CITY OF LAGUNA HILLS
TRAFFIC COMMISSION
REGULAR MEETING AGENDA
NOVEMBER 18, 2015
7:00 PM

Michael Caputo - Chair

Steven Beeuwsaert - Vice Chair **Mark Jones - Commissioner**
Greg Staar - Commissioner **Larry Woodruff - Commissioner**

Location: City Council Chamber, 24035 El Toro Road, Laguna Hills, California 92653

Any person wishing to address the Traffic Commission on any matter, whether or not it appears on this Agenda, is asked to complete a "Request to Speak" form available on the table at the back of the Chamber. The completed form is to be submitted to the Recording Secretary prior to an individual being heard by the Traffic Commission.

Members of the public wishing to address the Traffic Commission can do so during the Public Comments portion of the Agenda with a time limitation of three minutes per person, an overall time limit of ten minutes for any one subject, and a total time limit of thirty minutes for Public Comments. If you are commenting on an Agenda item, your comments will be heard at the time that item is scheduled on the Agenda. If you are addressing the Commission on an item not listed on the Agenda, the Traffic Commission is prohibited by law from discussing or taking any action on that item.

CALL TO ORDER

Resolution No. 96-04-09-1 established rules of decorum for public meetings held by the City of Laguna Hills. Resolution No. 96-04-09-1 is available on the table at the back of the City Council Chamber.

PLEDGE OF ALLEGIANCE

ROLL CALL OF COMMISSION MEMBERS

1. PUBLIC COMMENTS

This is the time to address the Traffic Commission on any matter not listed on

this Agenda that is within the subject matter jurisdiction of the Commission. Public Comments are limited to three minutes per person, an overall time limit of ten minutes for any one subject, and a total time limit of thirty minutes.

2. MINUTES

3. PRESENTATIONS

4. ADMINISTRATIVE REPORTS

4.1 ANALYSIS OF PARKING CONTROL SURVEY FOR PERMIT PARKING IN THE RIDGEFIELD COMMUNITY NEIGHBORHOOD

4.2 STOP SIGN ANALYSIS AT THE INTERSECTION OF SORESINA AT TERAMO

5. INFORMATIONAL ITEMS

5.1 SHERIFF'S DEPARTMENT PRESENTATION

5.2 RADAR SPEED TRAILER

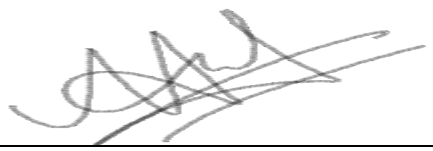
6. COMMISSIONER COMMENTS

7. ADJOURNMENT

The next Regular Meeting of the Traffic Commission, scheduled for January 20, 2016, will be re-scheduled to January 27, 2016, at 7:00 PM, in the City Council Chamber, located at 24035 El Toro Road, Laguna Hills, California.

CERTIFICATION

I, HUMZA JAVED, Traffic Engineer of the City of Laguna Hills, do hereby certify that a copy of the foregoing Agenda was posted at Laguna Hills City Hall, Laguna Hills Community Center, and the Courtyard at La Paz Center by November 12, 2015, at 5:00 PM.



November 12, 2015

HUMZA JAVED **DATE**
ASSOCIATE CIVIL ENGINEER

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, you should contact the office of the City

Engineer at (714) 707-2650. Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to assure access.

Materials related to an item on this Agenda submitted to the Commission after distribution of the Agenda packet are available for public inspection in the Public Services Department at 24035 El Toro Road, Laguna Hills, California, during normal business hours.

CITY OF LAGUNA HILLS, CALIFORNIA
TRAFFIC COMMISSION MEETING
MINUTES
SEPTEBMER 16, 2015
7:00 P.M.

CALL TO ORDER

The Regular Meeting of the Traffic Commission of the City of Laguna Hills, California, was called to order by Chair Mike Caputo at 7:00 PM in the Laguna Hills City Council Chamber, 24035 El Toro Road, Laguna Hills, California

PLEDGE OF ALLEGIANCE:

The Pledge of Allegiance was led by Chair Caputo.

ROLL CALL OF COMMISSION MEMBERS:

Present: Chair Mike Caputo, Vice Chair Steven Beeuwsaert, Commissioner Greg Staar, Commissioner Larry Woodruff

Absent: Commissioner Mark Jones

1. PUBLIC COMMENTS

None

2. APPROVAL OF MINUTES

THE TRAFFIC COMMISSION APPROVED THE MINUTES OF THE JULY 15, 2015, REGULAR MEETING BY M/CHAIR CAPUTO, S/VICE CHAIR BEEUWSAERT.

Approved by a vote of 4-0 Commissioner Jones Absent.

3. PRESENTATIONS

None

4. ADMINISTRATIVE REPORTS

4.1 PARKING CONTROL SURVEY (PERMIT PARKING) IN THE RIDGEFIELD COMMUNITY NEIGHBORHOOD

Associate Civil Engineer, Humza Javed, indicated that at the July 15, 2015,

Traffic Commission meeting, the Commission requested Staff to re-survey the Ridgefield Community regarding implementation of parking controls along the streets of Sierra Bonita, La Cienega, Los Cerros, and Rio Grande. The residents of the community were concerned with overflow parking from the adjacent Crestline condominiums and the Via Lomas community. Mr. Javed stated the initial survey sent out on June 24, 2015, resulted in a response rate of 68%, but there was no clear consensus on parking controls. At the direction of the Traffic Commission, the second survey sent out on August 18, 2015, had a response rate of 75%. However, the parking control option with the highest percentage of votes only received 43% support, less than the 67% threshold required by the Laguna Hills Municipal Code for establishing a permit parking program. In addition, Mr. Javed indicated, based on the response rate, the majority of the neighborhood does not support a permit parking program.

Resident Stuart Merrell spoke in favor of permit parking.
Resident Jean Merrell spoke in favor of permit parking.
Resident Melissa Frueh spoke in favor of permit parking.

THAT THE TRAFFIC COMMISSION RECEIVE AND FILE THIS REPORT, M/COMMISSIONER WOODRUFF, S/COMMISSIONER STAAR.

Approved by a vote of 3-1 Vice Chair Beeuwsaert Voted No and Commissioner Jones Absent.

4.2 BECKENHAM STREET PARKING

Associate Civil Engineer, Humza Javed, indicated Staff had recently been contacted by a resident of the Acacia Knolls Gated Community regarding overnight parking along Beckenham Street between Paseo de Valencia and Wilkes Place. The resident stated the parking consists of out-of-neighborhood vehicles that arrive and leave during late night and early morning hours that contribute to noise, disturbance and trash. Mr. Javed also said previously, in 2014, staff had received a similar complaint and presented a report to the Traffic Commission at its November 19, 2014, meeting. No action was warranted at that time. Based on new surveys, an average of 30 vehicles are parked along Beckenham Street nightly. A number of these vehicles could be associated with adjacent residential properties, however, it is likely that a majority are overflow vehicles from other neighborhoods. Mr. Javed said while it is accepted that the out-of-neighborhood parking is generating noise during the night and early morning hours, staff did not observe any traffic violations, and all vehicles were noted as being legally parked. Mr. Javed stated staff has identified several options the Traffic Commission may consider implementing regarding control of

parking on Beckenham Street. The options include; taking no action, limit parking during a specific time frame, or no parking at any time. Mr. Javed said staff does not recommend the no parking at any time option, due to the need to maintain access for persons driving to and using Beckenham Park.

Resident Mary Pruitt spoke in favor of permit parking.
Resident Benedek Toth spoke in favor of permit parking.
Resident Fred (Buck) Buckhalter spoke in favor of permit parking.
Resident Sterling Lund spoke in favor of permit parking.
Resident Renee Horibe spoke in favor of permit parking.
Resident Debbie Rey spoke in favor of permit parking.
Resident Lou Greenleaf spoke in favor of permit parking.
Resident Nick Williams spoke in favor of permit parking.
Resident Suzanne Lawrence Houssainy spoke in favor of permit parking.

THAT THE TRAFFIC COMMISSION RECOMMEND TO THE CITY COUNCIL THE ESTABLISHMENT OF PERMIT PARKING FROM 10:00 PM TO 6:00 AM ON BECKENHAM STREET FOR THE RESIDENTS OF THE ACACIA KNOLLS AND SUNSET PLACE COMMUNITIES, M/VICE CHAIR BEEUWSAERT, S/COMMISSIONER WOODRUFF.

Approved by a vote of 3-1 Chair Caputo Voted No and Commissioner Jones Absent.

5. INFORMATIONAL ITEMS

5.1 SHERIFF'S DEPARTMENT PRESENTATION

Sergeant Prince gave a verbal report updating the Traffic Commission on traffic issues in the City.

5.2 RADAR SPEED TRAILER

Staff submitted the schedule for the radar trailer.

6. COMMISSIONER COMMENTS

No Comments.

7. ADJOURNMENT

There being no further business before the Traffic Commission at this session, Chair Caputo declared the meeting adjourned at 8:40 p.m.

Prepared by:

_____
Humza Javed, P.E.
Associate Engineer

Approved By:

_____
MICHAEL CAPUTO, CHAIR

City of Laguna Hills
Traffic Commission
Staff Report

DATE: 11/18/15

TO: TRAFFIC COMMISSIONERS

FROM: HUMZA JAVED, P.E.
ASSOCIATE CIVIL ENGINEER

ISSUE: ANALYSIS OF PARKING CONTROL SURVEY FOR PERMIT PARKING IN THE RIDGEFIELD COMMUNITY NEIGHBORHOOD

RECOMMENDATION: THAT THE TRAFFIC COMMISSION RECEIVE AND FILE THIS REPORT.

SUMMARY:

At the October 27th City Council meeting, two residents of the Ridgefield Community addressed the City Council regarding their concerns about out-of-neighborhood parking in their community. This issue was previously discussed at the July 15, 2015 and the September 16, 2015 Traffic Commission meetings. Two separate parking surveys previously sent out to the neighborhood did not reveal adequate support for a parking control. In response to the resident's comments, however, the City Council directed staff to further analyze the survey results and prepare a geographic break down of the results regarding support for a parking control. The breakdown of the survey did not alter the results of the previous surveys analysis, which concluded insufficient support for a parking control in the Ridgefield neighborhood in accordance with City Code. It is recommended that the Traffic Commission receive and file this report.

BACKGROUND:

Over the last several months, residents from the Ridgefield community have been in touch with Staff regarding out-of-neighborhood parking along the streets of Sierra Bonita, La Cienega Street, Los Cerros Drive, and Rio Grande Avenue. The residents of the community are concerned with the apparent overflow parking from the adjacent Crestline condominiums and the Via Lomas community. This issue was previously discussed at the July 15, 2015 and the September 16, 2015 Traffic Commission meetings. Staff previously mailed out two surveys to the neighborhoods, and both times the survey did not reveal adequate support (67%) for a parking control. Results of the surveys were presented at the aforementioned Traffic Commission meetings.

Recently, at the October 27, 2015 City Council meeting, two of Ridgefield neighborhood residents requested the City Council review the "impact zone" of the survey area and re-analyze the survey results. Staff reviewed the survey results and has provided a breakdown by street as follows:

RIDGEFIELD NEIGHBORHOOD	***LOS CERROS DRIVE***	***LA CIENEGA STREET***	***RIO GRANDE AVENUE***
Number of Residences	7	33	11
Number of Surveys mailed	7	33	11
Number of Surveys returned	7	23	8
Percent Response Rate	100%	70%	72%
Number of residents in favor of ANY parking control	7	17	6
Percent of residents who support a parking control	100%	52%	54%
Number of residents who DO NOT want any parking controls	0	6	2

The results above indicate a 100% support for a parking control on Los Cerros Drive, 52% support for a parking control on La Cienega Street, and a 54% support for a parking control on Rio Grande Avenue. Staff analyzed, if Rio Grande were to be omitted from the "impact zone," the number of residents on the streets of Los Cerros Drive and La Cienega Street are 40. The number of residents who support a parking control on these two streets through prior surveys are 24 (60 percent). According to Laguna Hills Municipal Code (LHMC) Chapter 11-24, Residential Permit Parking Program, permit parking can be established only if 67% or more of the affected residents support it. As shown above, there is not enough support for a permit parking control. Please see attached Vicinity Map.

Crestline HOA has been notified of the adjacent community's concerns with regards to the overflow parking. They have been told to remind their residents of the City's permit parking program along Gordon Road for their residents. With the cooperation of Crestline HOA, some of the overflow parking may be relieved from adjacent residential streets.

This report and its results will be presented to the City Council at the next available meeting. The Traffic Commission is invited to offer comments on the results for parking controls in the Ridgefield neighborhood for inclusion in the staff report to the City Council.

ATTACHMENTS:

- Vicinity Map

RIDGEFIELD PARKING SURVEY
AUGUST 18, 2015

Los Cerros
100% in Favor of
Permit Parking

La Cienega
50% in Favor of
Permit Parking

Rio Grande
54% in Favor of
Permit Parking

11/18/2015 ITEM NO. 4.1

11/18/2015 ITEM NO. 4.1

City of Laguna Hills
Traffic Commission
Staff Report

DATE: 11/18/15

TO: TRAFFIC COMMISSIONERS

FROM: HUMZA JAVED, P.E.
ASSOCIATE CIVIL ENGINEER

ISSUE: STOP SIGN ANALYSIS AT THE INTERSECTION OF SORESINA AT TERAMO

RECOMMENDATION: THAT THE TRAFFIC COMMISSION RECEIVE AND FILE THIS REPORT.

SUMMARY:

City staff received a request from a resident of the community to evaluate the need for a stop control at the intersection of Soresina at Teramo. The resident was concerned about potential collisions at this T- intersection and the assignment of right-of-way. In accordance with the guidelines of the California Manual on Uniform Traffic Control Devices (CA MUTCD), the City's Traffic Engineering Consulting Firm, Hartzog & Crabill, Inc. performed a stop sign analysis at this intersection. Based on the results, it is determined that a stop control on Soresina at Teramo is not justified based on the existing conditions. It is recommended that the Traffic Commission receive and file this report.

BACKGROUND:

Teramo is a 40-foot wide local residential collector roadway traversing in the east-west direction. Soresina is a 36-foot wide residential roadway traversing in the north-south direction. Soresina has fronting residential properties, and Teramo has rear or side facing residential properties. Both roadways provide space for one lane in each direction with on-street parking allowed in both directions, and meet in a "T" intersection. The "prima facie" speed limit on both roadways is 25 MPH. Please see attached Vicinity Map.

City staff recently received a request from a resident of the community to evaluate the need for a stop control at the intersection of Soresina at Teramo. The resident was concerned about a potential collision at this T- intersection based on the assignment of right-of-way.

In accordance with the guidelines of the California Manual on Uniform Traffic Control Devices (MUTCD), the City's Traffic Engineering Consulting firm, Hartzog & Crabill, Inc.

(HCI), performed a multi-way stop warrant analysis at the subject intersection. The accident history, traffic speeds, traffic volumes, and visibility at the intersection were all reviewed. In summary, none of the criteria for a multi-way stop or even a one-way stop sign installation were satisfied; please see attached report by Hartzog & Crabill, Inc. dated September 21, 2015 for further details.

ATTACHMENTS:

- Vicinity Map
- Hartzog & Crabill, Inc. report dated September 21, 2015

NORTH

25m

85ft

Date: 09/11/15

VICINITY MAP

11/18/2015 ITEM NO. 4.2

11/18/2015 ITEM NO. 4.2

HARTZOG & CRABILL, Inc.

Trammell Hartzog, President
Jerry Crabill, P.E. (Retired)
Gerald J. Stock, P.E., Executive Vice-President

17852 E. 17th Street
Suite 101
Tustin, CA 92780

Phone: (714) 731-9455
FAX: (714) 731-9498

www.hartzog-crabill.com

September 21, 2015

Mr. Humza Javed, P.E.
Associate Civil Engineer
City of Laguna Hills
24035 El Toro Road
Laguna Hills, CA 92653

Subject: Multi-way Stop Sign Analysis: Teramo at Soresina

Dear Mr. Javed:

Hartzog & Crabill, Inc. (HCI) has completed a Multi-Way Stop Sign Warrant Analysis for the subject intersection. As you will see in the attached report, no multi-way stop warrants were satisfied, and our recommendation is for denial of a stop sign installation at this time.

The analysis was completed in response to the City's request to verify if a multi-way stop sign installation is warranted, and recommended based on meeting standard guidelines. The California Manual of Uniform Traffic Control Devices (*California MUTCD*) was used for defining the requirements for a multi-way stop sign installation. At the present time, the intersection is un-controlled on all approaches. In overall consideration of existing conditions, and no multi-way stop warrants found satisfied, a multi-way stop sign installation, or even a one-way stop sign installation, is not recommended at this time. Parking restrictions of at least one car length from each corner are advisable in order to assure that minimum sight distance is maintained.

It has been our pleasure to prepare this analysis for the City of Laguna Hills. If you have any questions or need more information please call (714) 731-9455.

Very truly yours,
HARTZOG & CRABILL, INC.

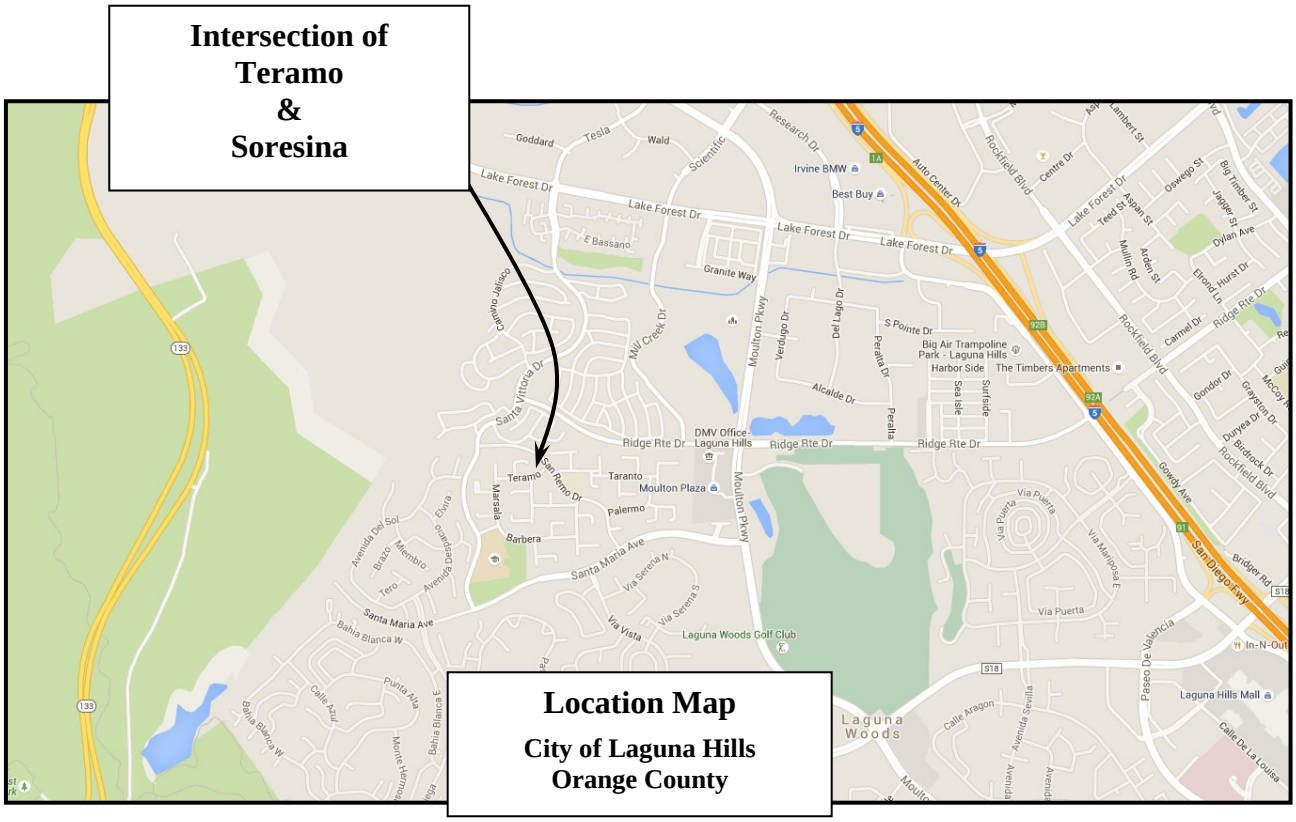
Gerald J. Stock, P.E.
Vice President
City & Traffic Engineering Services

Attach: Multi-way Stop Control Warrants Analysis Report

MULTI-WAY STOP CONTROL WARRANTS ANALYSIS
INTERSECTION OF
TERAMO AT SORESINA
IN THE CITY OF LAGUNA HILLS, CA

INTRODUCTION

The City of Laguna Hills requested Hartzog & Crabill, Inc. (HCI) to complete a Multi-way Stop Warrants Analysis at the intersection of Teramo and Soresina. This analysis was completed in order to verify if a multi-way stop sign, or a one-way stop sign, installation is warranted and recommended based on meeting standard guidelines. The location is a T-intersection with Teramo running in the east and west directions and Soresina running in the north-south direction, on the south side of Teramo. The intersection is located west of the Interstate 5 Freeway, just east of Santa Vittoria Drive (*see Location Map below*). The intersection is entirely within the City of Laguna Hills' jurisdiction. Presently, the intersection is uncontrolled (i.e., there are no STOP signs posted on any approach to this intersection).



11/18/2015 ITEM NO. 4.2

BACKGROUND

Teramo is a 40-foot wide local residential collector roadway with primarily rear facing or side facing residential properties on both sides of the street. The two-lane roadway provides for one lane of traffic in each direction, which are not separated by any centerline striping at or near its intersection with Soresina. The roadway is fully-improved with concrete curb, gutter, and sidewalk on both sides. Teramo does not have a posted speed limit; however, the residential nature of this street results in a '*prima facie*' speed limit of 25 MPH and does not require posting. On-street parking is allowed on both sides of the roadway. There is no regulatory signage controlling traffic on Teramo (uncontrolled) at its intersection with Soresina.

See Exhibit 1 (next page) for photo images of Teramo.

Soresina is a 36-foot wide, north-south local residential roadway with residential frontage on both sides. Soresina has a northerly terminus at its intersection with Teramo and a southerly terminus at its nearby intersection with Adamo. The two-lane roadway provides for one lane of traffic in each direction, which are not separated by any centerline striping. The roadway is fully-improved with concrete curb, gutter, and sidewalk on both sides. Soresina does not have a posted speed limit; however, the residential nature of this street results in a '*prima facie*' speed limit of 25 MPH and does not require posting. On-street parking is allowed on both sides of the roadway. There is no regulatory signage controlling traffic on Soresina (uncontrolled) at its intersection with Teramo.

See Exhibit 2 (following page) for a photo image of Soresina.

EXHIBIT 1

TERAMO (*LOOKING WESTBOUND*) @ SORESINA

TERAMO (*LOOKING EASTBOUND*) @ SORESINA

11/18/2015 ITEM NO. 4.2

EXHIBIT 2

SORESINA (*LOOKING NORTHBOUND*) @ TERAMO

11/18/2015 ITEM NO. 4.2

WARRANT GUIDELINES

As is common practice with many municipal agencies, the City of Laguna Hills follows State guidelines for determining if traffic control devices, such as multi-way stop signs, should be installed. Therefore, the prevailing source used for this analysis is the State of California Manual of Uniform Traffic Control Devices (*California MUTCD*). The California MUTCD contains minimum guidelines regarding traffic volumes, collisions, speeds, visibility, and other criteria in order to satisfy the requirements, in this case, for the recommendation and installation of a multi-way stop.

The California MUTCD Multi-way Stop Applications Guidance criteria are described in the following four main parts:

A) As an interim measure where traffic control signals are justified;

B) Reported crashes – five or more in a 12-month period that are susceptible to correction by a multi-way stop installation;

C) Minimum traffic and pedestrian volumes, speeds, and delay; and,

D) Where a combination of the above criteria are all satisfied to 80 percent.

If any one, or a combination, of these criteria is met, then a multi-way stop application should be considered. If these criteria are not met, the installation of an unwarranted multi-way stop sign installation is typically not recommended as it may place the City in a position of potential liability.

The California MUTCD guidelines describing Right-of-Way at Intersections, STOP Sign Applications, Multi-way Stop Applications, and Yield Sign Applications are included in Appendix A.

11/18/2015 ITEM NO. 4.2

MULTI-WAY STOP ANALYSIS

The California MUTCD Multi-way Stop Applications section contains guidelines, such as minimum collisions and traffic volumes necessary for the justification of multi-way stop control. The general guidelines given for a stop sign application begin with using engineering judgment for the installation of a stop sign(s) on a street entering a through highway and where high speeds on the cross street make entry difficult, or due to restricted view, or when crash records indicate a need for control by a stop sign. Further guidance criteria found in the California MUTCD include the following important statements: ***"YIELD or STOP signs should not be used for speed control… In most cases, the street carrying the lowest volume of traffic should be controlled… A STOP (R1-1) sign is not a 'cure-all' and is not a substitute for other traffic control devices. Often, the need for a STOP (R1-1) sign can be eliminated if the sight distance is increased by removing obstructions... A YIELD or STOP sign should not be installed on the higher volume roadway unless justified by an engineering study… Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal...***

Collision History

The guidelines for Multi-way Stop Applications contained in the California MUTCD regarding collisions, or crashes, require a minimum of five (5) reported crashes occurring in a 12-month period that are susceptible to correction by a multi-way stop installation in order to satisfy this warrant. Such crashes include right-turn and left-turn collisions, as well as right-angle collisions (i.e., broadside, or head-on) and pedestrian-vehicle collisions. The latest available collision history for the intersection was gathered from the State of California Highway Patrol (CHP) Statewide Integrated Traffic Records System website (*i-SWITRS*). A comprehensive 5-year traffic collision history summary report was prepared for this intersection and reviewed for collisions susceptible to correction by the installation of a multi-way stop. Table 1 (*next page*) provides the most recent summary of collision history occurring at or near this intersection.

11/18/2015 ITEM NO. 4.2

Collision History (continued)

TABLE 1
SWITRS COLLISION SUMMARY

Intersection	2009-12		2013		2014		2015	
	Date	Type of Coll. / Correctible?	Date	Type of Coll. / Correctible?	Date	Type of Coll. / Correctible?	Date	Type of Coll. / Correctible?
Teramo at Soresina		***None Reported***		***None Reported***		***None Reported***		***None Reported***

Notes: Information above is derived per the latest 5-year intersection traffic collision database report provided by the CHP i-SWITRS website.

1) Type of Coll. = Type of Collision (*i.e., broadside, rear-end, etc.*)
2) Correctible? = Yes / No

As shown, there have been (0) reported collisions at or near the intersection during the past (5) years of available SWITRS collision data. Since the collision warrant requires a minimum of (5) reported crashes, susceptible to correction by a multi-way stop, to occur within a 12-month period, the collision warrant is not satisfied.

All traffic collision data collected for this intersection is included in Appendix B.

Traffic Volumes

HCI collected Average Daily Traffic (ADT) vehicular approach counts on Tuesday, August 25, 2015 in order to account for vehicles that typically use this intersection. The 24-hour traffic count for both approaches on Teramo is 522 vehicles per day with the highest AM peak-hour volume of 27 vehicles and the highest PM peak-hour volume of 46 vehicles. The 24-hour traffic count for Soresina is 195 vehicles per day with the highest AM peak-hour volume of 27 vehicles and the highest PM peak-hour volume of 17 vehicles. Table 2 (next page) provides a breakdown of the approach volumes.

11/18/2015 ITEM NO. 4.2

Traffic Volumes (continued)

TABLE 2
VEHICULAR ADT COUNT DATA

Street	Direction	24-Hour Volume	Directional Split	Highest Hourly Volume
Teramo	Eastbound	181	35%	17 (12:00–1:00PM)
	Westbound	341	65%	31 (6:00–7:00PM)
Soresina				
	Northbound	195	100%	27 (8:00–9:00AM)

Teramo is considered the 'through' or 'major' street due to the intersection geometry at the 'top' of this T-intersection, and having higher volumes. Moreover, Soresina may be considered the 'minor' street since most likely northbound Soresina traffic does have to stop at the intersection before proceeding left or right on Teramo, and it has its southerly terminus at the nearby residential street of Adamo.

It is typically expected that the traffic volumes on the minor street are considerably less than those on the major street. As can be seen from the table above, this is the case as the minor approach (northbound Soresina) carries approximately 27% of the entire traffic entering the intersection. This is most likely due to the geometric layout of the streets and that Teramo leads to the collector street of San Remo Drive.

A part of the California MUTCD guideline criteria also calls for a reduction in the required minimum volumes when the critical approach speed (*or 85th-percentile speed*) on the major street exceeds 40 MPH. If this is the case, the minimum vehicular volumes to be met for a multiway stop installation are reduced to 70%. As both roadways have a posted or un-posted '*prima facie*' residential speed limit of 25 MPH, the 70% minimum volumes for a multi-way stop sign analysis are <u>not</u> applicable.

Traffic Volumes (continued)

It is important to note that the hourly vehicle traffic counts shown in Table 2 above are given for the highest hour of traffic for each direction, and serve as a good indicator to compare with the required minimum hourly traffic volumes in the California MUTCD multi-way stop guidelines. It should also be mentioned that the average hourly minimum volumes for a multi-way stop application are to be satisfied for any eight (8) hours of an average day (not just one hour).

Table 3 below shows the California MUTCD minimum traffic volume guidelines for a Multi-way Stop Application in comparison with the highest 8-hour traffic count data at this intersection. Both Parts 1 and 2 of the minimum volume warrants below must be satisfied in order to fulfill the traffic volume warrant.

TABLE 3

MULTIWAY STOP SIGN WARRANT FOR MINIMUM TRAFFIC VOLUMES
TERAMO AT SORESINA

Part 1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least **300** vehicles per hour for any (**8**) hours of an average day,	***and***	**Part 2.** The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least **200** units per hour for the same (**8**) hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour,	***but***	**Part 3.** If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are (**70**) percent of the above values.
Results:		**Results:**		**Results: No < 40 MPH**
No, average (36) vehicles per hour		**No, average (15) vehicles per hour**		***Prima Facie* 25 MPH**
Meets only 12% of required average major street hourly traffic volumes		**Meets only 8% of required minor street hourly traffic volumes**		

As shown above, the average hourly intersection approach traffic volumes for the highest 8-hour period did not satisfy the required volumes in both Parts 1 and 2 (*12% major street / 8% minor street*). Consequently, the traffic volume warrant is not satisfied for a multi-way stop sign installation.

All traffic volume data collected for this intersection is included in Appendix C.

11/18/2015 ITEM NO. 4.2

Speeds

Both Teramo and Soresina have an unposted *prima facie* speed limit of 25 MPH, which is expected for two-lane local residential roadways. Field observations confirmed that vehicles were not regularly speeding over these speeds near the intersection, but were typical for an urbanized two-lane local roadway environment.

Visibility

Impaired visibility, or restricted sight distance, due to the geometry of the intersection was carefully considered during our field-review of the surrounding urban, residential environment. The geometry of the intersection does have slight vertical curvature on Teramo; however, it was determined in the field that special traffic signage for improved visibility of the intersection, or other advanced signage, is not necessary for this residential, low speed street.

Driver sight distance was also measured from the stopped location of northbound Soresina, since this is the approach that intersects with the top of the T-intersection. The measured distance was derived from the stopping sight distance guidelines found in the California MUTCD ***(see Appendix D)***. In this reference, a 25 MPH roadway speed recommends a minimum Stopping Sight Distance of 155 feet, while 30 MPH (5 MPH higher than posted) recommends 200 feet. As a conservative measure, the 200 foot minimum sight distance was used for our evaluation. More specifically, this stopping sight distance was field-measured from a typical 'stopped' vehicle location on northbound Soresina towards the oncoming lanes of traffic on Teramo. An orange cone was set at this distance, and a photograph was taken from a stopped driver's perspective. As Exhibit 3 on the next page shows, sight distance when looking from northbound Soresina did have a clear line of sight to the cone. Consequently, the minimum stopping visibility is considered satisfied from the side street of this T-intersection. Although none were observed, it should be mentioned that on-street parked vehicles may occasionally hinder this sight distance if they are higher profile or parked very close to the corners. Parking restrictions of at least one car length from the corners are advisable. (***See sight distance photos in Exhibit 3 on the following page***).

11/18/2015 ITEM NO. 4.2

EXHIBIT 3

NB SORESINA (*LOOKING EASTERLY*) @ TERAMO

NB SORESINA (*LOOKING WESTERLY*) @ TERAMO

11/18/2015 ITEM NO. 4.2

MULTIWAY STOP ANALYSIS SUMMARY

The analysis of the four (4) main criteria provided in the California MUTCD regarding Multi-way Stop Applications showed that this intersection did not meet the minimum guidelines to justify stopping the major roadway (Teramo). The four main criteria analyzed were: 1) As an interim measure where traffic control signals are justified; 2) Reported collisions – a correctible crash problem; 3) Traffic and pedestrian volumes, speeds, and delay; and 4) Where a combination of the above criteria are satisfied to 80 percent.

In summary, the collision history at the intersection resulted in (0) SWITRS-reported collisions during the last (5) years of available data, where the minimum guideline calls for at least five (5) correctible collisions in a 12-month period.

The average minimum hourly traffic volumes for a multi-way stop that are to be satisfied for any eight (8) hours in an average day were not close to being satisfied. Excessive delay to the minor roadway (northbound Soresina) was not observed in terms of stopping and waiting for a gap on the major roadway. Therefore, since intersection collision history and traffic volumes do not satisfy the minimum guidelines, it can also be derived that a traffic signal is not justified at this intersection. The 80% combined criteria were also not met as both the collision history and minimum traffic volumes guidelines were not satisfied to this percentage.

Engineering judgment should always be included in any decision regarding traffic safety improvements. Intersection lighting was verified and found to be adequate as there was typical local roadway lighting (70 W) on one street light located on the southeast corner. Further intersection information was gathered in the field in regards to pedestrian and bicycle activity which was determined as moderate activity due to the nearby San Joaquin Elementary School.

11/18/2015 ITEM NO. 4.2

MULTIWAY STOP ANALYSIS SUMMARY (*continued*)

In terms of visibility and roadway curvature, it was determined in the field that this intersection does not require further consideration for any special signage, since the minimum sight distance was satisfied. Although minimum sight distance was field-measured and found satisfied from the side-street perspective, parking restrictions of at least one car length from the corners are advisable in order to assure sight distance is maintained.

CONCLUSION / RECOMMENDATION

In overall consideration of the existing conditions at the T-intersection of Teramo and Soresina, and no multi-way stop warrants found satisfied, a multi-way stop sign installation, or even a one-way stop sign installation, is not recommended at this time.

Parking restrictions of at least one car length from the corners of the intersection are advisable in order to assure that minimum sight distance is maintained.

11/18/2015 ITEM NO. 4.2

APPENDIX A

MULTIWAY STOP APPLICATIONS GUIDELINES:

CALIFORNIA MUTCD

Standard:

03 **Except as provided in Paragraphs 4 and 5, the minimum sizes for regulatory signs facing traffic on multi-lane conventional roads shall be as shown in the Multi-lane column of Table 2B-1** and 2B-1(CA)**.**

Option:

04 Where the posted speed limit is 35 mph or less on a multi-lane highway or street, other than for a STOP sign, the minimum size shown in the Single Lane column in Table 2B-1 and 2B-1(CA) may be used.

05 Where a regulatory sign, other than a STOP sign, is placed on the left-hand side of a multi-lane roadway in addition to the installation of the same regulatory sign on the right-hand side or the roadway, the size shown in the Single Lane column in Table 2B-1 and 2B-1(CA) may be used for both the sign on the right-hand side and the sign on the left-hand side of the roadway.

Standard:

06 **A minimum size of 36 x 36 inches shall be used for STOP signs that face multi-lane approaches.**

07 **Where side roads intersect a multi-lane street or highway that has a speed limit of 45 mph or higher, the minimum size of the STOP signs facing the side road approaches, even if the side road only has one approach lane, shall be 36 x 36 inches.**

08 **Where side roads intersect a multi-lane street or highway that has a speed limit of 40 MPH or lower, the minimum size of the STOP signs facing the side road approaches shall be as shown in the Single Lane or Multi-lane columns of Table 2B-1** and 2B-1(CA) **based on the number of approach lanes on the side street approach.**

Guidance:

09 *The minimum sizes for regulatory signs facing traffic on exit and entrance ramps should be as shown in the column of Table 2B-1 and 2B-1(CA) that corresponds to the mainline roadway classification (Expressway or Freeway). If a minimum size is not provided in the Freeway column, the minimum size in the Expressway column should be used. If a minimum size is not provided in the Freeway or Expressway Column, the size in the Oversized column should be used.*

Section 2B.04 Right-of-Way at Intersections

Support:

01 State or local laws written in accordance with the "Uniform Vehicle Code" (see Section 1A.11) establish the right-of-way rule at intersections having no regulatory traffic control signs such that the driver of a vehicle approaching an intersection must yield the right-of-way to any vehicle or pedestrian already in the intersection. When two vehicles approach an intersection from different streets or highways at approximately the same time, the right-of-way rule requires the driver of the vehicle on the left to yield the right-of-way to the vehicle on the right. The right-of-way can be modified at through streets or highways by placing YIELD (R1-2) signs (see Sections 2B.08 and 2B.09) or STOP (R1-1) signs (see Sections 2B.05 through 2B.07) on one or more approaches.

Guidance:

02 *Engineering judgment should be used to establish intersection control. The following factors should be considered:*

A. Vehicular, bicycle, and pedestrian traffic volumes on all approaches;
B. Number and angle of approaches;
C. Approach speeds;
D. Sight distance available on each approach; and
E. Reported crash experience.

03 *YIELD or STOP signs should be used at an intersection if one or more of the following conditions exist:*

A. An intersection of a less important road with a main road where application of the normal right-of-way rule would not be expected to provide reasonable compliance with the law;
B. A street entering a designated through highway or street; and/or
C. An unsignalized intersection in a signalized area.

04 *In addition, the use of YIELD or STOP signs should be considered at the intersection of two minor streets or local roads where the intersection has more than three approaches and where one or more of the following conditions exist:*

A. The combined vehicular, bicycle, and pedestrian volume entering the intersection from all approaches averages more than 2,000 units per day;

B. The ability to see conflicting traffic on an approach is not sufficient to allow a road user to stop or yield in compliance with the normal right-of-way rule if such stopping or yielding is necessary; and/or

C. Crash records indicate that five or more crashes that involve the failure to yield the right-of-way at the intersection under the normal right-of-way rule have been reported within a 3-year period, or that three or more such crashes have been reported within a 2-year period.

05 *YIELD or STOP signs should not be used for speed control.*

Support:

06 Section 2B.07 contains provisions regarding the application of multi-way STOP control at an intersection.

Guidance:

07 *Once the decision has been made to control an intersection, the decision regarding the appropriate roadway to control should be based on engineering judgment. In most cases, the roadway carrying the lowest volume of traffic should be controlled.*

08 *A YIELD or STOP sign should not be installed on the higher volume roadway unless justified by an engineering study.*

Support:

09 The following are considerations that might influence the decision regarding the appropriate roadway upon which to install a YIELD or STOP sign where two roadways with relatively equal volumes and/or characteristics intersect:

A. Controlling the direction that conflicts the most with established pedestrian crossing activity or school walking routes;

B. Controlling the direction that has obscured vision, dips, or bumps that already require drivers to use lower operating speeds; and

C. Controlling the direction that has the best sight distance from a controlled position to observe conflicting traffic.

Standard:

10 **Because the potential for conflicting commands could create driver confusion, YIELD or STOP signs shall not be used in conjunction with any traffic control signal operation.,** ~~**except in the following cases:**~~

~~**A. If the signal indication for an approach is a flashing red at all times;**~~

~~**B. If a minor street or driveway is located within or adjacent to the area controlled by the traffic control signal, but does not require separate traffic signal control because an extremely low potential for conflict exists; or**~~

~~**C. If a channelized turn lane is separated from the adjacent travel lanes by an island and the channelized turn lane is not controlled by a traffic control signal.**~~

10a STOP signs shall not be erected at any entrance to an intersection controlled by traffic signals. Refer to CVC 21355(a).

Option:

10b YIELD or STOP signs may be used at a channelized turn lane if it is separated from the adjacent travel lanes moving in same direction by an island and the channelized turn lane is not controlled by a traffic control signal.

Standard:

11 **Except as provided in Section 2B.09, STOP signs and YIELD signs shall not be installed on different approaches to the same unsignalized intersection if those approaches conflict with or oppose each other.**

12 **Portable or part-time STOP or YIELD signs shall not be used except for emergency and temporary traffic control zone purposes.**

13 **A portable or part-time (folding) STOP sign that is manually placed into view and manually removed from view shall not be used during a power outage to control a signalized approach unless the maintaining agency establishes that the signal indication that will first be displayed to that approach upon restoration of power is a flashing red signal indication and that the portable STOP sign will be manually removed from view prior to stop-and-go operation of the traffic control signal.**

11/18/2015 ITEM NO. 4.2

Option:

14 A portable or part-time (folding) STOP sign that is electrically or mechanically operated such that it only displays the STOP message during a power outage and ceases to display the STOP message upon restoration of power may be used during a power outage to control a signalized approach.

Support:

15 Section 9B.03 contains provisions regarding the assignment of priority at a shared-use path/ roadway intersection.

Section 2B.05 STOP Sign (R1-1) and ALL WAY Plaque (R1-3P)

Standard:

01 **When it is determined that a full stop is always required on an approach to an intersection, a STOP (R1-1) sign (see Figure 2B-1) shall be used.**

02 **The STOP sign shall be an octagon with a white legend and border on a red background.**

03 **Secondary legends shall not be used on STOP sign faces.**

04 **At intersections where all approaches are controlled by STOP signs (see Section 2B.07), an ALL WAY supplemental plaque (R1-3P) shall be mounted below each STOP sign. The ALL WAY plaque (see Figure 2B-1) shall have a white legend and border on a red background.**

05 **The ALL WAY plaque shall only be used if all intersection approaches are controlled by STOP signs.**

06 **Supplemental plaques with legends such as 2-WAY, 3-WAY, 4-WAY, or other numbers of ways shall not be used with STOP signs.**

Support:

07 The use of the CROSS TRAFFIC DOES NOT STOP (W4-4P) plaque (and other plaques with variations of this word message) is described in Section 2C.59.

Guidance:

08 *Plaques with the appropriate alternative messages of TRAFFIC FROM LEFT (RIGHT) DOES NOT STOP (W4-4aP) or ONCOMING TRAFFIC DOES NOT STOP (W4-4bP) should be used at intersections where STOP signs control all but one approach to the intersection, unless the only non-stopped approach is from a one-way street.*

Option:

09 An EXCEPT RIGHT TURN (R1-10P) plaque (see Figure 2B-1) may be mounted below the STOP sign if an engineering study determines that a special combination of geometry and traffic volumes is present that makes it possible for right-turning traffic on the approach to be permitted to enter the intersection without stopping.

Support:

10 The design and application of Stop Beacons are described in Section 4L.05.

11 A STOP (R1-1) sign is not a "cure-all" and is not a substitute for other traffic control devices. Often, the need for a STOP (R1-1) sign can be eliminated if the sight distance is increased by removing obstructions.

Through Highways

Option:

12 STOP (R1-1) signs may be installed either at or near the entrance to a State highway, except at signalized intersections, or at any location so as to control traffic within an intersection. Refer to CVC 21352 and 21355. See Section 1A.11 for information regarding this publication.

Support:

13 When STOP (R1-1) signs or traffic control signals have been erected at all entrances, a highway constitutes a through highway. Refer to CVC 600.

14 Authority to place STOP (R1-1) signs facing State highway traffic is delegated to the Caltrans District Directors.

Option:

15 Local authorities may designate any highway under their jurisdiction as a through highway and install STOP (R1-1) signs in a like manner. Refer to CVC 21354.

Standard:

16 No local authority shall erect or maintain any STOP (R1-1) sign or other traffic control device requiring a stop, on any State highway, except by permission of Caltrans. Refer to CVC 21353.

Support:

17 Caltrans will grant such permission only when an investigation indicates that the STOP (R1-1) sign will benefit traffic.

Section 2B.06 STOP Sign Applications

Guidance:

01 *At intersections where a full stop is not necessary at all times, consideration should first be given to using less restrictive measures such as YIELD signs (see Sections 2B.08 and 2B.09).*

02 *The use of STOP signs on the minor-street approaches should be considered if engineering judgment indicates that a stop is always required because of one or more of the following conditions:*

A. The vehicular traffic volumes on the through street or highway exceed 6,000 vehicles per day;

B. A restricted view exists that requires road users to stop in order to adequately observe conflicting traffic on the through street or highway; and/or

C. Crash records indicate that three or more crashes that are susceptible to correction by the installation of a STOP sign have been reported within a 12-month period, or that five or more such crashes have been reported within a 2-year period. Such crashes include right-angle collisions involving road users on the minor-street approach failing to yield the right-of-way to traffic on the through street or highway.

Support:

03 The use of STOP signs at grade crossings is described in Sections 8B.04 and 8B.05.

Section 2B.07 Multi-Way Stop Applications

Support:

01 Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal.

02 The restrictions on the use of STOP signs described in Section 2B.04 also apply to multi-way stop applications.

Guidance:

03 *The decision to install multi-way stop control should be based on an engineering study.*

04 *The following criteria should be considered in the engineering study for a multi-way STOP sign installation:*

A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.

B. Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.

C. Minimum volumes:

1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and

2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but

3. If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.

D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Option:

05 Other criteria that may be considered in an engineering study include:

A. The need to control left-turn conflicts;

B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;

C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and

D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.

Section 2B.08 YIELD Sign (R1-2)

Standard:

01 **The YIELD (R1-2) sign (see Figure 2B-1) shall be a downward-pointing equilateral triangle with a wide red border and the legend YIELD in red on a white background.**

Support:

02 The YIELD sign assigns right-of-way to traffic on certain approaches to an intersection. Vehicles controlled by a YIELD sign need to slow down to a speed that is reasonable for the existing conditions or stop when necessary to avoid interfering with conflicting traffic.

Section 2B.09 YIELD Sign Applications

Option:

01 YIELD signs may be installed:

A. On the approaches to a through street or highway where conditions are such that a full stop is not always required.

B. At the second crossroad of a divided highway, where the median width at the intersection is 30 feet or greater. In this case, a STOP or YIELD sign may be installed at the entrance to the first roadway of a divided highway, and a YIELD sign may be installed at the entrance to the second roadway.

C. For a channelized turn lane that is separated from the adjacent travel lanes by an island, even if the adjacent lanes at the intersection are controlled by a highway traffic control signal or by a STOP sign.

D. At an intersection where a special problem exists and where engineering judgment indicates the problem to be susceptible to correction by the use of the YIELD sign.

E. Facing the entering roadway for a merge-type movement if engineering judgment indicates that control is needed because acceleration geometry and/or sight distance is not adequate for merging traffic operation.

Standard:

02 **A YIELD (R1-2) sign shall be used to assign right-of-way at the entrance to a roundabout. YIELD signs at roundabouts shall be used to control the approach roadways and shall not be used to control the circulatory roadway.**

03 **Other than for all of the approaches to a roundabout, YIELD signs shall not be placed on all of the approaches to an intersection.**

Section 2B.10 STOP Sign or YIELD Sign Placement

Standard:

01 **The STOP or YIELD sign shall be installed on the near side of the intersection on the right-hand side of the approach to which it applies. When the STOP or YIELD sign is installed at this required location and the sign visibility is restricted, a Stop Ahead sign (see Section 2C.36) shall be installed in advance of the STOP sign or a Yield Ahead sign (see Section 2C.36) shall be installed in advance of the YIELD sign.**

02 **The STOP or YIELD sign shall be located as close as practical to the intersection it regulates, while optimizing its visibility to the road user it is intended to regulate.**

02a YIELD signs shall not be erected upon the approaches to more than one of the intersecting streets. Refer to CVC 21356.

03 **STOP signs and YIELD signs shall not be mounted on the same post.**

04 **No items other than inventory stickers, sign installation dates, and bar codes shall be affixed to the fronts of STOP or YIELD signs, and the placement of these items shall be in the border of the sign.**

05 **No items other than official traffic control signs, inventory stickers, sign installation dates, anti-vandalism stickers, and bar codes shall be mounted on the backs of STOP or YIELD signs.**

06 **No items other than retroreflective strips (see Section 2A.21) or official traffic control signs shall be mounted on the fronts or backs of STOP or YIELD signs supports.**

APPENDIX B

SWITRS COLLISION HISTORY

11/18/2015 ITEM NO. 4.2

CITY OF LAGUNA HILLS
SWITRS COLLISION DATABASE
INTERSECTION OF TERAMO AND SORESINA
JAN. 1, 2009 - JUL. 31, 2015

CASE ID	COLLISION DATE	COLL. TIME	PRIMARY ROAD	SECONDARY ROAD	DIST.	DIR.	INTERS.	WEATH. 1	COLL. SEVERITY	PRIM. COLL. FACT.	PCF VIOL CAT.	PCF VIOL.	HIT AND RUN	TYPE OF COLL.	MOTOR VEHICLE INVOLVED WITH	ROAD SURF.

Incident Reported

CODES:

Weather 1
A - Clear
B - Cloudy
C - Raining
D - Snowing
E - Fog
F - Other
G - Wind
- - Not Stated

Collision Severity
1 - Fatal
2 - Injury (Severe)
3 - Injury (Other Visible)
4 - Injury (Complaint of Pain)
0 - PDO (Property Damage Only)

Primary Collision Factor
A - (Vehicle) Code Violation
B - Other Improper Driving
C - Other Than Driver
D - Unknown
E - Fell Asleep
- - Not Stated

PCF Violation Category
01 - Driving or Bicycling Under Influence
02 - Impeding Traffic
03 - Unsafe Speed
04 - Following Too Closely
05 - Wrong Side of Road
06 - Improper Passing
07 - Unsafe Lane Change
08 - Improper Turning
09 - Automobile ROW
10 - Pedestrian ROW
11 - Pedestrian Violation
12 - Traffic Signals and Signs
13 - Hazardous Parking
14 - Lights
15 - Brakes
16 - Other Equipment
17 - Other Hazardous Violation
18 - Other Than Driver (or Ped)
19 -
20 -
21 - Unsafe Starting or Backing
22 - Other Improper Driving
23 - Pedestrian or "Other" Under the Influence
24 - Fell Asleep
00 - Unknown
- - Not Stated

Hit and Run
F - Felony
M - Misdemeanor
N - Not Hit & Run

Type of Collision
A - Head-On
B - Sideswipe
C - Rear-End
D - Broadside
E - Hit Object
F - Overturned
G - Vehicle/Pedestrian
H - Other
- - Not Stated

Motor Vehicle Involved With:
A - Non-Collision
B - Pedestrian
C - Other Motor Vehicle
D - Motor Vehicle on Other Roadway
E - Parked Motor Vehicle
F - Train
G - Bicycle
H - Animal
I - Fixed Object
J - Other Object
- - Not Stated

Road Surface
A - Dry
B - Wet
C - Snowy or Icy
D - Slippery
- - Not Stated

APPENDIX C

AVERAGE DAILY TRAFFIC (ADT)
COUNT DATA

Prepared by NDS/ATD

VOLUME

Soresina & Teramo

Day: Tuesday
Date: 8/25/2015

Highest Eight Hours

City: Laguna Hills
Project #: CA15_1213_001

DAILY TOTALS	NB	SB	EB	WB	Total
	195	0	181	341	717

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	1		0		1		1		3		12:00	8		0		3		6		17	
00:15	0		0		0		1		1		12:15	2		0		7		7		16	
00:30	0		0		1		0		1		12:30	3		0		2		5		10	
00:45	0	1	0		0	2	1	3	1	6	12:45	4	17	0		5	17	7	25	16	59
01:00	0		0		0		1		1		13:00	2		0		4		7		13	
01:15	0		0		0		1		1		13:15	3		0		3		10		16	
01:30	0		0		0		0		0		13:30	2		0		1		4		7	
01:45	0		0		0		0	2	0	2	13:45	2	9	0		2	10	2	23	6	42
02:00	0		0		0		0		0		14:00	3		0		2		5		10	
02:15	0		0		0		0		0		14:15	7		0		0		6		13	
02:30	0		0		0		0		0		14:30	2		0		2		5		9	
02:45	0		0		0		0		0		14:45	4	16	0		3	7	6	22	13	45
03:00	0		0		0		0		0		15:00	0		0		5		3		8	
03:15	1		0		0		1		2		15:15	3		0		1		5		9	
03:30	0		0		1		1		2		15:30	3		0		4		7		14	
03:45	0	1	0		0	1	0	2	0	4	15:45	1	7	0		4	14	4	19	9	40
04:00	1		0		0		0		1		16:00	4		0		5		10		19	
04:15	0		0		1		0		1		16:15	2		0		3		8		13	
04:30	1		0		0		0		1		16:30	1		0		2		5		8	
04:45	0	2	0		0	1	0		0	3	16:45	3	10	0		2	12	7	30	12	52
05:00	0		0		1		0		1		17:00	2		0		5		7		14	
05:15	0		0		2		1		3		17:15	2		0		3		6		11	
05:30	3		0		1		1		5		17:30	4		0		3		8		15	
05:45	0	3	0		0	4	0	2	0	9	17:45	1	9	0		4	15	5	26	10	50
06:00	2		0		1		1		4		18:00	3		0		3		7		13	
06:15	3		0		2		2		7		18:15	0		0		4		9		13	
06:30	3		0		5		2		10		18:30	5		0		4		5		14	
06:45	1	9	0		5	13	2	7	8	29	18:45	0	8	0		4	15	10	31	14	54
07:00	1		0		2		4		7		19:00	3		0		3		7		13	
07:15	5		0		1		3		9		19:15	3		0		1		4		8	
07:30	6		0		3		2		11		19:30	1		0		4		9		14	
07:45	9	21	0		4	10	5	14	18	45	19:45	0	7	0		2	10	6	26	8	43
08:00	7		0		3		4		14		20:00	5		0		1		6		12	
08:15	6		0		3		4		13		20:15	0		0		0		6		6	
08:30	7		0		2		2		11		20:30	0		0		0		2		2	
08:45	7	27	0		4	12	4	14	15	53	20:45	4	9	0		1	2	4	18	9	29
09:00	1		0		4		5		10		21:00	0		0		0		6		6	
09:15	3		0		3		1		7		21:15	2		0		1		5		8	
09:30	2		0		0		3		5		21:30	0		0		4		5		9	
09:45	5	11	0		6	13	5	14	16	38	21:45	0	2	0		1	6	3	19	4	27
10:00	2		0		1		7		10		22:00	2		0		1		2		5	
10:15	1		0		2		1		4		22:15	0		0		1		3		4	
10:30	3		0		2		2		7		22:30	0		0		0		2		2	
10:45	2	8	0		2	7	5	15	9	30	22:45	0	2	0		0	2	0	7	0	11
11:00	3		0		4		6		13		23:00	0		0		1		1		2	
11:15	3		0		1		2		6		23:15	2		0		1		2		5	
11:30	5		0		0		5		10		23:30	1		0		0		3		4	
11:45	1	12	0		1	6	2	15	4	33	23:45	1	4	0		0	2	1	7	2	13
TOTALS		95				69		88		**252**	**TOTALS**		100				112		253		**465**
SPLIT %		37.7%				27.4%		34.9%		**35.1%**	**SPLIT %**		21.5%				24.1%		54.4%		**64.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	195	0	181	341	717

AM Peak Hour	07:45		06:15	11:30	**07:30**	**PM Peak Hour**	12:00		12:15	18:00	**12:00**
AM Pk Volume	29		14	20	**56**	**PM Pk Volume**	17		18	31	**59**
Pk Hr Factor	0.806		0.700	0.714	**0.778**	**Pk Hr Factor**	0.531		0.643	0.775	**0.868**
7 - 9 Volume	48	0	22	28	**98**	**4 - 6 Volume**	19	0	27	56	**102**
7 - 9 Peak Hour	07:45		07:30	07:30	**07:30**	**4 - 6 Peak Hour**	16:45		17:00	16:00	**16:00**
7 - 9 Pk Volume	29	0	13	15	**56**	**4 - 6 Pk Volume**	11	0	15	30	**52**
Pk Hr Factor	0.806	0.000	0.813	0.750	**0.778**	**Pk Hr Factor**	0.688	0.000	0.750	0.750	**0.684**

APPENDIX D

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

CALIFORNIA MUTCD

Table 6E-1. Stopping Sight Distance as a Function of Speed on Level Roads. (Used as suggested longitudinal buffer space length or location for flagger station)

Speed*	Distance
20 mph	115 feet
25 mph	155 feet
30 mph	200 feet
35 mph	250 feet
40 mph	305 feet
45 mph	360 feet
50 mph	425 feet
55 mph	495 feet
60 mph	570 feet
65 mph	645 feet
70 mph	730 feet
75 mph	820 feet

* Posted speed, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph.

Table 6E-101(CA). Stopping Sight Distance as a Function of Speed on Downgrades. (Used as suggested longitudinal buffer space length or location for flagger station)

Speed (mph)	% Downgrade (Buffer Space)		
	-3% (feet)	-6% (feet)	-9% (feet)
20	116	120	126
25	158	165	173
30	205	215	227
35	257	271	287
40	315	333	354
45	378	400	427
50	446	474	507
55	520	553	593
60	598	638	686
65	682	728	785
70	771	825	891
75	866	927	1003

* Exhibit 3-2. A Policy on Geometric Design of Highways and Streets, AASHTO, 2001, p.115.

CITY OF LAGUNA HILLS

NOVEMBER 2015

RADAR TRAILER SCHEDULE (RAINY DAYS EXCLUDED)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10 Nellie Gail N/O Empty Saddle 25 MPH	11 Woodbluff S/O Middleridge 25 MPH	12 Bridlewood S/O Laurel Crest 25 MPH	13	14
15	16	17	18	19	20	21
22	23	24	25	26 Thanksgiving	27 Holiday	28
29	30					

11/18/2015 ITEM NO. 5.2

Rainy Days Excluded

11/18/2015 ITEM NO. 5.2

CITY OF LAGUNA HILLS

DECEMBER 2015

RADAR TRAILER SCHEDULE (RAINY DAYS EXCLUDED)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 Woodbluff W/O Middleridge 25 MPH	2 Bridlewood S/O Laurel Crest 25 MPH	3 Alameda S/O El Prado 25 MPH	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25 HOLIDAY	26
27	28	29	30	31		