



Town Council Agenda Report

Date: July 23, 2019 Item No. 2

To: Honorable Mayor and Town Council

Subject: FOUR-WAY STOP AT THE INTERSECTION OF SHOSHONE/
FLATHEAD ROAD AND TONAWANDA ROAD

From: Douglas Robertson, Town Manager

Submitted by: Brad Miller, Town Engineer
Engineering Department

Budgeted Item: Yes No N/A

RECOMMENDED ACTION

Adopt Resolution 2012-21, “A Resolution of the Town Council of the Town of Apple Valley establishing the intersection of Shoshone/ Flathead Road and Tonawanda Road as a four-way STOP intersection.”

BACKGROUND

On May 14, 2019, the Town Council received public comment that included resident concerns about speed and safety at intersections along Flathead Road, from Tonawanda Road to Ramona Road. Per the Town Manager’s direction, staff has evaluated speed limits, the collision history, and overall traffic control measures along Flathead Road between Tonawanda Road and Ramona Road. As a result of this study, it has been determined that the existing traffic control measures along this segment of Flathead Road are correctly based on Engineering Warrant Studies and Radar Speed Surveys. However, the existing two-way stop at the intersection of Shoshone/ Flathead Road and Tonawanda Road does have geometric characteristics that produce sight distance limitations that are adequate at posted speeds, but may become marginal at higher approach speeds. Therefore, based on the unusual geometrics of this intersection, and the exercise of Engineering judgement, Engineering staff is recommending that the existing two-way stop controls at Shoshone/ Flathead Road and Tonawanda Road be upgraded to a full four-way stop.

ANALYSIS

Engineering staff supports the findings of the evaluation, and with Town Manager Robertson's approval, are bringing the upgrade to a four-way stop at this intersection before Town Council for approval, and immediate appropriate implementation.

FISCAL IMPACT

Funding for this project is available in the Town Council approved 2019-2020 Capital Improvement Project Budget using Measure I funds. The total project cost, which includes signage, markings, and the recommended temporary flashing beacons, is \$3,000.00.

ATTACHMENTS

- A. Resolution 2019-21.
- B. Engineering Analysis

RESOLUTION NO. 2019-21

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

WHEREAS, a traffic engineering investigation has determined that establishing the intersection of Shoshone/ Flathead Road and Tonawanda Road as a four-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 Shoshone Road/ Flathead Road and Tonawanda Road as a four-way STOP intersection.

Section 2: Authorizes and directs the Town Manager to cause additional STOP signs to be placed on Shoshone Road/ Flathead Road and Tonawanda Road.

APPROVED and **ADOPTED** this the 23th day of July, 2019.

Larry Cusack, MAYOR

ATTEST:

La Vonda M-Pearson, TOWN CLERK

May 28, 2019

TO: Brett Morgan, Senior Engineering Associate
Town of Apple Valley

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

**SHOSHONEE ROAD/FLATHEAD ROAD AND TONAWANDA ROAD
ALL-WAY STOP CONTROLS**

RECOMMENDATIONS

1. Consider the installation of all-way stop controls at Shoshonee Road/Flathead Road and Tonawanda Road.
2. Replace the existing curve warning signs on Shoshonee Road/Flathead Road approaching Tonawanda Road with the appropriate turn warning signs and retain the existing 25 mph advisory speed plates.

BACKGROUND

As requested I reviewed the intersection of Shoshonee Road/Flathead Road and Tonawanda Road with respect to the need for all-way stop controls and offer the following comments.

DISCUSSION

Shoshonee Road/Flathead Road in the subject vicinity is classified as a major collector roadway in the current functional classification map (California Roadway System Map 15U13) and runs east-west. The roadway is identified as Shoshonee Road west of Tonawanda Road and Flathead Road east of the intersection. It has one lane in each direction, separated by a double yellow centerline, and soft shoulders. There are 45 mph



speed limit signs exiting the intersection for both eastbound and westbound traffic. Approaching the intersection from both directions on Shoshonee Road/Flathead Road are curve warning signs with 25 mph advisory speed plates. The nearest traffic controls are a traffic signal at Happy Trails Highway, 0.6 miles to the east, and all-way stop controls at Rincon Road, 0.6 miles to the west. It generally has a straight, flat alignment, except for a horizontal curve between Tonawanda Road and Seminole Road, west of the intersection. There is residential development on all corners of the intersection.

Tonawanda Road is classified as a local roadway and runs north-south. It is unstriped with one travel lane in each direction. There are posted stop controls, limit lines and



South Approach – Looking North



North Approach – Looking South

“STOP” pavement markings on the north and south approaches. There is no posted speed limit. It has a generally straight, flat alignment

with a reverse horizontal curve between Shoshonee Road/Flathead Road and Erie Road, north of the intersection.

Volume and speed counts were taken at this intersection on May 8-9, 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 volume day (May 8, 2019) was used for analysis. The data showed the average of the eight highest hours on the main street (Shoshonee Road/Flathead Road) approaches to the intersection to be 211 vehicles per hour. The average of the same eight highest hours on the minor street (Tonawanda Road) approaches to the intersection was 33 vehicles per hour.

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A review of the available SWITRS data at this intersection revealed one reported collision since 2014 that could be correctable with the installation of all-way stop controls. This was a broadside injury collision that occurred on November 15, 2014 and involved a southbound through vehicle vs. an eastbound through vehicle.

Town Staff conducted a sight distance evaluation at this intersection in 1993 (copy attached) and determined an unobstructed sight distance for traffic on the north approach of Tonawanda Road viewing eastbound traffic on Shoshonee Road of 111 feet. The



North Approach – Looking West

report further identifies that this visibility increases to 295 feet if the motorist views Shoshonee Road through the split rail fence.

For the legal speed limit of 45 mph on Shoshonee Road/Flathead Road, the minimum stopping sight distance per Table 201.1 of the California Highway Design Manual is 360 feet. Field measurements revealed that visibility for the south approach of Tonawanda Road looking both east and west onto

Shoshonee Road/Flathead Road exceeds the minimum stopping sight distance. The minimum stopping sight distance for the north approach of Tonawanda Road looking east is also satisfied. However, visibility from the north approach viewing traffic to the west is limited due to the horizontal curvature and fencing and is consistent with the distance identified in the 1993 report. This visibility requires motorists to look through the split rail fence as well as around the vegetation located on private property within the fence. Furthermore, approximately 190 feet west of the intersection is a solid wood fence that completely blocks visibility.

The California Manual of Uniform Traffic Control Devices (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 D 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.

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As indicated previously, the average 8-hour volume on Shoshonee Road/Flathead Road is 211 vph and the average volume for the same 8 hours on Tonawanda Road is 33 vph. The major street volume nominally satisfies the minimum volume thresholds in Warrant C while the minor street warrant is 24% satisfied. Approximately 87% of the total intersection volume during the 8 highest hours is on the currently uncontrolled street (Shoshonee Road/Flathead Road). The CA MUTCD guidance generally suggests that multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal.

With regards to the additional criteria allowed for consideration in the CA MUTCD, the following criterion appears applicable to justify all-way stop controls at this intersection.

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 north approach of Tonawanda Road viewing traffic approaching from the west is limited due to the roadway curvature, private property fencing and vegetation. The minimum stopping sight distance of 360 feet cannot be provided and can create conflict for motorists attempting to enter or cross Shoshonee Road/Flathead Road.

Field observations identified curve warning signs with 25 mph advisory speed plates approaching the intersection on Shoshonee Road/Flathead Road from both directions. The curve warning sign on the west approach is modified to include cross street indications. CA MUTCD Section 2C.07 states that a turn warning sign shall be used instead of a curve warning sign in advance of curves that have advisory speeds of 30 mph or less. Based on the existing 25 mph advisory speed, both curve warning signs should be replaced with the appropriate turn warning signs.



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CONCLUSION

Due to the restricted visibility for motorists on the north approach viewing traffic approaching from the west and application of the additional criteria regarding visibility issues, the installation of all-way stop controls could be justified. In addition, the existing curve warning signs should be replaced with turn warning signs to maintain consistency with the CA MUTCD. If all-way stop controls are installed, the advance turn warning signs should be removed and W3-1 (stop ahead) signs installed on Shoshonee Road/Flathead Road in advance of the intersection.

JR: Shoshonee Rd-Flathead Rd and Tonawanda Rd All-Way Stop Control Analysis - 5-28-19

Attach.

