

**DEPARTMENT OF TRANSPORTATION**  
OFFICE OF TRAFFIC ENGINEERING & OPERATIONS  
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*Flex your power!  
Be energy efficient!*

July 27, 2012

Federal Highway Administration  
1200 New Jersey Avenue, S.E., HOTO-1  
Washington, DC 20590

**Status Report: 4(09)-13 (E) Yellow LED Border on Ped Signal – Caltrans**

Thank you for your December 12, 2011 response letter approving our request to experiment with the addition of a yellow LED border to a standard pedestrian signal head. As requested in the response, we are submitting an interim status report to show what has been completed over the last six months. Although the project started off slower than anticipated, I am pleased to report that two major milestones towards evaluating the proposed modification have been completed.

As you are aware, before we can proceed with an evaluation plan for a new traffic device in the State of California, the California Traffic Control Devices Committee (CTCDC) must have an opportunity to review and approve the experiment proposal. Since the CTCDC typically convenes only three times a year, it was important to get on the earliest agenda possible to keep the project on track. Fortunately, thanks to CTCDC Executive Secretary, Devinder Singh, this item was placed on the agenda for the February 16<sup>th</sup> CTCDC meeting in San Diego.

The proposed pedestrian signal modification and the evaluation plan were described to the committee at the February meeting. The presentation was followed by numerous questions from committee members seeking clarification about the functionality of the device and its proposed operation. One suggestion from the committee was to consider expanding the evaluation to compare the effectiveness of the yellow LED border against the animated eyes symbol that is already allowed in the MUTCD (Section 4E.04). However, the committee was reminded that the FHWA only approved evaluating the yellow LED border modification. Expanding the study would likely require that another evaluation plan be submitted to FHWA for approval. With that understanding, the idea to compare the yellow LED border against the animated eyes symbol was offered only as a consideration. In the end, the CTCDC approved the evaluation plan as presented.

The meeting minutes can be viewed at the following link:

<http://www.dot.ca.gov/hq/traffops/signtech/newtech/minutes/Min021612.pdf>.

The second major hurdle was to develop the device to use for the evaluation. Several manufacturers from Caltrans' Pre-Qualified Product List for LED Traffic Signal Modules were

contacted to see if they were interested in fabricating the modified pedestrian signal. Most manufacturers declined taking on the work, but after a few months of correspondence with Western Regional Marketing Manager, Kimberly Konte, Leotek Electronics agreed to develop the device.

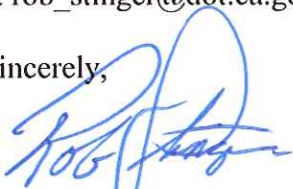
The prototype pedestrian signal module was demonstrated on May 30<sup>th</sup> at a Caltrans facility in Sacramento. The module was connected to a pre-programmed 2070 traffic signal controller to show how the yellow LED border would function when a pedestrian call is made. The prototype looked very similar to the illustration submitted to FHWA for conceptual approval and it performed perfectly. It was agreed to move forward with the prototype with only a few minor adjustments – the major change being the reduction of the spacing between the individual yellow LEDs from 2 inches to 1 inch. The reduction in spacing was considered necessary to make the yellow border more visible in bright daylight conditions.

Attached are pictures of the prototype module placed in a standard pedestrian signal housing. The unit has been mounted on a portable signal pole (with pedestrian push button) that can easily be connected to a 2070 controller and used for demonstration purposes. The sequence of pictures shows how the modified signal will operate during the evaluation.

We are currently in the process of purchasing 16 prototype modules that will be used for the evaluation project. Assuming four crosswalks per traffic signal, this will allow us to evaluate two intersections at a time. Provided there are no delays in acquiring the prototype modules, data for at least two intersections will be gathered before winter conditions influence pedestrian activity. Studies will resume in the Spring of 2013 and continue until data is gathered for five intersections.

Feel free to contact me if you have any questions. I can be reached at 530-225-3229 or via email at [rob\\_stinger@dot.ca.gov](mailto:rob_stinger@dot.ca.gov).

Sincerely,



ROB STINGER, P.E.  
Chief, Traffic Engineering & Operations  
District 2

Attachment

Cc: FHWA California Division Office  
Devinder Singh – CTCDC Executive Secretary  
Ed Lamkin – Caltrans District 2 Maintenance & Operations  
Don Fogle – Caltrans HQ Traffic Operations  
Kim Konte – Leotek Electronics

4(09)-13(E) YELLOW LED BORDER ON PED SIGNAL - CALTRANS



**Before activation**  
(LED border - dark)



**Pedestrian push button is activated**  
(LED border - illuminated)



**Walk signal**  
(LED border - illuminated)



**Flashing hand / countdown begins**  
(LED border - dark)

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January 11, 2013

Federal Highway Administration  
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Washington, DC 20590

**Status Report No. 2: 4(09)-13 (E) Yellow LED Border on Ped Signal – Caltrans**

Since our last correspondence regarding the experiment referenced above, our progress was delayed due to the time-consuming process required to purchase the 16 prototype pedestrian signal modules. As mentioned in the previous status report, we were successful in working with Leotek Electronics in developing a pedestrian signal module modified with a yellow LED border. Our next step was to obtain 16 of these devices and begin the evaluation. Unfortunately, the procurement step took much longer to administer than originally anticipated.

Although the modules are not off-the-shelf items and need to be custom made for the evaluation, our purchasing department expressed concerns about buying them without following a competitive bid process. This required performing additional work to find interested suppliers and obtain quotes. Ultimately, we were successful in obtaining two quotes for the modules and placed an order with the lowest bidder on October 30, 2012. The expected ship date for the order is the first week of February. Considering this step was initiated in early August 2012, the additional processes effectively delayed the project schedule almost three months.

Prior to purchasing the modules, we had hoped to receive the equipment by late summer so that data could be gathered for a couple intersections before the winter weather arrived. The three-month delay in acquiring the equipment eliminated this opportunity and requires that we modify our evaluation plan slightly to stay on schedule. At two locations we are planning to study, pedestrian activity is not greatly affected by inclement weather. These intersections are located in the downtown section of Redding where on-street parking is limited and people need to walk to access the local restaurants and businesses. This will allow us to begin the data collection soon after we receive the prototype modules rather than wait for better weather conditions in the Spring. This adjustment should put us back on track to finish the evaluation plan and submit a final report to FHWA in December.

Feel free to contact me if you have any questions. I can be reached at 530-225-3229 or via email at [rob\\_stinger@dot.ca.gov](mailto:rob_stinger@dot.ca.gov).

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January 11, 2013  
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Sincerely,



ROB STINGER, P.E.  
Chief, Traffic Engineering & Operations  
District 2

Cc: FHWA California Division Office  
Devinder Singh – CTCDC Executive Secretary  
Ed Lamkin – Caltrans District 2 Maintenance & Operations  
Janice Benton – Caltrans HQ Traffic Operations