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June 10, 2014

Ms. Cherie Melka
Melka Wines
P.O. Box 82
Oakville, CA 94562

Subject: ***Focused Traffic Analysis for the Proposed Melka Winery Project - Located at 2900 Silverado Trail Napa County***

Dear Ms. Melka:

This report provides a focused traffic analysis for the proposed Melka Winery project located at 2900 Silverado Trail north of Deer Park Road in Calistoga (see Figure 1 for Project Vicinity Map). This study reflects our discussions with your planning consultant (Mr. Jake Storms) regarding the project characteristics and other adjacent approved/pending projects in the study area. In addition, all necessary field reviews, traffic counts, and overall analyses of the project's effect on traffic were conducted based on initial comments received from Napa County Planning, Building, and Environmental Services. Some of the key issues evaluated in this study include the following:

- Existing and future weekday PM and weekend mid-day peak hour operations at the Melka Winery Project Driveway/Silverado Trail intersection;
- Near-term (Year 2015) traffic conditions reflecting other approved/pending winery projects in the study area;
- Project trip generation relative to the proposed use permit on of winery production, employment, and visitor data;
- Project site circulation and vehicle access at the Silverado Trail project driveway and truck circulation;
- Cumulative year 2030 (no project) conditions along Silverado Trail based on the Napa County General Plan Update EIR.

The following sections outline existing and future traffic conditions with and without the proposed Melka Winery project based on input from Napa County Planning staff. Where necessary, measures have been recommended to ensure acceptable traffic flow, circulation, and/or fair share contribution to regional cumulative traffic improvements along Silverado Trail. 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

Attachments: Appendices
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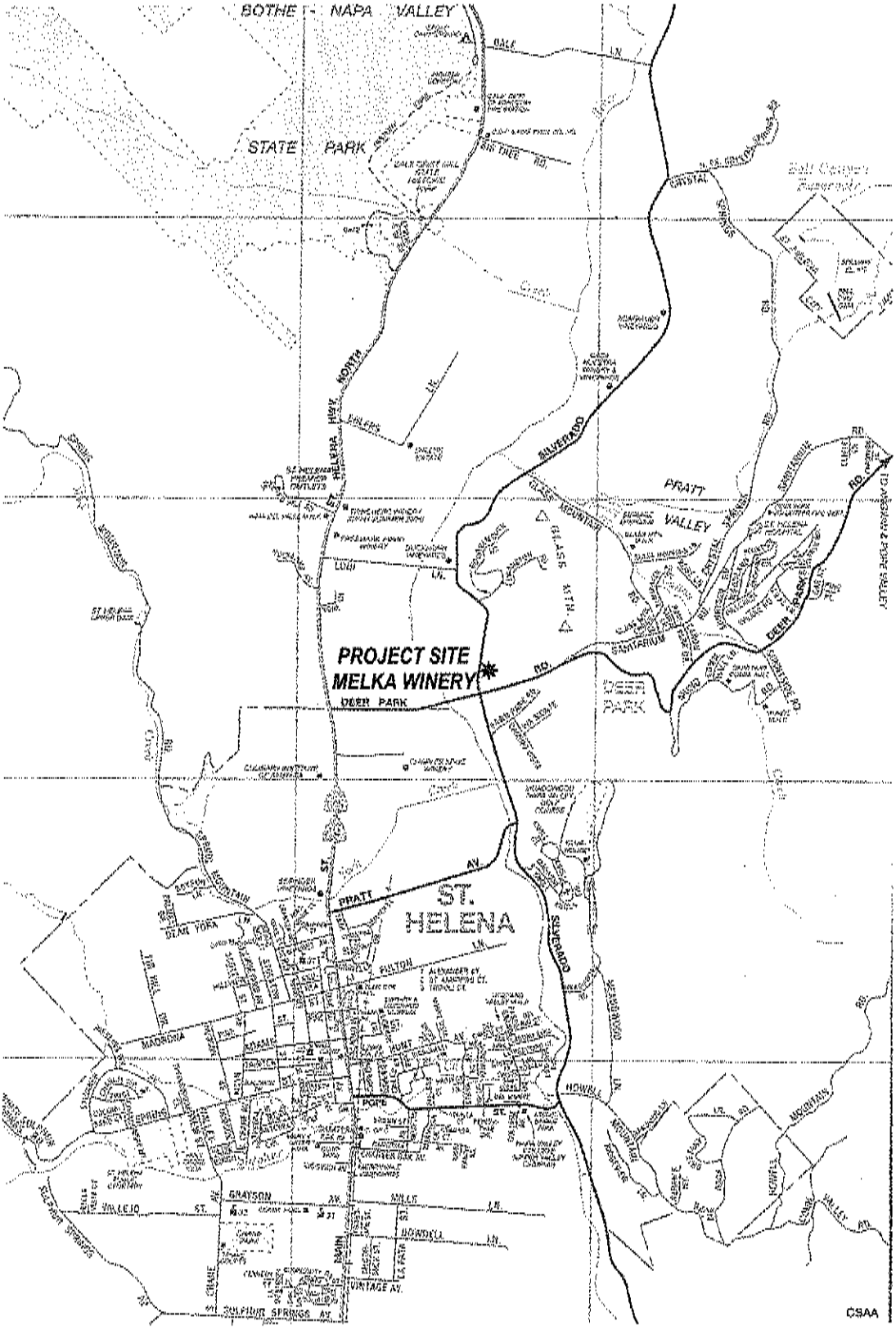

Project Vicinity Map

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figure 1

1. EXISTING TRAFFIC CONDITIONS

Roadways

The proposed Melka Winery project would be located at 2900 Silverado Trial on the east side of roadway approximately 850 feet north of Deer Park Road. Located on the east side of the Napa Valley, Silverado Trial serves as one of the two north-south facilities extending through the valley. State Route 29 extends north-south along the west side of the valley and can be accessed via Deer Park Road. A brief description of the each roadway follows:

Silverado Trail extends in a northwest-southeast direction between Calistoga and St. Helena in the project study area. Classified as a two-lane rural arterial roadway, Silverado Trail provides access northwest to Calistoga and State Route 128 as well as southeast to Napa. In the immediate project site area, Silverado Trail functions as a two-lane rural highway and has two 12-foot travel lanes with 4-5 foot shoulders (striped each side) north of Deer Park Road. The speed limit on Silverado Trail is 55 mph. Napa County defines Silverado Trail as a two-lane, rural arterial roadway.

Deer Park Road extends east-west between State Route 29 and Silverado Trail approximately 850 south of the project site. The roadway continues east of Silverado Trail to provide access to Deer Park. A two-lane rural collector street with 7-8 foot shoulders, Deer Park Road is located north of St. Helena and comprises one of the Valley's main "cross-streets" that connects SR-29 and Silverado Trail (these include Pope Street to the south and Larkmead Lane to the north). Deer Park Road provides access primarily to agricultural (vineyards) areas in the project site vicinity.

Existing Intersection Volumes

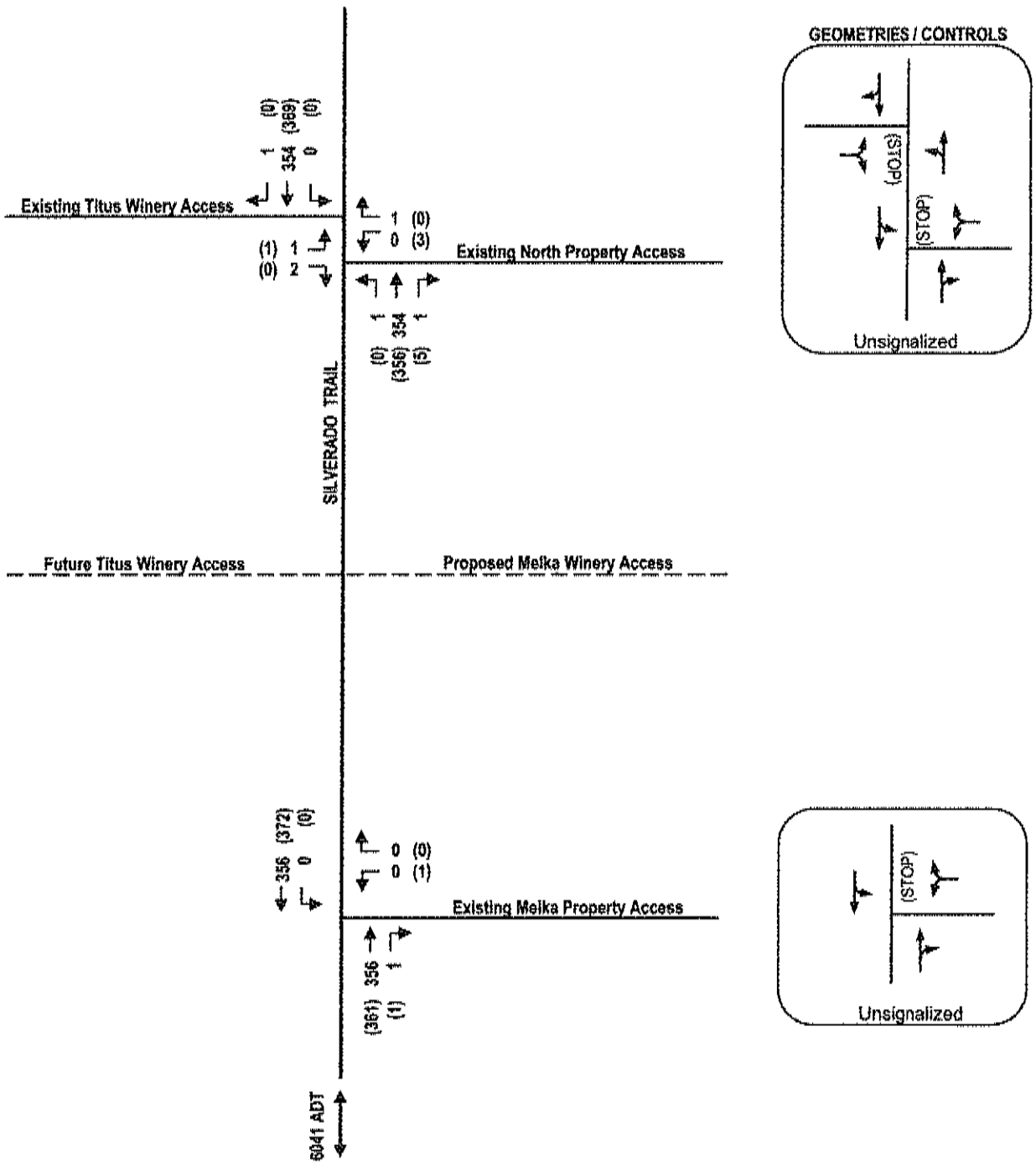
In order to identify existing peak hour operating conditions, existing traffic counts were obtained from a very recent transportation study conducted for a proposed winery immediately west of the proposed project site off of Silverado Trail.[1] Vehicle counts were conducted during a weekday PM commute period and a Saturday peak afternoon period at the following intersections:

1. Silverado Trail/Project Driveway Vicinity — Stop-control (minor driveway)

Peak period vehicle counts were conducted on a Friday late afternoon (3:00-6:00 p.m.) and Saturday afternoon (1:00-6:00 p.m.). The resultant "peak hour" of traffic flow on Silverado Trail occurs during 4:30-5:30 p.m. (Friday) and 2:45-3:45 p.m. (Saturday). Peak period counts were conducted during the harvest/crush season (late September) and reflect peak traffic conditions. With respect to the proposed project site driveway; there are currently no winery operations generating traffic at the property (only a single-family residence). Therefore, daily and peak hour driveway traffic for existing uses on the site was generated using Institute of Transportation Engineers (ITE) research on single-family homes resulting in one (1) peak hour trip and 10 daily trips.

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

[1] *Crane Transportation Group (CTG), Traffic Impact Report—Proposed Titus Winery in Napa Valley, October 3, 2013.*



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Existing Weekday PM and (Weekend) Peak Hour Volumes

North

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figure 2

Roadway Volumes

Based on new daily traffic counts conducted along Silverado Trail just north of Deer Park Road, Silverado Trial has a current average daily traffic volume of 6,401 vehicles.[2] Daily traffic volumes on Silverado Trail were collected on weekdays (Thursday-Friday) and on a weekend (Saturday). As with peak hour data collection, overall volumes are slightly higher on a Friday than on a Saturday (6,401ADT and 5,742 ADT). Based on Napa County's designation of Silverado Trail as a two-lane rural arterial, an ADT of 6,401 would be considered operating at LOS C.[3]

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).

The existing project driveway location at Silverado Trial is a minor-street, stop-controlled intersection. Located at the east end of the parcel, the driveway consists of single lane approach for the westbound right and left-turn movements onto Silverado Trail. This type of intersection is classified as three-way or (T-type) intersection. There is no southbound left-turn lane or northbound right-turn lane on Silverado Trail at the existing project driveway.

Based on the Highway Capacity Manual (*HCM 2000*) 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 during the weekday PM peak hour, the Silverado Trial /Melka Wines Project Driveway intersection is operating at LOS B (10.5 seconds) for the stop-sign controlled westbound driveway turning movements onto Silverado Trail. During the weekend (Saturday) mid-day peak hour, through-volumes on Silverado Trail are proportionately higher than weekday volumes. As a result, the Silverado Trail/Melka Wines Project driveway intersection is operating at LOS C (15.2 seconds) for the westbound movements onto Silverado Trail.

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	Silverado Trail/Melka Driveway (Res.)	Stop	B 10.5	C 10.5	C 15.2	C 16.0

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.

[2] *Baymetrics Traffic Resources, Average Daily Traffic (ADT) count, Silverado Trail (north of Deer Park Road), November 7-9, 2013.*
[3] *Napa County Baseline Data Report, Transportation and Circulation, Table 11-1, Napa County Roadway Segment Daily LOS Volume Thresholds, 2005.*

Based on the California Manual on Uniform Traffic Control Devices (CAMUTCD) peak hour signal warrant criteria, Silverado Trail/Melka Wines Project driveway intersection was evaluated for signalization.[4] 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. The study intersection does not qualify for signalization under the peak hour warrants as the peak hour volumes are too low (the warrant graphs are provided in the Appendix).

It is noted that the current project driveway serves only the existing Melka residence cottage and new home (under construction) located off of Silverado Trail (approximately 850 feet north of Deer Park Road). The actual project driveway serving Melka Winery uses would be constructed at a point between their existing residential driveway and adjacent residential driveway located approximately 385 feet to the north. The project applicant intends to close the existing driveway and use the new driveway to access both proposed winery and residential uses (residential areas of the parcel would be accessed via an internal branch of the driveway and electronic gate).

Current Site Traffic/Entitlements

To accurately assess the proposed project's trip generation and impacts, the site traffic was observed at the existing residential driveway serving the Melka residence off of Silverado Trail. However, during both the weekday and weekend peak periods, no vehicle trips were observed going to/from the residential driveway. Therefore, to establish existing conditions a preliminary calculation was done assuming a single-family residence generating one (1) peak hour trip and ten (10) daily trips based on Institute of Transportation Engineers (ITE) research (PM weekday and mid-day weekend). This intersection LOS calculation was done to establish an existing base for current residential site uses.

2. NEAR-TERM (NO PROJECT) CONDITIONS

Near-Term (Approved/Pending Projects)

Near-term (no project) conditions represent a reasonable period of time in which the proposed project could be approved and/or constructed. Based on discussions with County staff, a two-year period to the year 2015 has been established for near-term (no project) conditions representing all approved/pending projects within the study area. In addition, recent approved/pending projects within the City of Calistoga are included in the overall project list. To generate near-term (no project) conditions, both Napa County and City of Calistoga Planning staff were contacted for recently approved projects within the project site study area.[5] [6] These projects are located both northwest of the project site in Calistoga, in the immediate project study area, and south along Silverado Trail and are described as follows:

City of Calistoga:

Silver Rose Resort Winery & Spa	Hotel: 85 rooms
963 Silverado Trail	Health Club: 8.8 ksf
Calistoga, CA 94515	Single-Family: 21 du's
	Restaurant: 150 seats
	Winery: 10,000 cases

[4] *California Manual on Uniform Traffic Control Devices (CAMUTCD), Chapter 4C, Peak hour signal warrant (#3), 2012.*
[5] *Ms. Suzzane Gardner-Gambill, Senior Planner, Planning, Building, and Environmental Services Department, Personal communication, Approved/pending project's in the Pickett Road and Calistoga area, March 14, 2013.*
[6] *Mr. Erik Lundquist, Senior Planner, City of Calistoga, Approved projects within the Calistoga City limits, Personal communication on March 25, 2013.*

Indian Springs Expansion Project 1712 Lincoln Avenue Calistoga, CA 94515	Hotel: 95 rooms Restaurant: 90 seats
Aubert Winery 333 Silverado Trail Calistoga, CA 94515	Production: 10,000 cases Visitors: 50 visitors/day Employees: n.a.
Brian Arden Winery 331 Silverado Trail Calistoga, CA 94515	Production: 10,000 cases Visitors: 60 visitors/day Employees: 4 full-time, 4 part-time
Lava Vine Winery 963 Silverado Trail Calistoga, CA 94515	Production: 12,600 cases Visitors: 90 visitors/day Employees: 4 full-time, 4 part-time
Napa County:	
Larkmead Cellars Vineyard 1100 Larkmead Lane Calistoga, CA 94515	Production: No change Visitors: No change Employees: 6 full-time, 4 part-time
Kelly Fleming Winery 2339 Pickett Road Calistoga, CA 94515	Production: 20,000 gallons Visitors: 24 visitors/day Employees: 8 full-time, 4 part-time
Venge Winery 4708 Silverado Trail Calistoga, CA 94515	Production: 20,000 gallons Visitors: 140 visitors/week Employees: 2 full-time, 2 part-time
Davis Estates Winery 4060 Silverado Trail Napa County, CA	Production: 30,000 gallons Visitors: 34 visitors/day Employees: 5 full-time
Titus Winery 2971 Silverado Trail Napa County, CA	Production: 24,000 gallons Visitors: 60 visitors/day Employees: 10 full-time, 2 part-time
Araujo Winery 2155 Picket Road Calistoga, CA 94515	Production: 20,000 gallons Visitors: 18 visitors/day Employees: 12 full-time, 2 part-time

Near-Term (No Project) Trip Generation

Near-term (approved/pending) projects' weekday PM hour, weekend mid-day peak hour, and daily traffic volumes have been taken directly from previous transportation analyses performed for those projects and these include the following:

- W-Trans, Traffic Impact Study for the Silver Rose Winery and Resort Project, City of Calistoga, February 14, 2012;

- W-Trans, Traffic Study for the Lava Vine Winery Project, City of Calistoga, January 18, 2012;
- W-Trans, Focused Traffic Impact Analysis for the Brian Arden Winery, City of Calistoga, November 29, 2011;
- W-Trans, Focused Traffic Analysis for the August Briggs (Aubert) Winery, City of Calistoga, December 4, 2002;
- Omni-Means Engineers & Planners, Updated Traffic Study for the Proposed Davis Estates Winery Project, Napa County, Draft Report, March 11, 2013 (included Larkmead Cellars Winery and Indian Springs Expansion projects).
- Omni-Means Engineers & Planners, Focused Traffic Analysis for the Proposed Araujo Estate Winery Project, 2155 Pickett Road, May 2, 2013;
- Crane Transportation Group, Traffic Impact Report, Proposed Titus Winery in Napa Valley, October 3, 2013.

For all remaining approved/pending projects, weekday PM peak, weekend peak hour, and daily traffic volumes have been calculated based on Use Permit modifications provided by Napa County Planning staff. These included the Venge Winery and Kelly Fleming Winery. Employee peaking factors and auto occupancy rates for visitors are based on recent winery research conducted by the Napa County Conservation, Development, and Planning Department.

Near-term (no project) daily and peak hour volumes for the weekday and weekend have been added to existing intersection volumes based on Silverado Trail travel 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.

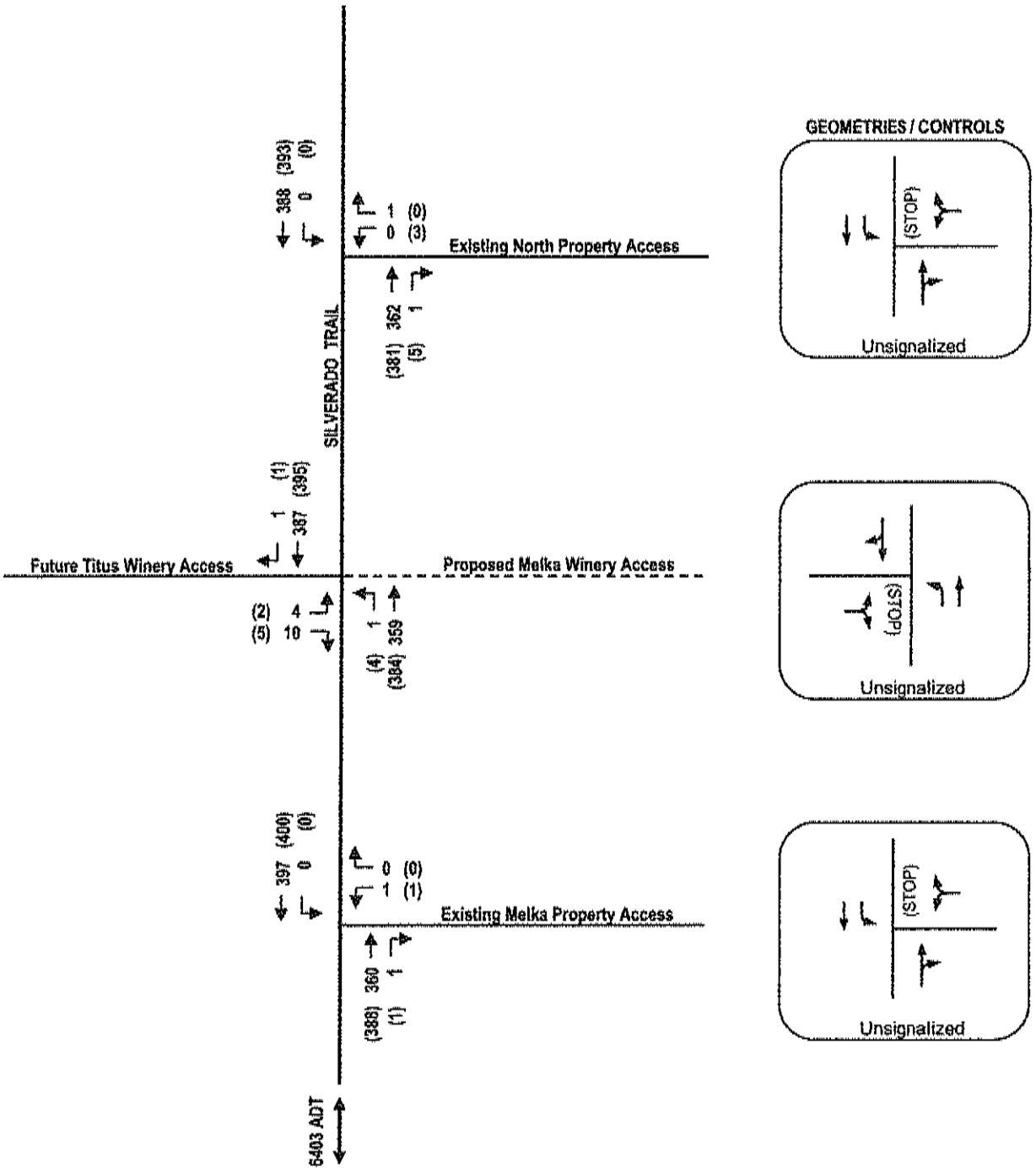
Near-Term (No Project) Circulation Improvements

In the immediate project study area, the Titus Winery is planning to re-locate their existing driveway that is currently located just north of the Melka Winery parcel on the west side of Silverado Trail. As part of this re-location effort, Titus Winery would install a northbound left-turn lane on Silverado Trail. The new driveway would be re-located approximately 240 feet east from its existing location. This would place the new driveway directly opposite the Melka Winery parcel. Based on discussions with the project applicant's civil engineers, they are currently working with the Titus Winery consultants in an attempt to align both the proposed Melka Winery driveway with the re-located Titus Winery driveway to form a four-way intersection.[7] This would improve vehicle and pedestrian safety on Silverado Trail by focusing vehicle turning movements at the two driveways and eliminating potential off-set/conflicting movements.

Near-Term (No Project) Intersection/Roadway Operation

With near-term (no project) volumes, study intersection LOS has been calculated and are shown in Table 1. The Silverado Trail/Melka Wines Project Driveway intersection would experience very slight on no increase in vehicle delays during the weekday PM peak hour and/or weekend mid-day peak hour. For the minor street (driveway) outbound turning movements, LOS would remain unchanged from LOS B (10.5 secs) conditions. During the Saturday mid-day peak, intersection LOS would remain at C with slight increases in vehicle delay from (15.2 secs.) to (16.0 secs) . Based on CAMUTCD peak hour signal warrant criteria (Warrant #3), the Silverado Trail/Melka Wines Project driveway intersection would not qualify for signalization with near-term (no project) volumes. ADT on Silverado Trail would increase to 6,763 (LOS C).

[7] *Joel Dickerson, P.E., Project Manager, Delta Consulting & Engineering, Melka Winery Exhibit Alt. 3—20 FT w/ Split (11-19-13), Personal communication, November 19, 2012.*



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Near Term Without Project
Weekday PM and (Weekend) 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

Project Description

Proposed winery operations would primarily include production with very small employee and visitor components. There would be limited marketing events consistent with existing Napa Valley activities. Based on discussions with the project applicant, winery production would begin in small batches. Phase I would include 25 barrels or approximately 10 tons of fruit (on-haul) using the existing on-site barn structure. The ultimate buildout phase would expand the production to 240 barrels (120 barrels per vintage; one aging and one new crushed). To accommodate the ultimate production goal, a second structure would be constructed that would house the barrels and allow 45-60 tons of fruit production. However, the applicant indicates that the winery would likely process 45 tons of fruit (annually) given existing and planned facilities. Proposed project components can be described as follows:

- Production 10,000 gallons annual
- Employees: Weekday: 1 full-time, 1 part-time
  Weekend: 1 full-time, 1 part-time

- Visitors: Weekday: 5 visitors
  Weekend: 7 visitors
- Trucks: Weekday: 1 truck per day
  Weekend: 1 truck per day

Daily operations for the proposed Melka Winery project would involve an all on-site winery operation with a maximum annual production of 10,000 gallons (4,050 cases). All fruit would be processed on-site during the year with the majority occurring during the harvest/crush season. 37 weekly visitors (by appointment only) are expected Monday through Saturday (the winery would be closed to visitation on Sundays); an average of five (5) daily visitors on a typical weekday and seven (7) daily visitors on a Saturday. Visitor hours would be limited between 10:00 a.m.–4:00 p.m. Employment is expected to be a maximum of 1 full-time employee and 1 part-time employee during both the weekday and weekend periods. The proposed project's marketing plan can be described as follows:[8]

Winery Marketing Plan

- Tours and Tastings: Seven (7) per day maximum, with up to five (5) persons on a weekday and seven persons on a Saturday (37 persons maximum/week—no public tours, appointment only, closed Sunday);
- Larger Auction-Related Events: Maximum of two (2) events per year; 75 persons maximum (1st event) and 100 persons in attendance at largest event (associated with Napa Valley Auction).

Project Trip Generation/Distribution

The proposed project's weekday and weekend peak hour and daily traffic volumes have been calculated and are shown in Table 3. Employee peaking factors and auto occupancy rates for visitors are based on recent winery research conducted by the Napa County Conservation, Development, and Planning Department.[9] Based on a 10,000 gallon winery with one full-time employee, one part-time employee, and 37 weekly visitors, the proposed project would be expected to generate 10 weekday daily trips with four (4) weekday PM peak hour trips (1 in, 3 out). During a typical weekend (Saturday), the project would be expected to generate 10 daily trips with five (5) mid-day (afternoon) peak hour trips (3 in, 2 out). Combined with the existing one-site single-family residence, the total trip generation for the project would equate to 20 weekday daily trips with five (5) weekday PM peak hour trips. During the weekend, the proposed project would generate 20 daily trips with six (6) mid-day Saturday peak hour trips.

During the six-week harvest crush season, the proposed project is expected to generate an average of 16 daily trips. Based on the largest marketing event attendance of 100 persons (once per year), there would total generation of 87 event trips.

To determine traffic conditions with the proposed project, the calculated project trips were added to existing volumes. Based on observed turning percentages and recent transportation studies in the area, the project trips were distributed 30% to/from the north and 70% to/from the south on Silverado Trail.

Daily, weekday PM peak hour, and weekend mid-day peak hour project trips (only) have been shown in Figure 4. Existing plus project and near-term plus project volumes have been shown in Figure 5 and 6.

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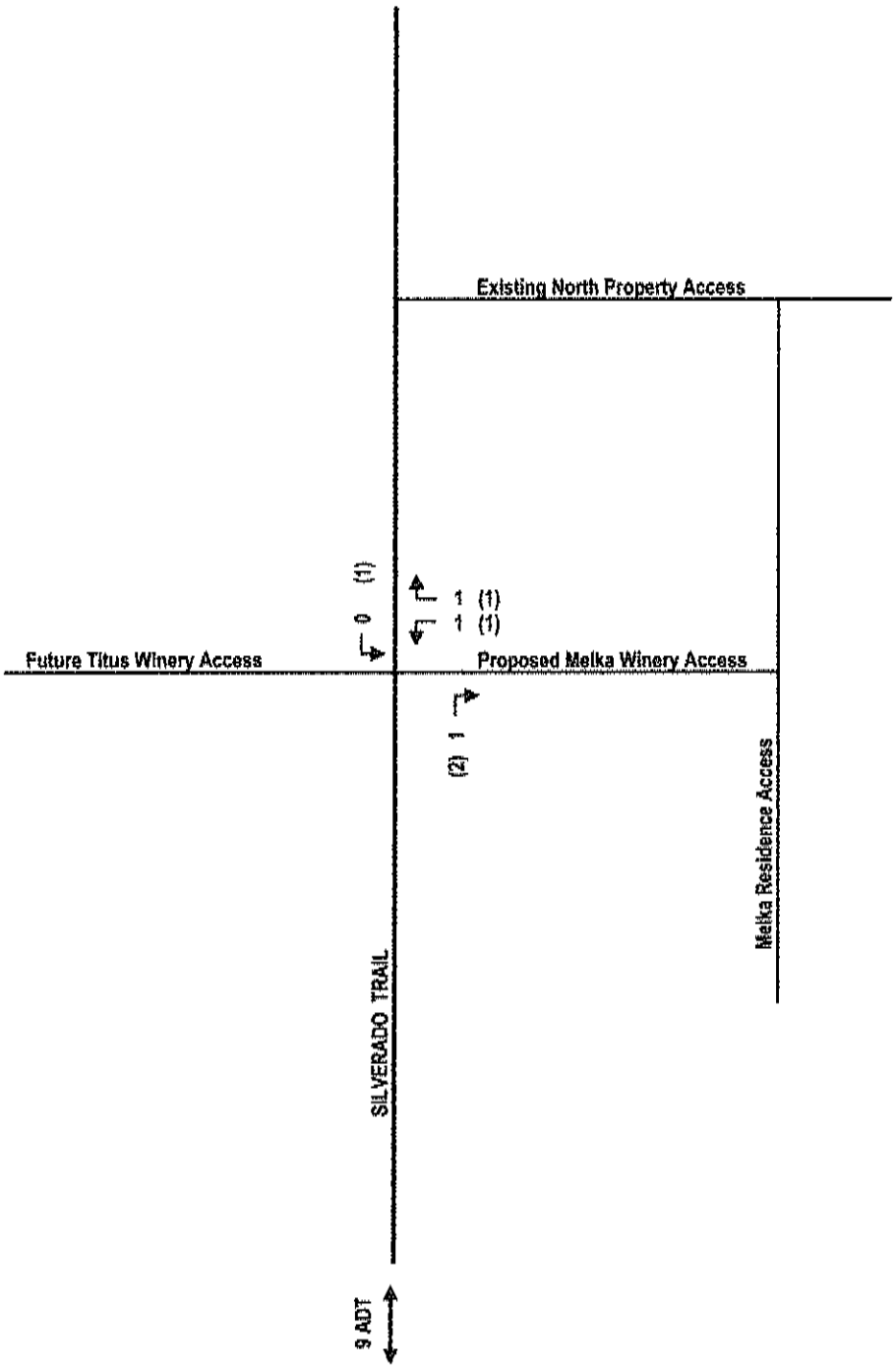
[8] *Project Statement; Araujo Estate Winery Use Permit Major Modification, APN 020-340-030, 2155 Pickett Road, Calistoga, Ca, 2013.*

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

TABLE 3
PEAK HOUR AND DAILY TRIP GENERATION:
PROPOSED MELKA WINERY PROJECT

Weekday Daily Traffic:		
5 visitors/2.6 persons per vehicle x 2 one-way trips	=	4 daily trips
1 full time employees x 3.05 one-way trips	=	3 daily trips
1 part-time employees x 1.90 one-way trips	=	2 daily trips
10,000 gallons/1,000 x .009 daily trucks x 2 o-w trips	=	1 daily trips
Total Weekday Daily Trips	=	**10 daily trips**
Weekday PM Peak Hour Traffic:		
(4 daily visitor trips + 1 daily truck trips) x 0.38 peak	=	2 peak hour trips
1 full time employees x 1 trip/employee	=	1 peak hour trips
1 part-time employees/2	=	1 peak hour trips
Total Weekday PM Peak Hour Trips	=	**4 trips (1 in, 3 out)**
Weekend (Saturday) Daily Traffic:		
7 visitors/2.8 persons per vehicle x 2 one-way trips	=	5 daily trips
1 full time employees x 3.05 one-way trips	=	3 daily trips
1 part-time employees x 1.90 one-way trips	=	2 daily trips
Total Weekend (Saturday) Daily Trips	=	**10 daily trips**
Weekend (Saturday) Peak Hour Traffic:		
5 daily visitor trips x 0.57 peak	=	3 peak hour trips
1 full time employees x 1 trip/employee	=	1 peak hour trips
1 part-time employees/2	=	1 peak hour trips
Total Weekend (Saturday) Peak Hour Trips	=	**5 trips (3 in, 2 out)**
Weekend (Saturday) Daily Harvest/Crush Traffic:		
7 visitors/2.8 persons per vehicle x 2 one-way trips	=	5 daily trips
1 full time employees x 3.05 one-way trips	=	3 daily trips
3 part-time employees x 1.90 one-way trips	=	6 daily trips
10,000 gallons/1,000 x .009 daily trucks x 2 o-w trips	=	1 daily trips
20 annual ton grapes (on-haul)/144 daily trucks x 2 o-w trips	=	1 daily trips
Total Weekend (Saturday) Daily Harvest/Crush Trips	=	**16 daily trips**
Largest Marketing Event – Additional Traffic		
6 event staff x 2 one-way trips per person	=	12 event trips
100 visitors / 2.8 visitors per vehicle x 2 o-w trips	=	71 event trips
2 trucks x 2 one-way trips	=	4 event trips
Total Largest Event Marketing Trips:	=	**87 event trips**

Source: Production, employee, and visitor data provided by Ms. Cherie Melka (project applicant) and Mr. Jake Storms (Planning Consultant), project representative, May, 2014. 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, 2012.



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Weekday PM and (Weekend) Peak Hour Project Trips

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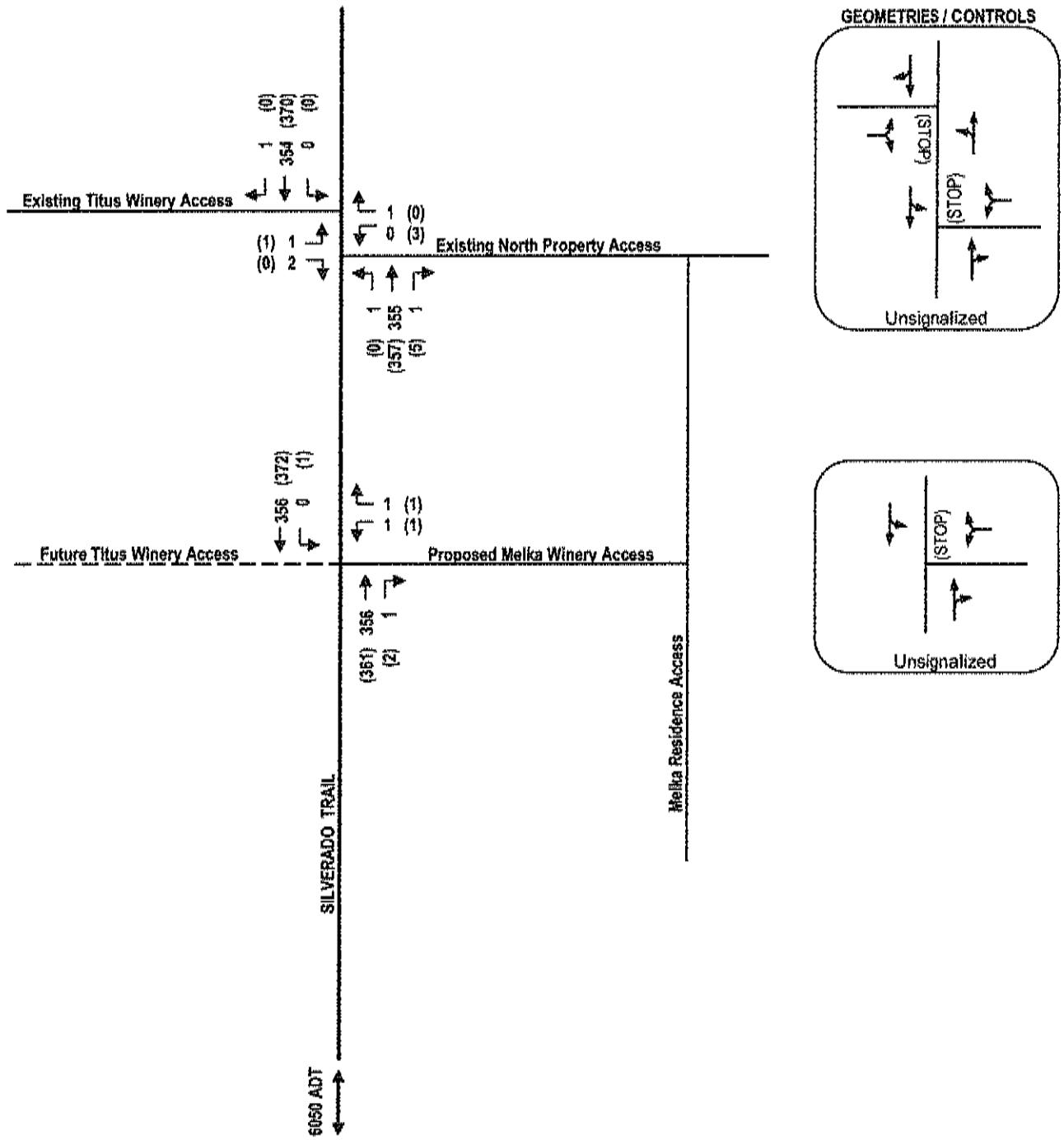
figure 4



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

North

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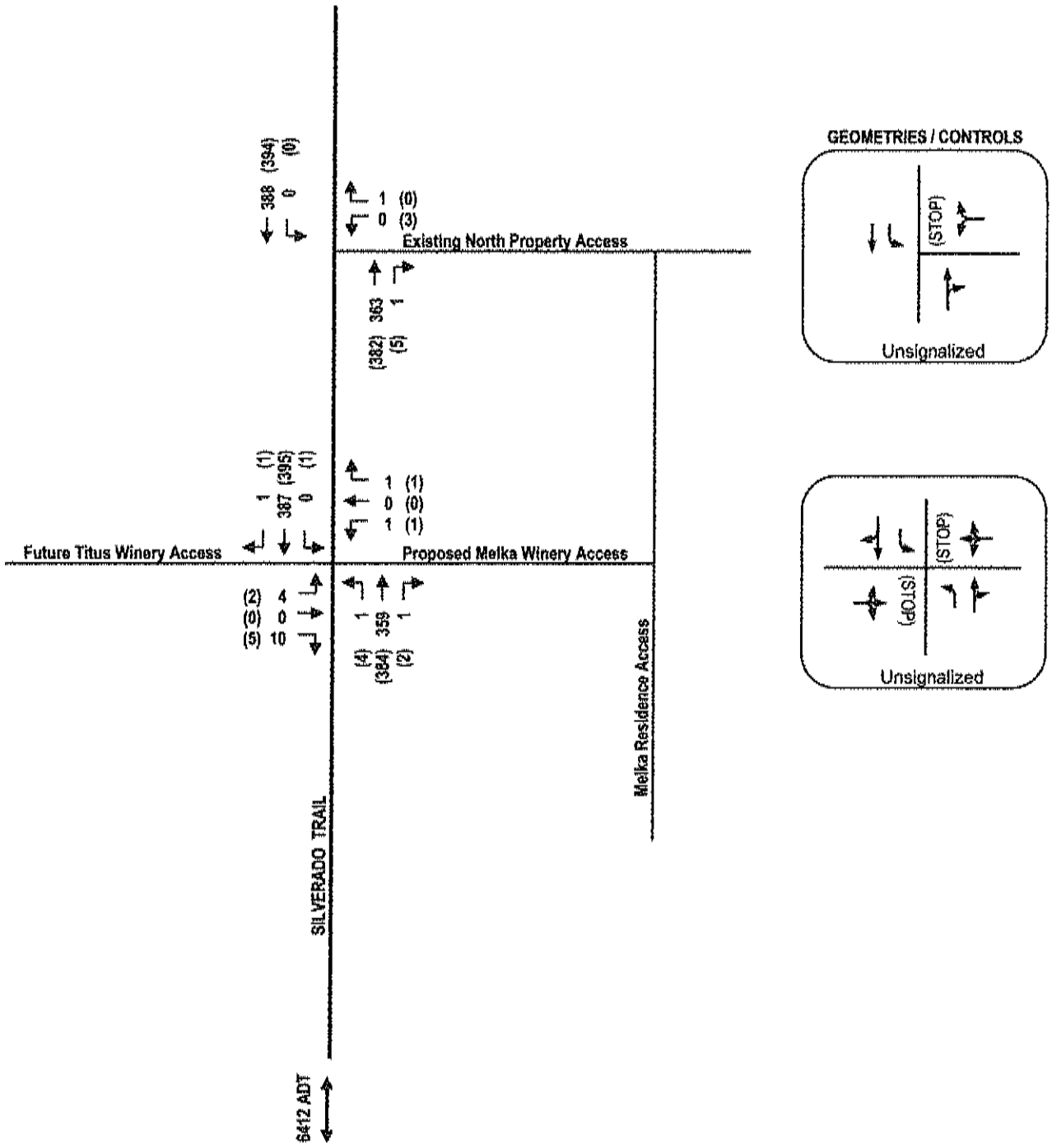
figure 5



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

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figure 6

Project Effects on Roadway/Intersection Operation

A. Existing Plus Project Conditions

The project would be expected to add approximately 14 daily trips south of the site and six (6) daily trips north of the site on Silverado Trail. This would represent an addition of less than one percent (0.003) to the daily volumes on Silverado Trail. The combined existing plus project volume of 6,421 daily trips would remain well within the carrying capacity of a two-lane, rural arterial roadway with conditions equivalent to LOS 'C'.

During the peak winery activity periods, the project would generate five (5) weekday PM peak hour and six (6) Saturday mid-day peak hour trips. It is noted that the proposed project tasting hours would not extend past 4:00 p.m. Therefore, it is likely that weekday PM peak hour project traffic is slightly over-stated given County peaking factors and all winery-related traffic would be outbound from the facility. 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.

With existing plus project traffic volumes, the intersection would continue to operate at acceptable levels (LOS B or better) during both the weekday PM peak hour and weekend mid-day peak hour periods. At shown in Table 4, intersection LOS would remain unchanged from existing conditions with very slight increases in overall vehicle delays. The intersection of Silverado Trail/Melka Winery Project driveway would not meet the minimum volume required for signalization under CAMUTCD peak hour warrant criteria.

The existing and existing plus project volumes were compared with the Napa County guidelines for installing a left turn lane on Silverado Trail at the Melka Winery driveway.[10] (The warrant graphs for weekday and Saturday conditions are provided in the Appendix). With 20 daily weekday/weekend trips at the proposed project driveway and 6,421 daily trips on Silverado Trail, a left-turn lane would not be warranted on Silverado Trail.

The projected right turn volumes at the site driveways are well below minimum thresholds at which right turn lane would be required (right turn lane warrant graphs are included in the Appendix).[11]

B. Near-Term Plus Project Conditions

With near-term plus project conditions, daily traffic volumes on Silverado Trail would increase to 6,783 ADT. Again, this would be within the carrying capacity of a two-lane, rural arterial roadway (LOS C).

The re-aligned project driveway intersection at Silverado Trail (opposite Titus Winery driveway) would operate at acceptable levels (LOS B or better) during both the weekday PM peak hour and weekend mid-day peak hour under near-term with project conditions. Driveway volumes at the both the proposed project and/or Titus Driveway would exceed not exceed the minimum volumes thresholds (Warrant #3) for signalization.). With 20 daily weekday/weekend trips at the proposed project driveway and 6,783 daily trips on Silverado Trail, a left-turn lane would not be warranted on Silverado Trail based on County guidelines.

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[10] *Napa County, Adopted Road and Street Standards, Left-Turn Lane Warrant Graph, revised November 21, 2006.*
[11] *Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide," November, 1985.*

TABLE 4
EXISTING PLUS PROJECT AND NEAR-TERM PLUS 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 + Project	Near-Term + Project	Existing + Project	Near-Term + Project
1	Silverado Trail/Melka Wine Driveway	Stop	B 13.5	B 11.8	B 13.7	B 12.0

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. Near-term plus project conditions assume newly aligned four-way intersection of Silverado Trail/Titus Winery Driveway/Melka Winery Driveway.

The projected right turn volumes at the site driveways would remain well below minimum thresholds at which right turn lanes would be required (right turn lane warrant graphs are included in the Appendix).

5. SITE ACCESS/DESIGN PARAMETERS

Sight Distance

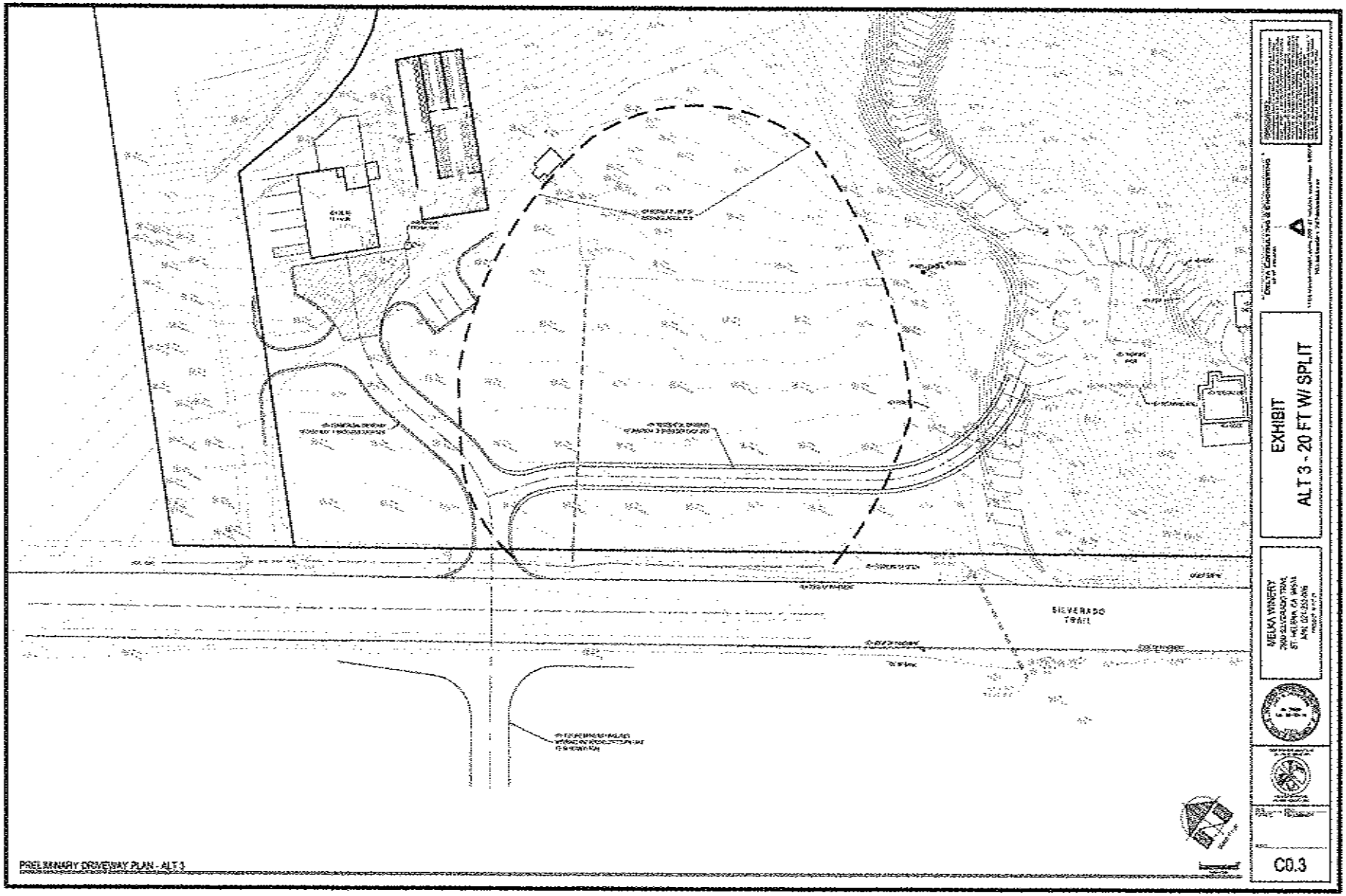
Vehicle sight distance at the existing Silverado Trail/Melka Winery Project driveway intersection (at its current location) was evaluated. The required vehicle visibility or "corner sight distance" is a function of travel speeds Silverado Trail. Caltrans design standards indicate that for appropriate 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 the minimum corner sight distance "shall be equal to the stopping sight distance".

Silverado Trail has a posted speed limit of 50-55 mph. New radar speed surveys of Silverado Trail were conducted for the roadway in the project area.[12] The "critical" vehicle speed (the speed at which 85% of all surveyed vehicles travel at or below) along Silverado Trail was measured at 49 mph. Caltrans' design standards indicate that these vehicle speeds require a stopping sight distance of 415-430 feet, measured along the travel lanes on Silverado Trail.[13] Based on field measurements, sight distance from the current Melka Wines existing residential driveway to the north on Silverado Trail is in excess of this distance. However, vehicle sight distance to the south is limited to 270 feet due to an existing rock wall and roadway curvature. For this reason, the existing Melka Winery driveway would be moved to a point north to align with the re-located Titus Winery driveway (see below--Project Access and Circulation). The new Melka Winery Project driveway location would be moved approximately 270-300 feet north from its existing location. This new proposed project driveway location would provide adequate vehicle sight distance in both directions on Silverado Trial. Therefore, the sight distance recommendations would be met for the speed limit and measured vehicle speeds.

Project Access and Circulation

The existing Melka Winery Project driveway currently serving residential uses on the parcel would be re-located to the north approximately 270-300 feet to serve both proposed winery and residential uses. As shown in Figure 7 (Project Site Plan), the Melka Winery driveway would be located opposite the new Titus Winery driveway off Silverado Trail. The proposed project driveway would serve both winery and residential uses on the parcel. However, driveway access to residential uses would be gated with an

[12] *Omni Means Engineers & Planners, Radar vehicle speed surveys, 2900 Silverado Trail, November 16, 2013.*
[13] *Caltrans, Highway Design Manual, Table 405.1A, Corner (Stopping) Sight Distance, 6th Edition, 2009.*



Project Site Plan

North

omni-means

figure 7

electronic pass keypad and no winery-related traffic would use this segment. The internal driveway width serving winery uses would meet the County's minimum requirement of 18-foot travel width extending northeast to the winery barn and tasting room. The vehicle circulation area in front of the main buildings would allow access for emergency vehicles (fire trucks) and parking (three spaces). The proposed winery driveway would then connect to the existing driveway to the north via an access easement. The driveway easement would serve two purposes; 1) provide access to additional parking areas (four spaces) on the north side of the existing winery building, and, 2) allow trucks to circulate through the site. Trucks would enter the site via the new project driveway and exit the site via the existing driveway to the north. It is noted that only trucks would use the existing driveway to the north to exit out onto Silverado Trail. No winery related vehicle traffic would be allowed to use this existing driveway for inbound/outbound egress and directional signage should be installed to enforce traffic flow.

The Napa County Transportation & Planning Agency (NCTPA) in cooperation with Napa County and local City agencies is developing bicycle routes as outlined in the Napa Countywide Bicycle Plan.[14] The plan encourages new developments to incorporate bicycle friendly design. Silverado Trail has striped shoulder areas (unofficial Class II bike lanes) in both directions. Some visitors may utilize bicycles to access the proposed project. The project would provide bicycle racks for visitors to the proposed winery.

Marketing Events

The winery proposes to host the following marketing large events: two annual events; one event with 75 guests; one event with 100 guests related to the Napa Valley Wine Auction.

Based on standard auto occupancy rates, the annual 100-person event would be expected to generate approximately 87 trips (44 in, 43 out) including visitors and staff. 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. These events are usually held outside of typical peak traffic periods (during the middle of the day or later than 6:00 p.m.) and therefore generally do not impact peak hour operations and no other visitation or events would occur during the annual events.

6. CUMULATIVE CONDITIONS

Cumulative Year 2030 Projections

Model Forecast

Cumulative (Year 2030) volume projections on Silverado Trail were derived from the Napa County Transportation & Planning Agency's traffic volume forecasts in the Napa County General Plan Update EIR and recent transportation analysis conducted in the project study area[15]. The forecast increase in weekday PM peak hour volumes from Year 2000 to Year 2030 on Silverado Trail in the project vicinity is approximately 125% north of Deer Park Road and 100% south of Deer Park Road. Using the most recent traffic analysis performed for the adjacent Titus Winery project, this would equate to an approximate 46% increase in straight line volumes on Silverado Trail between 2013 and 2030.[16]

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. For Silverado Trail, the segment listed has an average ratio of 0.88, indicating weekend peak hour volumes are expected to be about 90% of

[14] *Napa County, Countywide Bicycle Plan (2012), Planning Area-North Valley, May 2012.*
[15] *Crane Transportation Group, Traffic Impact Report---Proposed Titus Winery in Napa Valley, October 3, 2013.*
[16] *Crane Transportation Group, Ibid....*

weekday volumes. This corresponds with the volumes counted for this study which found the weekend peak hour volumes to be approximately 90% of the weekday peak hour volumes. Therefore the future weekday vs. weekend peak hour volumes would be expected to remain in the same ratio as the existing volumes.

Cumulative Operating Conditions

Although cumulative volumes are highly conservative, the forecast volumes would yield acceptable LOS 'C-D' conditions (8,600-13,800 ADT) on Silverado Trail. Applying the same weekday PM peak hour increase to daily traffic volumes (as a conservative measure), existing ADT on Silverado Trail would increase from 6,401 trips to 9,345 daily trips.

With regard to weekday PM peak hour and weekend mid-day peak hour intersection operation under cumulative year 2030 (no project) conditions, the existing Silverado Trail/Melka Winery Project driveway intersection would operate at acceptable conditions (LOS C or better) using County volume projections. With proposed project traffic, the newly aligned Silverado Trail/Titus Winery Driveway/Melka Winery Project driveway intersection operation would operate at LOS B during both weekday PM peak hour and weekend mid-day peak hours.

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 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.

7. Summary and Conclusions

Daily and Peak Hour Operations

The proposed Melka Winery project would generate 20 daily trips during the weekday and weekend periods (respectively). Proposed project traffic would represent an increase of less than 1% (0.003) over the existing Silverado Trail volume of 6,041 daily trips. All project study intersections would operate at LOS C or better under existing plus project conditions during both weekday and weekend peak hour conditions.

With near-term (approved/pending) development traffic volumes, the near- term and near-term plus project conditions would continue to operate acceptably. Near-term daily volumes on Silverado Trail are expected to be approximately 6,763 ADT without the project and 6,783 with the project trips, representative of LOS C conditions. The study intersection would continue to operate at satisfactory levels-of-service under near-term plus project conditions at LOS C or better during the weekday and weekend peak hour conditions.

Vehicle Sight Distance and Left-Turn Warrant

Silverado Trail has a posted speed limit of 50-55 mph. New radar speed surveys of Silverado Trail were conducted for the roadway in the project area. [17] The "critical" vehicle speed (the speed at which 85% of all

[17] *Omni Means Engineers & Planners, Radar vehicle speed surveys, 2900 Silverado Trail, November 16, 2013.*

surveyed vehicles travel at or below) along Silverado Trail was measured at 49 mph. Caltrans' design standards indicate that these vehicle speeds require a stopping sight distance of 415-430 feet, measured along the travel lanes on Silverado Trail.[18] Based on field measurements, sight distance from the current Melka Wines existing residential driveway to the north on Silverado Trail is in excess of this distance. However, vehicle sight distance to the south is limited to 270 feet due to an existing rock wall and roadway curvature. For this reason, the existing Melka Winery driveway would be moved to a point north to align with re-located Titus Winery driveway . The new Melka Winery Project driveway location would be moved approximately 270-300 feet north from its existing location. This new proposed project driveway location would provide adequate vehicle sight distance in both directions on Silverado Trial. Therefore, the sight distance recommendations would be met for the speed limit and measured vehicle speeds.

Existing and near-term volumes with proposed project traffic were compared with the Napa County guidelines for installing a left turn lane on Silverado Trail at the Melka Winery driveway.[19] (The warrant graphs for weekday and Saturday conditions are provided in the Appendix). With 20 weekday/weekend trips at the proposed project driveway and 6,783 daily trips on Silverado Trail, a left turn lane **is not warranted**. This would apply to both existing plus project and near-term plus project conditions. As previously noted, the project applicant would be aligning their new driveway with the proposed Titus Winery's new driveway on the west side of Silverado Trail to create a four-way intersection. This would improve vehicle and pedestrian safety on Silverado Trail by focusing vehicle turning movements at the two driveways and eliminating potential off-set/conflicting movements.

Vehicle Circulation/Access

The existing Melka Winery Project driveway currently serving residential uses on the parcel would be re-located to the north approximately 270-300 feet to serve both proposed winery and residential uses. As shown in Figure 7 (Project Site Plan), the Melka Winery driveway would be located opposite the new Titus Winery driveway off Silverado Trail. The proposed project driveway would serve both winery and residential uses on the parcel. However, driveway access to residential uses would be gated with an electronic pass keypad and no winery-related traffic would use this segment. The internal driveway width serving winery uses would meet the County's minimum requirement of 18-foot travel width extending northeast to the winery barn and tasting room. The vehicle circulation area in front of the main buildings would allow access for emergency vehicles (fire trucks) and parking (three spaces). The proposed winery driveway would then connect to the existing driveway to the north via an access easement. The driveway easement would serve two purposes; 1) provide access to additional parking areas (four spaces) on the north side of the existing winery building, and, 2) allow trucks to circulate through the site. Trucks would enter the site via the new project driveway and exit the site via the existing driveway to the north. It is noted that only trucks would use the existing driveway to the north to exit out onto Silverado Trail. No winery related vehicle would be allowed to use this existing driveway for inbound/outbound egress and directional signage should be installed to enforce traffic flow.

Cumulative Year 2030 Conditions

Cumulative (Year 2030) volume projections on Silverado Trail were derived from the Napa County Transportation & Planning Agency's traffic volume forecasts in the Napa County General Plan Update EIR and recent transportation analysis conducted in the project study area[20]. The Silverado Trail/Melka Winery Project driveway would operate at acceptable levels at LOS B (no project) and LOS B (with project) during the weekday PM and weekend mid-day peak hours. The improvement in intersection operation is due

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[18] *Caltrans, Highway Design Manual, Table 405.1A, Corner (Stopping) Sight Distance, 6th Edition, 2009.*
[19] *Napa County, Adopted Road and Street Standards, revised November 21, 2006.*
[20] *Crane Transportation Group, Traffic Impact Report--Proposed Titus Winery in Napa Valley, October 3, 2013.*

to a planned two-way-left-turn-lane that would be installed on Silverado Trail to serve the relocated Titus Winery, proposed Melka Winery, and adjacent residential driveway.

APPENDIX

Level of Service Definitions

Level of Service Calculations

Signal Warrant Sheets

Average Daily Traffic (ADT) Counts (Silverado Trail n/o Deer Park Road)

Radar Speed Surveys (Silverado Trail/Melka Winery Driveway)

Left-Turn Lane Warrant Graph (Napa County)

Right-Turn Lane Warrant Graph (Caltrans)

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.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	1	356	1	0	356
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	387	1	0	387
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	774	388			388	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	774	388			388	
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)	367	661			1170	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	388	387
Volume Left	0	0	0
Volume Right	1	1	0
cSH	661	1700	1170
Volume to Capacity	0.00	0.23	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.5	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.5	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.8%	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)	1	0	361	1	0	372
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	0	392	1	0	404
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	797	393			393	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	797	393			393	
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)	355	656			1165	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	393	404
Volume Left	1	0	0
Volume Right	0	1	0
cSH	355	1700	1165
Volume to Capacity	0.00	0.23	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	15.2	0.0	0.0
Lane LOS	C		
Approach Delay (s)	15.2	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	29.6%	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)	0	1	360	1	0	397
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	391	1	0	432
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	823	392			392	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	823	392			392	
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)	343	657			1166	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	392	432
Volume Left	0	0	0
Volume Right	1	1	0
cSH	657	1700	1166
Volume to Capacity	0.00	0.23	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.5	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.5	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	30.9%	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)	1	0	388	1	0	400
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	0	422	1	0	435
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	857	422			423	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	857	422			423	
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)	328	631			1136	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	423	435
Volume Left	1	0	0
Volume Right	0	1	0
cSH	328	1700	1136
Volume to Capacity	0.00	0.25	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	16.0	0.0	0.0
Lane LOS	C		
Approach Delay (s)	16.0	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	31.1%	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)	2	1	356	1	1	356
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	1	387	1	1	387
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	777	388			388	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	777	388			388	
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)	365	661			1170	

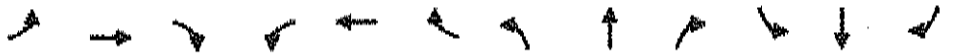
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	3	388	388
Volume Left	2	0	1
Volume Right	1	1	0
cSH	429	1700	1170
Volume to Capacity	0.01	0.23	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	13.5	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	13.5	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	29.5%	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)	2	1	361	2	1	372
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	1	392	2	1	404
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	800	393			395	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	800	393			395	
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)	354	655			1164	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	3	395	405
Volume Left	2	0	1
Volume Right	1	2	0
cSH	418	1700	1164
Volume to Capacity	0.01	0.23	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	13.7	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	13.7	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑		↰	↑	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	0	10	2	0	1	1	359	1	1	387	1
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
Hourly flow rate (vph)	4	0	11	2	0	1	1	390	1	1	421	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	817	817	421	827	817	391	422			391		
vC1, stage 1 conf vol	423	423		393	393							
vC2, stage 2 conf vol	393	393		434	424							
vCu, unblocked vol	817	817	421	827	817	391	422			391		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	98	100	100	100	100			100		
cM capacity (veh/h)	498	488	632	489	488	658	1137			1167		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	15	3	1	391	1	422
Volume Left	4	2	1	0	1	0
Volume Right	11	1	0	1	0	1
cSH	587	534	1137	1700	1167	1700
Volume to Capacity	0.03	0.01	0.00	0.23	0.00	0.25
Queue Length 95th (ft)	2	0	0	0	0	0
Control Delay (s)	11.3	11.8	8.2	0.0	8.1	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	11.3	11.8	0.0		0.0	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	30.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑		↰	↑	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	0	5	2	0	1	4	384	2	1	395	1
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
Hourly flow rate (vph)	2	0	5	2	0	1	4	417	2	1	429	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	859	860	430	864	860	418	430			420		
vC1, stage 1 conf vol	432	432		427	427							
vC2, stage 2 conf vol	427	428		437	433							
vCu, unblocked vol	859	860	430	864	860	418	430			420		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	100	100			100		
cM capacity (veh/h)	481	473	625	476	473	635	1129			1140		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	8	3	4	420	1	430
Volume Left	2	2	4	0	1	0
Volume Right	5	1	0	2	0	1
cSH	576	519	1129	1700	1140	1700
Volume to Capacity	0.01	0.01	0.00	0.25	0.00	0.25
Queue Length 95th (ft)	1	0	0	0	0	0
Control Delay (s)	11.3	12.0	8.2	0.0	8.2	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	11.3	12.0	0.1		0.0	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	30.9%	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)	0	1	390	1	0	635
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	424	1	0	690
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	1115	424			425	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1115	424			425	
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)	230	630			1134	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	425	690
Volume Left	0	0	0
Volume Right	1	1	0
cSH	630	1700	1134
Volume to Capacity	0.00	0.25	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.7	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.7	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	43.4%	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)	0	1	529	1	0	540
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	575	1	0	587
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	1162	576			576	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1162	576			576	
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)	215	517			997	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	576	587
Volume Left	0	0	0
Volume Right	1	1	0
cSH	517	1700	997
Volume to Capacity	0.00	0.34	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	12.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑		↰	↑	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	0	10	2	0	1	1	390	1	1	635	1
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
Hourly flow rate (vph)	4	0	11	2	0	1	1	424	1	1	690	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1120	1120	691	1130	1120	424	691			425		
vC1, stage 1 conf vol	693	693		427	427							
vC2, stage 2 conf vol	427	427		703	693							
vCu, unblocked vol	1120	1120	691	1130	1120	424	691			425		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	98	99	100	100	100			100		
cM capacity (veh/h)	378	388	445	367	388	630	904			1134		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	15	3	1	425	1	691
Volume Left	4	2	1	0	1	0
Volume Right	11	1	0	1	0	1
cSH	424	426	904	1700	1134	1700
Volume to Capacity	0.04	0.01	0.00	0.25	0.00	0.41
Queue Length 95th (ft)	3	1	0	0	0	0
Control Delay (s)	13.8	13.5	9.0	0.0	8.2	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	13.8	13.5	0.0		0.0	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	43.5%	ICU Level of Service	A	
Analysis Period (min)	15			

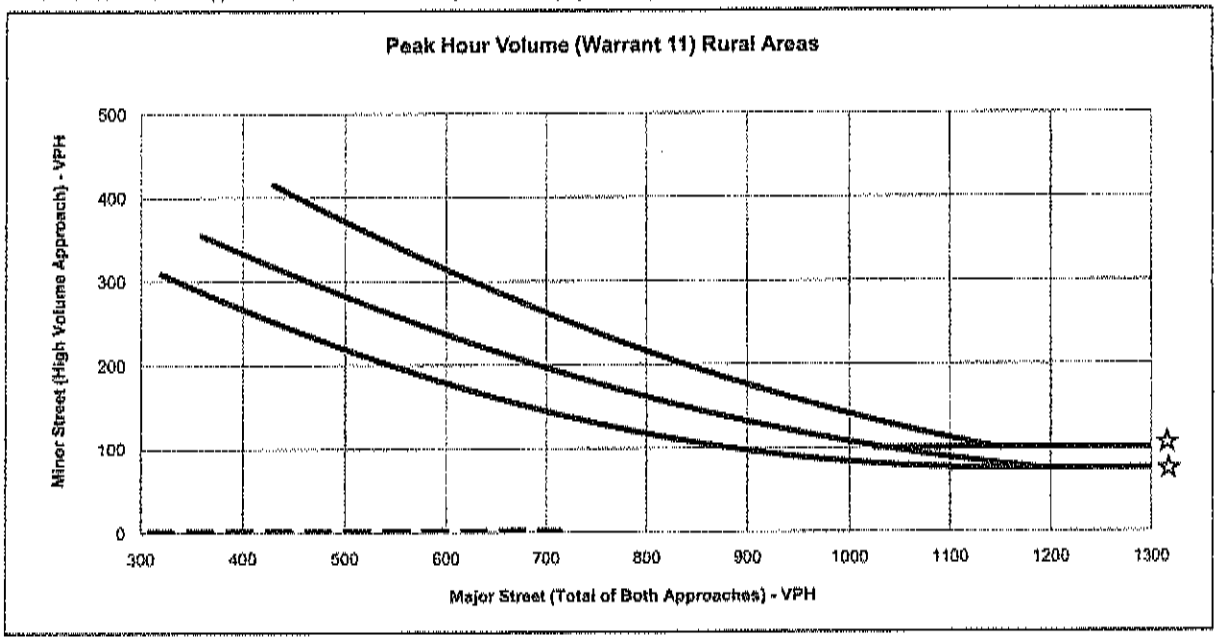
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	0	5	2	0	1	4	529	2	1	540	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	0	5	2	0	1	4	575	2	1	587	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1174	1176	588	1179	1175	576	588			577		
vC1, stage 1 conf vol	590	590		585	585							
vC2, stage 2 conf vol	585	586		595	590							
vCu, unblocked vol	1174	1176	588	1179	1175	576	588			577		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	99	100	100	100			100		
cM capacity (veh/h)	375	384	509	371	383	517	987			996		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	8	3	4	577	1	588
Volume Left	2	2	4	0	1	0
Volume Right	5	1	0	2	0	1
cSH	462	410	987	1700	996	1700
Volume to Capacity	0.02	0.01	0.00	0.34	0.00	0.35
Queue Length 95th (ft)	1	1	0	0	0	0
Control Delay (s)	12.9	13.9	8.7	0.0	8.6	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.9	13.9	0.1		0.0	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	38.5%	ICU Level of Service	A	
Analysis Period (min)	15			

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	360
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*

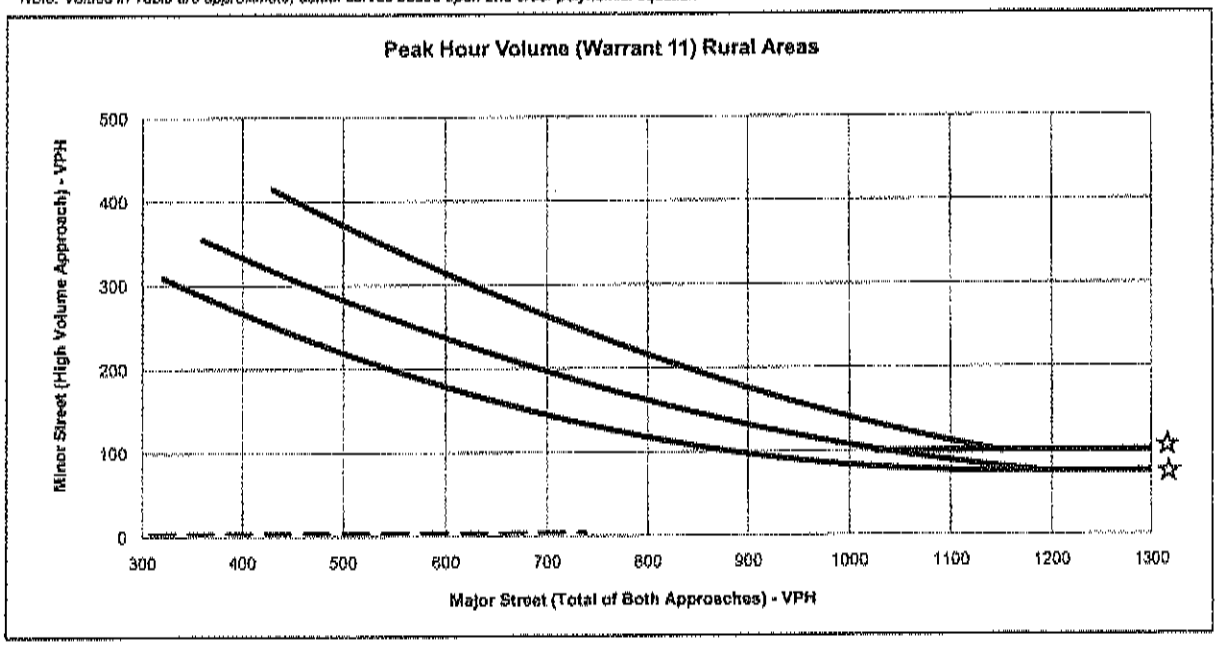


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	Silverado Trail / Meika Project Driveway / Titus Project Driveway
Scenario:	PM Weekay Existing _+ Project
Minor St. Volume:	3
Major St. Volume:	714
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	450	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*

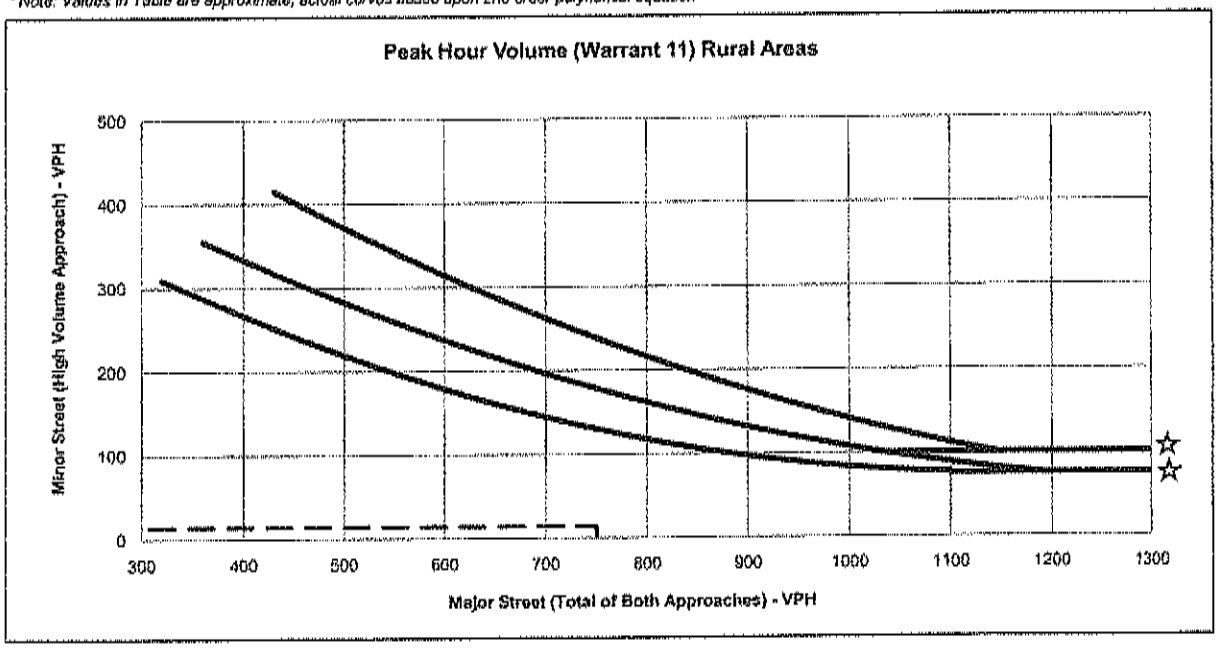


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	Silverado Trail / Melka Project Driveway / Titus Project Driveway
Scenario:	Mid-Day Weekend Existing + Project
Minor St. Volume:	4
Major St. Volume:	738
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	450	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*

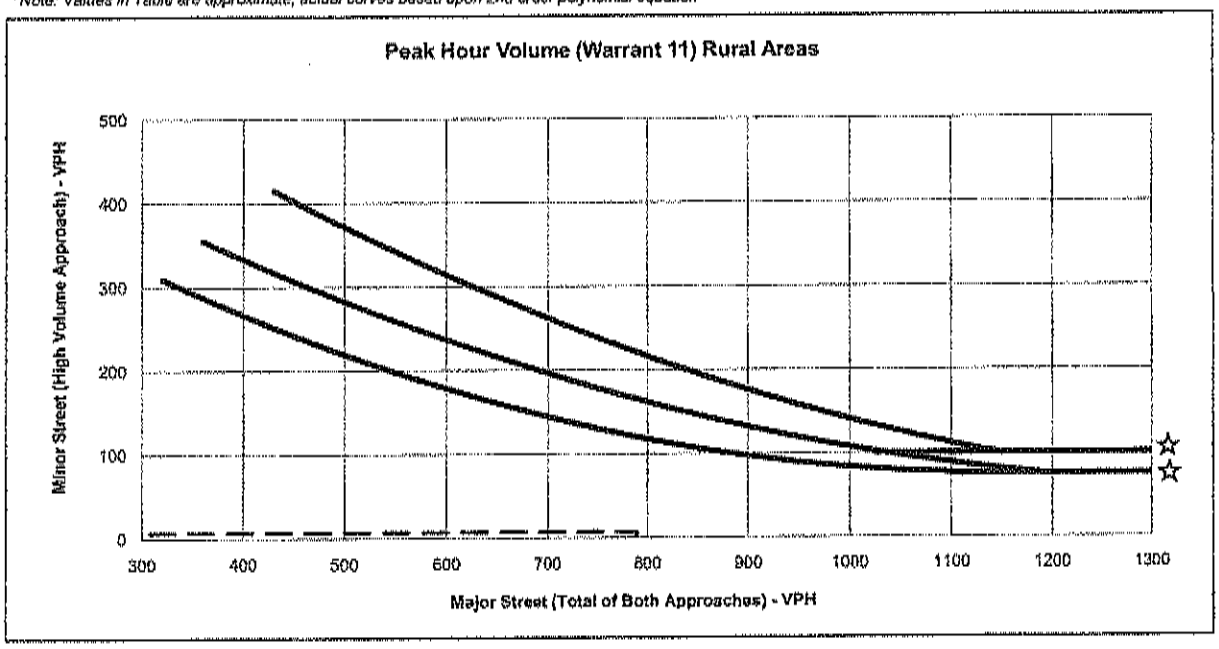


☆ NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Intersection:	Silverado Trail / Meika Project Driveway / Titus Project Driveway
Scenario:	PM Weekay Near-Term+ Project
Minor St. Volume:	14
Major St. Volume:	750
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:	Silverado Trail / Melka Project Driveway / Titus Project Driveway
Scenario:	MD Weekend Near-Term + Project
Minor St. Volume:	7
Major St. Volume:	789
Warrant Met?:	NO

B A Y M E T R I C S

ADT COUNTS IN NAPA VALLEY

Date	7-Nov-13	Thursday			8-Nov-13	Friday			9-Nov-13	Saturday		
Location	On Silverado Trail, about 1000' north of Deer Park Road											
Direction	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
1200	5	0	1	0	3	0	3	0	9	0	7	0
1215	2	0	2	0	3	0	1	0	1	0	7	0
1230	2	0	1	0	2	0	3	0	5	0	10	0
1245	2	11	0	4	0	8	2	9	4	19	3	24
100	0	6	1	4	3	8	1	7	6	16	3	19
115	2	6	1	3	2	7	1	7	1	16	7	24
130	0	4	0	2	3	8	6	10	3	14	4	18
145	3	5	1	3	1	9	1	9	2	12	3	16
200	0	3	0	2	3	9	0	3	1	7	1	15
215	1	4	2	3	0	7	0	7	3	9	5	13
230	0	4	2	5	0	4	1	2	1	7	3	12
245	0	2	1	5	0	1	2	3	0	5	5	14
300	1	2	0	5	2	3	2	6	0	4	1	14
315	0	1	0	1	0	2	0	6	2	3	0	9
330	0	1	0	1	0	2	1	5	0	2	1	7
345	1	2	2	2	0	2	2	6	2	4	0	2
400	0	1	2	4	1	1	4	7	1	5	0	1
415	1	2	1	5	1	2	2	9	0	3	4	3
430	3	5	5	10	2	4	4	12	2	5	3	7
445	0	4	6	14	4	8	3	13	1	4	5	12
500	6	10	3	15	1	8	8	17	2	5	4	16
515	3	11	3	17	5	12	7	22	2	7	4	16
530	2	10	7	19	2	12	10	28	2	7	3	16
545	5	14	10	23	6	14	8	33	1	7	9	20
600	10	19	4	24	4	17	12	37	10	15	6	22
615	22	39	19	40	24	36	17	47	16	29	6	24
630	14	56	17	50	21	55	20	57	8	35	7	28
645	43	94	37	73	40	89	31	83	21	45	10	29
700	54	138	26	95	37	142	27	95	14	49	14	37
715	20	136	36	112	28	146	36	104	15	48	11	42
730	26	143	32	127	31	162	23	107	13	53	17	52
745	39	139	44	138	59	181	36	112	37	69	13	55
800	47	132	41	133	40	164	42	127	17	72	26	67
815	40	152	39	138	34	170	47	148	19	78	22	78
830	53	179	47	166	47	188	41	166	24	87	22	83
845	38	178	44	166	66	187	47	173	26	86	33	103
900	64	195	45	170	50	197	51	182	32	101	32	107
915	56	211	46	177	47	210	49	184	51	133	37	120
930	47	203	52	187	50	213	30	182	48	157	32	130
945	32	219	33	176	47	194	51	190	44	175	35	133
1000	47	203	38	169	52	196	41	180	55	196	37	133
1015	65	191	41	167	51	202	45	176	49	195	33	133
1030	41	189	49	159	53	205	52	189	52	200	32	133
1045	53	186	41	167	65	223	40	188	88	244	38	136
1100	50	189	45	174	49	229	39	204	69	258	30	133
1115	55	199	50	187	64	231	40	159	68	274	49	149
1130	45	203	46	182	52	230	58	205	79	301	46	163
1145	38	188	50	191	69	234	60	237	61	276	54	179
1200	51	186	56	202	60	245	64	232	70	277	45	194
1215	46	177	56	208	67	248	66	248	76	268	62	207
1230	47	179	47	209	66	262	57	227	76	285	64	225
1245	59	203	36	215	54	247	46	213	59	281	46	217
1300	40	192	54	213	58	243	46	195	76	287	59	231
1315	38	184	66	225	65	241	56	185	93	304	62	231
1330	45	182	41	217	76	251	55	203	95	323	70	237
1345	54	177	42	203	68	265	65	222	59	323	50	241
1400	39	176	55	205	78	287	39	215	90	337	81	263
1415	57	191	44	184	64	286	56	215	85	339	41	244
1430	51	195	67	210	71	281	74	234	83	317	90	264
1445	52	193	69	235	83	296	65	234	93	351	34	268
1500	64	220	64	244	92	310	79	274	89	350	77	264
1515	66	233	59	259	76	322	82	300	60	334	87	308
1530	55	237	58	250	74	325	105	334	84	335	73	293
1545	78	263	83	264	73	315	77	343	61	301	79	318
1600	64	261	93	299	76	329	96	360	70	284	77	318
1615	73	270	69	303	86	309	81	359	54	269	87	315
1630	55	268	93	328	87	317	77	331	40	225	83	328
1645	63	263	79	324	87	331	96	350	57	216	73	322
1700	68	257	73	304	89	344	61	315	45	191	103	347
1715	56	240	89	324	81	339	69	303	49	186	73	333
1730	47	234	60	302	65	322	71	297	74	180	76	324
1745	52	223	54	276	61	296	52	253	40	168	56	307
1800	36	191	48	251	46	253	41	235	37	156	40	254
1815	32	174	41	203	39	211	37	203	28	135	41	233
1830	20	147	23	168	38	184	48	175	30	131	15	181
1845	22	117	7	119	39	162	30	151	22	113	24	149
1900	10	100	20	91	34	155	25	135	21	103	17	117
1915	21	82	12	62	25	141	17	115	12	87	25	101
1930	18	80	13	52	21	124	27	99	14	71	18	84
1945	12	70	13	58	14	99	11	80	11	60	16	76
2000	8	59	15	56	13	73	15	70	20	57	19	78
2015	11	49	10	54	17	60	13	66	15	58	23	76
2030	8	39	13	54	9	48	9	48	17	61	18	76
2045	11	38	6	37	14	48	9	46	15	65	12	72
2100	16	46	10	70	9	44	14	45	11	56	9	62
2115	7	42	13	43	15	47	14	46	10	53	4	45
2130	17	51	8	57	14	52	13	50	8	44	21	48
2145	13	53	7	38	13	51	16	57	4	37	17	53
2200	8	43	13	41	12	54	13	56	11	33	8	53
2215	5	43	6	34	16	55	18	60	9	32	11	57
2230	7	73	7	34	22	63	8	55	14	38	8	49
2245	4	24	5	37	8	58	12	51	3	37	8	35
2300	8	24	3	21	12	58	7	45	10	36	14	41
2315	8	27	3	18	5	47	6	33	8	35	14	44
2330	2	32	2	13	4	29	5	30	7	34	5	41
2345	6	24	7	15	5	26	4	22	7	38	3	38
TOTAL	2,679	N/A	2,789	N/A	3,346	N/A	3,055	N/A	2,924	N/A	2,818	N/A
AM		219		187		233		190		173		133
NOON		203		215		296		248		151		268
PM		220		338		344		360		290		347
EVEN		39		56		77		70		65		78

Telephone: (510) 232-1271 Fax: (510) 232-1272

RADAR SPEED SURVEY

OMNI-MEANS LTD.

Silverado Trail approaching Walka Access

DATE: 11/16/13 TIME START: 12:00pm TIME END: 1:00pm WEATHER: Clear ROAD TYPE: 2 lanes

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

SPEED	FREQUENCY	ACUM %	PERCENTAGE BREAKDOWN
36	1	1.0	
37	2	3.0	
38	2	5.0	
39	4	9.0	
40	5	14.0	
41	2	16.0	
42	5	21.0	
43	8	29.0	
44	13	42.0	
45	10	52.0	
46	9	61.0	
47	8	69.0	
48	9	78.0	
49	4	82.0	
50	7	89.0	
51	2	91.0	
52	3	94.0	
53	1	95.0	
54	2	97.0	
55	1	98.0	
56	1	99.0	
57	1	100.0	

100

AVERAGE SPEED = 45.5

50th PERCENTILE = 44.8

85th PERCENTILE = 49.4

90th PERCENTILE = 50.5

95th PERCENTILE = 53

PACE = 41 - 50

% IN PACE = 75

VEHICLES IN PACE = 75

SAMPLE VARIANCE = 18.57339

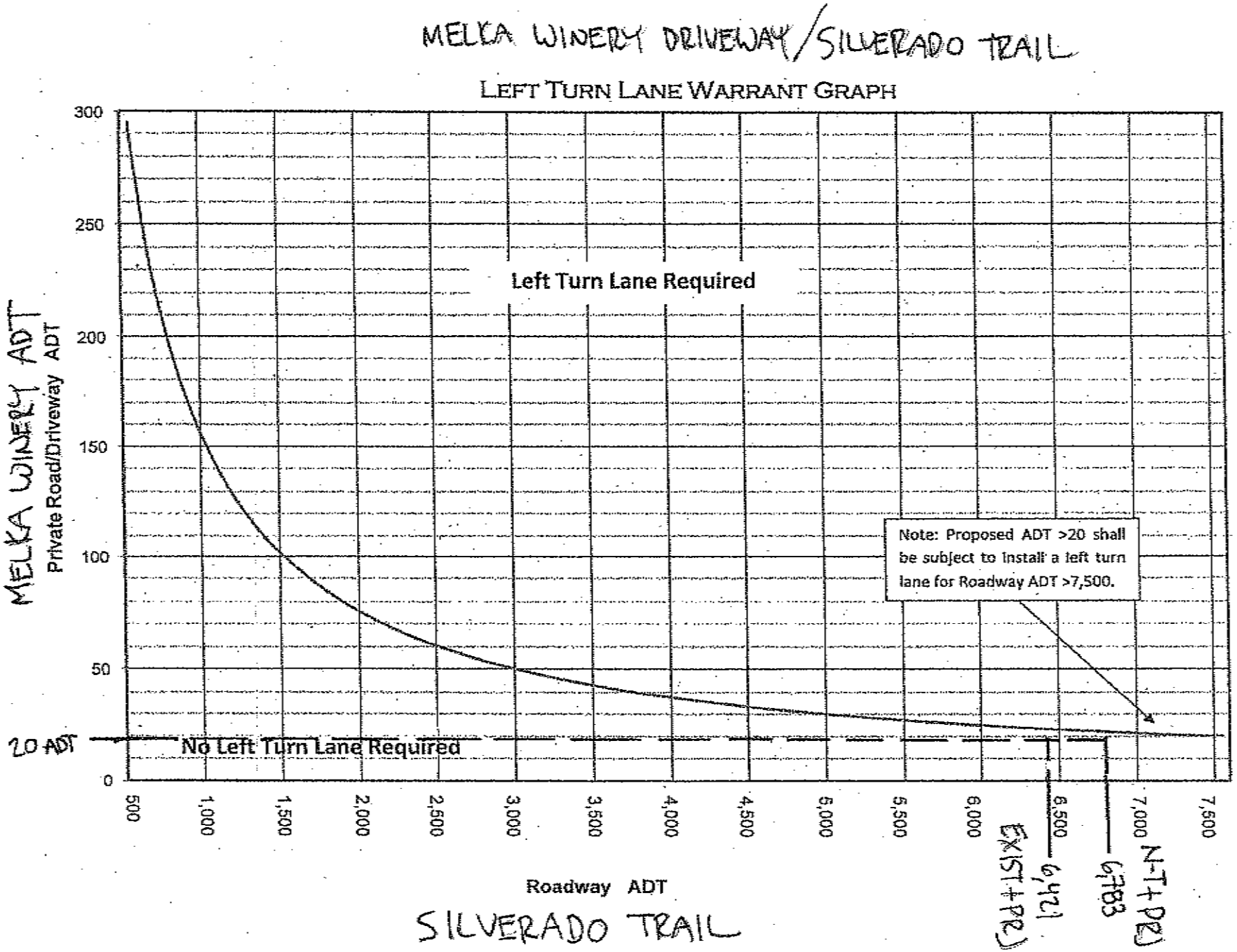
STANDARD DEVIATION = 4.309686

RANGE 1*S = 56

RANGE 2*S = 96

RANGE 3*S = 100

MELKA WINERY DRIVEWAY/SILVERADO TRAIL



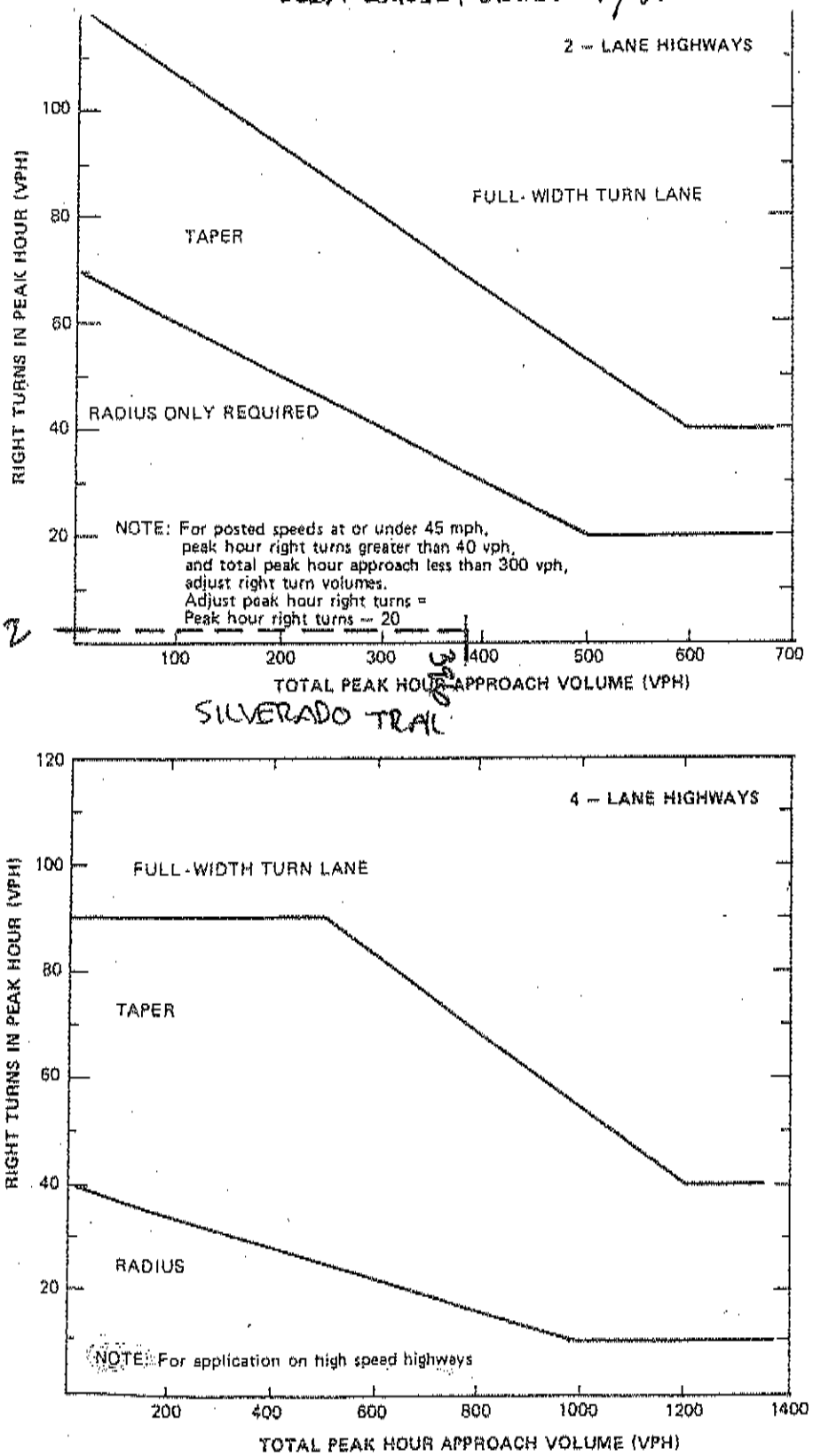


Figure 4-23. Traffic volume guidelines for design of right-turn lanes. (Source: Ref. 4-11)