

(2) Under normal traffic signal operation, signal faces must always have at least one indication illuminated while the proposed language requires the signal face to be dark;

(3) Because this is a traffic control signal requiring the motorist to stop, the requirement for two signal faces per approach should still hold. A car driving behind a truck may not be able to see the single indication; and

(4) It is better to keep the operation of this type of a signal uniform with other traffic control signals.

The public agencies also cited concerns about the validity of the studies⁴¹ that were conducted to show that it was a good device. There was only one comment in favor of the Emergency Beacon and that was from a traffic control device manufacturer. Due to overwhelming opposition and valid concerns, the FHWA withdraws this section from this final rule. While the manufacturer of the device has indicated some potential benefits to public agencies, including cost savings compared to a normal Emergency Vehicle Traffic Signal, the serious issues raised by the commenting public agencies indicate that further research is needed before the Emergency Beacon could be considered again in the future.

199. In Section 4G.02 Design of Traffic Control Signals for One-Lane, Two-Way Facilities, the FHWA changes the GUIDANCE statement, concerning the applicability of provisions of Chapter 4D Traffic Control Signal Features to traffic control signals for one-lane two-way facilities and exceptions to these provisions, to a STANDARD statement. One commenter from the City of Tucson, Arizona, agreed with this change. The FHWA adopts this change.

200. In Section 4L.02 Design and Location of Movable Bridge Signals and Gates, the FHWA removes from item A of the STANDARD statement the explanation that three-section signal faces with red, yellow and green signal lenses are generally used if movable bridge operation is quite frequent. In the NPA, the FHWA also proposed adding comparable text in a proposed SUPPORT statement, which would follow the third paragraph of the STANDARD statement. The FHWA received one comment on this change from the NCUTCD, recommending that the proposed SUPPORT be changed to GUIDANCE, to make it more in line with the intent of the previous text in

the 2000 MUTCD and to clarify the language. The FHWA incorporates the NCUTCD's recommended changes in this final rule. In the 2000 MUTCD, the applicable text was in a STANDARD, so it is inappropriate to change it to SUPPORT. A recommendation to consider the use of three-section signal faces when moveable bridge operation is frequent is appropriate, for safety reasons.

Additionally, the FHWA removes the phrase "on long bridges or causeways" from the last paragraph of the second STANDARD statement because two sets of gates may be used on bridges or causeways of any length and what constitutes a long bridge or causeway is not and cannot be readily defined. There were no comments on this change. The FHWA adopts this change.

201. In Section 4J.03 Design of Lane-Use Control Signals, the FHWA adds to the OPTION statement to allow the use of smaller size lane-use control signal faces for one-way and two-way left turn arrows in areas with minimal visual clutter and low speeds. The FHWA changes the definition of low speeds from "70 km/h (45 mph) or less" to "less than 70 km/h or less than 40 mph" to be consistent with similar criteria regarding signal lens sizes in Chapter 4D Traffic Control Signal Features. There were two comments from the NCUTCD and the City of Tucson, Arizona, in support of this change. The FHWA adopts this change with minor editorial revisions in this final rule.

202. In Section 4K.04 Speed Limit Sign Beacon, the FHWA adds to the STANDARD statement a requirement that a Speed Limit Beacon be used only to supplement a Speed Limit sign. One commenter from the City of Tucson, Arizona, agreed with this change. The FHWA adopts this change.

203. In Section 4L.01 Application of In-Roadway Lights, the FHWA revises the SUPPORT statement to include marked crosswalks in advance of roundabout intersections as additional situations for possible use of in-roadway lights. In the NPA, highway-rail grade crossings and highway-light transit rail grade crossings were also included in the statement, however the FHWA removes those elements due to opposition expressed by seven commenters from the NCUTCD, railroad agencies, associations representing railroads, the City of Tucson, Arizona, and a private citizen as well as the lack of sufficient research supporting its use. One commenter from the City of Plano, Texas, specifically agreed with adding the use of in-roadway lights at crosswalks in advance of roundabout intersections.

204. The FHWA received one general comment and two specific comments regarding Section 4L.02 In-Roadway Warning Lights at Crosswalks. A traffic engineering consultant suggested a SUPPORT statement be added to discuss possible trip and fall hazards of lights in crosswalk lines, because they are not readily detected by a blind person's cane. The U.S. Access Board made two suggestions regarding the flash rate for in-roadway warning lights and the use of audible and vibrotactile cues at crossings with in-roadway lights. These comments are beyond the scope of this rulemaking and may be addressed in a future rulemaking.

205. In the NPA, the FHWA proposed to add a new section following Section 4L.02 In-Roadway Warning Lights at Crosswalks. The proposed new section was numbered and titled "ion 4L.03 In-Roadway Lights at Highway-Rail Grade Crossings and Highway-Light Rail Grade Crossings" and contained STANDARD, GUIDANCE, and OPTION statements describing the design, application, and operation of in-roadway warning lights and in-roadway stop line lights at highway-rail and highway-light rail transit grade crossings. Based on the comments received from the NCUTCD, railroad owners, associations representing the railroad industry, the State DOTs of Wisconsin, Ohio, Nevada, and Oregon, the Cities of Plano, Texas, and Tucson, Arizona, the FHWA determines that the proposed addition of this section was premature. Although the concept of using in-roadway flashing lights at grade crossings logically makes sense as a means of increasing driver observance of the crossing, the details of colors, locations, and specific applications of in-roadway lights for grade crossings has not been sufficiently researched to draw supportable conclusions. Such research is underway in California and Michigan, but results will not be available for several years. The commenters in opposition to adding this section make strong arguments and cite some valid concerns. Therefore, the FHWA withdraws the proposed section in its entirety in this final rule and will await research results, prior to consideration of a possible rulemaking on this subject in the future.

Discussion of Adopted Amendments to Part 5—Traffic Control Devices for Low-Volume Roads

206. In Section 5A.03 Design, the FHWA revises the second paragraph of the STANDARD statement to refer to sign sizes on low speed, low volume roads by adding a sentence to this paragraph stating that the minimum

⁴¹ "Special Use Emergency Flashing signals Report", Archie Burnham & Associates, prepared for Richard D. Jones, Right-of-Way, Inc., 1995. This report is available on the docket.