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## Traffic Study



August 24, 2017

Mr. Paul Hobbs  
c/o Steve Martin Associates, Inc.  
130 South Main Street, Suite 201  
Sebastopol, CA 95472

## **Traffic Study for the Paul Hobbs-Nathan Coombs Winery Project**

Dear Mr. Hobbs,

As requested, W-Trans has prepared a traffic analysis relative to the proposed winemaking facility to be located at 2184 Imola Avenue in the County of Napa. The purpose of this letter is to address potential traffic impacts associated with the proposed winery.

### **Setting**

The study area consists of Imola Avenue east of Soscol Avenue, which runs along the southern edge of the project site, and Fourth Avenue, which runs along the eastern side of the site. The project site will be accessed via a new private driveway on Fourth Avenue. Imola Avenue is a two-lane undivided roadway that runs east-west in the study area with 12-foot travel lanes in each direction and a posted speed limit of 35 miles per hour (mph) from Soscol Avenue to Penny Lane and 40 mph from Penny Lane to Fourth Avenue. Drivers are required to reduce their speed to 25 mph when children are present near Napa Preschool and Napa County Community School between Navarre Street and Penny Lane.

### **Project Description**

The Paul Hobbs-Nathan Coombs Winery project would result in a new winery facility. As proposed, the winery would produce up to 60,000 gallons of wine and be built in two phases. The first phase includes winery production of 12,000 gallons per year while the second phase would increase production to the full 60,000 gallons. At ultimate Phase 2 production, the Paul Hobbs-Nathan Coombs Winery is proposed to have seven full-time employees during non-harvest operations and nine full-time employees during the harvest and bottling season as well as an average of 15 visitors on a typical weekday and 30 visitors on a weekend day. All winery visitations will be by appointment only. The proposed project includes four agricultural promotion events per year with two events for up to 50 guests and two events for up to 100 guests.

### **Collision History**

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports. The most current five-year period available is July 1, 2010 through June 30, 2015.

The calculated collision rate for the study segment was compared to the average collision rate for similar facilities statewide, as indicated in *2012 Collision Data on California State Highways*, California Department of Transportation. The segment of Imola Avenue between Soscol Avenue and Fourth Avenue experienced collisions at a rate of 0.29 collisions per million vehicle miles (c/mvm) which is less than the statewide average of 0.86 c/mvm for similar facilities. Fourth Avenue experienced one collision during this time period which resulted in a collision rate of 1.19 c/mvm which is slightly higher than the statewide average of 1.02 c/mvm for similar facilities. This collision occurred at southern portion of the segment where the road curves, which is approximately 1,700 feet from the proposed project driveway. No collisions occurred near the project driveway at the northern portion of the roadway. The collision rate calculations are enclosed.

## Trip Generation

The County of Napa's Winery Traffic Information/Trip Generation Sheet was used to determine the anticipated traffic generated with the proposed staff, visitors, and events. A copy of this worksheet is attached.

As the County of Napa's Winery Traffic Information/Trip Generation Sheet does not include guidance on inbound versus outbound trips during the peak hours, it was assumed that two-thirds of trip ends at the winery would be outbound during the weekday p.m. peak hour since most of the trips would be associated with employees and customers leaving at closure of the winery. For the Saturday midday peak hour it was assumed that inbound and outbound trip ends would be evenly split. The trip generation estimates for the proposed project are shown in Table 1.

Land Use	Daily		Weekday PM Peak Hour			Weekend MD Peak Hour		
	Weekday	Weekend	Trips	In	Out	Trips	In	Out
Winery	34	43	13	4	9	25	13	12

Note: Trip generation as estimated above does not include special events

Based on application of these assumptions, the proposed project is expected to generate 34 trip ends per day including 13 trips during the weekday p.m. peak hour and 43 daily trip ends on weekend days with 25 trips during the Saturday p.m. peak hour. It is noted that the majority of these trips are associated with visitors, and since data has shown that wine-tasting visitors make an average of four stops during a day of wine tasting, the number of new trips to the road network would actually be considerably lower. The trip generation therefore reflects new trips at the driveway and not necessarily new trips to the network, though for analysis purposes all of the trips will conservatively be used.

## Special Events

The winery's largest event will be a 100-person event with nine employees and one delivery truck. Using an occupancy of 2.8 persons per vehicle for guests and solo occupancy for staff, a maximum-sized 100-person event would be expected to generate 91 trip ends at the driveway, including 45 inbound trips and 46 outbound trips. Given that this event is infrequent, not part of typical daily operation, and often occurs outside the peak period for traffic, special event traffic was not included in the daily trip generation and resulting segment operation analysis.

## Trip Distribution

With the City of Napa just to the west of the proposed winery, it is assumed that 90 percent of trips will be to/from west the project site on Imola Avenue, with the remaining 10 percent of trips to/from the east of the project site to account for visitors that may be touring multiple wineries in Napa County.

The applied distribution assumptions and resulting trips are shown in Table 2.

Route	Percent	Daily Trips	AM Trips	Weekend Trips
To/from City of Napa (west)	90%	31	12	23
To/from the east	10%	3	1	2
<b>TOTAL</b>	<b>100%</b>	<b>34</b>	<b>13</b>	<b>25</b>

## Segment Level of Service

The County of Napa's adopted LOS Standard is contained in *Napa County General Plan Update 2008*. Policy CIR-16 states that the County shall seek to maintain an arterial Level of Service D or better on all county roadways. Because the only standard methodologies for evaluating two-lane roadways such as Imola Avenue are really more applicable to highways and are not applicable where speeds are lower than 45 mph, a volume-to-capacity method was applied. Level of Service is assigned based on volume-to-capacity ratios, where a v/c ratio of 0.60 or less is LOS A and a v/c ratio of 1.00 or more is LOS F.

The County of Napa identifies Imola Avenue as an arterial road. According to the *Napa County General Plan Environmental Impact Report*, February 16, 2007, the model used to evaluate future operating conditions used volume thresholds of 800 vehicles per hour per lane for arterials; this threshold was applied to Imola Avenue.

## Existing Conditions Level of Service

Under Existing conditions, Imola is operating acceptably at LOS A and is anticipated to continue operating at LOS A with the addition of project generated trips. The segment levels of service calculations are enclosed. These results are summarized in Table 3.

**Table 3 – Existing and Existing plus Project PM Peak Hour Roadway Segment Levels of Service**

Study Segment	Existing						Existing plus Project					
	PM Peak Hour			Weekend PM Peak Hour			PM Peak Hour			Weekend PM Peak Hour		
	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS
Imola Ave												
EB	428	0.54	A	279	0.35	A	431	0.54	A	291	0.36	A
WB	389	0.49	A	289	0.36	A	406	0.51	A	300	0.38	A

Notes: EB = eastbound, WB = westbound; v/c = volume to capacity ratio; LOS = Level of Service

## Future plus Project Conditions

In order to determine future volumes on Imola Avenue, a growth rate of two percent per year for 20 years, or 1.49, was applied to the 2016 volumes.

Under Future conditions, Imola Avenue is expected to operate at LOS C during the p.m. peak hour and continue operating at LOS A during the weekend midday peak hour. Imola Avenue is expected to continue operating at the same level of service with the addition of project added trips as without. The results are summarized in Table 4.

**Table 4 – Future and Future plus Project PM Peak Hour Roadway Segment Levels of Service**

Study Segment	Future						Future plus Project					
	PM Peak Hour			Weekend PM Peak Hour			PM Peak Hour			Weekend PM Peak Hour		
	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS
Imola Ave												
EB	638	0.80	C	416	0.52	A	641	0.80	C	428	0.54	A
WB	579	0.72	C	431	0.54	A	587	0.73	C	442	0.55	A

Notes: EB = eastbound, WB = westbound; v/c = volume to capacity ratio; LOS = Level of Service

## Proportional Share

The City of Napa has established the need to collect funding for future improvements needed at the intersection of Soscol Avenue/Imola Avenue, though it is unknown if such a funding mechanism has been established. Should there be such a fund and the County elect to do so, they may require that this project submit a proportional share of the cost of these future improvements, so this value was calculated. During the p.m. peak hour, the proposed project is expected to generate 13 trips, of which 12 would be expected to travel through this intersection. The proportional share formula used by Caltrans takes into account total intersection volumes under existing and future conditions. Turning movement counts from September 2015 were used for the proportional share calculation. Applying the Caltrans formula, the project's proportional share for improvements to the intersection would be 0.6 percent of the total cost. A copy of the proportional share calculation is enclosed.

## Access Analysis

### Sight Distance

At driveways a substantially clear line of sight should be maintained between the driver of a vehicle waiting on the driveway and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

Sight distance along Fourth Avenue at the project driveway was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance for minor street approaches that are a driveway is based on stopping sight distance with the approach travel speed used as the basis for determining the recommended sight distance. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a side street or driveway is evaluated based on stopping sight distance criterion and the approach speed on the major street.

There is no posted speed limit on Fourth Avenue, although there are advisory speeds of 15 mph at the curves. Speeds were measured at the project site at the approximate location of the new driveway. On average, vehicles traveling southbound, exiting the curve at the northern end of Fourth Avenue, are traveling at a speed of 35 mph. In the northbound direction, vehicles are traveling at an average of 30 mph. For a more conservative analysis, the sight distance criterion for 35 mph was used. For 35 mph, the minimum stopping sight distance required is 250 feet. Sight distances were measured using the site plan and conditions in the field were assessed. Sight distance at the approximate location of the proposed project driveway on Fourth Avenue is adequate with sight lines that exceed the minimum required sight distances. However, any plans for new landscaping should ensure that plantings at the project driveway do not exceed three feet in height to maximize sight lines.

### Left-Turn Lane Warrants

The need for a left-turn lane on Fourth Avenue at the project driveway was evaluated based on criteria contained in the *Napa County Road and Street Standards*, 2011. Daily traffic volumes for the roadway segment and driveway are required to determine the need for a left-turn lane. Traffic counts were collected on Imola Avenue between Soscol Avenue and Parrish Road, which is over a mile west of the project driveway located on Fourth Avenue. In order to determine volumes on Fourth Avenue, a 30-minute vehicle count was conducted during a field visit from 4:30 p.m. to 5:00 p.m. on May 9, 2016. At this time, there were approximately 25 vehicles that passed the proposed driveway location. This was compared to the segment volumes on Imola Avenue at this same time period. This segment of Imola Avenue experienced an average of 309 vehicles during this time period. Therefore, approximately eight percent of vehicles traveling on Imola Avenue continue on to or come from Fourth Avenue. For a more conservative analysis, it was assumed that that 10 percent of average daily trips (ADT) experienced on Imola Avenue would pass by the project driveway on Fourth Avenue. Based on these assumptions, Fourth Avenue experiences an ADT of 824 vehicles. The ADT at the project driveway is expected to be 34 daily trips on a weekday and 43 daily trips on the weekend. Based on these traffic counts, a left-turn lane is not warranted at the project driveway during weekdays or weekends under Existing plus Project Conditions.

A growth rate was applied to 824 ADT to determine the future volumes on Fourth Avenue. With the future volumes applied with project-generated trips, a left turn lane is not warranted during weekdays or weekends. Left-turn lane warrant results are enclosed.

### Conclusions and Recommendations

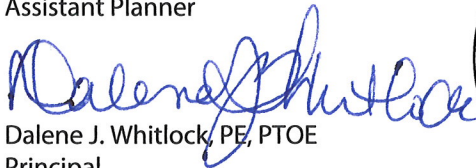
- The proposed winery is expected to produce 34 daily trips during the weekdays and 43 new trips on Saturday, including 13 p.m. peak hour trips on weekdays and 25 midday peak hour trips on Saturday.
- Under Existing conditions, Imola Avenue operates at LOS A during both peak periods and is expected to continue operating at this level of service with the addition of project-generated trips.
- Under Future Conditions, Imola Avenue is expected to operate at LOS C during the weekday p.m. peak hour and LOS A during the Saturday midday peak hour. The Level of service is anticipated to remain the same with the addition of project generated trips.
- The project is expected to contribute 0.6 percent of the anticipated increase in traffic volumes at Soscol Avenue/Imola Avenue; this represents their proportional share of the costs of future improvements should a fund be established to collect monies for the project.
- Sight distance is adequate at the project driveway on Fourth Avenue.
- A left-turn lane is not warranted on Fourth Avenue at the project driveway under either Existing or Future plus Project conditions.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,



Shannon Baker  
Assistant Planner



Dalene J. Whitlock, PE, PTOE  
Principal



DJW/scb/NAX112.L1

- Enclosures: Collision Rate Calculation  
Winery Traffic Information/Trip Generation Sheet  
Proportional Share Calculation  
Left-turn Lane Warrant

**SEGMENT COLLISION RATE CALCULATIONS**

**Paul Hobbs-Nathan Coombs Winery**

**Location:** Imola Ave between Soscol Ave & 4th Ave

**Date of Count:** Friday, April 08, 2016  
**ADT:** 8,200

**Number of Collisions:** 6  
**Number of Injuries:** 2  
**Number of Fatalities:** 0  
**Start Date:** July 1, 2010  
**End Date:** June 30, 2015  
**Number of Years:** 5

**Highway Type:** Conventional 2 lanes or less  
**Area:** Rural  
**Design Speed:** ≤55  
**Terrain:** Flat

**Segment Length:** 1.4 miles  
**Direction:** East/West

Number of Collisions x 1 Million					
ADT x 365 Days per Year x Segment Length x Number of Years					
	6	x	1,000,000		
8,200	x	365	x	1.37	x 5

	Collision Rate	Fatality Rate	Injury Rate
<b>Study Segment</b>	<b>0.29 c/mvm</b>	<b>0.0%</b>	<b>33.3%</b>
<b>Statewide Average*</b>	<b>0.86 c/mvm</b>	<b>2.4%</b>	<b>40.1%</b>

ADT = average daily traffic volume  
 c/mvm = collisions per million vehicle miles  
 \* 2012 Collision Data on California State Highways, Caltrans

**Location:** Fourth Avenue

**Date of Count:** Friday, April 08, 2016  
**ADT:** 820

**Number of Collisions:** 1  
**Number of Injuries:** 0  
**Number of Fatalities:** 0  
**Start Date:** July 1, 2010  
**End Date:** June 30, 2015  
**Number of Years:** 5

**Highway Type:** Conventional 2 lanes or less  
**Area:** Rural  
**Design Speed:** >55  
**Terrain:** Flat

**Segment Length:** 0.6 miles  
**Direction:** North/South

Number of Collisions x 1 Million					
ADT x 365 Days per Year x Segment Length x Number of Years					
	1	x	1,000,000		
820	x	365	x	0.56	x 5

	Collision Rate	Fatality Rate	Injury Rate
<b>Study Segment</b>	<b>1.19 c/mvm</b>	<b>0.0%</b>	<b>0.0%</b>
<b>Statewide Average*</b>	<b>1.07 c/mvm</b>	<b>2.5%</b>	<b>40.0%</b>

ADT = average daily traffic volume  
 c/mvm = collisions per million vehicle miles  
 \* 2012 Collision Data on California State Highways, Caltrans

## Winery Traffic Information / Trip Generation Sheet

Project Name: Paul Hobbs - Nathan Coombs Winery Project Scenario: Proposed

### Traffic during a Typical Weekday

Number of FT employees: <u>7</u> x 3.05 one-way trips per employee	=	<u>21</u> daily trips.
Number of PT employees: <u>0</u> x 1.90 one-way trips per employee	=	<u>0</u> daily trips.
Average number of weekday visitors: <u>15</u> / 2.6 visitors per vehicle x 2 one-way trips	=	<u>12</u> daily trips.
Gallons of production: <u>60000</u> / 1,000 x .009 truck trips daily <sup>3</sup> x 2 one-way trips	=	<u>1</u> daily trips.
<b>Total</b>	<b>=</b>	<b><u>34</u> daily trips.</b>
Number of total weekday trips x .38	=	<u>13</u> <b>PM peak trips.</b>

### Traffic during a Typical Saturday

Number of FT employees (on Saturdays): <u>7</u> x 3.05 one-way trips per employee	=	<u>21</u> daily trips.
Number of PT employees (on Saturdays): <u>0</u> x 1.90 one-way trips per employee	=	<u>0</u> daily trips.
Average number of weekend visitors: <u>30</u> / 2.8 visitors per vehicle x 2 one-way trips	=	<u>21</u> daily trips.
<b>Total</b>	<b>=</b>	<b><u>43</u> daily trips.</b>
Number of total Saturday trips x .57	=	<u>25</u> <b>PM peak trips.</b>

### Traffic during a Crush Saturday

Number of FT employees (during crush): <u>9</u> x 3.05 one-way trips per employee	=	<u>27</u> daily trips.
Number of PT employees (during crush): <u>0</u> x 1.90 one-way trips per employee	=	<u>0</u> daily trips.
Average number of weekend visitors: <u>30</u> / 2.8 visitors per vehicle x 2 one-way trips	=	<u>21</u> daily trips.
Gallons of production: <u>60000</u> / 1,000 x .009 truck trips daily x 2 one-way trips	=	<u>1</u> daily trips.
Avg. annual tons of grape on-haul: <u>97</u> x .11 truck trips daily <sup>4</sup> x 2 one-way trips	=	<u>1</u> daily trips.
<b>Total</b>	<b>=</b>	<b><u>51</u> daily trips.</b>
Number of total Saturday trips x .57	=	<u>29</u> <b>PM peak trips.</b>

### Largest Marketing Event- Additional Traffic

Number of event staff (largest event): <u>9</u> x 2 one-way trips per staff person	=	<u>18</u> trips.
Number of visitors (largest event): <u>100</u> / 2.8 visitors per vehicle x 2 one-way trips	=	<u>71</u> trips.
Number of special event truck trips (largest event): <u>1</u> x 2 one-way trips	=	<u>2</u> trips.

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

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



**Proportional Share Calculations  
Soscol Ave/Imola Ave**

		<b>Total Volume Entering the Soscol Ave/Imola Ave</b>	
	<b>PM</b>		<b>PM</b>
<b>Project Trips (T)</b>	13	Existing	4291
		Future Year	6411

***Destription of Project Improvement:***

Unknown

***Calculation of Project Share***

$$P = T / (TB - TE)$$

where:

P = Equitable Share

T = Project trips during the affected peak hour

TB = Build-out volumes

TE = Existing volumes

T	13
TB	6411
TE	4291
P	<b>0.6%</b>

# Napa County Left Turn Lane Warrant Graph

