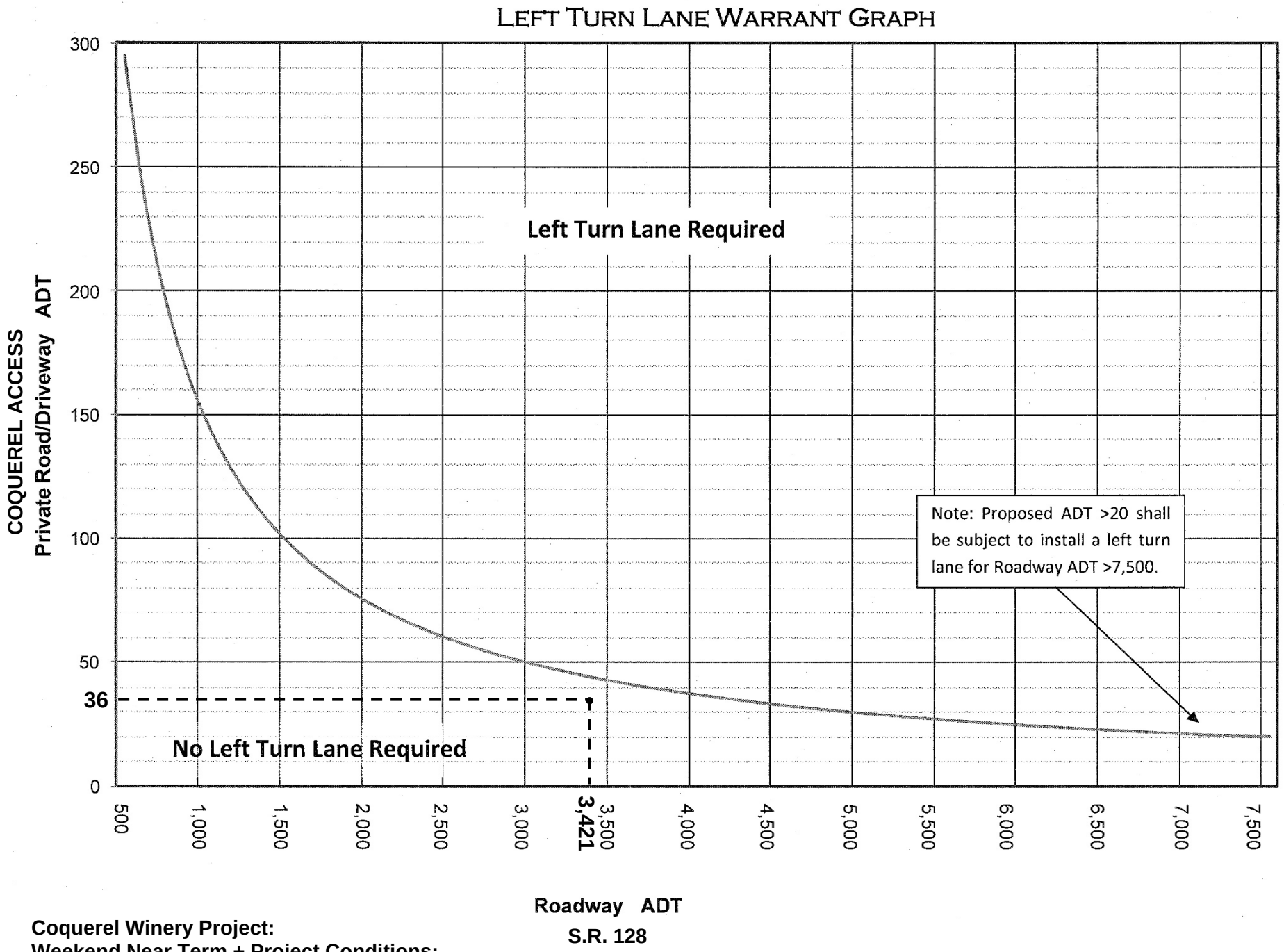
Coquerel Winery Project:
Weekend Existing + Project Conditions:
Left Turn Lane Not Warranted

Napa County, *Adopted Road and Street Standards*, revised August 31, 2004.



Coquerel Winery Project:
Weekday Near Term + Project Conditions:
Left Turn Lane Not Warranted

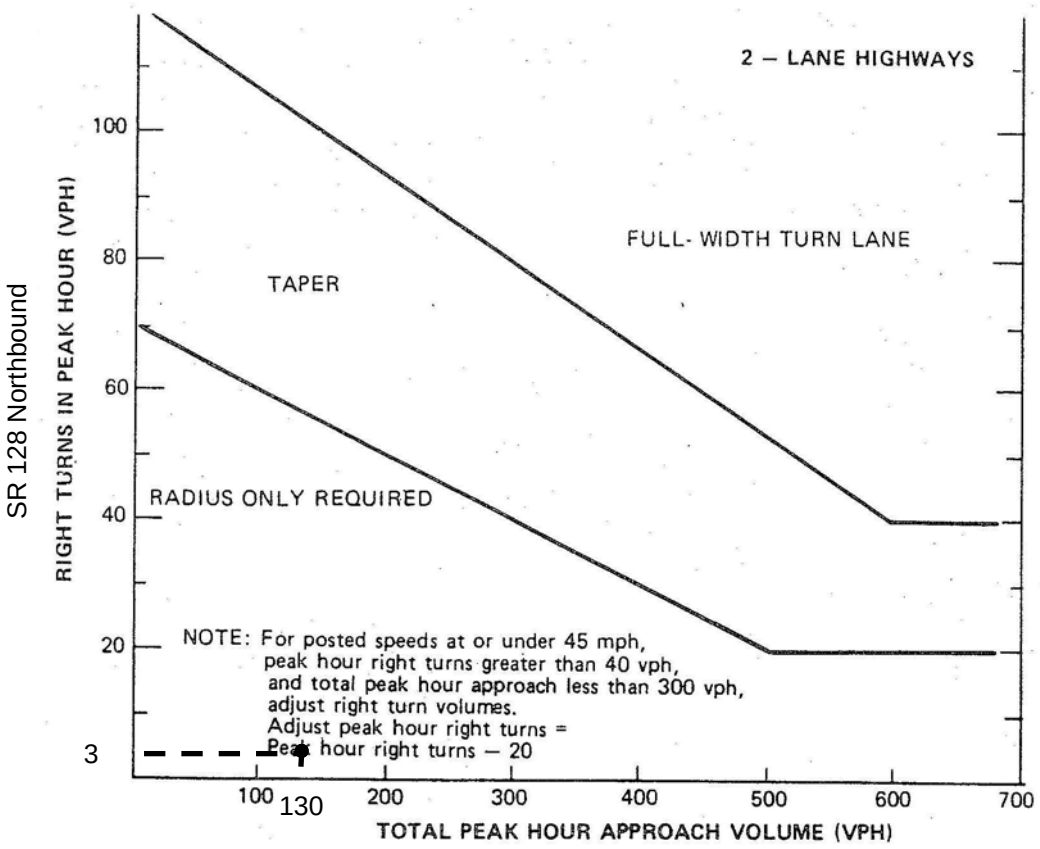
Napa County, *Adopted Road and Street Standards*, revised August 31, 2004.



Coquerel Winery Project:
Weekend Near Term + Project Conditions:
Left Turn Lane Not Warranted

Napa County, *Adopted Road and Street Standards*, revised August 31, 2004.

CALTRANS RIGHT TURN LANE WARRANTS



SR 128 Northbound

SR 128 Northbound

Coquerel Winery Project

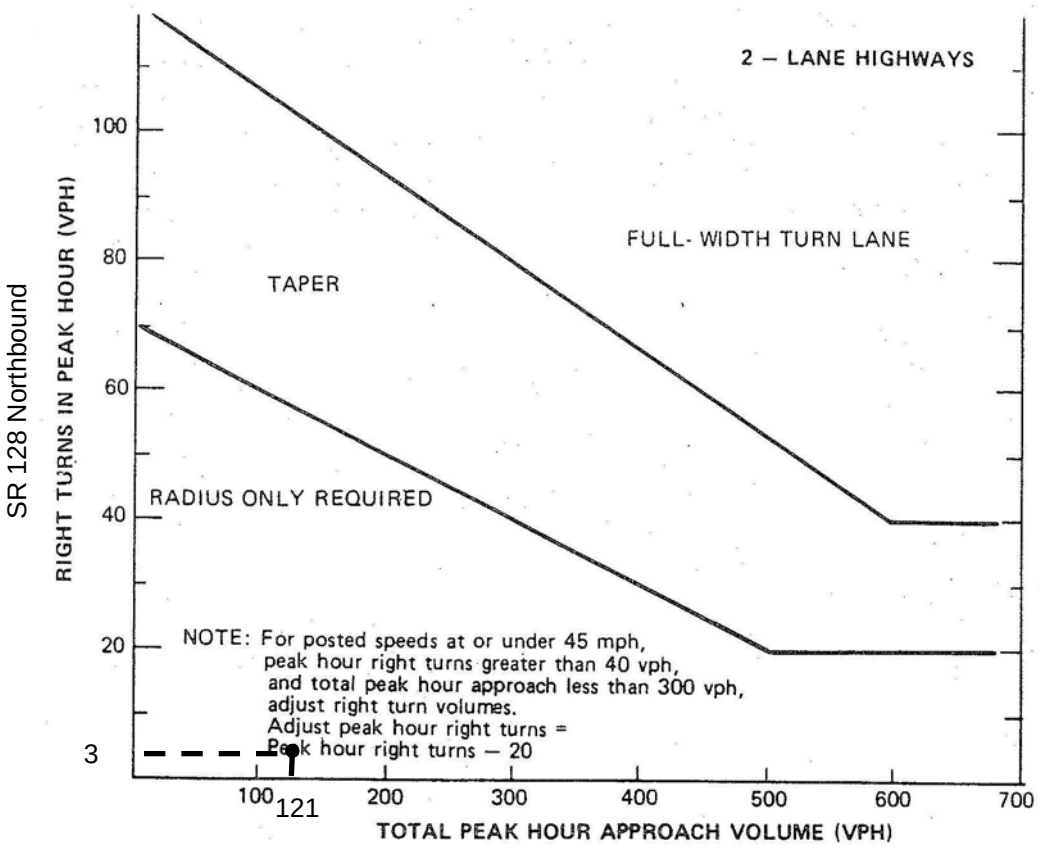
SR 128 / Winery Access Intersection

EXISTING + PROJECT WEEKDAY PM PEAK HOUR

RIGHT TURN LANE NOT WARRANTED

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

CALTRANS RIGHT TURN LANE WARRANTS



SR 128 Northbound

SR 128 Northbound

Coquerel Winery Project

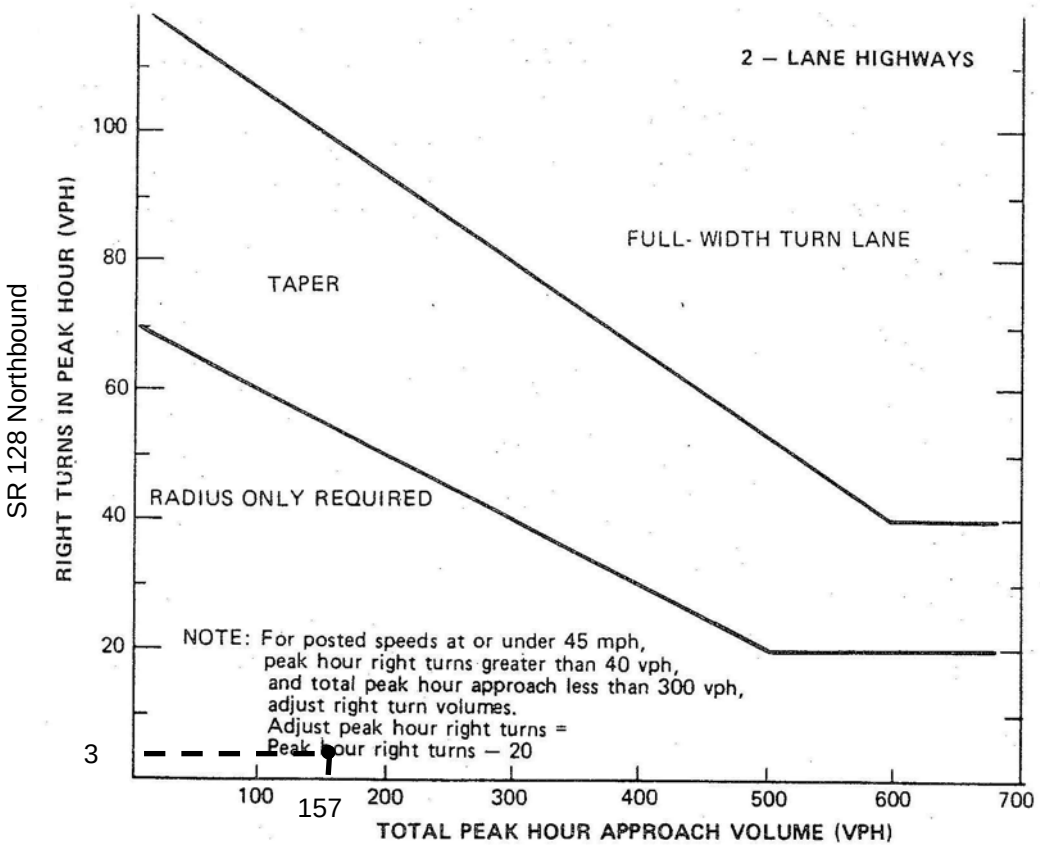
SR 128 / Winery Access Intersection

EXISTING + PROJECT WEEKEND PEAK HOUR

RIGHT TURN LANE NOT WARRANTED

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

CALTRANS RIGHT TURN LANE WARRANTS



SR 128 Northbound

SR 128 Northbound

Coquerel Winery Project

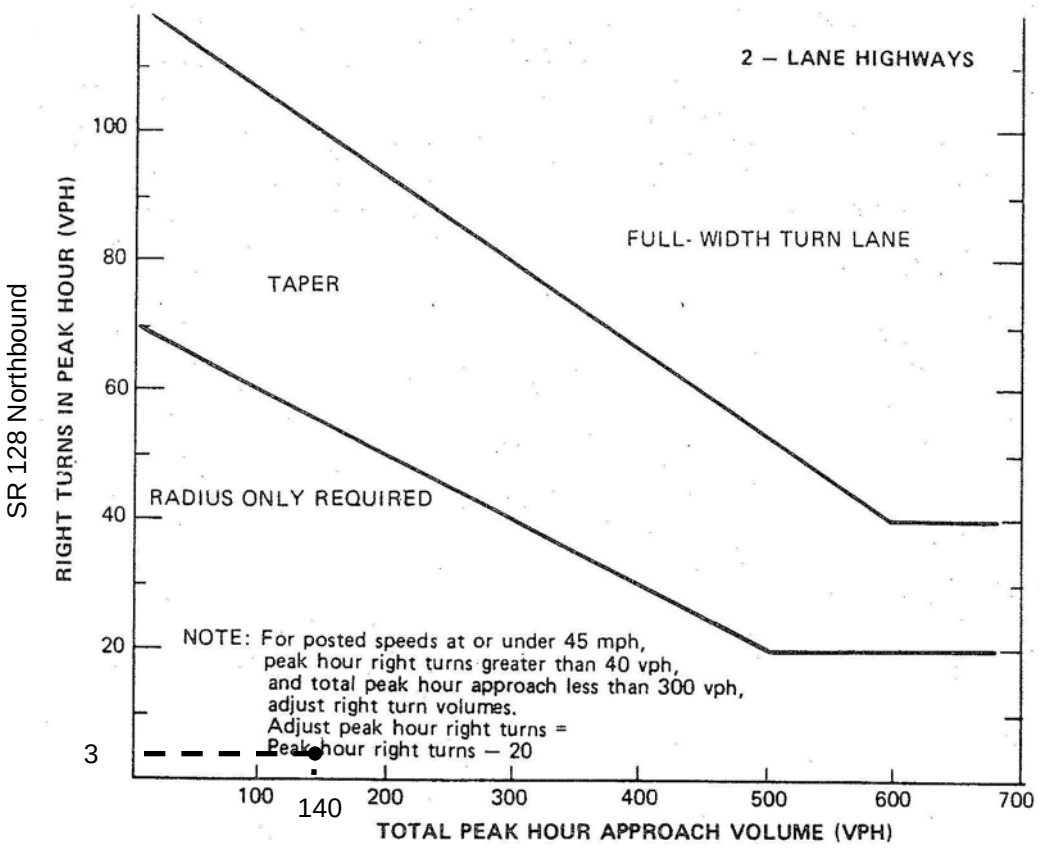
SR 128 / Winery Access Intersection

NEAR TERM + PROJECT WEEKDAY PM PEAK HOUR

RIGHT TURN LANE NOT WARRANTED

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

CALTRANS RIGHT TURN LANE WARRANTS



SR 128 Northbound

SR 128 Northbound

Coquerel Winery Project

SR 128 / Winery Access Intersection

NEAR TERM + PROJECT WEEKEND PEAK HOUR

RIGHT TURN LANE NOT WARRANTED

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

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. ≤ 0.60 v/c	≤ 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. 0.61 – 0.70 v/c	>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. 0.71 – 0.80 v/c	>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. 0.81 – 0.90 v/c	>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. 0.91 – 1.00 v/c	>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. > 1.00 v/c	> 50.0	> 50.0

References: 1. Highway Capacity Manual, Fourth Edition, Transportation Research Board, 2000, Contra Costa Transportation Authority (CCTA), Technical Procedures Update, Final, July 9, 2006. For the purposes of this study, CCTA intersection methodology has been used for signalized intersections yielding an LOS and v/c ratio.

LEVEL OF SERVICE (LOS) CRITERIA FOR ROADWAYS BASED ON VOLUMES

	LOS "A"	LOS "B"	LOS "C"	LOS "D"	LOS "E"
All Facilities (Volume-to-Capacity Ratio (V/C))	<0.6	0.6-0.7	0.7-0.8	0.8-0.9	0.9-1.0
	Two-way Average Daily Traffic (ADT) Threshold				
Roadway Segment Type	**LOS "A"**	**LOS "B"**	**LOS "C"**	**LOS "D"**	**LOS "E"**
6-Lane Freeway	60,000	80,000	100,000	120,000	140,000
4-Lane Freeway	35,000	50,000	65,000	80,000	95,000
4-lane Rural Highway	24,000	28,000	32,000	36,000	40,000
2-Lane Rural Highway	12,000	14,000	16,000	18,000	20,000
6-Lane Divided Arterial	32,000	38,000	43,000	49,000	54,000
4-Lane Divided Arterial	22,000	25,000	29,000	32,500	36,000
4-Lane Undivided Arterial	18,000	21,000	24,000	27,000	30,000
2-Lane Undivided Arterial	9,000	10,500	12,000	13,500	15,000
4-Lane Collector	12,000	15,000	18,000	21,000	24,000
2-Lane Collector	6,000	7,500	9,000	10,500	12,000

Note: 1. Based on "Highway Capacity Manual", Transportation Research Board, 2000 peak hour capacities. Daily capacities in the study area are assumed as nine times the peak hour capacity.

2. All volumes are approximate and assume typical roadway characteristics. Actual threshold volumes for each Level of Service listed above may vary depending on a variety of factors including (but not limited to) roadway curvature and grade, intersection or interchange spacing, driveway spacing, percentage of trucks and other heavy vehicles, travel lane widths, signal timing characteristics, on-street parking, volume of cross traffic and pedestrians, etc.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	127	0	0	127
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	138	0	0	138
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	276	138			138	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	276	138			138	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	714	910			1446	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	138	138
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1446
Volume to Capacity	0.00	0.08	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		10.0%	ICU Level of Service A
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	100	25	102	245	40	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	27	111	266	43	95
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	426	244			377	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	426	244			377	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	97			96	
cM capacity (veh/h)	564	795			1181	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	136	377	43	95
Volume Left	109	0	43	0
Volume Right	27	266	0	0
cSH	599	1700	1181	1700
Volume to Capacity	0.23	0.22	0.04	0.06
Queue Length 95th (ft)	22	0	3	0
Control Delay (s)	12.8	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	12.8	0.0	2.6	
Approach LOS	B			

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	118	0	0	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	128	0	0	130
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	259	128			128	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	259	128			128	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	730	922			1458	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	128	130
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1458
Volume to Capacity	0.00	0.08	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	9.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	207	34	84	205	27	93
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	225	37	91	223	29	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	362	203			314	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362	203			314	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	64	96			98	
cM capacity (veh/h)	622	838			1246	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	262	314	29	101
Volume Left	225	0	29	0
Volume Right	37	223	0	0
cSH	645	1700	1246	1700
Volume to Capacity	0.41	0.18	0.02	0.06
Queue Length 95th (ft)	49	0	2	0
Control Delay (s)	14.3	0.0	8.0	0.0
Lane LOS	B		A	
Approach Delay (s)	14.3	0.0	1.8	
Approach LOS	B			

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	9	2	127	3	1	127
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	138	3	1	138
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	280	140			141	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	280	140			141	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	709	908			1442	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	141	139
Volume Left	10	0	1
Volume Right	2	3	0
cSH	739	1700	1442
Volume to Capacity	0.02	0.08	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.0	0.0	0.1
Lane LOS	A		A
Approach Delay (s)	10.0	0.0	0.1
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	100	26	104	245	43	93
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	28	113	266	47	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	441	246			379	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	441	246			379	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	96			96	
cM capacity (veh/h)	551	793			1179	

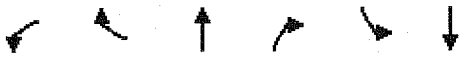
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	137	379	47	101
Volume Left	109	0	47	0
Volume Right	28	266	0	0
cSH	588	1700	1179	1700
Volume to Capacity	0.23	0.22	0.04	0.06
Queue Length 95th (ft)	22	0	3	0
Control Delay (s)	13.0	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	13.0	0.0	2.6	
Approach LOS	B			

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	4	1	118	3	1	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	1	128	3	1	130
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	262	130			132	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	262	130			132	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	726	920			1454	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	5	132	132
Volume Left	4	0	1
Volume Right	1	3	0
cSH	758	1700	1454
Volume to Capacity	0.01	0.08	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.8	0.0	0.1
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	0.1
Approach LOS	A		

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		17.1%	ICU Level of Service A
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	207	35	86	205	28	96
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	225	38	93	223	30	104
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	370	205			316	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	370	205			316	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	63	95			98	
cM capacity (veh/h)	615	836			1244	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	263	316	30	104
Volume Left	225	0	30	0
Volume Right	38	223	0	0
cSH	639	1700	1244	1700
Volume to Capacity	0.41	0.19	0.02	0.06
Queue Length 95th (ft)	50	0	2	0
Control Delay (s)	14.5	0.0	8.0	0.0
Lane LOS	B		A	
Approach Delay (s)	14.5	0.0	1.8	
Approach LOS	B			

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	154	0	0	154
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	167	0	0	167
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	335	167			167	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	335	167			167	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	660	877			1410	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	167	167
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1410
Volume to Capacity	0.00	0.10	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		11.4%	ICU Level of Service A
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	122	32	122	278	47	107
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	133	35	133	302	51	116
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	502	284			435	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	502	284			435	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	74	95			95	
cM capacity (veh/h)	505	755			1125	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	167	435	51	116
Volume Left	133	0	51	0
Volume Right	35	302	0	0
cSH	542	1700	1125	1700
Volume to Capacity	0.31	0.26	0.05	0.07
Queue Length 95th (ft)	33	0	4	0
Control Delay (s)	14.6	0.0	8.4	0.0
Lane LOS	B		A	
Approach Delay (s)	14.6	0.0	2.5	
Approach LOS	B			

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	137	0	0	137
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	149	0	0	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	298	149			149	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	298	149			149	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	693	898			1433	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	149	149
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1433
Volume to Capacity	0.00	0.09	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	10.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	224	39	98	232	32	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	243	42	107	252	35	114
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	416	233			359	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	416	233			359	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	58	95			97	
cM capacity (veh/h)	576	807			1200	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	286	359	35	114
Volume Left	243	0	35	0
Volume Right	42	252	0	0
cSH	601	1700	1200	1700
Volume to Capacity	0.48	0.21	0.03	0.07
Queue Length 95th (ft)	64	0	2	0
Control Delay (s)	16.3	0.0	8.1	0.0
Lane LOS	C		A	
Approach Delay (s)	16.3	0.0	1.9	
Approach LOS	C			

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	9	2	154	3	1	154
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	167	3	1	167
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	339	169			171	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	339	169			171	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	657	875			1407	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	171	168
Volume Left	10	0	1
Volume Right	2	3	0
cSH	688	1700	1407
Volume to Capacity	0.02	0.10	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.3	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	18.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	122	33	124	278	50	113
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	133	36	135	302	54	123
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	517	286			437	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517	286			437	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	95			95	
cM capacity (veh/h)	493	753			1123	

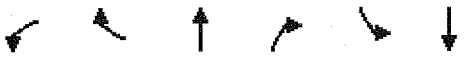
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	168	437	54	123
Volume Left	133	0	54	0
Volume Right	36	302	0	0
cSH	532	1700	1123	1700
Volume to Capacity	0.32	0.26	0.05	0.07
Queue Length 95th (ft)	34	0	4	0
Control Delay (s)	14.9	0.0	8.4	0.0
Lane LOS	B		A	
Approach Delay (s)	14.9	0.0	2.6	
Approach LOS	B			

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	4	1	137	3	1	137
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	1	149	3	1	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	302	151			152	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	302	151			152	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	689	896			1429	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	5	152	150
Volume Left	4	0	1
Volume Right	1	3	0
cSH	723	1700	1429
Volume to Capacity	0.01	0.09	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.0	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.0	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		18.0%	ICU Level of Service A
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	224	40	100	232	33	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	243	43	109	252	36	117
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	424	235			361	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	424	235			361	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	57	95			97	
cM capacity (veh/h)	569	804			1198	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	287	361	36	117
Volume Left	243	0	36	0
Volume Right	43	252	0	0
cSH	596	1700	1198	1700
Volume to Capacity	0.48	0.21	0.03	0.07
Queue Length 95th (ft)	65	0	2	0
Control Delay (s)	16.5	0.0	8.1	0.0
Lane LOS	C		A	
Approach Delay (s)	16.5	0.0	1.9	
Approach LOS	C			

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

Approved Developments Trip Generation

Napa County: Approved Developments In The Vicinity of Coquerel Project

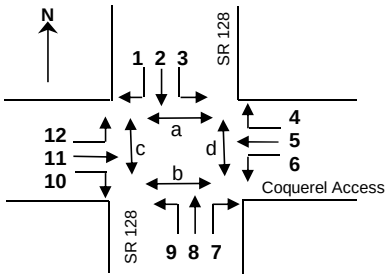
Napa County:	Production (gals./yr)	Daily Truck Trips	Visitors (per week)	Daily Visitor Trips	Employees	Daily Employee Trips	TOTAL TRIPS	Daily Trips on SR 128
McBride Winery	25,000	1	50	5	3	9	15	12
Johnston Vineyards	20,000	1	50	5	1	3	9	7
Bennett Lane Winery	50,000	1	200	22	11	34	57	46
Robert Pecota Winery / Atalon	60,000	1	20	2	4	12	15	3
Two Sisters Winery	15,000	1	10	1	2	6	8	8
Prager Family Estates	75,000	1	40	4	6	18	23	23
Villa Andriana	50,000	1	70	8	3	9	18	4
Envy Wines	20,000	1	60	7	3	9	17	3
Chateau Montelena	128,000	2	300 est.	43	7	21	66	10
Arroyo Winery	20,000	1	90	10	3	9	20	1
Carver Sutro Winery	20,000	1	120	13	3	9	23	1
Garnet Creek Winery	15,000	1	30	3	1	3	7	1
Amici Cellars	20,000	1	5	1	1	3	5	1
Tamber Bey	60,000	1	115	14	1	3	17	2
								122
City of Calistoga:								
From review of pending/approved developments it was estimated 20 daily trips added to SR 128 near project.								20
								142

Source: Napa County, Planning Department, Ms. Charlene Gallina, February 7, 2013.
City of Calistoga, Planning Department, Mr. Erik Lundquist, January 28, 2013.

Intersection Volume Worksheet

SR 128 / Coquerel Access

4/20,21/12 Fri., Sat.
Weather: Clear



A = Adult
T = Teen
C = Child
B = Bike

Weekday PM

	1	2	3	4	5	6	7	8	9	10	11	12	15 MIN.	60 MIN.	Pds&Bicy a - b / c - d	Project Acces In	Out
4:00-4:15		29	0	0		0	0	27					56		0	0	0
4:15-4:30		25	0	0		0	0	33					58		0	0	0
4:30-4:45		30	0	0		0	0	21					51		0	0	0
4:45-5:00		29	0	0		0	0	20					49	214	0	0	0
5:00-5:15		30	0	0		0	0	29					59	217	0	0	0
5:15-5:30		15	0	0		0	0	29					44	203	0	0	0
5:30-5:45		29	0	0		0	0	26					55	207	0	0	0
5:45-6:00		19	0	0		0	0	27					46	204	1AB - 0 / 1AB - 0	0	0
PeakHour:																	
4:15-5:15		114	0	0		0	0	103					217	217	1AB - 0 / 1AB - 0	**0**	**0**
balanced:		127						127				phf =	0.92		1 - 0 / 1 - 0		

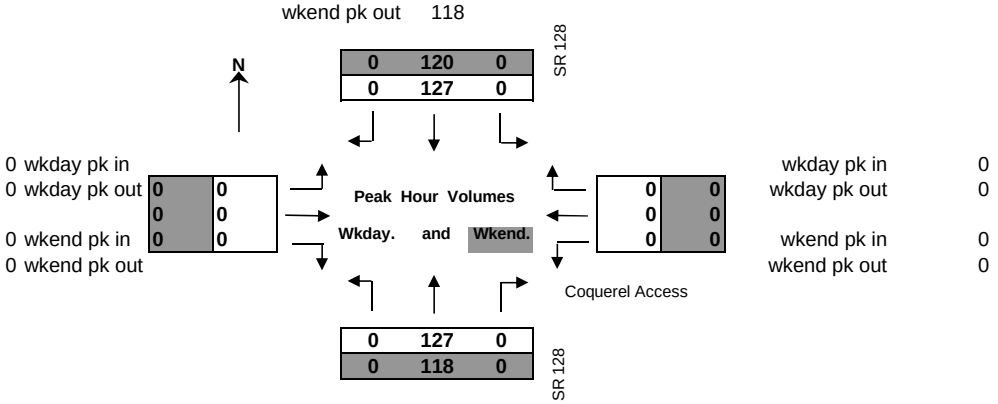
Weekend Afternoon

	1	2	3	4	5	6	7	8	9	10	11	12	15 MIN.	60 MIN.	Pds&Bicy a - b / c - d	Project Acces In	Out
1:00-1:15		31	0	0		0	0	20					51		0	0	0
1:15-1:30		25	0	0		0	0	25					50		0	0	0
1:30-1:45		27	0	0		0	0	28					55		0	0	0
1:45-2:00		22	0	0		0	0	32					54	210	0	0	0
2:00-2:15		17	0	0		0	0	17					34	193	0	0	0
2:15-2:30		15	0	0		0	0	27					42	185	0 - 0 / 1AB - 0	0	0
2:30-2:45		25	0	0		0	0	23					48	178	0	0	0
2:45-3:00		20	0	0		0	0	25					45	169	0	0	0
PeakHour:																	
1:00-2:00		105	0	0		0	0	105					210	210	0 - 0 / 1AB - 0	**0**	**0**
		120						118				phf =	0.95		0 - 0 / 1 - 0		

wkday pk in 127
wkday pk out 127

wkend pk in 120
wkend pk out 118

*Note: Also 1 in, 1 out total combined of all driveways between project site and Tubbs Ln.



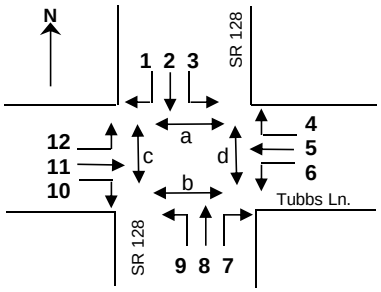
wkday pk in 127
wkday pk out 127

wkend pk in 118
wkend pk out 120

Intersection Volume Worksheet

SR 128 / Tubbs Lane

4/20,21/12 Fri., Sat.
Weather: Clear



A = Adult
T = Teen
C = Child
B = Bike

Weekday PM

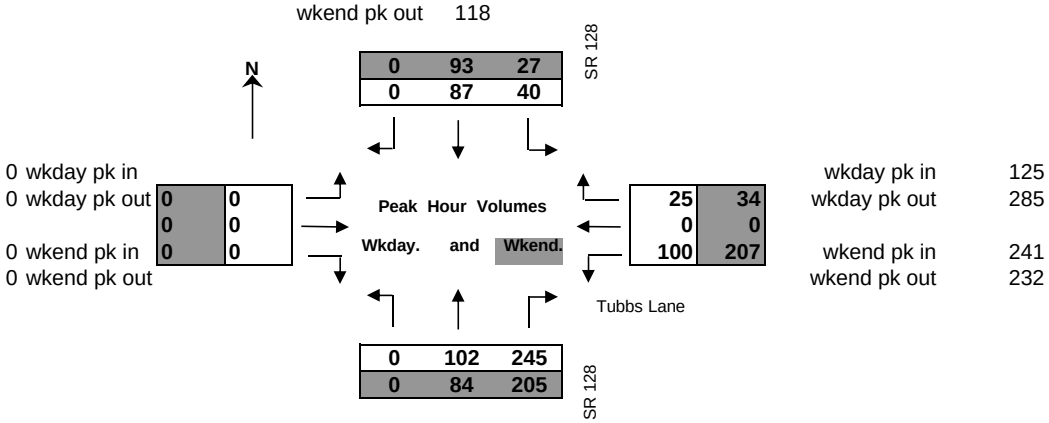
	1	2	3	4	5	6	7	8	9	10	11	12	15 MIN.	60 MIN.	Pds&Bicy a - b / c - d
4:00-4:15		19	10	3		21	47	24					124		0
4:15-4:30		17	8	4		27	50	29					135		0
4:30-4:45		18	12	4		20	52	17					123		0
4:45-5:00		18	11	3		19	48	18					117	499	0
5:00-5:15		21	10	7		21	53	23					135	510	0 - 0 / 2AB - 0
5:15-5:30		12	4	6		22	52	23					119	494	0
5:30-5:45		18	11	6		23	55	20					133	504	0
5:45-6:00		14	5	3		23	59	25					129	516	1AB - 0 / 1AB - 0
PeakHour:															
5:00-6:00		65	30	22		89	219	91					516	516	1AB - 0 / 3AB - 0
balanced:		87	40	25		100	245	102				phf =	0.95		1 - 0 / 3 - 0

Weekend Afternoon

	1	2	3	4	5	6	7	8	9	10	11	12	15 MIN.	60 MIN.	Pds&Bicy a - b / c - d
1:00-1:15		26	5	5		47	56	15					154		T - AB / 0 - A
1:15-1:30		20	6	8		55	40	17					146		A - 2A / 2A,1T,1AB - 3A,TB
1:30-1:45		19	8	10		46	42	18					143		0
1:45-2:00		18	5	7		37	45	25					137	580	0 - A / A,AB - 0
2:00-2:15		13	4	6		31	37	11					102	528	2A,2AB - TB / AB - 0
2:15-2:30		12	3	11		24	34	16					100	482	2A - 2A / 2A - 1A
2:30-2:45		19	6	9		27	28	15					104	443	0 - A,TB / A - 2A
2:45-3:00		17	3	5		30	49	20					124	430	0 - AB / 3A,1AB - 0
PeakHour:															
1:00-2:00		83	24	30		185	183	75					580	580	4A,2AB - 3A,2AB,TB /
balanced:		93	27	34		207	205	84				phf =	0.94		/ 6A,2AB - 3A
															6 - 6 / 8 - 3

wkday pk in 127
wkday pk out 127

wkend pk in 120
wkend pk out 118



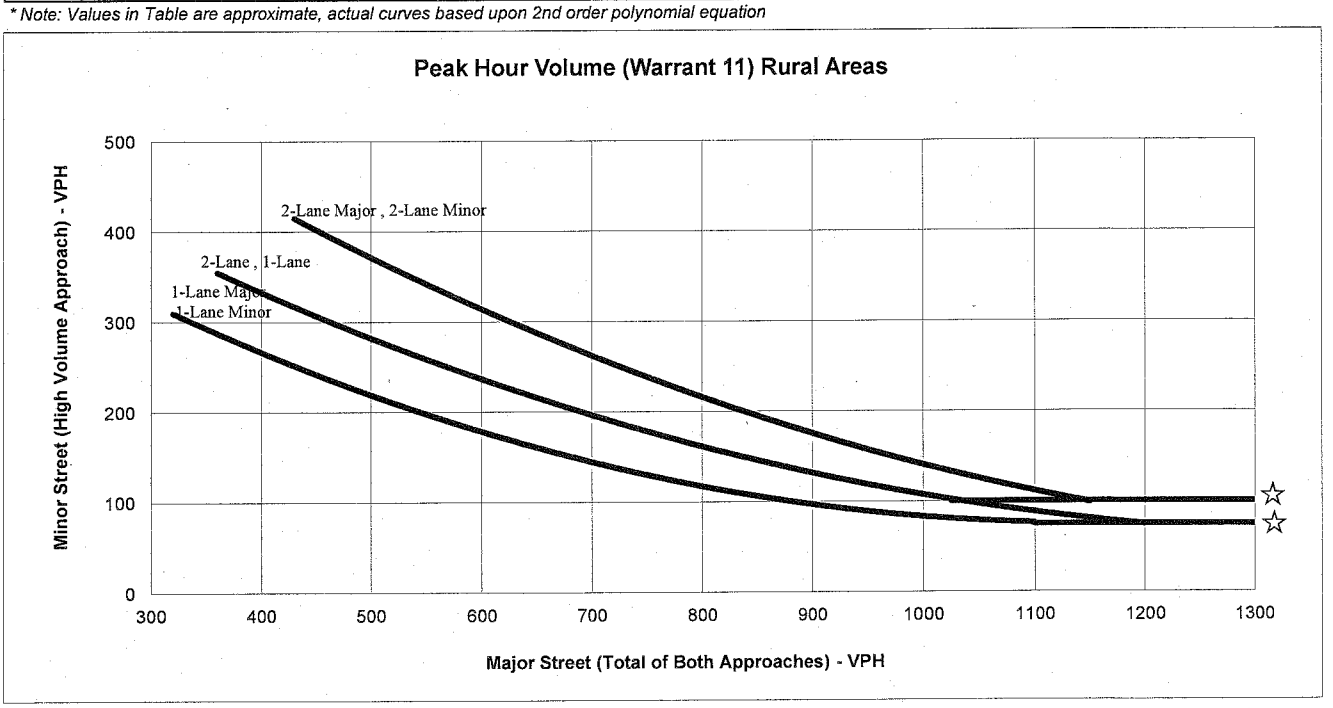
wkday pk in 347
wkday pk out 187

wkend pk in 289
wkend pk out 300

OMNI-MEANS

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*

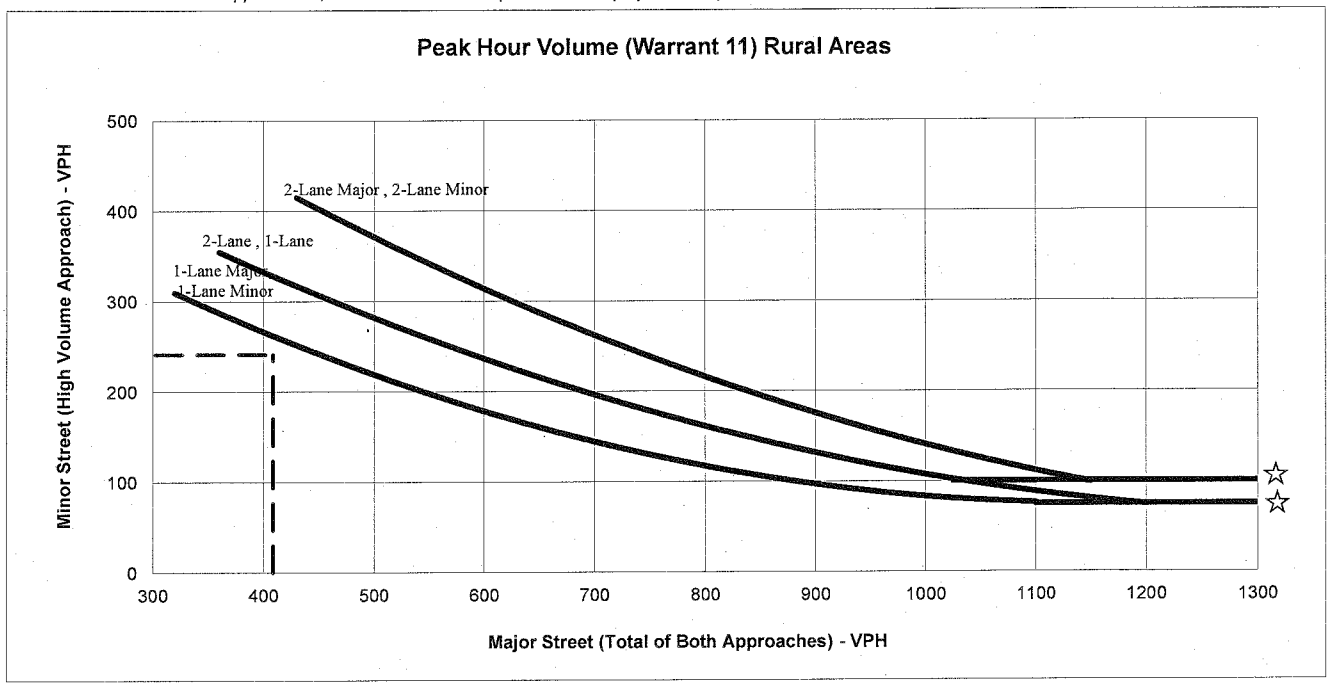


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	S.R. 128 / Tubbs Ln.
Scenario:	Existing Weekday PM Peak Hour Conditions
Minor St. Volume:	125
Major St. Volume:	274
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*

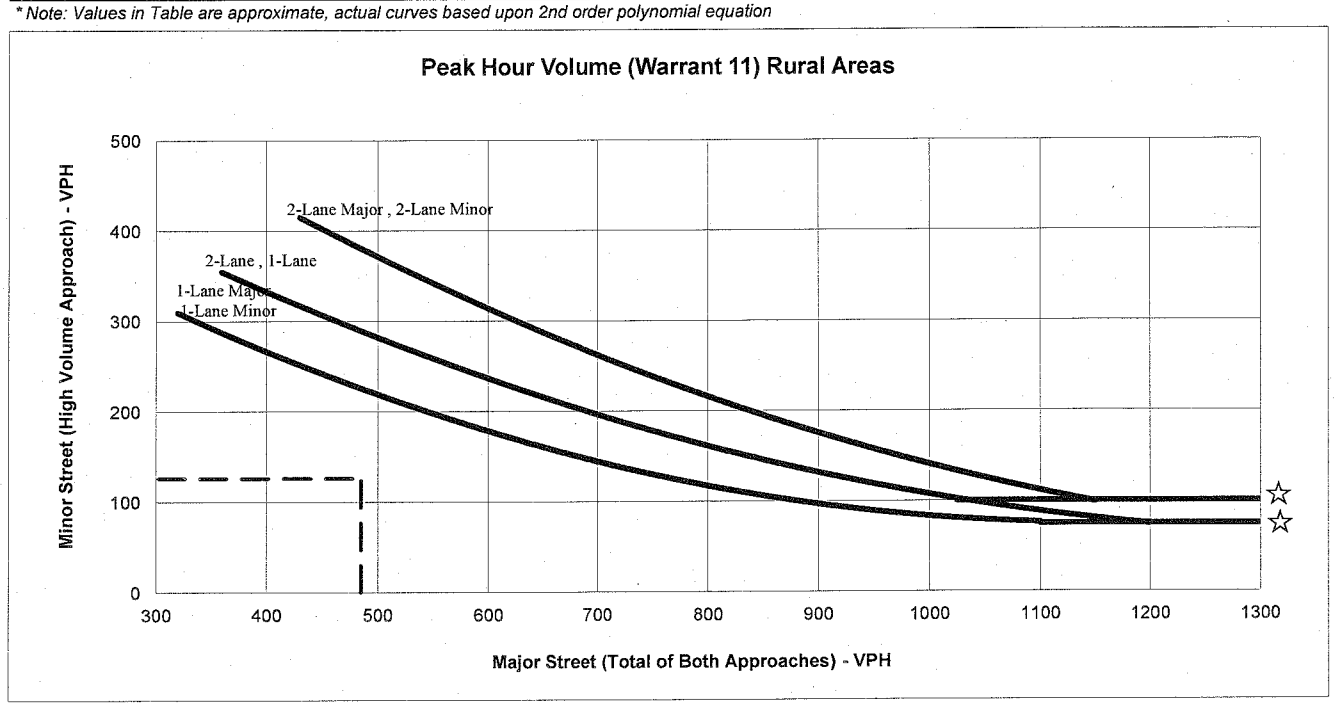


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	S.R. 128 / Tubbs Ln.
Scenario:	Existing Weekend Peak Hour Conditions
Minor St. Volume:	241
Major St. Volume:	409
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*

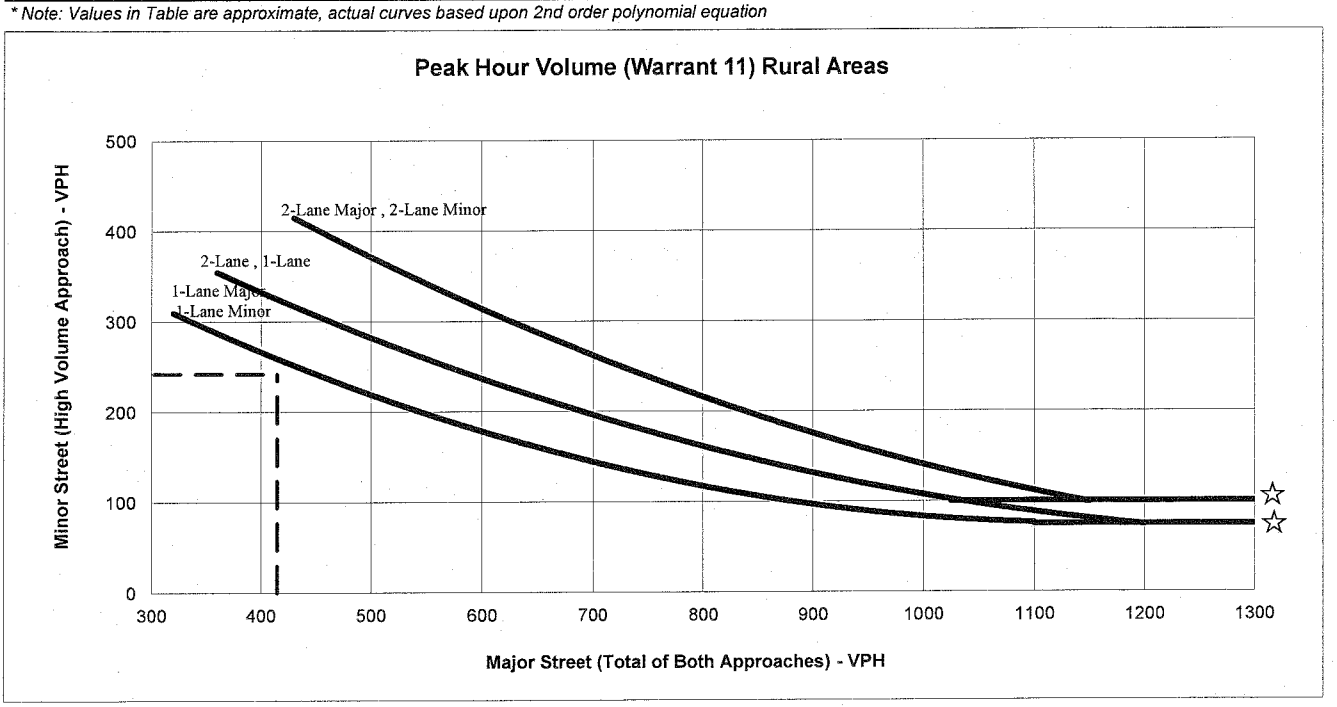


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	S.R. 128 / Tubbs Ln.
Scenario:	Existing + Project Weekday PM Peak Hour Conditions
Minor St. Volume:	126
Major St. Volume:	485
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*

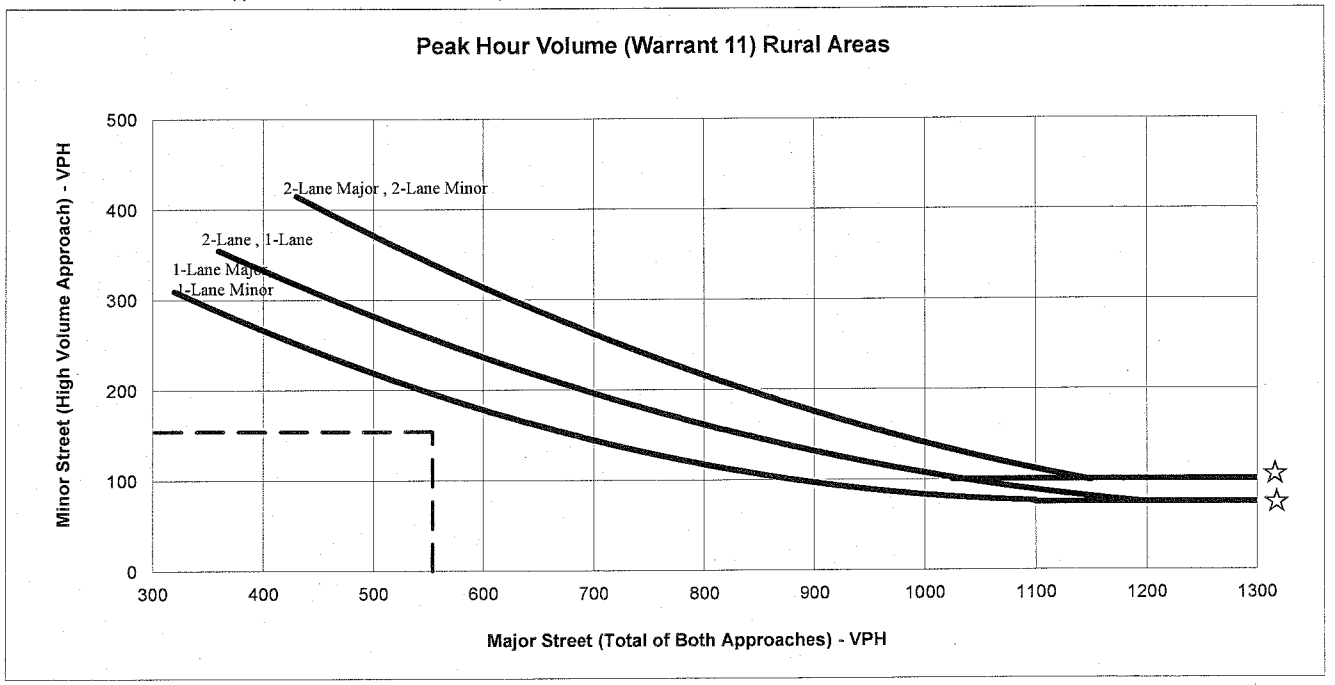


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	S.R. 128 / Tubbs Ln.
Scenario:	Existing + Project Weekend Peak Hour Conditions
Minor St. Volume:	242
Major St. Volume:	415
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:
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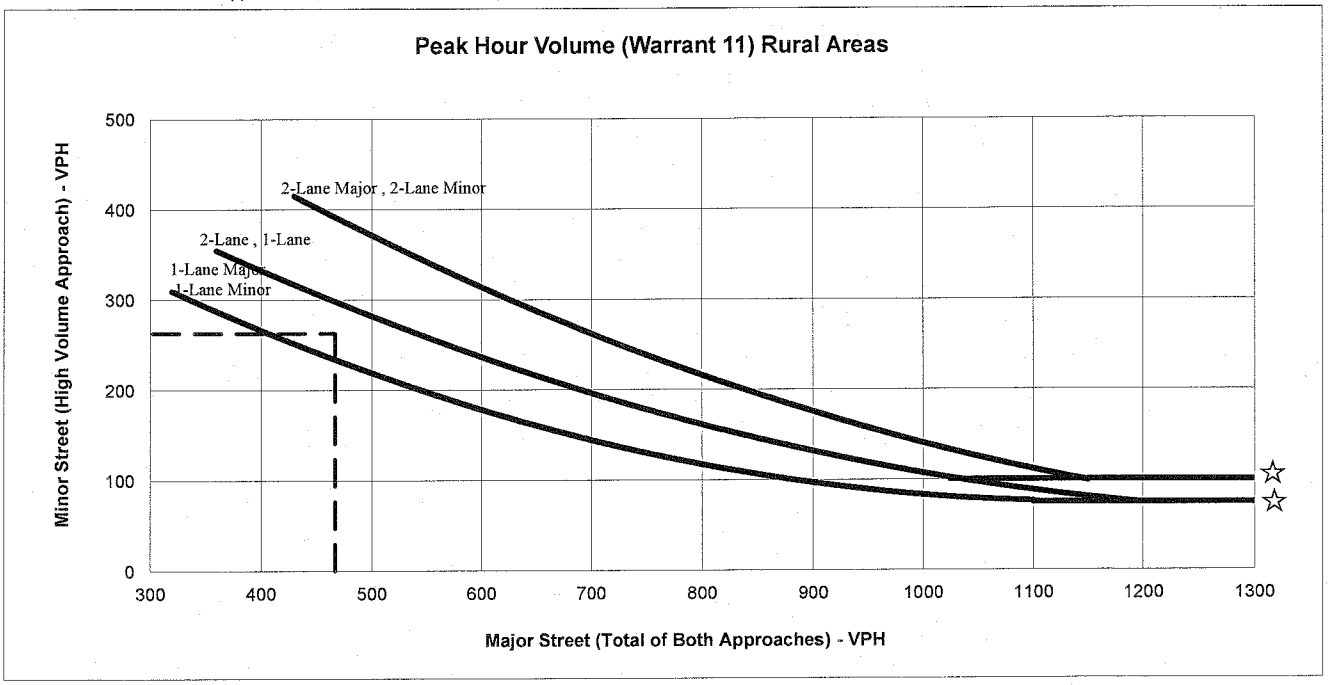
Intersection:	S.R. 128 / Tubbs Ln.
Scenario:	Near Term Weekday PM Peak Hour Conditions
Minor St. Volume:	154
Major St. Volume:	554
Warrant Met?:	No

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*



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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:	S.R. 128 / Tubbs Ln.
Scenario:	Near Term Weekend Peak Hour Conditions
Minor St. Volume:	263
Major St. Volume:	467
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
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1100	75	1100	90	1100	110
1200	75	1200	75	1150	100
1300	75	1300	75	1300	100

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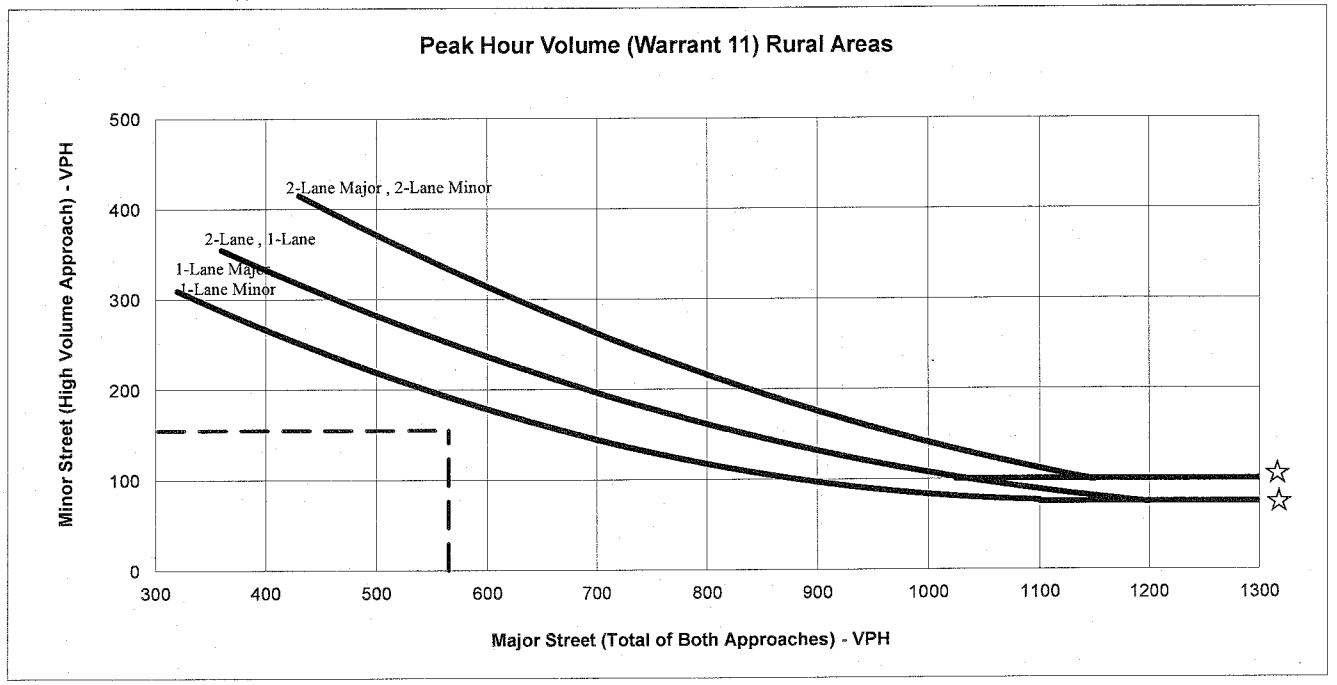

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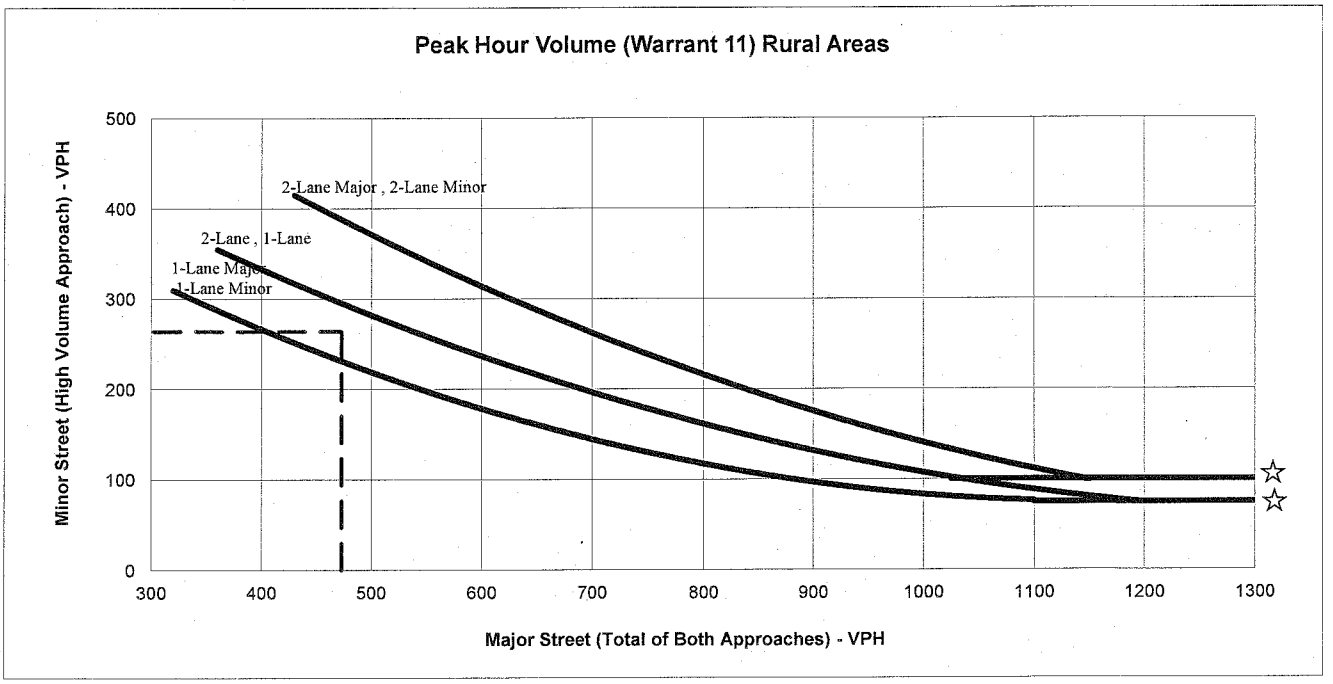
Intersection:	S.R. 128 / Tubbs Ln.
Scenario:	Near Term + Project Weekday PM Peak Hour Conditions
Minor St. Volume:	155
Major St. Volume:	565
Warrant Met?:	No

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*



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Intersection:	S.R. 128 / Tubbs Ln.
Scenario:	Near Term + Project Weekend Peak Hour Conditions
Minor St. Volume:	264
Major St. Volume:	473
Warrant Met?:	No