



Town Council Agenda Report

Date: December 10, 2019 Item No. 8

To: Honorable Mayor and Town Council

Subject: ALL-WAY STOP AT THE INTERSECTION OF APPLE VALLEY ROAD
AND JESS RANCH PARKWAY

From: Douglas Robertson, Town Manager

Submitted by: Brad Miller, Town Engineer
Engineering Department

Budgeted Item: Yes No N/A

RECOMMENDED ACTION

Adopt Resolution 2019-33, "A Resolution of the Town Council of the Town of Apple Valley establishing the intersection of Apple Valley Road and Jess Ranch Parkway as an all-way STOP intersection."

BACKGROUND

At the direction of the Town Manager, staff has evaluated speed limits, collision history, and overall traffic control measures at the intersection of Apple Valley Road and Jess Ranch Parkway. As a result of this study, it has been determined that the existing traffic control measures at this intersection are correct based on Engineering Warrant Studies and Radar Speed Surveys. However, there is a potential need to control vehicle/pedestrian conflicts in this area due to the close proximity to a church, lodge, fire station, and retirement condominium development. In addition, the area has some geometric characteristics that produce limited visibility for motorists on the east approach of Jess Ranch Parkway viewing traffic approaching from both the north and south on Apple Valley Road.

ANALYSIS

Based on the unusual geometrics of this intersection, the need to control vehicle/pedestrian conflicts, and the exercise of Engineering judgement, Engineering staff is recommending that stop controls at Apple Valley Road and Jess Ranch Parkway 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 immediately appropriate implementation. In addition, the existing stop signs will be replaced with 36" R1-1 signs per Section 2B.03 of the California Manual on Uniform Traffic Control Devices.

FISCAL IMPACT

The project will be paid for using Traffic Impact Fees. The estimated project cost, which includes signage, markings, and median modifications, and all other related activities and items, is \$25,000.00.

ATTACHMENTS

- A. Resolution 2019-33
- B. Engineering Analysis

RESOLUTION NO. 2019-33

A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF APPLE VALLEY ESTABLISHING THE INTERSECTION OF SHOSHONE/ FLATHEAD ROAD AND TONAWANDA ROAD AS AN ALL-WAY STOP INTERSECTION.

WHEREAS, a traffic engineering investigation has determined that establishing the intersection of Apple Valley Road and Jess Ranch Parkway 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 Apple Valley Road and Jess Ranch Parkway as an all-way STOP intersection.

Section 2: Authorizes and directs the Town Manager to cause additional STOP signs to be placed on Apple Valley Road and Jess Ranch Parkway.

APPROVED and **ADOPTED** by the Town Council of the Town of Apple Valley this the 10th day of December, 2019.

MAYOR,

ATTESTED:

TOWN CLERK, La Vonda M-Pearson

November 11, 2019

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

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

**APPLE VALLEY ROAD AND JESS RANCH PARKWAY
ALL-WAY STOP CONTROLS**

RECOMMENDATIONS

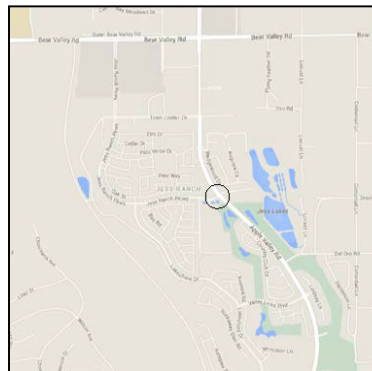
1. Consider the installation of all-way stop controls at the intersection of Apple Valley Road and Jess Ranch Parkway.
2. Repaint the faded white limit line and “STOP” marking on the east approach of Jess Ranch Parkway at Apple Valley Road.
3. Replace the missing R1-1 (“STOP”) sign on the east approach of Jess Ranch Parkway at Apple Valley Road with a 36” sign.
4. Replace the existing R1-1 (“STOP”) sign on the west approach of Jess Ranch Parkway at Apple Valley Road with a 36” sign.

BACKGROUND

As requested, I reviewed the intersection of Apple Valley Road and Jess Ranch Parkway with respect to the need for all-way stop controls and offer the following comments.

DISCUSSION

Apple Valley Road in the subject vicinity is classified as a local roadway in the current functional classification map (California Road System Map 15U23) and runs north-south. North



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of Town Center Road, it is classified as a minor arterial roadway. It has two travel lanes and a bike lane in each direction, separated by a raised median. There are left-turn pockets for both directions at Jess Ranch Parkway. There are sidewalks on both sides of Apple Valley Road north and south of the intersection.

Apple Valley Road has a posted 45 mph speed limit. The vertical alignment has a slight upgrade from north to south with a crest south of Jess Ranch Parkway. The subject intersection is located within a reverse horizontal curve. Fronting development is the Jess Ranch Lakes RV Resort on the east side, north of Jess Ranch Parkway and Jess Ranch Lakes on the east side, south of the intersection. The west side has a church on the northwest corner and the Mariposa Lodge on the southwest corner. Further west on Jess Ranch Parkway is a fire station and the Leisure Village Condominiums. There are all-way stop controls approximately 2,000 feet to the north at Town Center Drive to the north and approximately 2,300 feet to the south at Del Oro Road.



Jess Ranch Parkway is classified as a local roadway. It has a posted speed limit of 25 mph and runs east-west. It forms a four-legged intersection with Apple Valley Road and is controlled with a stop sign, "STOP" pavement marking and white limit line on the west approach. This approach has a left-turn lane and a through/right-turn lane, separated from the westbound travel lane by a raised median. The east leg has a faded "STOP" pavement marking and limit line. There is a

sign post, but no stop sign. There are sidewalks on both sides of the roadway west of Apple Valley Road. The east approach is generally unimproved. Jess Ranch Parkway is gated at the condominiums west of Old Apple Valley Road.

Volume and speed counts were taken at this intersection on October 23-24, 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 minor street volume day (October 24, 2019) was used for analysis. The data showed the average of the eight highest hours on the main street (Apple Valley Road) approaches to the intersection to be 604 vehicles per hour. The average of the same eight highest hours on the minor street (Jess Ranch Parkway) approaches to the intersection was 67 vehicles per hour. Speed data revealed an 85th percentile speed of 55 mph approaching the intersection from the south and 53 mph approaching from the north.

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

- 10/26/17 – Eastbound Left-turn vs. Southbound Thru – Broadside - PDO
- 4/5/17 – Northbound Lane Change vs. Northbound Thru – Sideswipe – PDO
- 11/30/15 - Eastbound Left-turn vs. Southbound Thru – Broadside - PDO
- 10/19/15 – Eastbound Left-turn vs. Southbound Thru – Broadside - Injury
- 10/3/15 – Eastbound Left-turn vs. Southbound Thru – Broadside - PDO



For the legal speed limit of 45 mph on Apple Valley Road, the minimum stopping sight distance per Table 201.1 of the California Highway Design Manual is 360 feet. For the measured prevailing (85th percentile) speed of 55 mph, it is 500 feet. Field measurements revealed that visibility for the west approach



of Jess Ranch Parkway looking both north and south onto Apple Valley Road exceeds the minimum stopping sight distance for both speeds. Visibility for the east approach looking south onto Apple Valley Road exceeds the minimum stopping sight distance for the legal speed limit but can be obstructed by roadside vegetation for the prevailing speed. Vehicles need to creep forward into the travelled way to eliminate the



visibility restrictions. An above-ground utility cabinet, surrounded by vegetation, restricts visibility when looking to the north for both the legal speed limit and prevailing speed of vehicles.

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 Apple Valley Road is 604 vehicles per hour and the average volume for the same 8 hours on Jess Ranch Parkway is 67 vehicles per hour. The major street volume satisfies the minimum volume thresholds in Warrant C while the minor street warrant is 48% satisfied. The reported collision history revealed a maximum of three (3) 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 left-turning vehicles hitting southbound through vehicles.

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 – There is a church, lodge, fire station and retirement condominium development on the west side of Apple Valley Road. On the east side is an RV resort and Jess Lakes. Pedestrian access is enhanced by the existing sidewalks throughout the area. These destinations attract pedestrian crossings on Apple Valley Road, which creates the potential for significant conflict between pedestrians and motorists. Furthermore, the speed and volume of traffic on Apple Valley 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 Jess Ranch Parkway viewing traffic approaching from both the north and south on Apple Valley Road is limited due to the roadway curvature, roadside vegetation and the above ground utility cabinet on the northeast corner. This is exacerbated by the prevailing speed of traffic, which was measured at up to 10 mph above the legal speed limit. These visibility restrictions can create conflict for



motorists attempting to enter or cross Apple Valley Road. The conflict is reinforced by the four (4) reported broadside crashes since October 2015.

Field observations revealed that the stop sign on the east approach of Jess Ranch Parkway is missing. Per the California Vehicle Code and CA MUTCD, a stop sign shall be installed when it is determined that a full stop is always required on an approach to an intersection. Therefore, the missing stop sign should be replaced. In addition, the "STOP" pavement marking and white limit line are faded and should be refreshed to reinforce the requirement to stop.



The size of the existing stop (R1-1) sign on the west approach of Jess Ranch Parkway at Apple Valley Road is 24". CA MUTCD Section 2B.03 states the following:

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

Both conditions apply to the west approach, and the second condition applies to the east approach. Therefore, both approaches should be replaced with 36" R1-1 (stop) signs.

CONCLUSION

The traffic volumes and reported crash history at this location do not satisfy CA MUTCD volume or crash 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 Apple Valley Road and Jess Ranch Parkway. The R1-1 (stop) signs for



both approaches of Jess Ranch Parkway (one existing, one missing) should be replaced with 36" signs, and the existing pavement markings on the east approach should be refreshed.

JR: Apple Valley Rd at Jess Ranch Pkwy All-Way Stop Control Analysis - 11-11-19

Attach.



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