

**ORANGE COUNTY TRAFFIC COMMITTEE
AGENDA**

*Thursday, August 20, 2009
9:00 A.M.*

*Hall of Administration Building
333 W. Santa Ana Blvd., Room 119
Santa Ana, California*

Committee Representation:
Auto Club of Southern California
California Department of Transportation
California Highway Patrol
Capistrano Unified School District
Orange County Sheriff's Department
OC Public Works (Operations)
OC Public Works (Traffic Engineering)

I. INTRODUCTIONS

II. AGENDA ITEMS

A. Live Oak Canyon Road Traffic Study; Trabuco Canyon; District 3.

- **STAFF PRESENTATIONS**
- **PUBLIC DISCUSSION**
- **COMMITTEE DISCUSSION AND RECOMMENDATION**

III. PUBLIC AND COMMITTEE COMMENTS ON OFF-AGENDA ITEMS

IV. MEETING ADJOURNMENT

V. NEXT SCHEDULED MEETING: Thursday, September 17, 2009

All supporting documentation is available for public review in the office of Traffic Engineering located in the OC Public Works Building, 300 N. Flower St., Room 509, Santa Ana, 92703 during regular business hours, 7:00 a.m. - 5:00 p.m., Monday through Friday. Telephone: 714-834-5069

ORANGE COUNTY TRAFFIC COMMITTEE

COMMITTEE REPORT OF: August 20, 2009

ITEM A

SUPERVISORIAL DISTRICT: 3

SUBJECT: Traffic Study

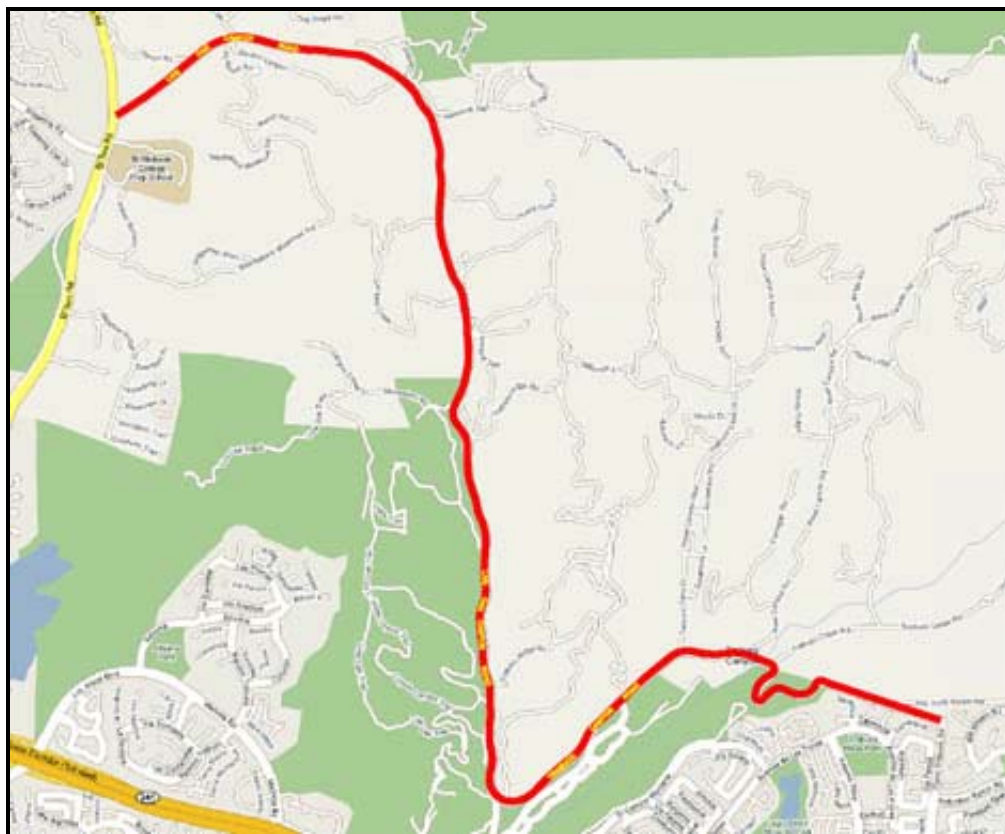
LOCATION: Live Oak Canyon Road/Trabuco Canyon Road; Trabuco Canyon; TB 862, 863, 893

INITIATED BY: County of Orange

REQUEST: Examine current operational performance.

DATA:

LOCATION MAP



INTRODUCTION

OC Public Works/Traffic Engineering, with the assistance of W.G. Zimmerman Engineering Inc., has completed a traffic study of Live Oak Canyon Road/Trabuco Canyon Road (hereafter, “the Road”). The overall goal of the study was to identify any existing roadway performance issues and provide possible enhancement or mitigation measures. Data from this study has been excerpted and summarized in this staff report. The complete Live Oak Canyon Road Traffic Study is incorporated by reference and is available separately.

EXISTING CONDITIONS

The Road is located in the unincorporated area of Orange County, between the juncture of El Toro Road and Santiago Canyon Road (east of Lake Forest) and Plano Trabuco Road in Rancho Santa Margarita. The Live Oak Canyon Road portion of the Road extends from El Toro Road to the entrance of O’Neill Regional Park, where it becomes Trabuco Canyon Road. Trabuco Canyon Road continues eastward to become Plano Trabuco Road. To help focus the Traffic Study and better present the data, the evaluation divided the road into the following three general segments:

- Segment 1 Live Oak Canyon Road from El Toro Road/Santiago Canyon Road to Hamilton Trail;
- Segment 2 Live Oak Canyon Road from Hamilton Trail to Trabuco Canyon Road and;
- Segment 3 Trabuco Canyon Road from Live Oak Canyon Road to Plano Trabuco Road (generally near the Rancho Santa Margarita city limit).

Live Oak Canyon Road/Trabuco Canyon Road (Scenic Route S19) is a five mile long narrow, two-lane, collector road with dirt shoulders. The Road winds through hills and canyons, with varying vertical alignment, sharp curves, a crossing of Trabuco Creek, and a curving climb up a steep bluff. Portions of the Road are lined with mature oak trees, which provide a shady canopy over the roadway. Various concrete barriers, metal beam guardrails, power poles, and embankments also exist near the road’s edge along portions of the roadway.

Adjacent land uses include private residences, a church, medical facilities, a general store, restaurants/bars, a fire station, horse stables, a post office, a regional park, a school, and a monastery. Cook’s Corner bar/restaurant is located at the intersection of the Road and El Toro Road, and is known as an attraction for motorcyclists.

The travel way width varies generally from 20 feet to 24 feet. This measurement does not include the approximately zero to two foot unpaved shoulder on each side of the road.

The posted speed limit is 35 MPH, except for the 25 MPH “when children are present” speed limit posted in the vicinity of Trabuco Elementary School. Parking is restricted along the Road except near the school, where parking is allowed from sunset to sunrise. Curve warning signs with advisory speeds are posted before sharp curves.

Signage and markings include a double yellow centerline with raised pavement markers, curve warning signs, white edge line striping, and pavement edge delineators at specific locations. Except for a stop sign at the intersection of the Road and El Toro Road, no other stop signs or traffic signals exist along the Road. Cross streets (approximately seven) are controlled by stop signs.

Intersection safety lighting is installed at specific locations.

There is a dipped concrete road crossing at Trabuco Creek that allows low-flow creek water to flow under through drainage culverts. During periods of high flows, the overflow floods the roadway. The crossing is well marked with flashing signals during periods of high flow, to alert drivers to the flooded condition.

TRAFFIC VOLUMES -- 24-HOUR ADT

The 2009 average Annual Daily Traffic (ADT) for the Road was approximately 3,000 vehicles per day. The average ADT volume trend has remained at about the same level from 1999 through 2008.

SPOT SPEED DATA

The following table summarizes spot speed surveys taken at 3 locations during a 24-hour period on April 29, 2009:

Speed Survey Summary

Peak Period	Section	From	To	15 th Percentile		50 th Percentile		85 th Percentile		10 MPH Pace Speed	
				NB	SB	NB	SB	NB	SB	NB	SB
AM	Live Oak Canyon	El Toro Rd	Ranch Rd	38	35	44	43	48	50	39-48	38-47
PM	Live Oak Canyon	El Toro Rd	Ranch Rd	36	32	41	40	48	46	36-45	36-45
AM	Live Oak	Ranch Rd	Lambrose	38	36	44	39	50	44	38-47	36-45

	Canyon		Canyon								
PM	Live Oak Canyon	Ranch Rd	Lambrose Canyon	37	36	41	40	48	44	36-45	36-45
AM	Trabuco Canyon	Trabuco Oaks	Rose Canyon	24	31	29	38	33	45	25-34	34-43
PM	Trabuco Canyon	Trabuco Oaks	Rose Canyon	24	31	29	38	32	46	25-34	35-44

ACCIDENT DATA

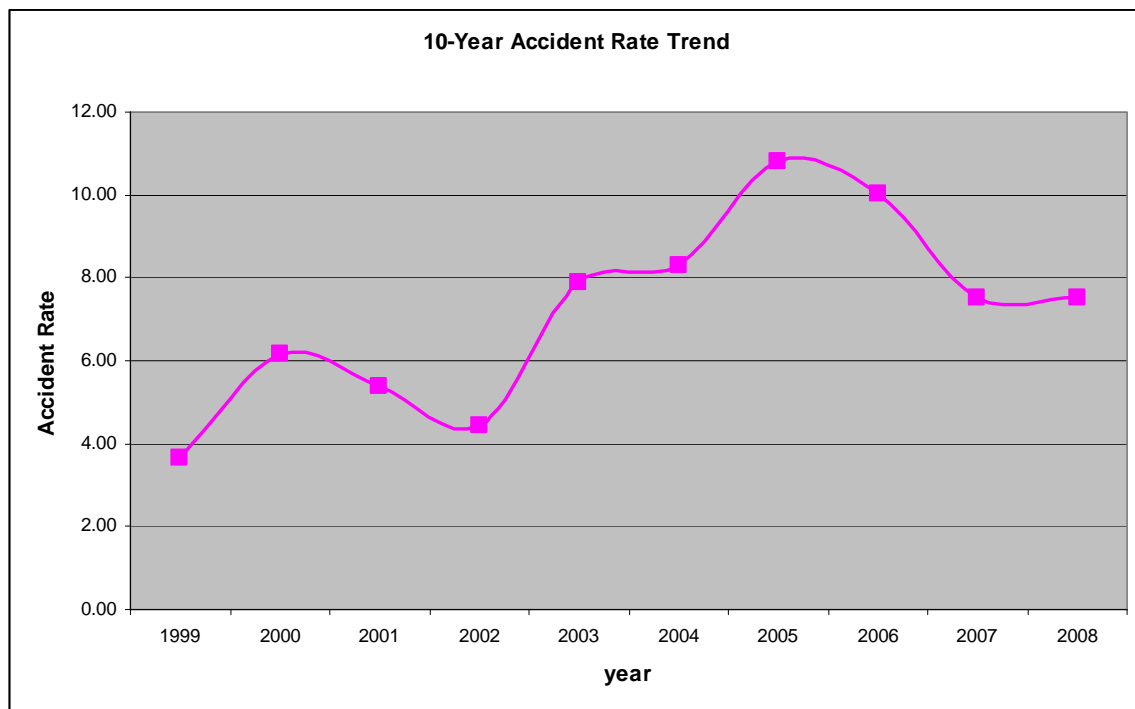
General accident summary data was reviewed for the last ten years to identify any accident trends. A detailed review of the most recent three years of individual accident records was conducted to identify specific accident causes and driver statistics.

Traffic Engineering records for January 1999 through December 2008 indicate the following accident data:

**10 Year Accident Summary
(Live Oak Canyon Road/Trabuco Canyon Road)**

	Accidents (1/1/99 Thru 12/31/08)			
	PDO	Injury	Fatal	Total
Total	148	214	10	372
Percentage	40%	58%	3%	100%
Avg Accidents (per yr)	15	21	1	37

The total accident trend increased from 1999 to a peak in 2005, and then from 2005 through 2008 decreased slightly. However, the overall trend from 1999 to 2008 has increased.

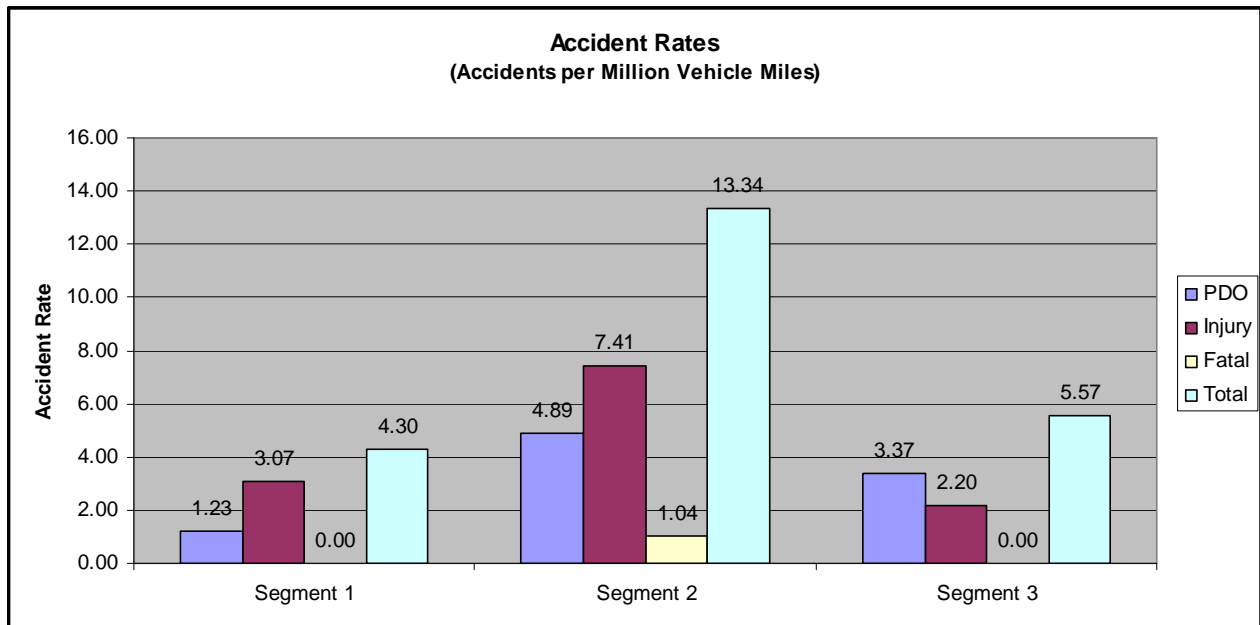


A total of 142 accidents were reported in the study area over the most recent three year period (January 1, 2006 to April 17, 2009). (See the Traffic Study for the ten year and three year accident data inventory and graphic summaries for each year and in total). These accident reports and summarized data may not include all accidents within this time period (including one known accident on April 7, 2009) due to processing of the reports by the CHP. Of the 142 total accidents in the three years, 60 accidents were property damage only (PDO), 75 were injury accidents, and 7 were fatal accidents.

Three Year Accident Summary

(Live Oak Canyon Road/Trabuco Canyon Road)

	Accidents (1/1/06 Thru 4/17/09)			
	PDO	Injury	Fatal	Total
Total	60	75	7	142
Percent	42%	53%	5%	100%
Average Accidents (per yr)	19	23	2	44

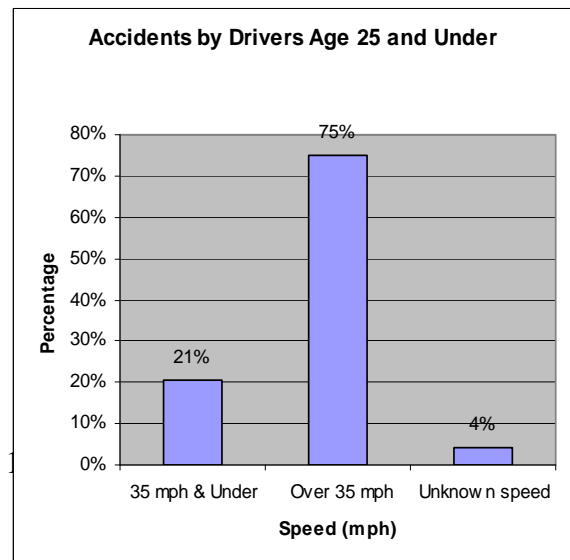
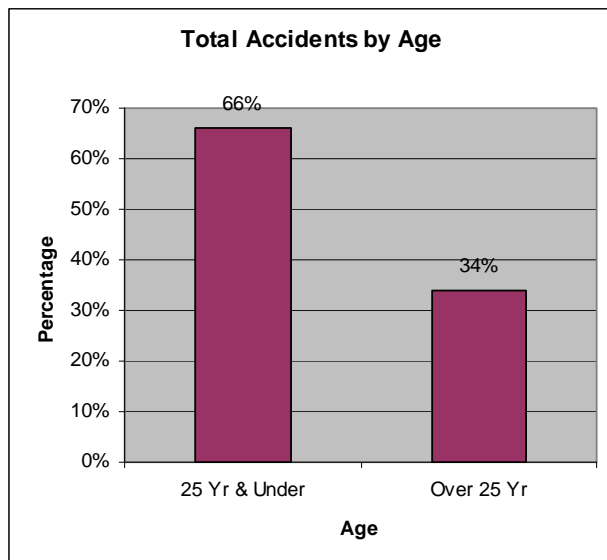


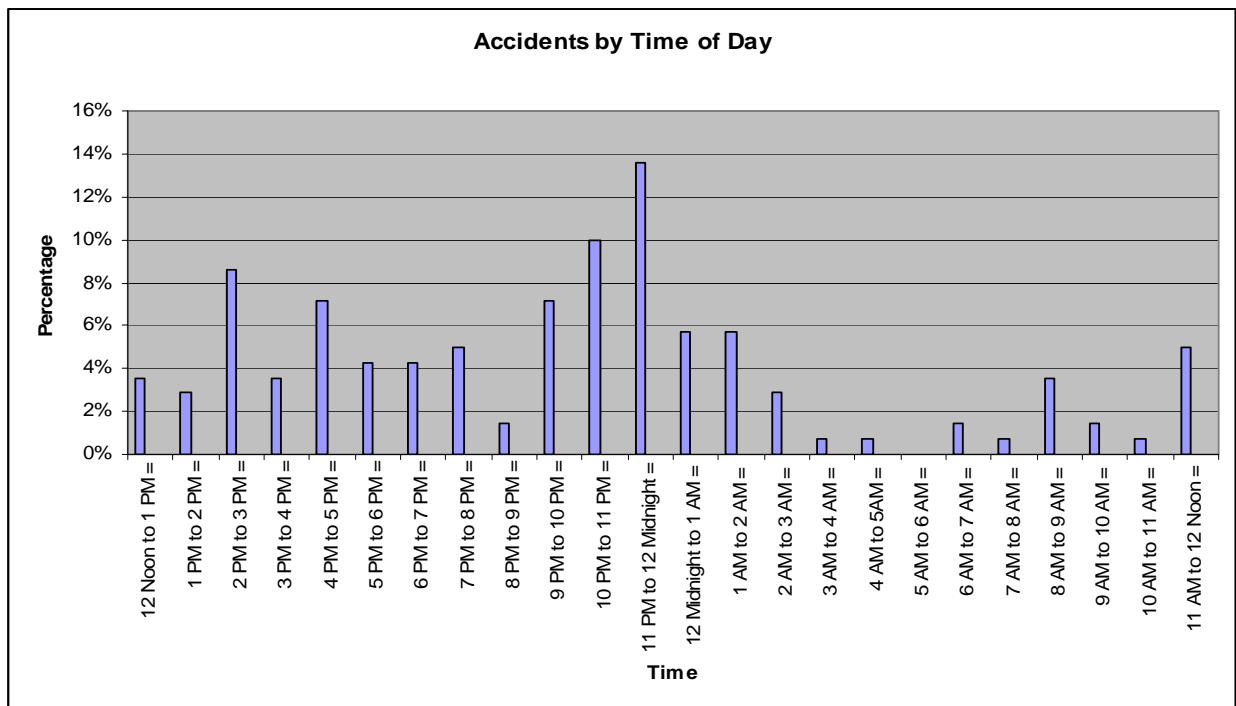
Average/Expected Injury and Total Accident Rate Summary**

Segment	Project Rate		National Rate ¹		State Rate ²	
	Injury	Total	Injury	Total	Injury	Total
1	3.07	4.30	1.0	2.2	0.62	1.65
2	7.41	13.34	1.0	2.2	0.62	1.65
3	2.20	5.57	1.0	2.2	0.62	1.65

**Accident Rates per million vehicle-miles

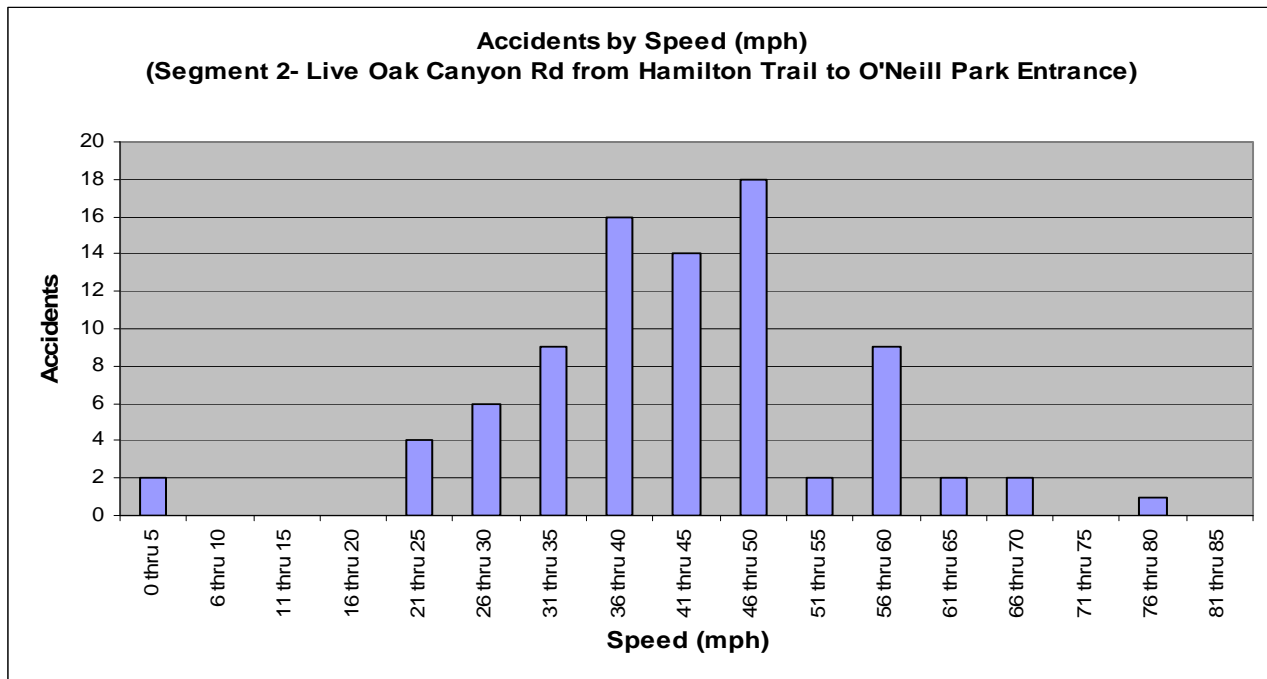
The following graphics from the Traffic Study serve to illustrate some of the more significant accident trends and statistics.





Segment 2 had the highest number of accidents and all of the fatal accidents of the three segments in the 3 year study period. Segment 2 has a higher density of trees, a large number of trees adjacent to the travel-way and more curves per mile than either Segment 1 or Segment 3. A total of 90 accidents were reported on this 2.13 mile long road segment of Live Oak Canyon Road, which included 33 (37%) PDO accidents, 50 (55%) injury related accidents and 7 (8%) fatal accidents over a three year study period from January 2006 through April 17, 2009.

It was found that more than 75% of drivers who were involved in accidents were driving at speeds higher than the posted speed limit. 34 of the 90 accidents in Segment 2 (38%) were related to speeds more than 10 mph over the posted speed limit.



PUBLIC MEETINGS

Two project meetings and one Traffic Committee were held with respect to the Live Oak Canyon Road/Trabuco Canyon Road study. The purpose of the meetings was to solicit input from interested parties and local residents regarding information and items to be considered as part of the County’s evaluation of Live Oak Canyon Road/Trabuco Canyon Road. An initial meeting was held on Monday, May 4, 2009 at Orange County facilities with representatives of the Board of Supervisors, OC Public Works, OC Sheriff, California Highway Patrol, Canyon interests and others to discuss project scope, identify significant issues and direct future data collection. A second meeting was held on Wednesday, June 3, 2009 at the Trabuco Canyon Elementary School for the public to discuss the project and solicit specific concerns of users of the roadway. The public input mainly centered on enforcement, education, and engineering. A summary of the comments and concerns received from these meetings presents the data based on the categories of enforcement, education, and engineering in the Traffic Study. The final consensus of the residents was that the road is not the problem; accidents were caused by unlawful driving habits. Enhanced enforcement was the primary suggestion and residents favored minimal roadway changes and protection of the tree canopy.

The status of preparing the study and data collected was presented at the July 16, 2009, Traffic Committee meeting. Discussion and input from the Committee members was incorporated into this final report.

ANALYSIS

The County of Orange's Traffic Engineering Section within OC Public Works undertook this traffic study of Live Oak Canyon Road/Trabuco Canyon Road in response to local governing bodies and resident's concerns regarding the operational performance of Live Oak Canyon Road and Trabuco Canyon Road. An integral part of the study included a detailed analysis of accident data to provide a logical basis for the identification of possible countermeasures. Accident trends were analyzed, patterns of correctable accidents were identified, and potential enhancements along the roadway were categorized ranging from those that are relatively easy to implement to those that required additional research, may have environmental impacts or require changes to legislation.

Field reviews were conducted of these two lane curvilinear rural roads to identify and assess existing traffic controls. The existing posted speed limit on the study sections is 35 miles per hour (mph). These existing traffic control devices including double yellow centerline stripe, white edge line striping and numerous curve warning signs were found to be consistent with applicable standards and appropriate for this roadway.

Collected speed survey data indicates that the 85th percentile speed, or the prevailing speed of the majority of vehicles, exceeds the currently posted speed limit by about 10 mph. The data for those vehicles on the road between 12 am and 4 am shows that about one third were traveling more than 10 miles per hour over the posted speed limit and more than 10 percent were traveling more than 66 mph. Traffic volumes along the study roadway vary from 2400 to 3300 vehicles per day.

A detailed review and analysis of 142 accidents reported in the study area over the most recent three year period was conducted to note accident causes, accident locations, and various statistical information concerning the accidents. Of the 142 total accidents in the last three years, 60 accidents were property damage only, 75 were injury accidents, and 7 were fatal accidents. From this three year data analysis it was noted that approximately 70% of the accidents occurred in the southbound direction. Approximately 24% of the total accidents involved motorcycles. Approximately 66% of the accidents involved drivers of age 25 years and under. 75% of the accidents were related to speeds higher than the posted speed limit of 35 mph with speeds up to 80 mph. These "speeding" accidents particularly involved drivers of age 25 years and under. Additional analysis shows that, of the accidents caused by drivers of age 25 years and under, 65% of those accidents occurred during late night hours. The primary cited cause of the accidents was "speed".

The highest number of accidents within the study area was between Hamilton Trail and O'Neill Park, including all of the fatal accidents in the 3 year study period. This segment has a higher density of trees, a large number of trees adjacent to the travel-way and more curves per mile than other portions of the road. A total of 90 accidents were reported on this 2.13 mile long road segment of Live Oak Canyon Road, which included 33 (37%) PDO accidents, 50 (55%) injury related accidents and 7 (8%) fatal accidents over a three year study period. More than 75% of drivers who were involved in accidents in this segment were driving at speeds higher than the posted speed limit and 70% of the accidents involved drivers of age 25 years and under.

The detailed review showed a significant group of accidents concentrated in the area from Hamilton Trail to approximately 2,800 feet south of Monastery Road. Another grouping of accidents occurred along the area north and south of the O'Neill Regional Park entrance where Live Oak Canyon Road becomes Trabuco Canyon Road. The last grouping of accidents occurred on Trabuco Canyon Road from O'Neill Regional Park entrance to the Rancho Santa Margarita City limit line at Plano Trabuco Road. Accidents occurred at the sharp switchback curves south of the Trabuco Creek crossing.

Given the adequate signage, increasing enforcement along Live Oak Canyon Road would be the most effective way to reduce vehicle speeds, particularly during night time traffic when accidents are mostly caused by speed and racing. In addition to increased enforcement, operation of the roadway may be further enhanced for those few drivers unfamiliar with the roadway who are traveling slightly over the posted speed limit. Installation of advance curve warning signs with the appropriate advisory speed, along with more closely spaced chevrons located at the tighter curves could serve to highlight particular locations. The recommendations of the Study are broadly categorized into three groupings: "Relatively Easy to Implement", "Difficult to Implement or Requires Further Analysis" and "Requires Long Term Planning, Change to Laws, or Significant Funding". The first category includes suggestions such as: installation of additional animal, curve and grade warning signs; installation of metal beam guardrail; and installation of additional chevron and edge markers. The second category requires significant funding and/or additional studies to determine extent of any environmental impacts and includes: seek additional law enforcement grant funding; construct law enforcement turn-outs; and construct paved grooved shoulders. The final category includes such suggestions that may or may not prove feasible after further analysis and environmental studies or require changes in policy such as: construct extensive paved shoulders throughout; and construct speed "humps" or dipped cross-gutters.

RECOMMENDATION

1. Provide an animal warning sign (W11-3) for drivers entering the canyon from El Toro Road/Santiago Canyon Road.
2. Install metal beam guardrail preceding the tree and utility pole at southbound Monastery curve.
3. Install a curve warning with speed advisory sign in advance of the southbound curve at O'Neill Park Entrance.
4. Install a curve warning with speed advisory sign within the City in advance of the northbound right angle curve on Trabuco Canyon Road and trim the overhanging tree branches at the existing curve warning sign.

5. Install additional chevron signs at the first northbound right angle turn near the Rancho Santa Margarita City limits.
6. Install chevron signs along the outside of the northbound hairpin curve south of Trabuco creek, just northerly of the Rancho Santa Margarita City limits.
7. Install northbound supplemental sign indicating "Next 4 Miles" below the existing winding road sign near O'Neill Park.
8. Provide additional signage (SW4-1 CA) for the steep northbound downhill grade north of Hamilton Trail to provide additional notice of conditions to drivers unfamiliar with the roadway.
9. Install standard paddle markers along the outside of the smaller radius northbound curve north of Hamilton Trail.

BOARD ACTION NECESSARY TO ENACT THIS RECOMMENDATION

Approve this report.