

FINAL REPORT
City of Fremont

Radar Speed Feedback Sign Project

RS0404

October 1, 2003 through June 30, 2005

Report Prepared By: Rene Dalton

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OTS Regional Coordinator: Kim Garcia

Credits

In January of 2003, the Fremont City Council made a decision to de-fund its residential Traffic Calming program due to revenue shortfalls. This de-funding of the Traffic Calming program has prompted City of Fremont staff to look for new, innovative methods to reduce traffic speeds on roadways adjacent to schools and in residential neighborhoods.

The proposed Radar Speed Feedback Sign project builds on the success of using radar speed trailers that utilize similar technology to inform drivers of their speed as well as the speed limit of the street they are traveling on. In 2001, the Fremont Police Department received an average of 14 requests per month for additional radar enforcement of the speed limit from the community, school officials, and Traffic Engineering staff. The radar speed trailer was deployed to different streets throughout the City of Fremont an average of 15 days per month. To promote traffic safety and education, the City of Fremont's Police Department is available on a request basis to provide traffic safety presentations to schools and organizations. The Fremont Police Department, Traffic Engineering staff, and the School District officials meet quarterly to discuss issues and measures to improve safety and traffic circulation of streets adjacent to schools.

As with all other programs, the resources that the Police Department has to provide enforcement are also limited. The installation of the radar speed limit message signs will also work to assist the Fremont Police Department with their efforts.

On June 29, 2005 the City of Fremont installed 10 new radar speed limit feedback signs on six residential street segments. The signs will provide motorists awareness of their travel speed as they travel through residential streets in an effort to reduce overall travel speeds in the selected street segments. This project is part of the California Traffic Safety Program and was made possible through the support of the California Office of Traffic Safety, State of California, and the National Highway Traffic Safety Administration.

Disclaimer

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the State of California, the National Highway Traffic Safety Administration, or the Federal Highway Administration.

Project Personnel

There were several individuals and departments involved in seeing this project to completion from the initial concept through the successful installation of the

signs. Michael Montoya of Fortel Traffic was instrumental in providing us the technical information as well as providing the product. Beth Turnipseed at the Fremont Police Department provided speed related collisions information for the City's quarterly report. Sergeant Robert Haffer contributed in providing speed related complaint data. Former City of Fremont staff Sandeep Sandhu provided the most significant contribution the project from conception to defining scope of the project to processing the OTS grant funding agreement to monitoring the grant for OTS compliance. Republic Electric staff and Robert Asuncion were timely and very responsive in completing the sign installation and making the signs operational in accordance to the City Specifications. Fremont City staff Archie Lacanaliao provided the lead in set up and programming of signs as well trouble shooting the signs when we experienced technical difficulties.

GOALS AND OBJECTIVES

The Goals of this project are the following (Project Dates have been revised to match project schedule revision):

1. To reduce the total number of fatal speed related collisions N/A % from the calendar 2002 base year total of N/A to N/A by December 31, 2005.
2. To reduce the total number of injury speed related collisions 10 % from the calendar 2002 base year total of 253 to 228 by December 31, 2005.

The Objectives of this project are the following (dates of the original objectives have been revised to match revised project schedule):

1. To identify six locations for the radar speed back signs. City of Fremont Transportation Engineering staff will analyze crash data, speeding complaint data and speed survey data to identify locations where speeding is a chronic issue. Although there are several locations throughout the City of Fremont where speeding is a legitimate issue, the six street segments initially selected to mount the radar speed feedback signs will be identified as areas with the most need for speed monitoring and control. Staff will also utilize the Speed Lump Priority list to determine the street segments where the most need for speed control is existing.
2. To utilize the radar speed feedback signs to promote compliance with the posted speed limit and to collect data to warrant traffic control and traffic enforcement.
3. To change the attitude of drivers by promoting both understanding and awareness.
4. To decrease the critical (85%) speed in school zones by an average of 5-7 mph by September 1, 2005.

5. To decrease the average monthly number of traffic speeding complaints logged by the Police Department 10% from calendar 2001 base total of 14 to 12 by September 1, 2005.
6. To adopt the OTS Three Phase Speed Control Program. This program includes speed assessment, program publicity, automated speed awareness, and speed enforcement.
7. To begin sharing the radar speed sign computer data with the City of Fremont Police Department on a quarterly basis by September 1, 2005.
8. To issue a press release announcing the kick-off of the project by January 30, 2004. The press release will be forwarded to OTS Public Information Officer at pio@ots.ca.gov and the OTS Regional Coordinator for approval prior to release. Printed newspaper copies of the press release will be faxed or e-mailed to OTS.
9. To use the following standard language in all press and media materials:
"Funding for this program is provided by a grant from the California Office of Traffic Safety through the Business, Transportation and Housing Agency."
10. To submit print clip articles by 9 a.m. to the OTS Public Information Officer by e-mail at pio@ots.ca.gov and OTS Regional Coordinator, or via fax at (916) 262-2960. Include publication name and date the article was published on all clips.
11. To e-mail all press releases or media advisories, alerts, and materials to the OTS Public Information Officer at pio@ots.ca.gov and OTS regional Coordinator 2 weeks in advance for approval prior to their release.

METHODOLOGY

The first part of the project involved identifying residential street segment that have a history of speeding and was verified by speed data. Although there are many locations in Fremont with speeding issues, the six street segments (2 school frontages and 4 residential streets) chosen to install these signs were determined by staff from the Traffic Calming Priority List which takes into account crash data, speed data, traffic volume data, and complaint data.

The second part of the project was to research the effectiveness of the radar speed limit feedback sign. In 1999, the City of San Jose was the first City to purchase and evaluate Radar Speed Display signs. After several modifications and attempts to re-design the sign, a design that was satisfactory to the City of San Jose staff was installed in April 2001. Data received from this initial

installation was positive and demonstrated a 5-7 mph decrease in vehicle speeds during the times that the signs were operational. Based on the positive results of San Jose's radar sign program the City then pursued implementation of the radar sign project.

The third part of this project involved the selection of the radar signs. Research on six vendors was conducted to determine who could deliver a radar speed limit sign in accordance to the City specifications. Based on the City Specification requirements a vendor was selected. City specifications required that the signs operate in a manner different than Manual Uniform Traffic Control Devices (MUTCD) guidelines. The City was able to obtain approval from the California Traffic Control Devices Committee to install and operate the signs similar to the City of San Jose project. The signs are mounted on a street electrolier and displays "SPEED LIMIT 25" which changes to "YOUR SPEED XX" when motorists are detected to be traveling above the speed limit.

Third part of the project was the purchase and installation of the signs at the approved street segments. This process was conducted through the City's standard procedures for purchasing and project construction process. The installation of the project was completed in June 2005.

The last part of the project involves the gathering of speed data, speeding complaint data after the installation of the project to determine the effectiveness of the signs.

PROBLEMS

The overall program implementation process was relatively smooth but just required more time than expected. Getting approval of our project through the California Traffic Control Devices Committee took additional time and was an additional step. The selection of the vendor required additional documentation because after a comparison of 6 other vendors and their products Fortel Traffic Inc was the only vendor the City was able to identify that could satisfy the City specifications.

The City also learned that choosing existing street lighting poles to mount the new radar speed limit signs was a project constraint that can limit the use of the effectiveness of the radar signs. Obviously installing these signs on existing street lights resulted in much needed cost savings but did have some drawbacks. Some of the existing street lights are on curved street segments or are obstructed by trees and the City's preference would have been to locate those signs elsewhere such as on straight sections with unobstructed sight distance. Last, the City also considered installation of solar panels in order to be able to

install signs at locations where the street light poles are only on one side of the street. For future projects the City would consider additional funds for the cost of installing solar powered signs, new poles, and other cost related items such as trimming or removing street trees.

Last, one of the signs were vandalize within a week after the installation. City staff filed a police report and is currently working to obtain additional funds to replace the sign.

RESULTS

Attached is a table which shows the 85 percentile speed of traffic of the six street segments were the radar speed limit signs were installed. The signs are programmed to be operational only during the AM (6:30-10:00) and PM (2:00-7:00) peak hours Monday thru Fridays. The data displayed below is the 85th percentile speed during one of the afternoon peak hour periods.

SUMMARY				
STREET	LOCATION	TIME OF DAY	SPEED @ 85 % BEFORE PROJECT	SPEED @ 85 % AFTER PROJECT
FERNALD ST.	NB, @ MORENGO WAY	2:00PM - 3:00PM	32	33
WHITEHEAD	SB, @ 34071 WHITEHEAD	2:00PM - 3:00PM	34	33
GLENVIEW DRIVE	NB, @ 38778 GLENVIEW DR.	2:00PM - 3:00PM	34	30
HILO ST.	WB, @ 5001 HILO ST.	2:00PM - 3:00PM	34	26
CHILTERN DRIVE	SB, @ 40745 CHILTERN	2:00PM - 3:00PM	34	27
CREEKWOOD DRIVE	WB, @ 4872 CREEKWOOD DR.	2:00PM - 3:00PM	36	33
CREEKWOOD DRIVE	EB, @ 4908CREEKWOOD DR.	2:00PM - 3:00PM	36	31

Based on data results for the 2-3 PM peak hour, the 85th percentile travel speeds for the street segments decreased by a range of 1 mile per hour to 8 miles per hour for all the street segments except one. For Fernald Street the 85th percentile speed increased by 1 mph. Additional data for Fernald Street indicates that the 24 hr. period 85th percentile speed remained unchanged at 32 mph for before and after project conditions.

For Hilo Street, the data shows a favorable 8 mph decline for before and after traffic speed conditions. The City believes the radar sign at this location needs to be relocated more towards the middle of the street segment. Due to sidewalk street trees obstructing sight distance mid-block along Hilo Street, the radar sign was installed near the entrance of the street segment where the speeds are lower. Moving the radar sign closer to the middle of the street segment would give a better indication of the effectiveness of the sign. The City is considering allocating additional funds to the project to relocate this sign and also to remove 2 to 3 trees that would obstruct the visibility of the sign location.

The remaining four street segments indicate the traffic speeds were reduced by 1 to 7 mph. This data indicates for these locations the radar signs were effective in providing driver awareness of their travel speeds and has resulted in motorists to reduce their travel speeds. Based on these initial results the City will continue to monitor the operations of the sign and its effectiveness and also adjust the radar signs hours of operation targeting the highest peak hours of noncompliance. The travel speed data will be provided to the City's Police Department on a quarterly basis to be used for traffic enforcement. Overall the City believes the signs have been effective in reducing traffic speeds. The radar signs enable the City to gather data and monitor what traffic is doing out in the streets. This information is useful to our Police Department which is responsible in implementing the City's traffic enforcement program.

IMPLEMENTATION SCHEDULE

The implementation schedule for the radar speed limit sign once the revised agreement was approved and completed in December 2004 took approximately seven months to complete. Also, the overall project goals and objectives were satisfied within the time of the program cycle (includes project extension time request). Below is an outline of the actual project schedule following the project extension schedule was approved in December 2004:

12/1/2004 – 3/31/2005

- Review of project goals and objectives by City staff.
- Review and research radar sign products from various vendors.
- Consider installation of solar powered radar signs and research pole foundation loading capacity for wind loading.

4/1/2005 – 5/15/2005

- City staff completed radar sign comparison and found that only one sign manufacturer could provide the desired sign.

- The City of Fremont selected Fortel Traffic Inc. as the vendor to provide the City the radar speed limit signs. Purchase Order issued.

5/16/2005 – 6/30/2005

- Bid Proposals sent to 3 electrical Contractors for the Installation of the radar speed signs.
- Construction Contractor Republic Electric selected and agreement executed to complete installation of signs.
- Construction Contractor completed work 6/29/05.

7/1/2005 – 8/26/2005

- Compile speed data for after project conditions to determine effectiveness of radar speed limit signs.

DOCUMENTATION

Please see the enclosed examples of before and after project speed data indicating the effectiveness of the signs to reduce traffic speeds.