



U.S. Department
of Transportation
**Federal Highway
Administration**

1200 New Jersey Ave., SE
Washington, D.C. 20590

JUL 25 2014

In Reply Refer To:
HOTO-1

Mr. Bill Marshall
President
Electrotechnics Corporation
1310 Commerce Street
Marshall, Texas 75672

Dear Mr. Marshall:

Thank you for your e-mail message of July 9 requesting an official interpretation as to whether the simpler flash patterns for rectangular rapid flashing beacons (RRFBs) that recently were successfully tested could be made available for use.

You were prompted to request this official interpretation by the announcement that we placed in a “yellow box” at the top of the home page of the MUTCD web site on June 20, 2014. This announcement stated the following:

Federally-funded research was conducted by the Texas Transportation Institute (TTI) regarding the effectiveness of various flash patterns for RRFBs. The initial experimentation with RRFBs that led to the eventual interim approval for this device only tested one relatively complex flash pattern. Before proposing to add this new device to the MUTCD, the FHWA was interested in finding out if a simpler flash pattern that included more dark time would be equally or more effective at getting motorists to stop for pedestrians at uncontrolled crossings. The TTI research showed that two different simpler flash patterns were just as effective as the currently-approved pattern. An overview of the study and an executive summary that provides the detailed results are available on the TTI web site.

The overview of the study, which was funded by the FHWA and published by TTI, can be accessed at <http://tti.tamu.edu/2014/06/18/new-rapid-flash-beacon/> and the executive summary concerning this federally-funded research can be accessed at <http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/TTI-2014-5.pdf>.

Because of a desire to achieve uniformity, the FHWA is not interested in approving both of the additional RRFB flash patterns for eventual use, even though both were found to be equally as effective as the RRFB flash pattern that is currently specified in the Interim Approval 11 memorandum and clarified in Interpretations 4(09)-21 and 4(09)-22, all of which can be accessed at http://mutcd.fhwa.dot.gov/res-interim_approvals.htm.

The two additional RRFB flash patterns are called “Blocks” and “WW+S” in the research study. After comparing the two additional flash patterns, the FHWA favors the WW+S (wig-wag plus simultaneous) flash pattern because it has a greater percentage of dark time when both beacons of the RRFB are off and because the beacons are on for less total time. The greater percentage of

dark time is important because this will make it easier for drivers to read the sign and to see the waiting pedestrian, especially under nighttime conditions. The less total on time will make the RRFB more energy efficient, which is important since they are usually powered by solar energy.

The WW+S flash pattern is based on a flash cycle length of 800 milliseconds, which results in 75 flash cycles per minute. The 800-millisecond flash cycle shall have the following sequence:

The left side beacon is on for 50 milliseconds

Both beacons are off for 50 milliseconds

The right side beacon is on for 50 milliseconds

Both beacons are off for 50 milliseconds

The left side beacon is on for 50 milliseconds

Both beacons are off for 50 milliseconds

The right side beacon is on for 50 milliseconds

Both beacons are off for 50 milliseconds

Both beacons are on for 50 milliseconds

Both beacons are off for 50 milliseconds

Both beacons are on for 50 milliseconds

Both beacons are off for 250 milliseconds

It is the FHWA's official interpretation that any new RRFBs that are installed under the terms of Interim Approval 11 may use either the currently-approved flash pattern or the WW+S flash pattern. Existing RRFBs may continue to use the currently-approved flash pattern or may be converted to the WW+S flash pattern.

For recordkeeping purposes, we have assigned the following official ruling number and title: "4(09)-41 (I) – Additional Flash Pattern for RRFBs." Please refer to this number and title in any future correspondence regarding this topic.

Thank you for your interest in improving the clarity of the provisions contained in the MUTCD.

Sincerely yours,



for Mark R. Kehrl
 Director, Office of Transportation
 Operations