



TOWN OF APPLE VALLEY TOWN COUNCIL STAFF REPORT

To: Honorable Mayor and Town Council **Date:** April 10, 2012
From: Brad Miller, Town Engineer **Item No:** 7
Subject: FOUR-WAY STOP AT THE INTERSECTION OF KIOWA ROAD AND
OTTAWA ROAD

T.M. Approval: _____ **Budgeted Item:** Yes No N/A

RECOMMENDED ACTION:

Adopt Resolution 2012-18, "A Resolution of the Town Council of the Town of Apple Valley establishing the intersection of Kiowa Road and Ottawa Road as a four-way STOP intersection."

SUMMARY:

On March 14, 2012, the Traffic Safety Committee met and evaluated the need for four-way STOP controls at the intersection of Kiowa Road and Ottawa Road. The Committee concurred with the staff recommendation to establish the intersection as a four-way STOP. Attached is the staff report submitted to the Traffic Safety Committee for Council information.

ITEM # 3

To: Traffic Committee Members
From: Richard Pedersen, Deputy Town Engineer
Date: March 14, 2012
Subject: Four-way STOP sign installation at the intersection of Kiowa Road and Ottawa Road

Staff received a request from David Estes to investigate the intersection of Kiowa Road and Ottawa Road to determine if a four-way stop is warranted. Currently there are STOP signs on the east and west legs of the intersection on Ottawa Road.

Staff performed a traffic engineering investigation, which included an evaluation of past records of vehicle conflict, traffic volumes, and a field review of the intersection. Attached is the intersection analysis by Mr. Jack Rydell, P.E., T.E., PTOE.

Recommendation

Staff recommends that four-way STOP controls be installed at the intersection of Kiowa Road and Ottawa Road.

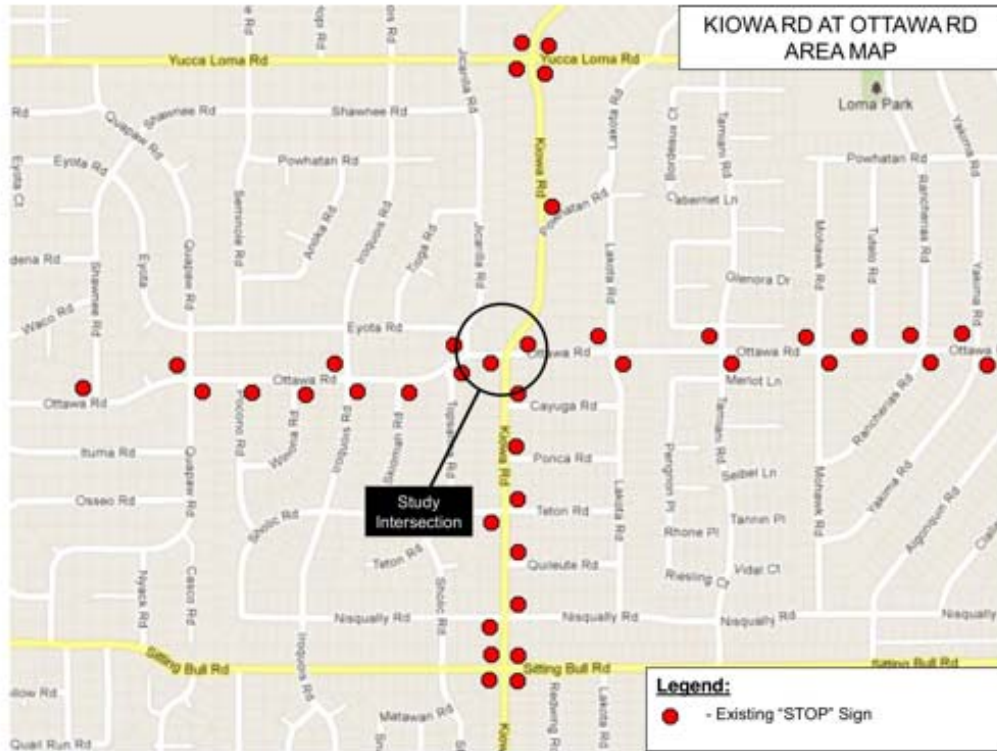
Fiscal Impact

Installation of 2 stop signs \$150 each

Attachments

Location Map, All-Way STOP Controls Intersection Analysis
Letter from David Estes







PROFESSIONAL BUSINESS & SAFETY ENGINEERING AND TRAFFIC MANAGEMENT

January 30, 2012

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

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

**KIOWA ROAD AND OTTAWA ROAD
ALL-WAY STOP CONTROLS**

RECOMMENDATION

1. Install all-way stop controls.

BACKGROUND

As requested I reviewed the intersection of Kiowa Road and Ottawa Road with respect to the need for all-way stop controls and offer the following comments.

DISCUSSION

Kiowa Road in the subject vicinity is classified as a minor arterial roadway in the current functional classification map and runs north-south. It has one travel lane and a bike lane in each direction. There are left-turn pockets at the intersection. The vertical alignment is relatively flat and the subject intersection is near the south end of a reverse curve. Kiowa Rd has a posted speed limit of 45 mph speed limit. Fronting development is single family residential. There are no sidewalks in the area. Kiowa Road is a transit route that includes stop locations at various intersections. There are all-way stops at the adjacent intersections of Yucca Loma Road to the north and Sitting Bull Road to the south.



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Ottawa Road is classified as a major collector roadway. It has a posted speed limit of 40 mph and runs east-west. It forms a four-legged intersection with Kiowa Road and is controlled with stop signs, "STOP" pavement markings and a white limit line. It is unstriped in the immediate vicinity of Kiowa Road with single family residential frontage. There are no sidewalks on either side in the area. Ottawa Road provides a route to the skate park at Navajo Road. Other than at Kiowa Road, Ottawa Road is not required to stop at other intersections within the area.



Volume counts were taken at this intersection in October 2010. The data showed an average weekday volume of 6,964 vehicles per day on Kiowa Road and 985 vehicles per day on Ottawa Road. The average volume on Kiowa Road for the 8 highest hours was 501 vehicles per hour. The average volume on Ottawa Road for the 8 highest hours was 64 vehicles per hour.

A review of the available accident history at this location revealed eight reported accidents at the intersection since 2003. The accidents are as follows:

11/21/11 – WB vehicle proceeding straight hit SB vehicle proceeding straight;

2/28/11 – WB vehicle hit NB vehicle (no vehicle movements were noted);

7/25/10 - SB vehicle ran off road due to unsafe speed;

10/3/08 - EB vehicle proceeding straight hit NB vehicle proceeding straight;

5/8/08 - SB vehicle ran off road due to unsafe speed;

8/19/06 - EB vehicle turning left hit NB vehicle proceeding straight;



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5/23/05 - NB vehicle proceeding straight rear ended a NB vehicle turning left;

4/4/03 - NB vehicle proceeding straight rear ended a NB vehicle turning left.

For the legal speed limit of 45 mph on Kiowa Road, the minimum stopping sight



distance per AASHTO (American Association of State Highway and Transportation Officials) standards is approximately 360 feet. Field measurements revealed that visibility for the east approach of Ottawa Road looking south onto Kiowa Road is approximately 135 ft from the limit line. Measurements taken at 10 feet back from the edge of pavement, which is where a motorists eyes would be if their vehicle was moved forward as much as reasonably possible without encroaching into traffic on Kiowa Road, slightly

increased to 165 feet. For pedestrians attempting to cross Kiowa Road from the southeast corner to the southwest corner, there was approximately 265 feet of visibility for a northbound vehicle in the travel lane. Based on these measurements, minimum stopping sight distance is not provided for these movements. Visibility for the east approach viewing traffic to the north and the west approach viewing traffic to the north and south exceeds the minimum stopping sight distance of 360 feet.

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:

- 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.
- Where minimum traffic volumes are observed that include an average of at least 300 vehicles per hour entering the intersection from the major street for any 8 hours of an average day, and a combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street of at least 200 units per hour for the same 8 hours.

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PROFESSIONAL BUSINESS & SAFETY ENGINEERING INFRASTRUCTURE MANAGEMENT

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.



Based on the above criteria, the collision and volume guidelines are not satisfied and do not support all-way stop control installation. With respect to the volume criteria, there are sufficient volumes on Kiowa Road but traffic on Ottawa Road does not meet the minimum threshold. 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 – Field observations revealed pedestrians walking along and crossing Kiowa Road. There are no sidewalks along either Kiowa Road or Ottawa Road which forces pedestrians to walk within the roadway and in close proximity to vehicles travelling at high rates of speed for this residential area. This creates the potential for significant conflict between pedestrians and motorists, especially when they are attempting to cross Kiowa Road. In addition, the presence of transit stops along Kiowa Road creates an increased demand for pedestrian crossing controls. This is further highlighted by the existing route to the area skate park that can be accessed via Ottawa Road to the east.

Locations where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless conflicting cross traffic is also required to stop – Visibility measurements do not satisfy the AASHTO minimum stopping sight distance for the east approach of Ottawa Road when viewing

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the south approach of Kiowa Road. The visibility limitations are exacerbated for pedestrians attempting to cross from the southeast to southwest corners, who require even longer time to cross Kiowa Road than motorists and are more difficult to see. Since the visibility restriction is due to roadway curvature and improvements located on private property, there are no feasible modifications to improve sight distance. It should be noted that there are windows of visibility through the existing fencing on private property. However these windows of visibility are currently due to the seasonal dormancy of vegetation and will be eliminated once the vegetation on private property becomes active again.

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 – Both roadways function as higher level roadways and provide direct access to other high level roadways within the Town's roadway system. Motorists could be assumed to have an expectation that both roadways have equal priority. By stopping traffic on Kiowa Road, traffic on Ottawa Road would have greater opportunity to enter or cross Kiowa Road.

Additional factors to be considered in determining the appropriateness of all-way stop control at this location should include:

- Installing new stop controls on Kiowa Road may increase volumes on Ottawa road due to the increased ability of motorists to enter or cross Kiowa Road.

CONCLUSION

The traffic volumes and reported accident history at this location do not satisfy CA MUTCD warrants for the installation of all-way stop controls. However issues related to inadequate visibility for the east approach of Ottawa Road, intersection operational characteristics, pedestrian walkability and crossing opportunities suggest that the installation of all-way stop controls at this location would enhance traffic safety.

JR: Kiowa Rd at Ottawa Rd All-Way Stop Control Analysis - 1-30-12

Attach.

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RESOLUTION NO. 2012-18

**A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF
APPLE VALLEY ESTABLISHING THE INTERSECTION OF
KIOWA ROAD AND OTTAWA ROAD AS A FOUR-WAY STOP
INTERSECTION.**

WHEREAS, a traffic engineering investigation has determined that establishing the intersection of Kiowa Road and Ottawa 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 Kiowa Road and Ottawa Road as a four-way STOP intersection.

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

APPROVED and **ADOPTED** this the 10th day of April, 2012.

MAYOR

ATTESTED:

TOWN CLERK