



Town Council Agenda Report

Date: June 9, 2020 Item No. 7

To: Honorable Mayor and Town Council

Subject: ALL-WAY STOP AT THE INTERSECTION OF TUSCOLA ROAD AND SYMERON ROAD

From: Douglas Robertson, Town Manager

Submitted by: Brad Miller, Town Engineer
Engineering Department

Budgeted Item: Yes No N/A

RECOMMENDED ACTION

Adopt Resolution 2020-21, "A Resolution of the Town Council of the Town of Apple Valley establishing the intersection of Tuscola Road and Symeron Road as an all-way STOP intersection."

BACKGROUND

Staff has evaluated speed limits, collision history and overall traffic control measures at the intersection of Tuscola Road and Symeron Road. This evaluation was performed in conjunction with an analysis of the school related traffic controls for Desert Knolls Elementary School which is located within approximately 225 feet of the intersection. There are marked school crosswalks on the east, west and south legs of the intersection, and the school utilizes a crossing guard to assist pedestrians crossing the roadways. There is a potential need to control vehicle/pedestrian conflicts in this area due to the close proximity to the school. In addition, visibility from the east approach looking south is obstructed by roadside vegetation. Vehicles need to creep forward into the crosswalk and the travelled way to eliminate the visibility restrictions. Furthermore, there is an identifiable pattern of broadside collisions that would be expected to be correctable with all-way stop controls.

ANALYSIS

Based on the need to control vehicle/pedestrian conflicts, the geometric characteristics, the pattern of collisions, and the exercise of Engineering judgement, Engineering staff is recommending that stop controls at Tuscola Road and Symeron Road be changed to an all-way stop. Engineering staff supports the findings of the evaluation, and with Town Manager Robertson's approval, are bringing the change to an all-way stop at this intersection before Town Council to consider for approval, and immediate appropriate implementation.

FISCAL IMPACT

The project will be paid for using Measure I funds. The estimated project cost, which includes signage, markings, crosswalk modifications, and all other related activities and items, is \$5,000.00.

ATTACHMENTS

- A. Resolution 2020-21
- B. Engineering Analysis

RESOLUTION NO. 2020-21

A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF APPLE VALLEY ESTABLISHING THE INTERSECTION OF TUSCOLA ROAD AND SYMERON ROAD AS AN ALL-WAY STOP INTERSECTION.

WHEREAS, a traffic engineering investigation has determined that establishing the intersection of Tuscola Road and Symeron Road as an all-way STOP intersection is warranted in accordance with Section 52.0111 of the San Bernardino County Code as adopted by the Town of Apple Valley.

NOW THEREFORE, THE TOWN COUNCIL OF THE TOWN OF APPLE VALLEY DOES RESOLVE AND ORDER AS FOLLOWS:

Section 1: Approves and establishes the intersection of Tuscola Road and Symeron Road as an all-way STOP intersection.

Section 2: Authorizes and directs the Town Manager to cause additional STOP signs to be placed on Tuscola Road and Symeron Road.

APPROVED and **ADOPTED** by the Town Council of the Town of Apple Valley this the 9th day of June 2020.

MAYOR, Scott Nassif

ATTESTED:

TOWN CLERK, La Vonda M-Pearson

December 9, 2019

TO: Brad Miller P.E., Town Engineer
Town of Apple Valley

FROM: Jack Rydell, P.E., T.E., PTOE
Traffic Engineer

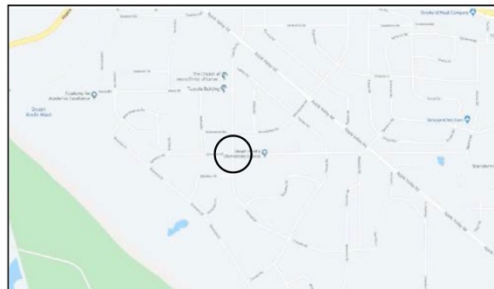
TUSCOLA ROAD AND SYMERON ROAD ALL-WAY STOP CONTROLS

RECOMMENDATIONS

1. Consider the installation of all-way stop controls at the intersection of Tuscola Road and Symeron Road.

BACKGROUND

As requested, I reviewed the intersection of Tuscola Road and Symeron Road with respect to the need for all-way stop controls and offer the following comments. This evaluation is done in conjunction with a school area traffic control evaluation for Desert Knolls Elementary School.



DISCUSSION

Tuscola Road in the subject vicinity is classified as a local roadway in the current functional classification map (California Road System Map 15U13) and runs north-south. It is unstriped and is approximately 32 feet wide north of Symeron Road and 24 feet wide south of the intersection. There are sidewalks only at the intersection corners. It has posted 45 mph speed limit signs south of Apple Valley Road and west of Nokomis Road. The vertical alignment in the immediate vicinity of Symeron Road is flat, and the horizontal alignment is straight, with a horizontal curve south of the intersection between Manitou Road and Hiawatha Road. Fronting development is residential, with Desert Knolls Elementary school located on the south side of Symeron

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Road, approximately 225 feet east of Tuscola Road. There is a traffic signal approximately 2,300 feet to the north at Apple Valley Road and stop controls approximately 3,500 feet to the south at Nokomis Road. A yellow school crosswalk is located on the south leg. Tuscola Road has various advance school warning signs north and south of Symeron Road.

Symeron Road is classified as a major collector roadway and has one lane in each direction, separated by double yellow and skip yellow centerline. It runs east-west and has a posted speed limit of 35 mph, with a 25 mph school speed zone in the vicinity of the school. Symeron Road also has various advance school warning signs east and west



of Tuscola Road. It forms a four-legged intersection with Tuscola Road and is controlled with stop signs and "STOP" pavement markings on the east and west approaches. There are sidewalks on both sides of the roadway east of Tuscola Road. Fronting development is residential in addition to the school. There are yellow



school crosswalks on the east and west legs. The alignment in the vicinity of the intersection is straight and flat.



Volume and speed counts were taken at this intersection on November 19-20, 2019 (attached). Per the California Manual on Uniform Traffic Control Devices (CA MUTCD) and industry standards, all-way stop control analyses are to be conducted using traffic volume data obtained on a Tuesday, Wednesday or Thursday, which are considered typical weekday volumes. Since the data obtained for either day would be

acceptable, the total intersection volumes for each day were compared and the highest total intersection volume day (November 19, 2019) was used for analysis. The data showed the average of the eight highest hours on the main street (Tuscola Road) approaches to the intersection to be 126 vehicles per hour. The average of the same eight highest hours on the minor street (Symeron Road) approaches to the intersection was 63 vehicles per hour. Speed data revealed an 85th percentile speed of 43 mph approaching the intersection from the south and 42 mph



approaching from the north.

Intersection vehicle and pedestrian volume counts were taken on November 19, 2019 during the morning school arrival period (7:30 – 9:00 am) and afternoon school dismissal period (2:30 – 4:30 pm). These counts revealed the following pedestrians crossing the three crosswalks:

- South Crosswalk: 11 during the a.m.; 54 during the p.m.
- East Crosswalk: 23 during the a.m.; 24 during the p.m.
- West Crosswalk: 4 during the a.m.; 17 during the p.m.

The south crosswalk is not stop controlled. During the morning arrival period, 149 vehicles travelled through the crosswalk, while the afternoon dismissal period had 262 vehicles traveling through the crosswalk.

A review of the available SWITRS data at this intersection revealed the following reported collisions since 2014:

- 9/19/19 – Eastbound Right-turn vs. Southbound Thru – Broadside - PDO
- 12/23/17 – Eastbound Thru vs. Northbound Thru – Broadside – PDO
- 3/26/15 - Eastbound Left-turn vs. Northbound Thru – Broadside - Injury
- 4/13/15 – Eastbound Right-turn Solo - Hit Fixed Object - PDO
- 12/15/14 – Eastbound Thru vs. Southbound Thru – Broadside - PDO

For the legal speed limit of 45 mph on Tuscola Road, the minimum stopping sight distance per Table 201.1 of the California Highway Design Manual is 360 feet. The measured prevailing (85th percentile) speeds of 42-43 mph supports using this distance.

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Field measurements revealed that visibility for the west approach of Symeron Road looking both north and south onto Tuscola Road exceeds the minimum stopping sight distance. Visibility for the east approach looking north onto Tuscola Road also exceeds the minimum stopping sight distance. However, visibility from the east approach looking south is obstructed by roadside vegetation. Vehicles need to creep forward into the crosswalk and the travelled way to eliminate the visibility restrictions.

The CA MUTCD provides guidance for the installation of all-way stop controls. It suggests that all-way stop controls may be considered when:

- **Warrant 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.
- **Warrant B** - There is a crash problem, as indicated by 5 or more reported crashes in a 12-month period that are susceptible to correction by all-way stop installation. Such crashes include right- and left-turn collisions as well as right-angle collisions.
- **Warrant C** - Where 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 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. When the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, as it does at this intersection, the minimum vehicular volume warrants may be reduced to 70 percent of the above values. **Therefore, the major street volume threshold is 210 vehicles per hour and the minor street threshold is 140 vehicles per hour.**
- **Warrant D** - Where none of the above Warrants are satisfied, but Warrants B and C are satisfied 80 percent. For this warrant, the 70 percent reduction for Warrant C cannot be applied.

The CA MUTCD also provides other criteria that may be considered, including:

- The need to control left-turn conflicts;
- The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;



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

As indicated previously, the average 8-hour volume on Tuscola Road is 126 vehicles per hour and the average volume for the same 8 hours on Symeron Road is 63 vehicles per hour. The major street volume is 60% satisfied in Warrant C while the minor street warrant is 45% satisfied. The main street/minor street volume split during the eight highest hours is approximately 67% vs. 33%. The reported collision history revealed a maximum of two (2) collisions within a 12-month period that could be correctable with all-way stop controls. Neither the volume nor crash thresholds are satisfied, however there is an identifiable crash pattern of eastbound vehicles hitting through vehicles on Tuscola Road.

Based on the above criteria, the collision and volume guidelines are not satisfied. However, the following criteria listed above may be applicable to this location:

The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes – Desert Knolls Elementary School is located within approximately 225 feet of the intersection and there are marked school crosswalks on the east, west and south legs. In addition, the school utilizes a crossing guard to assist pedestrians crossing the roadways. As indicated by the intersection vehicle and pedestrian counts, there are a significant number of pedestrians using this intersection to access the school, and there are a substantial number of vehicles crossing the uncontrolled crosswalk on the south leg. This crossing provides access to the residential areas west of Tuscola Road. The above information suggests the potential for significant conflict between pedestrians and motorists. Furthermore, the speed of traffic on Tuscola Road limits the available gaps in traffic to allow pedestrians to reasonably cross the roadway.

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 – Visibility for motorists on the east approach of Symeron Road viewing traffic approaching from the south on Tuscola Road is limited due to roadside vegetation. This visibility restriction can create conflict for motorists attempting to enter or cross Tuscola Road. The conflict is increased by



the need for motorists to be aware of the potential for pedestrian crossings within the marked school crosswalks.

CONCLUSION

The traffic volumes and reported crash history at this location do not satisfy CA MUTCD warrants for the installation of all-way stop controls. However, two of the additional criteria (pedestrian volume generators and visibility) may justify all-way stop controls. In addition, there is an identifiable pattern of broadside collisions that would be expected to be correctable with all-way stop controls. Based on this information, it is recommended that all-way stop control installation be considered at the intersection of Tuscola Road and Symeron Road. The concurrent Desert Knolls Elementary School traffic control evaluation contains recommendations that would be affected by the outcome of this report.

JR: Tuscola Rd at Symeron Rd All-Way Stop Control Analysis - 12-9-19

Attach.



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