



Planning & Community Development Department
Transportation Engineering Group
1685 Main Street, Room 115
Santa Monica, CA 90401

February 22, 2011

Director of the Office of Transportation Operations
U.S. Department of Transportation
Federal Highway Administration
Office of Transportation Operations, HOTO-1
1200 New Jersey Avenue, S.E., E84-477
Washington, DC 20590

SUBJECT: Request for Permission to Experiment – Circular Rapid Flashing Beacon

Dear Sir or Madam:

The City of Santa Monica, California, requests permission to conduct an experiment using a circular Rapid Flashing Beacon (RFB). The purpose of the experiment will be to determine the effectiveness of the circular RFB in increasing driver awareness and yielding compliance to pedestrians crossing the street at uncontrolled crosswalk locations versus a Rectangular Rapid Flashing Beacon (RRFB).

1. Problem Statement

The City of Santa Monica has requested approval from the State of California's Traffic Control Device Committee (CTCDC) to experiment with an RRFB. Although the RRFB has been granted interim approval by FHWA, the CTCDC has not yet approved the device for use in the State. In order to approve the device, the CTCDC has raised questions as to whether a similar device, using circular indications, would be as effective as an RRFB. Therefore, the City has proposed to evaluate the effectiveness of both an RRFB and circular RFB. Since the RRFB has been granted interim approval by FHWA, the City is submitting this request to experiment with a circular RFB.

2. Proposed Change

For the purpose of this experiment, a standard flashing beacon as defined in the California Manual on Uniform traffic Control Devices (CA MUTCD) will be modified with high intensity lights that operate using the RRFB rapid flash pattern, for comparative analysis with the RRFB. The two alternatives will be tested independently at the same location.

Testing Location

The devices will be tested in the City of Santa Monica at the intersection of Santa Monica Boulevard and Princeton Street. The test location consists of a marked crosswalk across Santa Monica Boulevard on the uncontrolled eastern leg of the intersection. Santa Monica Boulevard is a major boulevard that generally runs east-west. Stop controls are provided on Princeton Street, which is the minor side street approach to Santa Monica Boulevard. The intersection is offset, with the segment of Princeton Street south of Santa Monica Boulevard located approximately 30 feet west of the segment to the north. Traffic counts collected by the City in 2006 indicate that Santa Monica Boulevard has an Average Daily Traffic Volume (ADT) of about 28,200 vehicles, with a p.m. peak hour count of approximately 2,030 vehicles. The posted speed limit on Santa Monica Boulevard is 30 mph. In the five-year period between 2003 and 2008 there were two accidents involving pedestrians at this location. Both accidents occurred during daytime conditions with the pedestrians in the crosswalks, with one accident classified as a hit-and-run.

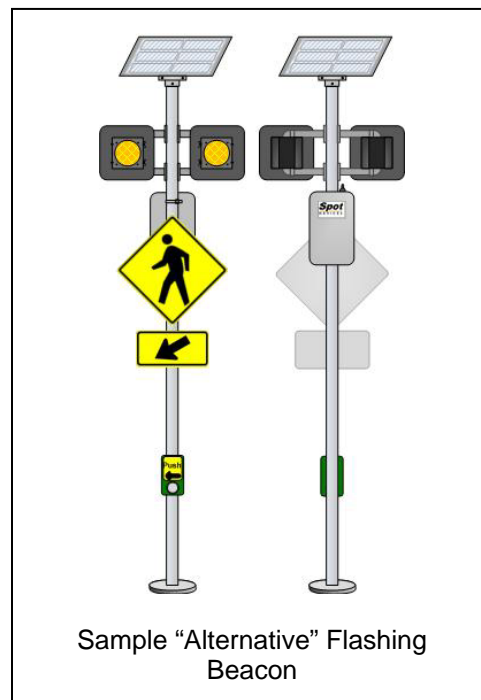
3. Device Information

While the FHWA has issued an Interim Approval allowing blanket use of the device, the RRFB does not meet the current standards for flashing warning beacons as contained in the 2009 edition of the MUTCD, Chapter 4L which requires a warning beacon to be round in shape and either 8 or 12 inches in diameter, to flash at a rate of approximately once per second, and to be located no less than 12 inches outside the nearest edge of the warning sign it supplements. The RRFB uses rectangular-shaped high-intensity LED-based indications, flashes rapidly in a wig-wag "flickering" flash pattern, and is mounted immediately between the crossing sign and the sign's supplemental arrow plaque.

The Interim Approval was brought before the CTCDC at its September 2008 meeting, agenda item # 08-25. The CTCDC recommended not adopting the FHWA Interim Approval in California, instead the Committee encouraged to agencies to seek approval from the CTCDC and test multiple devices based on the premise that "if other devices are equally effective, then why limit to a particular shape and size as issued in the Interim Approval by the FHWA".

Alternative Device

To meet the intent of the CTCDC's determination described above, an alternative device based on a standard circular flashing beacon will be fabricated and tested for comparative analysis. The alternative device will utilize the standard components of a flashing beacon as indicated in the MUTCD and the CA MUTCD, and to the extent possible, will be designed to replicate the configuration of the RRFB device. The alternative device will consist of two standard round 8 inch beacons mounted on a roadside pole to supplement a W11-2 (Pedestrian) crossing warning sign with a diagonal downward arrow (W16-7p) plaque, and will be located at or immediately adjacent to a marked crosswalk. The standard flashing beacons will be modified with high-intensity LED-based indications, and will use the rapid wig-wag "flickering" flash pattern utilized by the RRFB. An automatic dimming device may be used to reduce the brilliance of flashing yellow signal indications during night operation.



4. Experiment Scope

The objective of this experiment is to evaluate the effectiveness of the RRFB, and too evaluate the RRFB versus a standard side mounted flashing beacon as defined in the CA MUTCD with 8" round beacons that has been modified with high intensity lights and a rapid flash pattern. The experiment will be conducted at one location on Santa Monica Boulevard, a five-lane arterial. The following tasks are proposed.

1. Evaluate Existing Setting – Existing traffic facilities and conditions at the crossing location will be documented.
2. Pre-Installation Evaluation – Driver behavior and reactions to pedestrian crossing conditions will be measured with current traffic facilities.
3. Summary of Existing Conditions – Utilizing the setting and data collected in Tasks 1 and 2, an Existing Conditions Memo will be prepared including a description of existing conditions in the corridor and driver compliance with pedestrian crossings. A statistical analysis of crossing results will be performed.

4. Post-Installation RRFB Setting – Following installation of the RRFB, the study location on Santa Monica Boulevard will be reviewed in the field to determine any changed conditions. Any conditions varying from the initial survey will be described including specifications of the RRFB apparatus.
5. RRFB Experiment – Driver behavior to pedestrian crossing conditions will be measured with the installation of the RRFB according to the criteria discussed above. Since the RRFB will be activated via push button, conditions will be collected with the RRFB both activated and off. In addition, residents utilizing the crossing will be observed to determine the percentage of pedestrians who activate the device and the related traffic conditions at the time of activation. These conditions will be surveyed 30-45 days following installation and 90 days following installation.
6. Alternative Flashing Beacon Experiment – Driver behavior to pedestrian crossing conditions will be measured with the installation of the Alternative Flashing Beacon according to the criteria discussed above. Since the RRFB will be activated via push button, conditions will be collected with the RRFB both activated and off. In addition, residents utilizing the crossing will be observed to determine the percentage of pedestrians who activate the device and the related traffic conditions at the time of activation. These conditions will be surveyed 30-45 days following installation and 90 days following installation.
7. Evaluation – A draft technical report will be prepared that documents and compares the effectiveness of the Rapid Rectangular Flashing Beacon (RRFB) installation versus the Alternative Flashing Beacon design in relation to the base conditions. The document will include images of the intersection and data collection conditions as well as graphs, text, and tables summarizing the results of the data.
8. Progress reports – Subsequent progress reports documenting the performance of both alternatives evaluated will be provided following the 30, 45, and 90 day marks.

5. Experiment Schedule

The following schedule for testing is proposed:

Pre-Installation Evaluation	Fall 2010
RRFB Installation	March 2011
RRFB Experiment Period	March – May 2011
Alternative Flashing Beacon Experiment Period	June – August 2011
Evaluation	August – October 2011

We look forward to receiving approval from FHWA. Should you have any questions or require any additional information, please contact me directly.

Respectfully,

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke extending to the right.

Sam Morrissey, P.E.
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cc: Eileen Fogarty, Director of Planning & Community Development
John Fisher, Chair, California Traffic Control Device Committee