



# Federal Register

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## **Part II**

# **Department of Transportation**

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**Federal Highway Administration**

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**23 CFR Part 655**

**National Standards for Traffic Control  
Devices: Manual on Uniform Traffic  
Control Devices for Streets and  
Highways; Revision; Proposed Rule**

**DEPARTMENT OF TRANSPORTATION****Federal Highway Administration****23 CFR Part 655**

[FHWA Docket No. FHWA-2001-11159]

RIN 2125-AE93

**National Standards for Traffic Control Devices: Manual on Uniform Traffic Control Devices for Streets and Highways; Revision****AGENCY:** Federal Highway Administration (FHWA), DOT.**ACTION:** Notice of proposed amendments to the Manual on Uniform Traffic Control Devices (MUTCD); request for comments.

**SUMMARY:** The MUTCD is incorporated by reference in 23 CFR part 655, subpart F, approved by the Federal Highway Administration, and recognized as the national standard for traffic control devices used on all public roads. The purpose of this notice of proposed amendments is to revise standards, guidance, options, and supporting information relating to the traffic control devices in all parts of the MUTCD. The proposed changes are intended to expedite traffic, promote uniformity, improve safety, and incorporate technology advances in traffic control device application. These proposed changes are being designated Revision No. 2.

**DATES:** Comments must be received on or before August 19, 2002.

**ADDRESSES:** Mail or hand deliver comments to the U.S. Department of Transportation, Dockets Management Facility, Room PL-401, 400 Seventh Street, SW., Washington, DC 20590-0001 or submit electronically at <http://dmses.dot.gov/submit>. All comments should include the docket number that appears in the heading of this document. To facilitate documenting comments, please include the applicable MUTCD section number with each of your comments. All comments received will be available for examination at the above address between 9 a.m. and 5 p.m., e.t., Monday through Friday, except Federal holidays. Those desiring a notification of receipt of comments must include a self-addressed, stamped envelope or postcard, or print the acknowledgement page that appears after submitting comments electronically.

**FOR FURTHER INFORMATION CONTACT:** Mr. Ernest Huckaby, Office of Transportation Operations, Room 3408, (202) 366-9064, or Mr. Raymond Cuprill, Office of the Chief Counsel,

Room 4230, (202) 366-0791, U.S. Department of Transportation, Federal Highway Administration, 400 Seventh Street, SW., Washington, DC 20590. Office hours are from 7:45 a.m. to 4:15 p.m., e.t., Monday through Friday, except Federal holidays.

**SUPPLEMENTARY INFORMATION:****Electronic Access and Filing**

You may submit or retrieve comments online through the Document Management System (DMS) at <http://dmses.dot.gov/submit>. Acceptable formats include: MS Word (versions 95 to 97), MS Word for Mac (versions 6 to 8), Rich Text File (RTF), American Standard Code Information Interchange (ASCII)(TXT), Portable Document Format (PDF), and WordPerfect (versions 7 to 8). The DMS is available 24 hours each day, 365 days each year. Electronic submission and retrieval help and guidelines are available under the help section of the web site.

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**Background**

A list of the items of Revision No. 2 and the text of the Millennium Edition of the MUTCD with Revision No. 2 text incorporated are available for inspection and copying, as prescribed in 49 CFR part 7, at the FHWA Office of Transportation Operations, Room 3408, 400 Seventh Street, SW., Washington, DC 20590. Furthermore, the list of items of Revision No. 2 and the text of the 2000 Millennium Edition of the MUTCD with Revision No. 2 text incorporated are available on the MUTCD Internet site <http://mutcd.fhwa.dot.gov>. The current version of the 2000 Millennium Edition of the MUTCD with Revision No. 1 text incorporated is also available on this Internet site.

This notice of proposed amendments is being issued to provide an opportunity for public comment on the desirability of these proposed amendments to the MUTCD. Based on the comments received and its own experience, the FHWA may issue a final rule concerning the proposed changes included in this notice.

The notice of proposed amendments is being published in response to many comments received after the final rule creating the Millennium Edition of the

MUTCD was published on December 18, 2000. About 150 of the 7100 comments that were received on the eight notices of proposed amendments leading to the creation of the Millennium Edition of the MUTCD, while extremely worthy, were deemed to result in too significant a change from the text in the notices of proposed amendments to be incorporated in the final rule without allowing the public an additional comment period. Also, this notice addresses the many advances in technology, and the traffic and safety management strategies that have occurred since the beginning of the updating process of the 1988 edition of the MUTCD in 1997.

The FHWA invites comments on these proposed changes to the MUTCD.

The FHWA proposes giving figure numbers and titles to all pages that did not have a figure number for images of traffic control devices in the Millennium Edition of the MUTCD, to facilitate easy reference. The FHWA also proposes changing the titles of a number of figures to clarify a figure as either "typical" or "example(s) of." In general, the FHWA proposes using the word "typical" in the title if the figure portrays preferred or recommended practice, and the words "example(s) of" in the title if the figure portrays one or several of a variety of things that would be acceptable practice with no recommended preference. Also, where appropriate, the FHWA proposes modifying figures to reflect proposed changes in the text.

Additionally, throughout the MUTCD, minor changes in text are proposed for grammatical or style consistency, to improve consistency with related text or figures, to improve clarity, or to correct minor errors. Where the FHWA proposes to add new sections within a chapter of the MUTCD, the sections in the chapter that follow the proposed addition would be renumbered accordingly. All Tables of Contents, Lists of Figures, Lists of Tables, and page headers and footers would be revised as appropriate to reflect the proposed changes.

The FHWA is aware that Section 508 of the Rehabilitation Act, 29 U.S.C. 794 (2001), requires that certain electronic and information technology ("EIT") be accessible to individuals with disabilities. By regulation, 36 CFR 1194.4 (2001), EIT includes information contained on world wide websites. Because the FHWA distributes the MUTCD via the Internet site (<http://mutcd.fhwa.dot.gov>), it is aware that it must comply with Section 508, and it will do so by providing, in addition to the PDF file format, an alternative

format (hypertext markup language—HTML), that is accessible to individuals with disabilities. Included within those HTML files will be narrative descriptions of the illustrations (figures) that are contained within the affected non-accessible format electronic files. However, because of the very large number of figures of traffic control devices and of their possible applications in the 1150 page MUTCD, it was determined that the FHWA would be tentatively exempted from meeting this regulation due to onerous and costly effort resulting in a fundamental alteration of the electronic version of the MUTCD. The FHWA does have a contractual task underway, that will be completed approximately in a year, to develop the hypertext markup language tags. Furthermore, the FHWA determined that this notice of proposed amendments go forward immediately as the proposed changes would be beneficial to the traveling public, including those with visual disabilities.

A summary of the significant proposed changes for each of the parts of the MUTCD is included in the following discussion.

1. On Page i the FHWA proposes including addresses for several additional organizations whose publications are referenced in the various parts of the MUTCD.

*Discussion of Proposed Amendments to the Table of Contents*

2. The FHWA proposes condensing the Table of Contents to include only the list of Parts and Chapters. Each Part will continue to begin with a “table of

contents” that contains the page number of every section, figure, and table. This change will simplify the search for an item by those with visual disabilities by enabling them to advance to the appropriate Part and then page more quickly and easily.

*Discussion of Proposed Amendments to the Introduction*

3. In the Introduction, the FHWA proposes adding a fourth SUPPORT statement to clarify the organization of the MUTCD and explain how one could reference portions of the MUTCD.

The FHWA also proposes adding a new section that lists special compliance dates for various portions of the MUTCD. The purpose of this list is to provide a convenient reference guide to the user of special compliance dates for various portions of the MUTCD.

*Discussion of Proposed Amendments to Part 1—General*

4. In Section 1A.05 Maintenance of Traffic Control Devices, in the second paragraph of the GUIDANCE statement, the FHWA proposes revising the text to eliminate redundancy.

5. In Section 1A.10 Interpretations, Experimentations, and Changes, the FHWA proposes changing the first GUIDANCE statement to a STANDARD statement to ensure that these requests come to the FHWA’s Office of Transportation Operations.

Additionally, following the fourth GUIDANCE statement the FHWA proposes adding STANDARD, GUIDANCE, OPTION, and SUPPORT statements describing a new “interim

approval” process for the FHWA approving the use of new traffic control devices pending official rulemaking. Additionally, the FHWA proposes modifying Figure 1A–2 to reflect the “interim approval” process.

6. In Section 1A.11 Relation to Other Documents, the FHWA proposes modifying the STANDARD statement to update the documents to the latest editions. Additionally, the FHWA proposes adding additional sources of information in the SUPPORT statement. The FHWA also proposes revising the order of the sources of information, alphabetizing first by source, then by the title of the document.

7. In Section 1A.12 Color Code, the FHWA proposes adding to the STANDARD statement the assignment of the color fluorescent coral to incident management to make it easier for road users to follow directions relating to traffic incidents. The items will be reordered so that the colors appear in alphabetical order. The color coordinates for the color coral are indicated below.

The Commission Internationale de l’Eclairage (CIE) (English: International Commission on Illumination) chromaticity coordinates (x, y), defining the corner of the Fluorescent Coral daytime color region are as follows:

	X	y
0.450 .....		0.270
0.590 .....		0.350
0.644 .....		0.290
0.536 .....		0.230

	Luminance Factor Limits (Y)				
	D <sub>65</sub>		D <sub>150</sub>		
	Min	Max	Y <sub>F</sub>	Min	Max
Fluorescent Pink .....	25	None .....	15	25	None.

Fluorescent materials differ from non-fluorescent materials in that the total luminance is the sum of the luminances due to reflection and fluorescence. The luminance factor Y of such materials is the sum of the luminance due to reflection (Y<sub>R</sub>) and the luminance due to fluorescence (Y<sub>F</sub>). Therefore, Y=Y<sub>R</sub>+Y<sub>F</sub>. If the value Y<sub>F</sub> is greater than zero, the material is fluorescent; if Y<sub>F</sub> equals zero, then the luminance factor Y is equal to Y<sub>R</sub>.

These four pairs of chromaticity coordinates determine the acceptable color in terms of CIE 1931 Standard Colorimetric System (2 degree standard observer) measured with CIE Standard

Illuminant D65 in accordance with ASTM E991. In addition, the color shall be fluorescent, as determined by ASTM E1247.

8. In Section 1A.13 Definitions of Words and Phrases in This Manual, the FHWA proposes in the STANDARD statement revising definitions for: “Active Grade Crossing Warning System,” “Average Day,” “Beacon,” “Crosswalk,” and “Highway Traffic Signal” to better reflect accepted practice and terminologies.

Additionally, the FHWA proposes adding definitions for “Crashworthy,” “Detectable,” “Inherently Low Emission Vehicle (ILEV),” “Pedestrian Facilities,”

and “Roundabout Intersection” since they are used in the MUTCD.

Additionally, the FHWA proposes removing the definition for “Preferential Lane Marking” since it is no longer used in the MUTCD.

9. In Section 1A.14 Abbreviations Used on Traffic Control Devices, the FHWA proposes in the first STANDARD statement revising the text to clarify that the abbreviations shown in Table 1A–1 are not the only word messages that can be abbreviated.

The FHWA also proposes adding a GUIDANCE statement at the end of this section to give guidance regarding the consistency of abbreviations within a single jurisdiction.

Additionally, the FHWA proposes revising Tables 1A-1 and 1A-2 to include additional abbreviations, delete some abbreviations, and modify some abbreviations, based on research on driver understanding of abbreviations.

#### *Discussion of Proposed Amendments to Part 2—Signs*

10. In Section 2A.06 Design of Signs, the FHWA proposes adding to the SUPPORT statement that the “general appearance” of the sign legends, colors and sizes are shown in the illustrations and do not exactly correspond to the letter brush stroke widths of the “Standard Highway Signs”<sup>1</sup> book and the FHWA central values and tolerance limits of colors.

Additionally, the FHWA proposes adding to the STANDARD statement that, unless otherwise stated in the MUTCD for a specific sign, phone numbers or Internet addresses shall not be shown on any sign to reduce the possibility of driver distraction.

11. In Section 2A.07 Changeable Message Signs, the FHWA proposes revising the GUIDANCE statement to include safety messages as one of the types of allowable displays for changeable message signs.

Additionally, the FHWA proposes adding at the end of the section OPTION, SUPPORT, GUIDANCE, and STANDARD statements regarding the use, design, and format of safety and other messages so that they do not adversely affect the usefulness of the sign.

12. In Section 2A.08 Retroreflectivity and Illumination, the FHWA proposes clarifying Table 2A-1 by replacing “Patterns of incandescent light bulbs” with “Incandescent light bulbs” and by adding “Light Emitting Diodes (LEDs)” to the listed Means of Illumination under Other Devices to reflect current technology.

Additionally, the FHWA proposes adding a new SUPPORT statement at the end of the section referencing information contained in Section 2A.22 on the use of retroreflective material on the sign support.

13. In Section 2A.10 Shapes, the FHWA proposes clarifying Table 2A-3 by removing the Emergency Evacuation Route Marker from the listed signs for

the circle shape as the FHWA proposes that the design of this sign be a rectangular plate in accordance with other guide signs, as indicated in Section 2I.03.

Additionally, the FHWA proposes clarifying the information for the Trapezoid shape signs to be “Recreational and Cultural Interest Area Series” and “National Forest Route” signs.

14. In Section 2A.11 Sign Colors, the FHWA proposes modifying the STANDARD statement to read “The colors to be used on standard signs and their specific use on these signs shall be as indicated in the applicable sections of this Manual. The color coordinates and values shall be as described in 23 CFR, Part 655, Subpart F, Appendix.” This proposed modification will clarify that the color requirements apply to all signs in the MUTCD, not just those in Part 2, and would refer to the correct location of the color coordinates and values. The FHWA also proposes modifying the SUPPORT statement by deleting the color coral from the reserved colors, because FHWA proposes that the color coral be assigned for incident management uses. Additionally, the FHWA proposes adding to the SUPPORT statement that information regarding color coding of destinations on guide signs is contained in Section 2D.03. The FHWA also proposes modifying Table 2A-4 by adding a new column on the right hand side for the color coral, by adding a new row “Incident Management” to the bottom, by adding a second new row at the bottom, following Incident Management, “Changeable Message Signs\*\*” and by adding or revising color designation and note to reflect proposed changes in other parts of the MUTCD.

15. In Section 2A.12 Dimensions, the FHWA proposes adding a second paragraph to the SUPPORT statement describing and clarifying the different sizes of signs, as detailed in the Standard Highway Signs book.

16. In Section 2A.14 Word Messages, the FHWA proposes modifying the first GUIDANCE statement to clarify that the specific ratio of 25 mm (1 in) of letter height per 12 m (40 ft) of legibility distance should be a minimum.

Additionally, the FHWA proposes adding a new SUPPORT statement after the first paragraph of GUIDANCE to provide additional information that some research indicates that a ratio of 25 mm (1 in) of letter height per 10m (33 ft) of legibility distance could be beneficial for addressing the needs of older road users. A new GUIDANCE

heading would be added after the new SUPPORT statement.

17. In Section 2A.15 Sign Borders, the FHWA proposes modifying the STANDARD statement to clarify that the corners of all sign borders, except for STOP signs, shall be rounded. The FHWA also proposes modifying the GUIDANCE statement to clarify that, where practical, the corners of the sign should be rounded to fit the border, except for STOP signs.

18. In Section 2A.16 Standardization of Location, the FHWA proposes relocating Figures 2A-3, 2A-4, 2A-5, and 2A-6 to Section 2B.32 and removing Figure 2A-7. These relocated figures are more appropriate in Chapter 2B. The first SUPPORT statement would be revised to reflect these changes.

19. In Section 2A.17 Overhead Sign Installations, the FHWA proposes modifying the GUIDANCE statement to clarify that overhead guide signs should be used on freeways as well as expressways, under certain conditions.

20. In Section 2A.18 Mounting Height, the FHWA proposes relocating the first OPTION and SUPPORT statements so that they appear after the second paragraph of the first STANDARD statement. This proposed change will improve the clarity of the section.

Additionally, the FHWA proposes adding a paragraph to the last OPTION statement heading to state that if the vertical clearance for the design of other structures is less than 4.9 m (16 ft), the vertical clearance to overhead sign structures or supports may be as low as 0.30 m (1 ft) higher than the vertical clearance for the design of the other structures. These lower clearances for the sign structures are sometimes needed to maximize the visibility of the signs when low bridge structure or tunnel clearances limit the sign visibility.

21. In Section 2A.19 Lateral Offset, the FHWA proposes dividing the first STANDARD statement into a STANDARD and a GUIDANCE statement. The proposed STANDARD statement will deal with the lateral offset of overhead sign supports, and the proposed GUIDANCE statement will deal with the lateral offset of roadside-mounted signs. This will provide additional flexibility to jurisdictions for roadside-mounted signs.

22. In Section 2A.20 Position of Signs, the FHWA proposes to removing the second sentence under the SUPPORT statement as the references to the figures duplicates other references elsewhere.

23. In Section 2A.22 Posts and Mountings, the FHWA proposes adding an OPTION statement after the

<sup>1</sup> “Standard Highway Signs,” FHWA, 2002 Edition is available for purchase from the U.S. Government Printing Office Bookstore, Superintendent of Documents, Room 118, Federal Building, 1000 Liberty Avenue, Pittsburgh, PA 15222. Internet web site at <http://bookstore.gpo.gov>. It is also available on the FHWA’s web site at <http://mutcd.fhwa.dot.gov> and is available for inspection and copying at the FHWA Washington Headquarters and all FHWA Division Offices as prescribed at 49 CFR part 7.

SUPPORT statement, indicating that a strip of retroreflective material may be used on the supports of regulatory and warning signs to draw attention to the sign during nighttime conditions.

Additionally, the FHWA proposes adding a second STANDARD statement after the OPTION statement specifying the size, location, and color of the strip of retroreflective material if it is used. This will provide for uniformity of application.

24. In Section 2A.24, the FHWA proposes changing the title of the section from "Wrong Way Traffic Control" to "Median Opening Treatments for Divided Highways with Wide Medians," to better clarify the content of the section.

Additionally, the FHWA proposes removing the existing GUIDANCE statement and to change the STANDARD statement to a GUIDANCE statement, to clarify that at the median opening of a divided highway with side streets and driveways, where the median width at the median opening is 9 m (30 ft) or more, the median openings should be signed as two separate intersections. This will provide additional signing flexibility to jurisdictions.

25. In Section 2B.02 Design of Regulatory Signs, the FHWA proposes adding OPTION and GUIDANCE statements at the end of the section regarding the use of Changeable Message Signs to provide for the display of regulatory signs.

26. In Section 2B.03 Size of Regulatory Signs, the FHWA proposes modifying Table 2B-1 by adding and removing signs to reflect proposed changes in Part 2, and by adding additional sign sizes. These new sign sizes reflect proposed changes in Part 2, are values from the "Standard Highway Signs" book, and reflect regular use by highway agencies.

Additionally, the FHWA proposes that the ONE WAY (R6-2) sign and the DIVIDED HIGHWAY CROSSING (R6-3, R6-3a) signs be increased in size for all roads based on the research addressing the needs of older road users. The FHWA proposes adding sign sizes in the "Expressways" and "Freeways" columns for these signs and the R6-1 ONE WAY sign, since these are the main signs to alert road users of the divided highway.

The FHWA proposes that the new sizes of these signs become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

Additionally, the FHWA proposes adding to the OPTION statement that signs larger than those shown in Table 2B-1 may be used. Sometimes there are special conditions that warrant much larger signs and this flexibility is needed.

27. In Section 2B.06 STOP Sign Placement, the FHWA proposes correcting an error in the STANDARD statement by changing the word "correct" to "right" so that the statement reads, "The STOP sign shall be installed on the right side of the traffic lane to which it applies."

Additionally, the FHWA proposes adding that other than a DO NOT ENTER sign, no other sign shall be mounted back-to-back with a STOP sign, to assure that the shape of the STOP sign is visible to road users on other approaches to the intersection. The proposed exception for the DO NOT ENTER sign is to allow flexibility in urban areas where there may not be enough room to install separate poles for each sign and both signs must be installed at the corner.

28. In Section 2B.09 YIELD Sign Applications, the FHWA proposes clarifying the OPTION statement by adding a reference to STOP signs. The proposed change states that instead of using a STOP sign, a YIELD sign may be used if engineering judgment indicates that one or more of the conditions listed exist. The conditions for using a YIELD sign are not being changed.

Additionally, the FHWA proposes adding a STANDARD statement after the OPTION statement to require the use of a YIELD sign to assign right-of-way at the entrance to a roundabout intersection. An essential design feature of a modern roundabout is "yield-on-entry" so a YIELD sign is necessary at all entrances to the roundabout.

29. In Section 2B.10 YIELD Sign Placement, the FHWA proposes correcting an error in the first paragraph of the STANDARD statement by changing the word "correct" to "right" so that the first sentence reads, "The YIELD sign shall be installed on the right side of the traffic lane to which it applies." Additionally, FHWA proposes adding a new sentence after the first sentence of the STANDARD statement to require that YIELD signs shall be placed on both the left and right sides of the approaches to roundabout intersections with more than one approach lane. This is in concert with best practices of modern roundabout design and to assure adequate visibility of the YIELD signs.

The FHWA also proposes adding a paragraph to the STANDARD statement, which states that other than a DO NOT

ENTER sign, no other sign shall be mounted back-to-back with a YIELD sign.

Additionally, the FHWA proposes adding a paragraph to the GUIDANCE statement stating that, at a roundabout intersection, the face of the YIELD sign should not be visible from the circulating roadway. This is recommended to prevent circulating vehicles in the roundabout from yielding unnecessarily.

The FHWA also proposes adding an OPTION statement at the end of the section to allow the installation of an additional YIELD sign on the left side of the road and/or the use of a YIELD line at wide-throat intersections. This will provide for improved visibility of the YIELD signs where needed.

30. In Section 2B.11 Speed Limit Sign (R2-1), the FHWA proposes modifying the STANDARD statement to reflect that as indicated in Figure 2B-1, the FHWA proposes a new unique design for the metric speed limit sign. The sign will have a red circle around the speed value with a "km/h" legend below. Based on this new design, the FHWA proposes removing the first SUPPORT statement, as it is no longer needed. The new design of the metric Speed Limit sign will better differentiate a metric speed limit sign from an English units speed limit sign, and will also remedy the possible situation where the "METRIC" plaque used in the old design is damaged or stolen and the sign appears to be an English units Speed Limit sign with a higher but erroneous value.

The FHWA also proposes clarifying the third paragraph of the GUIDANCE statement to differentiate the rounding of a speed limit on a sign located on a non-residential street from a sign located on a residential street. The proposed GUIDANCE states that when a speed limit is posted, it should be the 85th-percentile speed of free-flowing traffic, rounded up to the nearest 10 km/h (5 mph) on non-residential streets and rounded up or down to the nearest 10 km/h (5 mph) increment on residential streets. Additionally, the FHWA proposes adding a paragraph to the beginning of the GUIDANCE statement, which states that States and local agencies should reevaluate their non-statutory speed limits on their streets and highways at least once every 5 years to determine whether adjustments would be appropriate.

The FHWA proposes adding a paragraph to the end of the OPTION statement, which states that a changeable message sign that displays to approaching drivers the speed at which they are traveling may be installed in conjunction with a Speed Limit sign.

The FHWA also proposes adding, following the OPTION statement, a GUIDANCE statement, which states that if a changeable message sign displaying approach speeds is installed, the legend YOUR SPEED XX KM/H (MPH) or similar legend should be shown. Changeable message signs displaying the actual speeds of approaching drivers have been shown to be valuable tools to enhance driver compliance with speed limits.

31. Following Section 2B.14 Minimum Speed Limit Sign (R2-4), the FHWA proposes adding a new section numbered and titled "Section 2B.15 Fines Higher Sign (R2-6)." The proposed Section 2B.15 will consist of OPTION, GUIDANCE, and STANDARD statements on the uses of the FINES HIGHER sign; namely, to advise road users when increased fines are imposed for traffic violations within designated roadway segments; and on the installation of the FINES HIGHER sign; namely, below an applicable regulatory or warning sign in a temporary traffic control zone, a school zone, or other applicable designated zone. The sections following Section 2B.15 will be renumbered accordingly.

32. The FHWA proposes removing existing Section 2B.16 Reduced Speed Ahead Signs (R2-5) Series, as these signs are proposed to be revised to be warning signs and added to Chapter 2C. The FHWA proposes this change because the intended message is more properly categorized as a warning message rather than a regulatory message. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

33. In Section 2B.17, the FHWA proposes retitling the section from "Turn Prohibition Signs (R3-1 through R3-4)" to "Turn Prohibition Signs (R3-1 through R3-4, and R3-18)" to include a new symbol sign which combines the No Left Turn and the No U-Turn symbol signs into one symbol sign, and to add to the OPTION and GUIDANCE statements information on the proper use of the sign. This proposed new sign will reduce the sign clutter at an intersection where both movements are restricted and make it easier for road users to understand the multiple turn restrictions.

34. In Section 2B.19 Mandatory Movement Lane Control Signs (R3-5, R3-5a, and R3-7), the FHWA proposes clarifying the GUIDANCE statement that

the lane control pavement markings mentioned are lane-use arrow markings.

35. In Section 2B.23, the FHWA proposes changing the title from "Reversible Lane Control Signs (R3-9c through R3-9i)" to "Reversible Lane Control Signs (R3-9d, R3-9f through R3-9i)" and removing the R3-9c and R3-9e signs and all of their references in the section. Using just the R3-9d sign will improve uniformity and maintain consistency with the red X symbol used in reversible lane signal systems. The DO NOT ENTER symbol is intended to be used to prohibit entry into a roadway or ramp, and using this symbol to prohibit use of a single lane of a roadway that is otherwise available for travel is inconsistent and degrades the meaning of the symbol.

The FHWA proposes clarifying in the first STANDARD statement that the barriers mentioned are physical barriers.

Additionally, the FHWA proposes modifying item B of the second OPTION statement to read, "An engineering study indicates that the use of the Reversible Lane Control signs alone would result in an acceptable level of safety and efficiency." This is proposed to clarify the specific types of signs used for control of a reversible lane operation that the study needs to evaluate to determine whether such signs alone, without reversible lane signals, would be acceptable.

The FHWA proposes that these changes in Section 2B.23 become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

36. In Section 2B.28 Keep Right and Keep Left Signs (R4-7, R4-8), the FHWA proposes adding to the first OPTION statement that the Keep Left (R4-8) sign may be used at locations where it is necessary for traffic to pass only to the left of a roadway feature or obstruction.

The FHWA proposes adding to the GUIDANCE statement to clarify that the Keep Right sign should be mounted on the face of, or just in front of, a pier or other obstruction separating opposite directions of traffic in the center of the highway such that traffic will have to pass to the right of the sign.

Additionally, the FHWA proposes adding a new STANDARD statement following the GUIDANCE statement that the Keep Right sign shall not be installed on the right side of the roadway in a position where traffic must pass to the left of the sign.

The proposed changes in Section 2B.28 are to clarify the proper uses of Keep Right and Keep Left signs.

37. In Section 2B.29 DO NOT ENTER Sign (R5-1), the FHWA proposes modifying the GUIDANCE statement by clarifying the placement of the DO NOT ENTER sign. The proposed GUIDANCE states that, if used, the DO NOT ENTER sign should be placed directly in view of the road user at the point where a road user could wrongly enter a divided highway, one-way roadway, or ramp, and includes a reference to Figure 2B-8.

Additionally, the FHWA proposes renumbering and retitling Figure 2B-2 from "Typical Wrong-Way Signing for a Divided Highway" to "Figure 2B-8. Example of Wrong-Way Signing for a Divided Highway with a Median Width of 9 m (30 ft) or Greater."

38. In Section 2B.31 Selective Exclusion Signs, the FHWA proposes changing item H in the SUPPORT statement from "Hazardous Cargo" to "Hazardous Material" to reflect the changes proposed in Section 2B.46.

39. In Section 2B.32 ONE WAY Signs (R6-1, R6-2), the FHWA proposes relocating four figures from Section 2A.16 to Section 2B.32. Figure 2A-5 will be renumbered and retitled "Figure 2B-10. Examples of Locations of ONE WAY Signs"; Figure 2A-6 will be renumbered and retitled "Figure 2B-11. Examples of Locations of ONE WAY Signs"; Figure 2A-4 will be renumbered and retitled "Figure 2B-12. Examples of ONE WAY Signaling for Divided Highways with Medians 9 m (30 ft) or Greater"; and Figure 2A-3 will be renumbered and retitled "Figure 2B-13. Example of ONE WAY Signaling for Divided Highways with Medians Less Than 9 m (30 ft)." The FHWA also proposes to add a new figure, "Figure 2B-14. Examples of ONE WAY Signaling for Divided Highways with Medians Less Than 9 m (30 ft) and Separated Left-Turn Lanes." These figures are most directly associated with ONE WAY signs and should be located adjacent to Section 2B.32, which contains the text about ONE WAY signs.

Additionally, the FHWA proposes showing the optional Keep Right signs on the medians on Figures 2B-13 and 2B-14 at a 45 degree angle facing the road users on the cross street, to make it easier for them to determine the location of the median nose and to enter the proper roadway of a divided highway.

40. In Section 2B.35 Design of Parking, Standing, and Stopping Signs, the FHWA proposes adding to the GUIDANCE statement that where special parking restrictions are imposed

during heavy snowfall. Snow Emergency signs should be installed, and that the legend will vary according to the regulations, but the signs should be vertical rectangles, having a white background with the upper part of the plate a red background. This GUIDANCE was inadvertently left out of the current MUTCD. However, signs of this type are used by many jurisdictions.

41. In Section 2B.39 Pedestrian Crossing Signs (R9–2, R9–3), the FHWA proposes modifying the second OPTION statement by changing the “PEDESTRIANS PROHIBITED” to “NO PEDESTRIAN CROSSING” as the proper word message sign to be used as an alternate to the No Pedestrian Crossing (R9–3a) symbol sign. “NO PEDESTRIAN CROSSING” is the intended meaning of the symbol and more clearly describes the actual restriction of pedestrian movement.

42. In Section 2B.40, the FHWA proposes changing the title from “Traffic Signal Signs (R10–1 through R10–13)” to “Traffic Signal Signs (R10–1 through R10–21)” to reflect proposed additional traffic signal signs. These signs are shown in new Figures 2B–17 and 2B–18.

The FHWA proposes adding to the second OPTION statement that the R10–3d sign may be used if the pedestrian clearance time is sufficient only for the pedestrian to cross to the median. This sign is similar to the existing R10–3b sign except that next to the DON’T WALK symbol is the message “START CROSSING TO MEDIAN WATCH FOR VEHICLES.” The FHWA also proposes modifying Figure 2B–17 to add illustrations of the R10–3d sign and the R10–3e sign. The R10–3e sign is a variant incorporating “time remaining to finish crossing” and is consistent with countdown pedestrian signals as proposed in Part 4.

Additionally, the FHWA proposes revising and relocating the third OPTION statement to follow the second STANDARD statement to indicate that a symbolic NO TURN ON RED (R10–11) sign may be used as an alternate to the R10–11a and R10–11b signs. The symbolic sign is proposed to have a symbolic red ball rather than using the “No Right Turn” symbol, to avoid confusion with the R3–1 (No Right Turn) sign.

Additionally, the FHWA proposes relocating the last item in the second GUIDANCE statement to the first paragraph under the third OPTION statement (new fourth OPTION statement) and changing it to read that when right turn on red after stop is permitted and pedestrian crosswalks are marked, the TURNING TRAFFIC MUST

YIELD TO PEDESTRIANS (R10–15) sign may be used. This proposed change is necessary to prevent potential overuse and reduced impact of the sign. Additionally, the FHWA proposes adding a paragraph to the third OPTION statement (new fourth OPTION statement) allowing the use of supplemental plaques showing times of day or with the legend WHEN PEDESTRIANS ARE PRESENT below a NO TURN ON RED sign, to allow the flexibility to restrict turns on red only during certain times or when a pedestrian conflict is present.

Additionally, the FHWA proposes adding to the second GUIDANCE statement that where turns on red after stop are permitted and the turn signal indication is a RED ARROW, the RIGHT (LEFT) TURN ON RED ARROW PERMITTED AFTER STOP (R10–17 or R10–17a) sign should be installed adjacent to the RED ARROW signal indication to conform to the “Uniform Vehicle Code and Model Traffic Ordinance”<sup>2</sup> (UVC) as revised. The revised UVC prohibits turns on a RED ARROW after stop unless a sign specifically allowing the turn is in place.

Additionally, the FHWA proposes adding to the third STANDARD statement that the EMERGENCY SIGNAL—STOP WHEN FLASHING RED (R10–14) sign shall be used in conjunction with emergency beacons and that the U–TURN YIELD TO RIGHT TURN (R10–16) sign shall be installed near the left-turn signal face if U-turns are allowed on a protected left-turn movement from which drivers making a right turn from the conflicting approach to their left are simultaneously being shown a right-turn GREEN ARROW signal indication, to correspond with proposed changes in Part 4 of the MUTCD, which will require the use of these signs with Emergency Beacons and when right turns conflict with U-turns, respectively.

43. In Section 2B.46 the FHWA proposes changing the title from “Hazardous Cargo Signs (R14–2, R14–3)” to “Hazardous Material Signs (R14–2, R14–3)” and revising the OPTION and GUIDANCE statements to replace “cargo” with the word “material” and to revise the symbol for the Hazardous Material sign (R14–3) sign to be HM rather than HC, to correspond with

Section 2B.31 and to reflect the change in terminology in the industry. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 5 years for existing signs in good condition to minimize any impact on State or local highway agencies.

44. In Section 2B.48 Preferential Lane Signs (R3–10 through R3–17), the FHWA proposes modifying the first paragraph of the third GUIDANCE statement to include light rail transit in the list of preferential lane signs for which the diamond symbol should not be used, because the diamond symbol is intended to be used only to denote HOV lanes. The FHWA also proposes changing the last paragraph of the third GUIDANCE statement to a second STANDARD statement because changeable message signs serving as HOV signs shall be the required sign size and shall display the required letter height and legend format that corresponds to the type of facility and design speed as articulated in Section 2A.07. This proposed change from a recommended practice to a required practice is being made to preclude the use of insufficiently sized or designed changeable message signs to display these important regulatory messages for HOV lane use.

Additionally, the FHWA proposes adding a new GUIDANCE statement at the end of the section that the Inherently Low Emission Vehicle (ILEV) (R3–10b) sign should be used to indicate that it is permissible for a properly labeled and certified ILEV, regardless of the number of occupants, to operate in the HOV lanes and that the ILEV signs should be ground mounted in advance of the HOV lanes and at intervals along the HOV lanes based upon engineering judgment. A uniform sign design and application are needed to enhance driver understanding and compliance regarding ILEV use of HOV lanes and also to correspond to proposed changes in Section 2B.49.

45. In Section 2B.49 High-Occupancy Vehicle (HOV) Lanes, the FHWA proposes modifying the STANDARD statement to allow motorcycles to use HOV lanes that received Federal-aid program funding.

The FHWA also proposes three additions to this STANDARD statement. The first addition requires agencies to allow a vehicle with less than the required number of occupants to operate in the HOV lanes if:

A. The vehicle is properly labeled and certified as an ILEV and the HOV lane is not a bus-only HOV lane; or

<sup>2</sup> The “Uniform Vehicle Code and Model Traffic Ordinance,” 2000 edition, is published by the National Committee on Uniform Traffic Laws and Ordinances, 107 S. West Street, #110, Alexandria, Virginia 22314. It is available for inspection as prescribed at 49 CFR part 7. Purchase information is available on the web site for the National Committee at <http://www.ncutlo.org>.

B. The HOV lanes are part of a project that is participating in the FHWA Value Pricing Pilot Program.

The second addition requires that the requirements for a minimum number of occupants in a vehicle to use an HOV lane shall be in effect for most, or all, of at least one of the usual times during the day when the demand to travel is greatest (such as morning or afternoon peak travel periods) and the traffic congestion problems on the roadway and adjoining transportation corridor are at their worst. The final addition requires a Federal review prior to initiating a proposed test or demonstration project that seeks to significantly change the operation of the HOV lanes for any length of time.

The last major change that the FHWA proposes to this section is the addition of a SUPPORT statement at the end of the Section. The SUPPORT statement states that the Inherently Low Emissions Vehicle (ILEV) program requirements, certification program, and other regulatory provisions are developed and administered through the U.S. Environmental Protection Administration (EPA). The U.S. EPA is the only entity with the authority to certify ILEVs. Vehicle manufacturers must request the U.S. EPA to grant an ILEV certification for any vehicle to be considered and labeled as meeting these standards. According to the U.S. EPA, 1996 was the first year that they certified any ILEVs. The U.S. EPA regulations specify that ILEVs must meet the emission standards specified in 40 CFR 88.311–93 and their labeling must be in accordance with 40 CFR 88.311–93(c).

The proposed changes in Section 2B.49 are to assure consistency with the provisions of Titles 23 and 49 of the United States Code (USC), with commitments made by FHWA during the National Environmental Policy Act process, and with requirements under the Clean Air Act.

46. In Section 2B.50 High-Occupancy Vehicle Sign Applications and Placement, the FHWA proposes adding a SUPPORT statement after the GUIDANCE statement, which states that Figures 2E–44 through 2E–48 show application and placement examples of HOV signing for entrances to barrier-separated HOV lanes and direct entrances to and exits from HOV lanes. This figure reference will clarify the intended use of these signs.

47. The FHWA proposes redesignating current Section 2B.51 Other Regulatory Signs, as Section 2B.54 and revising the STANDARD statement to indicate that the symbol for

the seat belt symbol is in the “Standard Highway Signs” book.

48. The FHWA proposes adding a new Section 2B.51 Photo Enforced Signs (R10–18, R10–19). The purpose of this new section is to provide guidance to State and local agencies on the use of the photo enforcement signs to alert road users of this type of traffic enforcement. The FHWA proposes including an OPTION statement with two paragraphs. The first paragraph states that a TRAFFIC LAWS PHOTO ENFORCED (R10–18) sign may be installed at a jurisdictional boundary to advise road users that some of the traffic regulations within that jurisdiction are being enforced by photographic equipment. The second paragraph states that a PHOTO ENFORCED (R10–19) sign (see Figure 2B–1) may be mounted below a regulatory sign to advise road users that the regulation is being enforced by photographic equipment.

Additionally, the FHWA proposes including a STANDARD statement, which states that if the PHOTO ENFORCED (R10–19) sign is used below a regulatory sign, it shall be a rectangle with black legend and border on a white background.

The FHWA proposes that these signs become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs of different designs that are in good condition to minimize any impact on State or local highway agencies.

49. The FHWA proposes adding a new Section 2B.52 Yield Here To Pedestrians Signs (R1–6, R1–6a). These proposed new signs alert road users of the presence of an unsignalized midblock pedestrian crossing. The FHWA proposes including a STANDARD statement, which states that if YIELD lines are used in advance of an unsignalized marked crosswalk, the YIELD HERE TO PEDESTRIANS (R1–5 or R1–5a) signs, shall be placed 6.1 to 15 m (20 to 50 ft) in advance of the nearest crosswalk line. The purpose of the STANDARD is to provide for the uniform use and placement of these signs and improved pedestrian safety.

The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

50. The FHWA proposes adding a new Section 2B.53 In-Street Pedestrian Crossing Signs (R1–6, R1–6a). These proposed new signs remind road users

of the laws regarding right-of-way at an unsignalized pedestrian crossing. The FHWA proposes including OPTION, GUIDANCE, and STANDARD statements describing the proposed use, design and application of the In-Street Pedestrian Crossing (R1–6, R1–6a) signs. These signs are proposed in order to provide for uniformity of these regulatory messages and for improved pedestrian safety.

The FHWA also proposes adding a new figure numbered and titled Figure 2B–22, “Unsignalized Pedestrian Crosswalk Signs” to illustrate the design of the R1–5, R1–5a, the R1–6, and the R1–6a signs.

51. In Section 2C.02 Application of Warning Signs, the FHWA proposes modifying the SUPPORT statement to reflect that “categories” not “applications” of warning signs are shown in Table 2C–1. This change is necessary to make the text and Table 2C–1 consistent.

Additionally, the FHWA proposes changing the title of Table 2C–1 from “Application of Warning Signs” to “Categories of Warning Signs” and to add new roadway related and traffic related signs and supplemental plaques to the table based on proposed changes in other sections of Chapter 2C. The change in the title of the table is being proposed to better reflect the actual content of the table.

52. In Section 2C.04 Size of Warning Signs, the FHWA proposes changing Table 2C–2 to add sizes for the Expressway W1 series Arrows signs, sizes for the Expressways and Freeways W7 series truck runaway signs, sizes for the Expressways and Freeways W12–2P low clearance signs, and increasing the sizes for all roadways except Freeways for the W10–1 advance grade crossing sign, to enhance visibility of this sign for all road users, including older drivers. The FHWA proposes that the larger sizes become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

53. In Section 2C.05 Placement of Warning Signs, the FHWA proposes changing Table 2C–4 so that the distances for the placement of advance warning signs correspond to the values in the 2001 AASHTO “A Policy on Geometric Design of Highway and Streets”<sup>3</sup> book and to make the table easier to use.

<sup>3</sup> “A Policy on Geometric Design of Highways and Streets,” 4th Edition, 2001, in both hardcopy and CD-ROM, is available from the American



In Table 2C-4, the FHWA proposes combining the "Condition B" and "Condition C" columns and labeling them "Condition B". The FHWA also proposes adding columns for 90, 100, and 110 km/h and 60 and 70 mph for the deceleration to the listed advisory speed and rows for 70 and 75 mph for the Posted or 85th Percentile Speed. Finally, the FHWA proposes revising the Notes to reflect the proposed changes throughout the MUTCD. These changes to Table 2C-4 are proposed to reflect the needs of older road users, and to improve the clarity of the Notes.

54. In Section 2C.06, the FHWA proposes changing the title from "Horizontal Alignment Signs (W1-1 through W1-5)" to "Horizontal Alignment Signs (W1-1 through W1-5, W1-10, W1-11, W1-15)" to reflect the proposed Hairpin Curve (W1-11) sign and the 270 Degree Loop (W1-15) sign.

In the first OPTION statement, the FHWA proposes recommending the use of the Hairpin Curve sign and the 270 Degree Loop sign based on the change in horizontal alignment. These new signs would better portray the severe curvature for these types of alignment changes.

The FHWA also proposes adding to the GUIDANCE statement. The proposed addition recommends installing a One-Direction Large Arrow (W1-6) sign or Chevron Alignment (W1-8) sign on the outside of a turn or curve when the Hairpin Curve sign or 270-Degree Loop sign is installed. The reason for this recommendation is to provide for enhanced warning to road users of the severe alignment change and reduce run-off-the-road crashes.

The FHWA also proposes adding a second GUIDANCE statement following the STANDARD statement. This proposed GUIDANCE recommends that the need for additional curve warning signs or advisory speed reduction warning plaques be based on an engineering study or on engineering judgment. The reason for this recommendation is that highway curves tend to be high crash locations with the crash rate about three times the rate for highway tangent segments and with the run-off-the-road crash rate about four times the tangent segment rate.

The FHWA proposes adding an OPTION statement that provides a method that may be used to determine the need for additional speed reduction warning signs. The FHWA proposes these optional criteria for determining the need for additional recommended speed reduction signs to mitigate the high number of run-off-the-road crashes along curves and ramps. Most curves are

very well outlined with delineators or chevron signs. Since crashes are still occurring, the FHWA believes that there is a need to remind drivers of the recommended reduction in speed as they proceed along the curve or ramp.

Additionally, the FHWA proposes adding to Table 2C-5 to show the metric speed value of less than or equal to 50 km/h along with the English unit of less than or equal to 30 mph and showing the metric speed value of greater than 50 km/h along with the English unit of greater than 30 mph. The metric values were inadvertently omitted from the Millennium Edition of the MUTCD.

55. In Section 2C.07, the FHWA proposes changing the title from "Combination Horizontal Alignment/Advisory Speed Signs (W1-9)" to "Combination Horizontal Alignment/Advisory Speed Signs". The FHWA also proposes changes to the first OPTION statement to allow the combination into a single sign of any Horizontal Alignment sign with an Advisory Speed (W13-1) plaque. The resulting sign number for the combination sign would be the Horizontal Alignment sign number with an "a" added. This change will provide additional flexibility to jurisdictions.

The FHWA proposes revising the STANDARD statement. When a combination Horizontal Alignment/Advisory Speed sign is used, the proposed revised STANDARD statement will require that the advisory speed match the advisory speed on the Advisory Speed plaque mounted with the advance warning sign and that the sign also be installed as near as practical to the beginning of the turn or curve, as depicted on new Figure 2C-2. When the recommended reduction in speed is 20 km/h (15 mph) or greater, the proposed revised STANDARD will require that the combination Horizontal Alignment/Advisory Speed sign supplement other advance warning signs.

Additionally, the FHWA proposes adding an OPTION statement, which states that when the recommended reduction in speed is less than 25 km/h (15 mph), instead of installing other advance warning signs, the combination Horizontal Alignment/Advisory Speed sign alone may be installed just before the point of curvature. The combination Horizontal Alignment/Advisory Speed sign may be used throughout the turn or curve.

The proposed changes to Section 2C.07 provide for enhanced uniformity of application of these types of signs and improved safety on curves and turns.

56. In Section 2C.10 Chevron Alignment Sign (W1-8), the FHWA proposes adding to the STANDARD statement that a border shall not be used on the CHEVRON ALIGNMENT sign. The purpose of this change is to correct an error in the current edition.

57. In Section 2C.11 Hill Signs (W7-1, W7-1a, W7-1b), the FHWA proposes adding to the GUIDANCE statement to clarify that on longer grades, the Hill sign with distance (W7-3a) plaque or the combination distance/grade (W7-3b) plaque at periodic intervals of approximately 1.6 km (1 mi) spacing should be considered. This change is proposed to clarify that the plaques should not be used alone but should supplement the Hill sign.

58. In Section 2C.12 Truck Escape Ramp Signs (W7-4 Series), the FHWA proposes adding to the STANDARD statement to indicate that at least one of the W7-4 series warning signs shall be used when truck escape ramps are installed. This change clarifies that additional warning signs may be used as conditions warrant.

59. In Section 2C.13, the FHWA proposes changing the title from "ROAD NARROWS Sign (W5-1)" to "ROAD NARROWS Sign (W5-1, W5-1a)" to reflect the new symbolic Road Narrows (W1-5a) sign. The Narrow Bridge (W5-2a) symbol sign would be renumbered and retitled as the new Road Narrows (W5-1a) symbol sign. The Road Narrows (W5-1a) symbol sign may be used as an alternate to the word message ROAD NARROWS (W1-5) word sign. The FHWA proposes these changes because the road user's understanding of the symbol is not exclusively as "narrow bridge ahead," but rather as symbolic of any narrowing of the road, such as the presence of curb bulb-outs or chicanes.

60. In Section 2C.14 NARROW BRIDGE Sign (W5-2), the FHWA proposes removing the reference to the Narrow Bridge symbol (W5-2b) sign from the OPTION statement. This change reflects the proposed change of the Narrow Bridge symbol (W5-2b) sign to the Road Narrows symbol (W5-1a) sign.

61. In Section 2C.17 Divided Highway (Road) Ends Sign (W6-2), the FHWA proposes modifying the GUIDANCE statement to clarify that a Divided Highway Ends (W6-2) symbol sign should be used in advance of the end of a section of physically divided highway (not an intersection or junction) as a warning of two-way traffic ahead. The reason for this change is that the

warning sign should be placed in advance of, rather than at, the start of the divided highway section.

62. In Section 2C.19 DEAD END/NO OUTLET Sign (W14-1, W14-2), the FHWA proposes modifying the STANDARD statement to clarify that when the W14-1 or W14-2 sign is used, the sign shall be posted as near as practical to the entry point or at a sufficient advance distance to permit the road user to avoid the dead end or no outlet condition by turning off, if possible, at the nearest intersecting street. The change is proposed to give additional flexibility to jurisdictions when posting the sign at the exact entry point is not practical due to obstructions or other factors.

63. In Section 2C.20 Low Clearance Signs (W12-2 and W12-2P), the FHWA proposes clarifying the STANDARD statement by removing the words "or minimum structure height". This change is proposed to clarify the proper application of Low Clearance signs.

Additionally, the FHWA proposes clarifying the GUIDANCE statement by changing the phrase "legal limit" to "legal maximum vehicle height" to reflect more precisely the proper dimension.

64. In Section 2C.21 BUMP and DIP Signs (W8-1, W8-2), the FHWA proposes modifying the second GUIDANCE statement to clarify that a short stretch of depressed alignment that might momentarily hide a vehicle should be treated as a no-passing zone when centerline striping is provided on a two-lane or three-lane road. The proposed change replaces the word "may" with "might" to avoid possible confusion of this as an OPTION statement, and clarifies that the use of a no-passing zone in this situation only applies when centerline striping is provided on the road.

65. In Section 2C.22 SPEED HUMP Sign (W17-1), the FHWA proposes adding a sentence to the OPTION statement to allow the use of the legend SPEED BUMP instead of the legend SPEED HUMP on the W17-1 sign. This proposed addition provides additional flexibility to jurisdictions and to reduce sign inventory.

66. In Section 2C.24, the FHWA proposes changing the title from "SHOULDER Signs (W8-4, W8-9, W8-9a, and W8-11)" to "SHOULDER and UNEVEN LANES Signs (W8-4, W8-9, W8-9a, and W8-11)". This new title is more accurate since the UNEVEN LANES (W8-11) sign is distinguished from the Shoulder signs.

The FHWA proposes adding a STANDARD statement just before the GUIDANCE statement. The proposed

STANDARD statement requires the use of the SHOULDER DROP-OFF (W8-9a) sign when a shoulder drop-off, adjacent to the travel lane, exceeds 75 mm (3 in) in depth and is not protected by portable barriers. The FHWA also proposes removing the part of the GUIDANCE statement concerning the use of the SHOULDER DROP-OFF sign since it is covered in the proposed new STANDARD statement. This STANDARD statement is identical to the STANDARD statement in Section 6F.41 (Shoulder and UNEVEN LANES Signs). This proposed requirement is to represent the state-of-the-practice.

67. In Section 2C.26 Advance Traffic Control Signs (W3-1a, W3-2a, W3-3, W3-4), the FHWA proposes clarifying that the reference to a beacon in the second OPTION statement and the second GUIDANCE statement is a reference to a warning beacon. This clarification is necessary to be consistent with prescribed use of warning beacons in Part 4 of the MUTCD.

68. In Section 2C.27 CROSS TRAFFIC DOES NOT STOP Plaque (W4-4), the FHWA proposes replacing the entire section with new OPTION and STANDARD statements. The OPTION statement specifies that the CROSS TRAFFIC DOES NOT STOP (W4-4) plaque may be used in combination with a STOP sign when engineering judgment indicates drivers frequently misinterpret the intersection as a multi-way stop condition. The STANDARD statement specifies that if the W4-4 plaque is used, it shall be installed below the STOP sign. The proposed new text for this section is necessary to provide for more uniform application of this plaque.

Additionally, the FHWA proposes removing the arrow from the design of the plaque to reduce potential confusion and misunderstanding as to whether the arrow denotes the direction cross traffic is flowing or the direction toward which the driver is to look for cross traffic.

69. In Section 2C.28 Merge Sign (W4-1), the FHWA proposes changing the title to reflect the addition of the new Entering Roadway Merge (W4-1a) sign. In addition to the title change, the FHWA proposes adding a recommendation to the GUIDANCE statement, which states that when a Merge sign is to be installed on an entering roadway that curves before merging with the major roadway, the Entering Roadway Merge (W4-1a) sign should be used. This sign is recommended for this condition because it would better portray the actual geometric conditions to road users on the entering roadway. The

FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

70. In Section 2C.29 Added Lane Sign (W4-3), the FHWA proposes changing the title to reflect the addition of the new Entering Roadway Added Lane (W4-3a) sign. In addition to the title change, the FHWA proposes an addition to the GUIDANCE statement, which states that when an Added Lane sign is to be installed on a roadway that curves before converging with another roadway that has a tangent alignment at the point of convergence, the Entering Roadway Added Lane (W4-3a) sign should be used. This sign is recommended for this condition because it would better portray the actual geometric conditions to road users on the entering roadway. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

71. In Section 2C.30, the FHWA proposes changing the title of the section from "Lane Ends Signs (W9-1, W9-2)" to "Lane Ends Signs (W4-2, W9-1, W9-2)". This title change reflects the addition of the Lane Reduction (W4-2) sign, which was included in previous editions of the MUTCD but not in the Millennium Edition.

The FHWA proposes changing the design of the Lane Reduction (W4-2) symbol sign to improve the comprehension by road users. The new design has been developed by human factors research studies and will be similar to one being used successfully in Canada. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

Additionally, the FHWA proposes adding the Lane Reduction (W4-2) symbol sign to the first and second GUIDANCE statements and to the OPTION statement, indicating that the W4-2 symbol sign is an alternative to the LANE ENDS MERGE LEFT (RIGHT) (W9-2) word sign. This will provide additional flexibility to jurisdictions.

72. In Section 2C.33 Advisory Exit, Ramp, and Curve Speed Signs (W13-2, W13-3, W13-5), the FHWA proposes

changing the design of the metric exit speed, ramp speed, and curve speed signs, and advisory speed signs/plaques so that the metric speed value is within a black circle with "km/h" below. This new design will better differentiate between signs and plaques with metric units for speed from those using English units for speed.

The FHWA also proposes adding "Figure 2C-8 Example of Advisory Speed Signing for an Exit Ramp". This figure illustrates the use of the Exit Speed sign along the deceleration lane and the use of the Ramp Speed signs along the actual ramp. The figure will clarify application of these signs to jurisdictions.

Additionally, the FHWA proposes adding to the OPTION statement at the end of the section, which states that the 85th percentile speed, which is equivalent to the 16 degree ballbank indication or an 85 mm/second (0.28 ft/second) reading on an accelerometer, may be used to determine the recommended speed along the ramp or curve as it is the speed at which most road users' judgment recognizes incipient instability along a ramp or curve. The FHWA proposes this OPTION criteria to enhance the uniformity of determining the recommended advisory speed and to provide additional warning to motorists since highway curves have a crash rate about three times the rate for highway tangent segments and a run-off-the-road crash rate about four times the tangent segment rate.

73. In Section 2C.34 Intersection Warning Signs (W2-1 through W2-6), the FHWA proposes changing the design of the CIRCULAR INTERSECTION (W2-6) sign to a symbol sign with three rotating arrows to better portray the operations at circular intersections. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

Additionally, the FHWA proposes modifying the GUIDANCE statement. The proposed changes clarify that the recommendation to not use Intersection Warning signs on controlled approaches does not apply to the use of the Circular Intersection Warning symbol (W2-6) sign, and add a recommendation that this sign should be used on the approach to a YIELD sign controlled roundabout intersection. These changes are proposed to reflect state of the practice regarding roundabouts.

74. In Section 2C.36, the FHWA proposes changing the title from "Motorized Traffic Signs (W8-6, W11-5, W11-8, W11-10)" to "Motorized Traffic Signs (W8-6, W11-5, W11-5a, W11-8, W11-10, W11-10a, W11-12)" to include the optional Farm Machinery (W11-5a) symbol sign which was inadvertently omitted, and to reflect a proposed Dump Truck (11-10a) sign for use in work zones and other locations where there is a concentration of dump truck crossing or entering the roadway, and a proposed Emergency Signal Ahead (W11-12) supplemental plaque for use with the W11-8 sign.

In the first OPTION statement, the FHWA proposes adding a statement that the TRUCK CROSSING (W8-6) word message sign may be used as an alternate to the Truck Crossing symbol sign, to provide additional flexibility.

In the second OPTION statement, the FHWA proposes adding that a supplemental plaque with the legend SHARE THE ROAD may be mounted below Motorized Traffic warning signs. The purpose of this addition is to allow the use of this sign to provide additional warning to road users.

75. In Section 2C.37, the FHWA proposes changing the title from "Crossing Signs (W11-1, W11-2, W11-3, W11-4, W16-7P)" to "Nonvehicular Signs (W11-1, W11-2, W11-3, W11-4, W11-11, W11-14, W11-14a, W11-15)" to reflect the addition of the following proposed signs: Golf Cart (W11-11) symbol sign, Horse and Buggy (W11-14) symbol sign, Horse and Carriage (W11-14a) symbol sign, and the Waterfowl Crossing (W11-15) symbol sign. Many variations of these symbol signs are currently being used and these designs will create a set of uniform symbol messages for road users. The FHWA proposes that these changes become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

The FHWA also proposes clarifying the first OPTION statement to add golf carts and horse-drawn vehicles to the list of crossing activities for which Nonvehicular signs may be used to alert road users. This reflects the addition of new signs for this purpose.

The FHWA also proposes clarifying the second OPTION statement to clarify that the supplemental plaques such as AHEAD or XX METERS may be used with the Nonvehicular warning signs, when used in advance of a crossing. These plaques are specifically intended

to provide advance notice to road users of crossing activity.

Additionally, the FHWA proposes modifying the STANDARD statement to clarify that when Nonvehicular warning signs are used at the crossing, the signs shall be supplemented with a diagonal downward pointing arrow (W16-1) plaque showing the location of the crossing. This proposed modification reflects the fact that Nonvehicular warning signs can be used either in advance of or at the crossing, and is consistent with the practice of using the diagonal downward pointing arrow with other crossing signs.

Additionally, the FHWA proposes adding to the third OPTION statement to clarify that Pedestrian, Bicycle, School Advance Crossing, and School Crossing signs and their related supplemental plaques may have a fluorescent yellow-green background with a black legend and border. This proposed change reflects the common practice for supplemental plaques to be of the same color as the signs they supplement.

76. In Section 2C.42 Advisory Speed Plaque (W13-1), the FHWA proposes adding to the first OPTION statement to clarify that the Advisory Speed (W13-1) plaque may be used to supplement any warning sign to indicate the recommended speed for a condition. This will provide additional flexibility for jurisdictions.

In the STANDARD statement, the FHWA proposes requiring the use of the Advisory Speed plaque where an engineering study indicates a need to advise road users of the recommended speed for a condition and if they are used, the speed shown shall be a multiple of 10 km/h (5 mph). This change is needed to clarify that engineering studies are needed to determine the need for an Advisory Speed plaque and to determine what the recommended speed is for the condition.

Additionally, the FHWA proposes adding an OPTION statement at the end of the section, which states that the 85th-percentile speed, which is equivalent to the 16 degree ballbank indication or an 85 mm/second (0.28 ft/second) reading on an accelerometer, may be used to determine the recommended speed along the ramp or curve as it is the speed at which most road users' judgment recognizes incipient instability along a ramp or curve. This provides jurisdictions with several optional methods of determining recommended speeds, reflecting current practices.

77. In Section 2C.43, the FHWA proposes changing the title from

“Supplemental Arrow Plaques (W16–5P, W16–6P)” to “Supplemental Arrow Plaques (W16–5, W16–6, W16–7)” to remove the “p” suffix and to reflect the existence of the diagonally pointing down arrow plaque and include the designation in the section text.

78. In Section 2C.46 DEAD END/NO OUTLET Plaques (W14–1P, W14–2P), the FHWA proposes adding to the OPTION statement to clarify that DEAD END (W14–1P) or NO OUTLET (W14–2P) plaques may be used in combination with Street Name (D3) signs to warn turning traffic that the crossroad ends in the direction indicated by the arrow on the plaque and that where there the cross street has no name, the plaque may be used alone in place of a street name sign. The proposed change will clarify the proper use of these types of plaques with street name signs or alone.

Additionally, the FHWA proposes removing the STANDARD statement, which requires the use of the DEAD END or NO OUTLET plaque where traffic can proceed straight through the intersection to the dead end or no outlet street. This STANDARD is proposed for removal because it is no longer appropriate. The preferred practice under the conditions cited is the use of the DEAD END (W4–1) and NO OUTLET (W4–2) warning signs rather than the plaques.

79. The FHWA proposes adding a new section, numbered and titled “Section 2C.48 High Occupancy Vehicle (HOV) Plaque (W16–1).” This proposed new section includes an OPTION statement on the use of the proposed High Occupancy Vehicle (HOV) Plaque. Specifically, an HOV (W16–1) plaque may be used to warn drivers in an HOV lane of a specific condition and to differentiate a warning sign specific for HOV lanes when the sign is also visible to traffic on the adjoining general purpose roadway. Additionally the diamond symbol may be used instead of the word message HOV and, when appropriate, the words LANE or ONLY may be used. This will enhance road user understanding of which signs apply to which lanes.

80. The FHWA proposes adding a new section numbered and titled “Section 2C.49 PHOTO ENFORCED Plaque (W16–10).” This proposed new section includes an OPTION statement on the use of the proposed PHOTO ENFORCED plaque in advance of locations of photo enforcement of traffic laws, thereby, alerting motorists of the use of cameras as an enforcement tool. This change is proposed for consistency with the proposed addition of the PHOTO ENFORCED plaque for use with regulatory signs, as described in

proposed Section 2B.51. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

Additionally, the FHWA proposes adding a STANDARD statement to require that, if used below a warning sign, the PHOTO ENFORCED plaque be a rectangle with a black legend and border on a yellow background. This STANDARD is proposed to make the color of the plaque consistent with the color of the warning sign it supplements.

81. The FHWA proposes adding a new section, numbered and titled “Section 2C.50 HILL BLOCKS VIEW Sign (W7–6).” This proposed new section includes an OPTION statement on the use of the proposed HILL BLOCKS VIEW sign in advance of the crest of a vertical curve to advise road users to reduce speed and to look for vehicles and other roadway users as they approach and traverse the hill as only limited sight distance is available. The FHWA proposes adding this sign because it is in use, fulfills an important need, and has been found by research to be well understood by road users.

Additionally, the FHWA proposes including a GUIDANCE statement, which states that when a HILL BLOCKS VIEW sign is used, an Advisory Speed plaque based on available stopping sight distance should accompany it. This is proposed because road users should be advised of the recommended speed for traversing the hillcrest.

82. The FHWA proposes adding a new section, numbered and titled “Section 2C.51 Speed Reduction Signs (W3–5, W3–5a).” This proposed new section includes a GUIDANCE statement, which recommends using the proposed Speed Reduction signs to inform road users of a reduced speed zone when engineering judgment indicates the need for advance notice to comply with the posted speed limit ahead. These proposed new warning signs replace the R2–5a, b, and c signs because the intended message is more properly categorized as a warning message rather than regulatory message. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

Additionally, the FHWA proposes including a STANDARD statement, which requires that a Speed Reduction sign be followed by a Speed Limit (R2–1) sign installed at the beginning of the zone where the speed limit applies and that the speed limit displayed on the Speed Reduction sign shall be identical to the speed limit displayed on the subsequent Speed Limit sign. This is needed to provide for uniform application of these signs.

82. The FHWA proposes adding a new section, numbered and titled “Section 2C.52 BRIDGE ICES BEFORE ROAD Sign (W8–13).” This proposed new section includes an OPTION statement on the use of the proposed BRIDGE ICES BEFORE ROAD sign, which states that the sign may be used in advance of bridges to advise road users as they approach and traverse the bridge during winter weather conditions.

Additionally, the FHWA proposes including a GUIDANCE statement, which recommends that the BRIDGE ICES BEFORE ROAD sign be removed or covered during seasons of the year when its message is not relevant.

This proposed new section will provide for uniform design and application of a sign for warning of the specific condition.

84. The FHWA proposes adding a new section, numbered and titled “Section 2C.53 Traffic Signal Signs (W25–1, W25–2).” This proposed new section includes a STANDARD statement on the use of the proposed CAUTION ONCOMING GREEN EXTENDED (W25–1) and CAUTION ONCOMING GREEN MAY BE EXTENDED (W25–2) traffic signal signs. The STANDARD statement requires that unless a separate left-turn signal face is provided and is operated as described in Section 4D.06, if the possibility exists that a CIRCULAR YELLOW signal indication could be displayed to an approach from which drivers are turning left permissively without the simultaneous display of a CIRCULAR YELLOW signal indication to the opposing approach (see Section 4D.05), either a W25–1 or a W25–2 sign be installed near the left-most signal head. The FHWA proposes adding this new section because these signs are proposed in Chapter 4D as one of several ways to eliminate or reduce safety issues associated with the “yellow trap” in some traffic signal phasing sequences.

85. The FHWA proposes adding a new section, numbered and titled “Section 2C.54 Truck Rollover Warning Signs (W1–13, W1–13a).” This proposed new section includes OPTION and STANDARD statements on the use of

the proposed Truck Rollover Warning signs to warn driver of vehicles with a high center of gravity of a curve or turn having geometric conditions that are prone to cause such vehicles to lose control and overturn. This proposed new section will provide for uniform design and application of signs for this purpose. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

86. In Section 2D.03 Color, Retroreflection, and Illumination, the FHWA proposes adding a SUPPORT statement following the STANDARD statement, which states that color coding is sometimes used to help road users distinguish between multiple potentially confusing destinations. The SUPPORT statement gives examples of valuable uses of color coding including guide signs for roadways approaching or inside an airport property with multiple terminals serving multiple airlines, and wayfinding signs for various neighborhoods, business areas, or traffic generator destinations within a community or area.

The FHWA proposes adding a second STANDARD statement that prohibits the use of different color sign backgrounds to provide color-coding of destinations and that requires that the color-coding shall be accomplished by the use of different colored square or rectangular panels on the face of the guide signs.

The FHWA also proposes adding an OPTION statement, which states that the different colored panels may include a black or white (whichever provides the better contrast with the panel color) letter, numeral, or other appropriate designation to identify the airport terminal or other destination.

Additionally, the FHWA proposes adding a SUPPORT statement, which states that two examples of color-coded guide sign assemblies are shown in Figure 2D-1. Figure 2D-1 is a proposed new figure titled "Examples of Color-Coded Destination Guide Signs" and illustrates two overhead guide signs examples of color-coded airport terminal destination guide signs and an example of a color-coded community destination guide sign.

The proposed changes to Section 2D.03 will provide for enhanced uniformity of design and application of color-coding of destinations in guide signs.

87. In Section 2D.04 Size of Signs, the FHWA proposes rephrasing the first OPTION statement to clarify that

reduced letter height, reduced interline spacing, and reduced edge spacing may be used on guide signs if the sign size is limited by factors such as lane width, and vertical and lateral clearance.

Additionally, the FHWA proposes adding a STANDARD statement that prohibits the use of reduced spacing between the letters or words of the legend as a means of reducing the overall size of a guide sign.

The proposed changes to this section will provide for enhanced legibility of guide signs, especially for older road users.

88. In Section 2D.06 Size of Lettering, the FHWA proposes removing the last paragraph in the STANDARD statement, which required sign panels to be large enough to accommodate the legend without crowding. That information has been modified and included in Section 2D.04, where it is more appropriately located.

89. In Section 2D.17 ALTERNATE Auxiliary Signs (M4-1, M4-1a), the FHWA proposes adding the qualifiers of time or distance to the word "shorter" in the GUIDANCE statement. This addition clarifies that the shorter (time or distance) or better-constructed route should retain the regular route number. This will clarify that the shorter route can be defined in terms of either time or distance, and will provide additional flexibility.

90. In Section 2D.23, the FHWA propose changing the title from "TEMPORARY Auxiliary Sign (M4-7)" to "TEMPORARY Auxiliary Sign (M4-7, M4-7a)" to reflect the addition of the new TEMP (M4-7a) sign and to add the TEMP (M4-7a) sign to the OPTION and STANDARD statements. The TEMP sign is proposed for improved legibility.

91. In Section 2D.26 Directional Arrow Auxiliary Signs (M6 Series), the FHWA proposes removing the M6-8 and M6-9 multiple direction advance arrow auxiliary signs. These specific arrow signs are not consistent in design concept with the other Directional Arrow Auxiliary Signs, and the M6-6 and M6-4 signs or separate assemblies for each route direction should be used instead to provide enhanced clarity to road users.

92. In Section 2D.27 Route Sign Assemblies, the FHWA proposes renumbering Figure 2D-2 to become Figure 2D-6 and modifying all three sheets of the figure to make the sign assemblies illustrated in the figure consistent with requirements in Section 2D.15 regarding the size of the initial letter of the Cardinal Direction Auxiliary Signs, and to illustrate directional assemblies that reflect the most recent state of the practice.

93. In Section 2D.31 Confirming or Reassurance Assemblies, the FHWA proposes removing from the STANDARD statement the requirement that, if used, the Confirming Assembly be installed just beyond intersections of numbered routes.

Additionally, in the first GUIDANCE statement, the FHWA proposes recommending that a Confirming Assembly should be installed just beyond intersections of numbered routes.

These changes are proposed because use of the confirming assembly beyond intersections with numbered routes should be a recommended practice rather than completely optional. The confirming assembly provides highly desirable information to road users. These proposed changes allow flexibility in installing the signs to adjust to roadside conditions.

94. In Section 2D.34, the FHWA proposes changing the title from "Destination Signs" to "Destination Signs (D1 Series)" and to add the sign number designations to the section text to clarify which signs are applicable to the material in the section.

The FHWA proposes moving material concerning the use of a sloping arrow at an irregular intersection from the second GUIDANCE statement to a new second OPTION statement. This proposed change removes unclear language and clarifies that the sloping arrow use is optional.

95. In Section 2D.36, the FHWA proposes changing the title from "Distance Signs" to "Distance Signs (D2 Series)", adding the sign number designations to the section text to clarify which signs are applicable to the material in the section, and adding the D2-3 (3 destination distance sign) to the text, to reflect all the signs included in the series.

Additionally, in the first GUIDANCE statement, the FHWA proposes adding a recommendation that the distance shown on the sign be the distance to the center of the central business district, or to the point where the major north/south and east/west routes serving the city intersect, or to some point near the center of the city. The FHWA proposes this addition because this distance measurement is the general practice used by State and local agencies.

96. In Section 2D.38, the FHWA proposes changing the title from "Street Name Sign (D3)" to "Street Name Sign (D3-1)". In the first GUIDANCE statement the FHWA proposes adding a recommendation that on multi-lane streets with speed limits of 60 km/h (40 mph) or more the minimum letter size should be 200 mm (8 in). Larger letter

sizes are needed to improve sign legibility and safety for older drivers. In this same GUIDANCE statement, the FHWA proposes deleting the recommendation that larger letter heights be used for Street Name signs mounted overhead, because more specific guidance is being proposed to be added elsewhere in this section.

The FHWA also proposes adding a clarification to the first OPTION statement. Currently the OPTION statement generally states that a symbol or letter designation may be used to identify the government jurisdiction. The proposed paragraph provides more specificity by stating that a symbol or letter designation may be used on a Street Name sign to identify the governmental jurisdiction, area of jurisdiction, or other government-approved institution. This change is proposed to provide additional flexibility for jurisdictions that install Street Name signs.

The FHWA proposes adding to the first STANDARD statement that if a symbol or letter designation is used, the height, in addition to the width, of the symbol or letter designation shall not exceed the letter height of the sign. This proposal will provide for more uniform Street Name sign design and assure that the name of the street will have more prominence on the sign than the jurisdictional symbol or letter designation.

Two changes are proposed in the second OPTION statement. First, the FHWA proposes eliminating midblock locations from the provision concerning locations where Street Name signs may be installed, because Street Name signs are not appropriate at non-intersection locations. At midblock locations, Advance Street Name signs, as described in a subsequent section, are appropriate to provide advance notice of the next intersection. Second, the FHWA proposes eliminating the provision allowing the installation of a supplemental Street Name sign separately or below an intersection-related warning sign on intersection approaches, because this is an inappropriate use. Instead, the Advance Street Name plaque, as described in Section 2C.45, is appropriate for this purpose.

The FHWA proposes changes to the fourth GUIDANCE statement. First, the FHWA proposes eliminating the recommendation on the color of the supplemental Street Name sign when it is combined with a warning sign, because this is now termed an Advance Street Name plaque and is discussed in Section 2C.45. Second, the FHWA proposes recommending that in urban

and suburban areas, especially where Advance Street Name signs are not used, overhead-mounted street name signs be considered. If overhead Street Name signs are used, the lettering should be at least 300 mm (12 inch) high in capital letters or 300 mm (12 in) upper-case letters with 225 mm (9 in) lower-case letters. This proposal reflects the need for enhanced visibility and legibility of Street Name signs for road users, especially older people, in the complex driving environments of urban and suburban areas.

Additionally, the FHWA proposes adding a SUPPORT statement at the end of the section referencing Section 2C.45 for information regarding the use of street name signs as supplemental plaques below intersection-related warning signs. The FHWA proposes that these changes become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period until January 9, 2012, for existing signs in good condition to minimize any impact on State or local highway agencies. This date corresponds with the existing compliance period for increasing the letter height to 150 mm (6 in) on all street name signs.

97. The FHWA proposes adding a new section, numbered and titled "Section 2D.39 Advance Street Name Signs (D3-2)" immediately following Section 2D.38. The FHWA proposes SUPPORT, STANDARD, OPTION, and GUIDANCE statements to describe the uses, placement, legend, and lettering sizes for Advance Street Name signs. The proposed new section is needed to provide for uniform design and application of Advance Street Name signs. The following sections would be renumbered accordingly. The FHWA proposes a phase-in compliance period until January 9, 2012, for existing signs in good condition to minimize any impact on State or local highway agencies. This date corresponds with the existing compliance period for increasing the letter height to 150 mm (6 in) on all street name signs.

98. In existing Section 2D.44 (new Section 2D.45) General Service Signs (D9 Series), the FHWA proposes adding Electric Vehicle Charging to the list of services, one or more of which General Services signs must carry, in accordance with the second STANDARD statement.

The FHWA proposes removing references in the fourth OPTION statement to the Road Conditions Dial 511 (D12-5) sign and adding new OPTION, STANDARD, and GUIDANCE statements regarding the use and design of the redesigned TRAVELER INFO CALL 511 (D12-5) sign. These changes

reflect the assignment of 511 as the nationwide traveler information telephone number.

Additionally, the FHWA proposes changing the words "CB Monitoring" in the existing fifth OPTION statement to "Channel 9 Monitored" and to make a corresponding change in item C of the following GUIDANCE statement. These changes reflect current practice and terminology. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

99. In existing Section 2D.45 (new Section 2D.46), the FHWA proposes changing the title from "Reference Posts (D10-1 through D10-3)" to "Reference Location Signs (D10-1 through D10-8)" and to change the term "reference posts" to "reference location signs" throughout the section to correspond to terminology used throughout the MUTCD.

The FHWA proposes two changes to the first STANDARD statement. First, the FHWA proposes distinguishing between use on conventional roads and freeways. The design of reference location signs used on conventional roads is the same as currently listed in the STANDARD. If reference location signs are used on freeways or expressways, the FHWA proposes requiring that the reference location signs be designed in accordance with the STANDARDS contained in Section 2E.54, for consistency with other signs used on expressways or freeways. Second, the FHWA proposes requiring the installation of reference location signs on the right side of the roadway, except where conditions limit or restrict the use of such signs on the right side of the roadway. This is proposed for enhanced uniformity of location of these signs.

The FHWA proposes two changes to the last OPTION statement. First, the FHWA proposes changing the suggested spacing of intermediate reference location signs from one, two, or five tenths of a kilometer (or mile) to one-tenth of a kilometer (or mile) or some other regular spacing, for enhanced consistency and uniformity. Second, the FHWA proposes that to further enhance the reference location sign system, a new enhanced reference location (D10-7) sign and a new enhanced intermediate reference location (D10-8) sign may be installed at one-tenth of a kilometer (mile) interval, or at some other regular spacing. Evaluation of experimental systems indicates that this

type of sign greatly assists road users in reporting a more precise location of an incident or other emergency.

The FHWA proposes adding a STANDARD statement describing the design of the enhanced reference location signs and the enhanced intermediate reference location signs. The proposed STANDARD requires that the signs shall be vertical panels having green backgrounds with white numerals, letters, and borders, except for the route shield which shall be the standard color and shape. The top line shall consist of the cardinal direction for the roadway; the second line shall consist of the applicable route shield for the roadway; the third line shall identify the units in metric or English; the fourth line shall identify the kilometer (mile) reference for the location; and for the enhanced intermediate reference location sign the fifth line shall give the tenth of a kilometer (mile) using a decimal point.

Although a blue background has been used in some experimental projects, the FHWA believes that the standard green background of the 30-year old "mile marker" system should be used. Although most of the signs of experimental projects use an abbreviation and do not spell out the cardinal direction, the FHWA believes that most road users do not understand the abbreviations, thus spelling out the cardinal direction would assist road users in reporting incidents. Likewise, most of the signs of experimental projects do not use a decimal point before the tenth of kilometer (mile), however, recent research indicates that road users better understand that the location is a fraction of a kilometer (mile) with the decimal point.

The FHWA proposes that the design of this optional enhanced reference location sign become effective immediately for new location referencing system installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs of existing systems to minimize any impact on State or local highway agencies.

The FHWA also proposes requiring the installation of the enhanced reference location signs on the right side of the roadway in rural areas except where conditions limit or restrict the use of enhanced reference location signs on the right side of the roadway.

Finally, the FHWA proposes adding an OPTION statement, which states that in urban areas, enhanced reference location signs may be installed on the right side of the roadway, in the median, or on ramps to replace or to supplement

reference location signs. This will provide flexibility to jurisdictions.

100. In existing Section 2D.47 (new Section 2D.48) General Information Signs (I Series), the FHWA proposes removing all references concerning Adopt-a-Highway signs from the MUTCD. Current State and local practices pertaining to Adopt-A-Highway signs vary widely and, in some cases, include the use of commercial logos for indicating Adopt-A-Highway sponsors. The use of logos has raised deeper policy issues regarding Federal and State laws concerning advertising along the right-of-way, general commercialization of the right-of-way, the safety to motorists and workers, and the ability to raise revenues for activities such as litter removal.

Recent discussions of the signing criteria in the MUTCD, along with dialogue of several American Association of State Highway and Transportation Officials (AASHTO) subcommittees, have highlighted these deeper issues that go beyond the simple standards included in the MUTCD. For example, the AASHTO Subcommittee on Maintenance has argued that several States have existing contracts that allow a commercial entity to exchange maintenance and litter pickup services for signs acknowledging the commercial sponsors who pay for the services. These contracts supplement scarce maintenance resources for these States. The Subcommittee also noted that the use of more experienced crews used in such arrangements is safer than using volunteers.

The AASHTO Subcommittee on Traffic Engineering, on the other hand, has argued that these acknowledgements of the commercial sponsors is an opening for other types of advertising (including electronic advertising on overhead dynamic message signs along freeways and at signalized intersections) and raise serious concerns over driver distraction, confusion, and crash potential and liability. At the request of the Subcommittee on Maintenance, the AASHTO Standing Committee on Highways has established a task force to consider commercialization within the right-of-way, including, but not limited to, signage for the Adopt-A-Highway program.

Until the AASHTO study is completed, the FHWA is proposing the removal of all references to Adopt-A-Highway signs in the MUTCD.

In this section, the FHWA also proposes adding new OPTION, GUIDANCE, and STANDARD statements regarding the use of signs to display safety or transportation-related

messages. These messages, such as SEAT BELTS BUCKLED? and DON'T DRINK AND DRIVE, are in common and widespread use in many jurisdictions and they provide valuable reminders to road users of important laws. The proposed additions to this section provide for consistency in application of these types of messages on General Information signs and reduce the possibility of such signs being misused.

Finally, the FHWA proposes in the second STANDARD statement replacing the words "jurisdiction logos" with "boundary" to provide additional flexibility highway agencies to use different colors for political boundary signs.

101. In existing Section 2D.48 (new Section 2D.49) Signing of Named Highways, in the first STANDARD statement the FHWA proposes adding additional requirements for installing memorial signs on the mainline. These requirements prohibit the use of memorial names on the directional guide signs, interference with necessary highway signing, and placement which compromises the safety or efficiency of traffic flow. The proposed STANDARD statement is identical to the STANDARD statement in Section 2E.08. The FHWA proposes this addition for consistency and to clarify the acceptable locations to install memorial signs.

102. The FHWA proposes adding a new section, numbered and titled "Section 2D.52 National Scenic Byways Marker (D6-4)." The FHWA proposes including SUPPORT, OPTION, and STANDARD statements that describe the National Scenic Byways program and the markers that may be placed on roads designated as National Scenic Byways or All-American Roads by the Secretary of Transportation of the U.S. DOT. As of January 2002 there were 72 such designated byways in 32 States. This new section is proposed to provide for uniformity of design and application of markers on designated National Scenic Byways.

103. In Section 2E.10, the FHWA proposes changing the title from "Number of Signs at an Overhead Installation" to "Number of Signs at an Overhead Installation and Sign Spreading" and relocating the SUPPORT and GUIDANCE statements on sign spreading from Section 2E.11 because they are more appropriately associated with sign location installation.

104. In Section 2E.11, the FHWA proposes changing the title from "Sign Spreading and Pull-Through Signs" to "Pull-Through Signs" to reflect the proposed relocation of the sign

spreading SUPPORT and GUIDANCE statements to Section 2E.10.

In the first GUIDANCE statement, the FHWA proposes replacing the words "only when" with "where" to broaden the use of Pull-Through signs. The FHWA proposes this change to recognize that Pull-Through signs can be beneficial in congested traffic for road users, especially older drivers, at many locations. The FHWA also proposes recommending that Pull-Through signs with down arrows be used where alignment of the through lanes is curved and the exit direction is straight ahead, where the number of through lanes is not readily evident, and at multilane exits. This will enhance the information provided to road users.

105. In Table 2E-3 Minimum Letter and Numeral Sizes for Freeway Guide Signs According to Interchange Classification, the FHWA proposes adding dimensions for the "Action Message Word" row and adding a row with dimensions for the sizes of "Numerals and Letter" for Gore signs. These were inadvertently omitted from the current edition.

106. In Section 2E.19 Diagrammatic Signs, the FHWA proposes to add to item A of the first STANDARD statement the option of showing each individual lane arrangement. Research of the needs of older road users indicates that it is easier to comprehend a diagrammatic sign with one arrow for each lane than one arrow for all lanes as the width of each lane on a single arrow is too small. Additionally, the FHWA proposes adding a second illustration to the Diagrammatic Sign for a Single-Lane Left Exit (Figure 2E-3) which shows two diagrammatic arrows instead of just one.

107. In Section 2E.20 Signing for Interchange Lane Drops, the FHWA proposes clarifying the second STANDARD statement that an EXIT ONLY (down arrow) (E11-1) panel shall not be used on an Exit Direction sign that contains an arrow in its design.

108. In Section 2E.28 Interchange Exit Numbering, the FHWA proposes relocating the second OPTION statement to the first GUIDANCE statement. Because road users might not expect a left exit and have difficulty in maneuvering to the left, the FHWA is recommending that the word LEFT be added to the exit number plaque. The FHWA is proposing this change because of numerous complaints of the difficulty that road users have in knowing when an exit is on the left. Very few road users know that when the exit plaque is installed on the top left edge of the sign, it means the exit is on the left. The FHWA proposes that this new

GUIDANCE become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 15 years for existing signs in good condition to minimize any impact on State or local highway agencies.

The FHWA proposes adding a new OPTION statement following the first GUIDANCE statement, which states that the portion of the exit number plaque containing the word LEFT may have a black legend and border on a yellow background. This proposed OPTION statement mirrors other similar uses of the black on yellow color pattern for signs and panel associated with left exits in the MUTCD.

Additionally, the FHWA proposes removing the EXIT 13 sign from Figure 2E-3 to reflect the changes in Section 2E.28.

109. In Section 2E.34 Exit Gore Signs, the FHWA proposes adding an OPTION statement to allow the mounting of a panel under the Exit sign indicating the advisory speed for the ramp. This option provides jurisdictions additional flexibility for reminding road users of the recommended speed for an exit ramp.

110. In Section 2E.49 Signing of Approaches and Connecting Roadways, the FHWA proposes removing the entire text of the section and adding new SUPPORT, GUIDANCE, STANDARD, and OPTION statements, as well as five new figures. The proposed new section addresses sign sequences and sign design for conventional roads with one lane and those with more than one lane of traffic approaching an interchange. The proposed new section also clarifies the use of signs for approaches and connecting roadways in order to better convey to road users the ramp configuration and the maneuver that a road user would have to make to get on the desired connecting roadway.

111. In Section 2E.51 General Service Signs, the FHWA proposes changing from 3 to 2 the number of meals per day for which a food establishment should have a continuous operation to serve in item B.2 in the first GUIDANCE statement. The FHWA proposes this change to accommodate more food businesses.

112. In Section 2E.54, the FHWA proposes changing the title from "Reference Posts" to "Reference Location Signs" to reflect the new enhanced reference location sign and to be consistent with changes in other parts of the MUTCD.

The FHWA proposes clarifying that the sign sizes in the STANDARD statement refer to reference location signs placed on freeways or

expressways, and that the abbreviation KM (MILE) shall be in 100 mm (4 in) white letters.

Additionally, the FHWA proposes adding a paragraph to the OPTION statement at the end of the section, which states that intermediate and enhanced reference location signs may also be used on freeways and expressways. It is on those types of facilities where such signs have the most common application.

113. In Section 2E.56 Radio Information Signing, the FHWA proposes adding OPTION and STANDARD statements at the end of the section describing the use and design of a TRAVELER INFO CALL 511 (D12-5) sign. With the adoption of 511 as the nationwide traveler information phone number, a uniform sign design is needed. The proposed changes in this section are consistent with the proposed changes in Section 2D.45.

114. In Section 2E.57 Carpool Information Signing, the FHWA proposes adding to the OPTION statement that Carpool Information signs may include Internet addresses or telephone numbers within the legend. The proposal reflects common current practice and provides for additional information to road users.

Additionally, the FHWA proposes changing the size of the maximum vertical dimension of the logo or symbol in the STANDARD statement from 900 mm (36 in) to 450 mm (18 in), to enhance the legibility of the primary message.

115. Following Section 2E.58, the FHWA proposes adding a new section, numbered and titled "Section 2E.59 High-Occupancy Vehicle (HOV) Signs." This proposed section includes STANDARD, GUIDANCE, OPTION, and SUPPORT statements regarding the use and placement of signs for HOV lanes and facilities. The FHWA also proposes including five figures illustrating examples of HOV signing applications. This proposed section reflects current state-of-the-practice.

116. In Section 2F.01 Eligibility, the FHWA proposes changing from 3 to 2 the number of meals per day for which a food establishment should have a continuous operation to serve in item B.2 of the fourth GUIDANCE statement. The FHWA proposes this change to accommodate more food businesses. This proposed change is consistent with the proposed change in Section 2E.51.

117. In Section 2F.04 Number and Size of Logos and Signs, the FHWA proposes changing the second STANDARD statement to require that a logo panel on signs for conventional roads and ramps not exceed 750 mm (30



in) in width instead of 600 mm (24 in) to be consistent with the proportions of panels for freeways and expressways.

118. In Section 2F.08 Double-Exit Interchanges, the FHWA proposes adding to the OPTION statement that at a double-exit interchange where there are four logo panels displayed for one of the exits and one or two panels to be displayed for the other exit, the logo panels may be arranged in three rows with two panels per row, to make the layout of the sign more logical.

119. In Chapter 2G TOURIST-ORIENTED DIRECTIONAL SIGNS, the FHWA proposes changing from "Typical" to "Examples of" in the titles of Figures 2G-1 and 2G-2 because the information shown is only an example of many acceptable arrangements of signs.

120. In Section 2G.01 Purpose and Application, in the second STANDARD statement, the FHWA proposes prohibiting the placement of tourist-oriented directional signs on conventional roads in urban areas. This proposal will clarify and strengthen the current requirement that such signs shall only be used on rural conventional roads.

Also, the FHWA proposes relocating the current first paragraph of the GUIDANCE statement to become a new second paragraph of the second STANDARD statement. This proposed change would require, rather than recommend, that tourist-oriented directional signs incorporate information from and be used in place of Specific Service signs where both types of signs are needed at an intersection. The FHWA is proposing this change in order to reduce sign clutter at intersections and enhance road user safety.

121. In Section 2G.07 State Policy, the FHWA proposes changing the phrase "State or Federal laws" to "State and Federal laws" in the STANDARD statement, to clarify that both types of laws must be heeded.

122. In Section 2H.09 Destination Guide Signs, the FHWA proposes clarifying the second STANDARD statement that linear parkway-type highways that primarily, rather than merely, function as arterial connectors, even if they also provide access to recreational or cultural interest areas, shall not qualify for the use of white-on-brown destination guide signs. The FHWA proposes this change to improve uniformity of guide signing on these important arterials.

The FHWA also proposes adding illustrations of trapezoidal-shaped directional guide signs to Figure 2H-2 to correspond with the optional use of

this shape for recreational or cultural interest area directional signing as provided for in Section 2G.09.

123. In Section 2I.03 EVACUATION ROUTE Sign (EM-1), in the first STANDARD statement, the FHWA proposes changing the design of the EVACUATION ROUTE (EM-1) sign to a rectangle sign with a blue circular symbol with a directional arrow and the legend EVACUATION ROUTE. The proposed minimum size is 600×600 mm (24×24 in) and the proposed circular symbol diameter is 2.54 mm (1 in) smaller than the width of the sign. This change reserves the circular shape sign exclusively for rail grade crossings and enhances the conspicuity and legibility of the EVACUATION ROUTE sign. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

In the second STANDARD statement, the FHWA proposes changing the detail regarding the colors to be used on the EVACUATION ROUTE (EM-1) sign and requiring that the entire sign be retroreflective. This proposed change corresponds with the proposed design changes required by the first STANDARD statement.

The FHWA proposes adding to the second OPTION statement that the legend on the EVACUATION ROUTE sign may be modified to describe the type of evacuation route, such as HURRICANE, to provide additional information to road users.

Additionally, the FHWA proposes adding to Figure 2I-1 illustrations of the HURRICANE EVACUATION ROUTE, AREA CLOSED, TRAFFIC CONTROL POINT, MEDICAL CENTER, and HURRICANE SHELTER signs and illustrations of six new directional signs for EMERGENCY SHELTER, FALLOUT SHELTER, CHEMICAL SHELTER, WELFARE CENTER, REGISTRATION CENTER, and DECONTAMINATION CENTER signs.

#### *Discussion of Proposed Amendments to Part 3—Markings*

124. In Section 3A.04 Colors, the FHWA proposes revising the STANDARD statement to clarify the use of black markings. Black markings can be used in conjunction with any other color marking to add contrast to it. The FHWA proposes removing the existing reference to object markers because it was not an appropriate reference.

125. The FHWA proposes changing the title of Section 3A.05 from "Colors

of Longitudinal Pavement Markings" to "Colors of Pavement Markings," because this section defines the use of colors for all pavement markings, not just longitudinal line markings. The FHWA also proposes revising this entire section to clarify the function of each color of pavement marking.

126. In Section 3A.06 Widths and Patterns of Longitudinal Pavement Markings, the FHWA proposes removing item A of the STANDARD statement, which states that a solid line prohibits or discourages crossing. This item does not describe the width or pattern of longitudinal lines. The remaining items would be renumbered accordingly.

In existing item D (new item C) of the STANDARD statement, the FHWA proposes replacing the word "normal" with "parallel" to clarify the pattern of a double line.

In existing items D, E, and F (new items C, D, and E) of the STANDARD statement, the FHWA proposes removing the last sentence of each item, since these sentences describe the function of various markings, rather than the width and pattern of longitudinal markings.

The FHWA proposes revising the GUIDANCE statement to clarify that this guidance refers to all roadway types, not just rural highways.

Additionally, the FHWA proposes revising the OPTION statement to differentiate between the dimensions for dotted lines used for line extensions and lane drop/add markings. The dimensions for the line segments and gaps for each are also proposed, for consistency with other sections in Part 3.

127. The FHWA proposes changing the title of Section 3B.01 from "Yellow Centerline and Left Edge Line Pavement Markings and Warrants" to "Yellow Centerline Pavement Markings and Warrants," and moving the fourth STANDARD statement of Section 3B.01 to Section 3B.06 since edge lines are appropriately covered in Section 3B.06.

128. In Section 3B.02 No-Passing Zone Pavement Markings and Warrants, the FHWA proposes revising the second STANDARD statement to clarify that no-passing zone markings on approaches to highway-rail grade crossings shall conform with Section 8B.19, and eliminating the requirement that no passing zone markings be used at other appropriate locations, to be consistent with Part 8 and eliminate overlap with more specific requirements for no passing zone markings elsewhere in Section 3B.02.

Additionally, the FHWA proposes revising the third STANDARD statement

to clarify the dimensions of a no-passing buffer zone, and eliminating the buffer zone dimensions specific to areas where no passing zones are required because of limited passing sight distance. The proposed dimension of "at least 15 m (50 ft) in length" is suitable for all no passing zone buffers regardless of the reason for the buffer.

129. In Section 3B.03 Other Yellow Longitudinal Pavement Markings, the FHWA proposes revising the text in the first paragraph of the first STANDARD statement to substitute the phrase "normal double" for "two double" in the description of the pavement marking requirements for reversible lanes. In the third paragraph of the first STANDARD statement, the FHWA proposes clarifying that the pavement marking requirements for a two-way left turn lane applies to such lanes that are never operated as a reversible lane. The FHWA proposes these changes to improve the clarity of the requirements and for consistency with requirements elsewhere in Chapters 3A and 3B.

130. The FHWA proposes changing the title of Section 3B.04 from "Edge Line Pavement Markings and Warrants" to "White Lane Line Pavement Markings and Warrants," and moving the fourth STANDARD statement of Section 3B.04 to Section 3B.06 since edge lines are appropriately covered in Section 3B.06.

131. In Section 3B.05 Other White Longitudinal Pavement Markings, the FHWA proposes changing the gap length for lane drop markings from 3.6 m (12 ft) gaps to 2.7 m (9 ft) gaps in the third OPTION statement to be consistent with the spacing of other marking gaps.

132. In Section 3B.06 Edge Line Pavement Markings, the FHWA proposes adding to the STANDARD statement text the requirements that are being relocated from Sections 3B.01 and 3B.04 pertaining to left and right edge lines. These proposed changes would result in all edge line pavement marking information being contained within one section.

The FHWA also proposes adding an OPTION statement, which states that wide solid edge line markings may be used for greater emphasis. Wide edge lines can sometimes be useful in reducing run-off-the-road crashes at curves and this proposal will provide additional flexibility for jurisdictions to use these markings where needed.

133. In Section 3B.08 Extensions Through Intersections or Interchanges, the FHWA proposes adding to the GUIDANCE statement on the placement and dimensions of pavement markings that are continued through intersections and interchanges. The FHWA proposes recommending that edge lines not be

extended into or continued through intersections or interchanges. This guidance is needed so that pavement marking extensions through intersections and interchanges do not confuse drivers in adjacent or opposing travel lanes.

134. In Section 3B.11 Raised Pavement Markers, the FHWA proposes clarifying in the first SUPPORT statement that the 10 mm (0.4 in) height of a raised pavement marker is for the retroreflective surface and that this height is the actual height or optical height. The FHWA also proposes clarifying the first SUPPORT statement to include marking the position of fire hydrants as one of the uses of raised pavement markings, for consistency with other proposed revisions in this section.

Additionally, the FHWA proposes adding an OPTION statement after the STANDARD statement, which states that blue raised pavement markers may be used to mark the positions of fire hydrants. This is common practice in many jurisdictions.

135. In Section 3B.12 Raised Pavement Markers as Vehicle Positioning Guides with Other Longitudinal Markings, in the first SUPPORT statement, the FHWA proposes revising the spacing used between raised pavement markers along longitudinal line markings from 2N to 3N because this is an acceptable spacing for most applications. The value "N" is equal to the length of one line segment plus one gap.

Additionally, in the second OPTION statement, the FHWA proposes changing from "N or less" to "2N or less" for the reduced spacing that may be used where it is desired to alert the road user to changes in the travel path, because this is an acceptable spacing for most applications.

136. In Section 3B.13 Raised Pavement Markers Supplementing Other Markings, the FHWA proposes revising item B1 of the GUIDANCE statement to indicate that raised pavement markers should not supplement right edge line markings unless they are spaced closely enough (no greater than 3 m (10 ft) apart) to approximate the appearance of a solid line. This proposed exception is needed to give jurisdictions the ability to use raised pavement markers to supplement edge lines in situations where additional wet-night delineation is needed, such as on curves.

In item B.2 of the GUIDANCE statement, the FHWA proposes revising the recommended spacing to be used between raised pavement markers along broken line markings from 2N to 3N

because this is an acceptable spacing for most applications.

Additionally, in item B.5 of the GUIDANCE statement, the FHWA proposes revising the recommended spacing to be used between raised pavement markers that supplement edge line extensions through freeway interchanges from N/2 to N because this is an acceptable spacing for most applications.

137. In Section 3B.14 Raised Pavement Markers Substituting for Pavement Markings, in the first STANDARD statement, the FHWA proposes revising the required spacing between raised pavement markers when substituted for broken line markings from N/12 to N/8 and revising the required spacing between raised pavement markers when substituted for solid lane line markings from N/8 to N/4. In the third STANDARD statement, the FHWA proposes revising the required spacing between raised pavement markers when substituted for dotted line markings from N/8 to N/4. The FHWA proposes these changes because these spacings are acceptable for most applications.

The FHWA proposes that these changes become effective immediately for new raised pavement marker installations. The FHWA proposes a phase-in compliance period of 10 years for existing raised pavement markers in good condition to minimize any impact on State or local highway agencies.

138. In Section 3B.15 Transverse Markings, in the first STANDARD statement the FHWA proposes adding "yield lines" and "speed hump" markings to the list of transverse markings required to be white markings.

Additionally, the FHWA proposes changing the second paragraph of the GUIDANCE statement to a STANDARD statement, which requires that pavement marking letters, numerals, and symbols be installed in accordance with the "Standard Alphabets for Highway Signs and Pavement Markings" to correct an oversight in the Millennium Edition of the MUTCD.

139. In Section 3B.16 Stop and Yield Lines, in the second paragraph of the first GUIDANCE statement, the FHWA proposes clarifying that YIELD signs are an exception to the recommendations on the use of stop lines, to be consistent with the intended use of yield lines.

The FHWA also proposes modifying the OPTION statement to clarify that yield lines may also be placed at locations where vehicles are to yield to pedestrians in compliance with a YIELD HERE TO PEDESTRIANS (R1-5 or R1-5a) sign, to correspond with the

proposed addition of this new sign to Chapter 2B.

The FHWA proposes revising and adding to the second GUIDANCE statement to clarify the recommended placement of yield lines at unsignalized midblock crosswalks, to enhance pedestrian safety. The FHWA also proposes adding a new paragraph to the second GUIDANCE statement regarding placement of yield lines at midblock crosswalks. The FHWA also proposes adding a new figure numbered and titled "Figure 3B-15 Examples of Yield Lines at Unsignalized Midblock Crosswalks" relating to the new text. All of the following figures in the chapter would be renumbered accordingly.

Additionally, the FHWA proposes adding a new SUPPORT statement at the end of the section to emphasize that drivers who yield too close to crosswalks on multi-lane approaches place pedestrians at risk by blocking other drivers' view of pedestrians. The FHWA proposes this to clarify the reasons for the recommended locations of stop and yield lines.

140. In Section 3B.17 Crosswalk Markings, in the second GUIDANCE statement the FHWA proposes increasing the upper limit of the range for spacing diagonal or longitudinal crosswalk marking lines from 300 to 600 mm (12 to 24 in) to 300 to 1500 mm (12 to 60 in) and to specify the relationship between marking spacing and line width, to provide more flexibility to jurisdictions.

141. In Section 3B.19 Pavement Word and Symbol Markings, the FHWA proposes modifying the third STANDARD statement to allow the use of STOP markings at the ends of aisles in parking lots even though there is no STOP sign. In parking lots, often there is no practical way to install a stop sign at the end of the aisles, so the STOP legend pavement marking is needed to clarify right-of-way.

142. In Section 3B.21 Curb Markings, in the first paragraph of the STANDARD statement, the FHWA proposes clarifying that the requirement for signs to be used with curb markings does not apply if the no parking zone is controlled by statute or local ordinance, to minimize unnecessary sign clutter.

The FHWA also proposes adding a new OPTION statement immediately following the first item in the first GUIDANCE statement to clarify the use of signs and word markings when curb markings are used to convey statutory law.

143. In Section 3B.22 Preferential Lane Word and Symbol Markings, the FHWA proposes adding to the second STANDARD statement that more than

one symbol or word marking can be used to mark a preferential lane, that the word message HOV is acceptable as a preferential marking (relocating this from the OPTION statement), and that the "T" marking be the light rail transit preferential lane symbol. Additionally, in the same STANDARD statement, the FHWA proposes requiring that symbol or word markings for each preferential lane use be installed if two or more preferential lane uses are permitted in a single lane. The FHWA proposes these changes to provide uniformity for marking of multi-use preferential lanes and to provide a distinctive symbol for light rail transit.

144. In Section 3B.24 Markings for Roundabouts, the FHWA proposes adding a new STANDARD statement, which prohibits marking bicycle lanes on roundabouts. The FHWA proposes the prohibition to enhance bicyclist safety by avoiding giving bicyclists a false sense of security when traveling through the roundabout with conflicting and turning traffic. This proposed change is consistent with state of the practice for roundabout design.

145. In Section 3C.01 Object Marker Design and Placement Height, the FHWA proposes adding to the first STANDARD statement that the minimum width of both the yellow and black stripes on a Type 3 striped marker shall be 75mm (3 in), to provide for uniformity of appearance of these markers. The FHWA proposes that this change become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

146. In Section 3D.01 Delineators, the FHWA proposes changing the STANDARD statement indicating that delineators are considered guidance devices rather than warning devices to a SUPPORT statement to be consistent with other parts of the MUTCD.

147. In Section 3E.01 General, the FHWA proposes several changes to reflect that red colored pavement is no longer being considered a traffic control device. Accordingly, the FHWA proposes adding to the SUPPORT statement that colored pavement located between the crosswalk lines is not considered to be a traffic control device, removing existing item A of the STANDARD statement concerning when the color red is used, and removing the second GUIDANCE statement concerning how the color red is used. These proposed changes will provide additional flexibility for jurisdictions to use colored pavements as aesthetic

treatments, such as in redevelopment areas, as long as the crosswalk is marked by standard, retroreflectorized, white lines.

Additionally, in the first GUIDANCE statement, the FHWA proposes recommending that colors that degrade the contrast of white crosswalk lines, or that might be mistaken by road users as a traffic control application, not be used for colored pavement located between crosswalk lines. This proposed change is needed to reduce the possibility of uses of colored pavements in ways that might confuse road users or reduce pedestrian safety.

#### *Discussion of Proposed Amendments to Part 4—Highway Traffic Signals*

148. In Section 4A.02 Definitions Relating to Highway Traffic Signals, the FHWA proposes revising the definition for "Average Day" and "Flashing" and adding a new definition for "Flashing Mode". These definitions would be identical to the proposed revised definitions in Section 1A.13 and are repeated in Section 4A.02 because they are especially pertinent to Highway Traffic Signals.

Additionally, the FHWA proposes revising the definitions for "Backplate" (change to "Signal Backplate"), "Detector," "Louver" (change to "Signal Louver"), "Signal Face," "Signal Head," and "Visibility-Limited Signal Face or Section" to better reflect accepted practice and terminologies.

The FHWA also proposes revising the definition of "Pedestrian Clearance Time" to correspond to proposed changes in the standards contained in Section 4E.10 (formerly 4E.09).

Additionally, the FHWA proposes adding new definitions for "Dual-Arrow Signal Section," "Emergency Beacon," "Moveable Bridge Signal," "Separate Left Turn Signal Face," and "Shared Left Turn Signal Face" because these terms are frequently used in Part 4. The entire list of definitions is renumbered accordingly.

149. In Section 4B.02 Basis of Installation or Removal of Traffic Control Signals, the FHWA proposes revising the first GUIDANCE statement to more specifically define the elements that should be considered as traffic conditions, because vehicles, pedestrians, and bicyclists are all considered to be traffic.

In the SUPPORT statement, the FHWA proposes changing the word "intersections" to "locations," since traffic signals are not always located at intersections. Traffic signals can be at shopping center driveways and other locations that are not legally considered

intersections. This proposed revision is carried throughout Part 4.

The FHWA proposes adding a paragraph to the beginning of the second GUIDANCE statement, which states that engineering judgment should be applied in the review of operating traffic control signals to determine whether the type of installation and the signal timing meet the current requirements of traffic. This information is relocated from Section 4B.03.

Additionally, in item E of the OPTION statement, the FHWA proposes removing the maximum time limit of one year for signal poles and cables to remain in place after removal of the signal heads, since it is too restrictive.

150. In Section 4B.03 Advantages and Disadvantages of Traffic Control Signals, the FHWA proposes revising item B of the second paragraph of the SUPPORT statement, to clarify that signal timing review and updating be conducted if needed and to clarify that every two years is just one of several possible frequencies of review.

151. In Section 4C.01 Studies and Factors for Justifying Traffic Control Signals, the FHWA proposes adding a recommendation to the GUIDANCE statement, which states that a traffic control signal installed under projected conditions should be studied again within one year after placing it in stop-and-go operation to determine if it is still justified and, if it is not justified, it should be taken out of stop-and-go operation or removed. The FHWA proposes this addition because it reflects best practice to prevent continued operation of unjustified signals. Additionally, the FHWA proposes categorizing a wide median (for purposes of signal warrant analysis) as one with a width greater than 9 m (30 ft), for consistency with other parts of the MUTCD.

Additionally, the FHWA proposes adding a paragraph at the beginning of the OPTION statement, which explains the option of using the left-turn volume on the major-street as the minor-street volume and the corresponding single direction of opposing traffic as the major street volume. The proposed change reflects commonly used and accepted practices and provides additional flexibility to practitioners in analyzing a location for a traffic signal.

The FHWA proposes adding an item H to the existing first (new second) paragraph of the OPTION statement to indicate that bicyclists may be counted as either vehicles or pedestrians when studying the need for a traffic control signal. This proposed change provides a more complete listing of recommended data for the engineering study.

Additionally, in item A of the existing second (new third) paragraph of the OPTION statement, the FHWA proposes removing the reference to the Peak Hour Warrant to correct an error in the previous edition.

152. In Section 4C.02 Warrant 1, Eight-Hour Vehicular Volume, in the first OPTION statement, the FHWA proposes changing the phrase “exceeds 70 km/h (40 mph)” to “exceeds 70 km/h or exceeds 40 mph” to clarify that, for purposes of evaluating warrant satisfaction, either 70 km/h or 40 mph (depending on whether metric or English units are used for speeds, and regardless of metric-English conversion factors) is the speed above which the 70% factor may be used. This change is carried throughout the applicable text and figures in Chapter 4C.

The FHWA proposes adding a new GUIDANCE statement following the first OPTION statement, and a new SUPPORT statement at the end of the section to better clarify the intended use of the combination of Conditions A and B under Warrant 1.

Additionally, the FHWA proposes adding a new OPTION statement after the second STANDARD statement to explain the use of 56% traffic volumes under certain conditions and modifying Table 4C-1 to include additional criteria for a combination of Conditions A and B as reflected in the text. These changes will better reflect commonly accepted practice that was implicitly allowed in the 1988 MUTCD.

153. In Section 4C.08 Warrant 7, Crash Experience, the FHWA proposes adding a new OPTION statement at the end of the section to explain the use of 56% traffic volumes. This proposed change is consistent with similar proposed changes in Section 4C.02.

154. In Section 4D.01, General, the FHWA proposes removing from the STANDARD statement the requirement that a traffic control signal be operated in either a steady (stop-and-go) mode or a flashing mode at all times. This change is proposed because it is in conflict with other STANDARD statements in Chapter 4E that require flashing indications (flashing UPRaised HAND pedestrian signal indications) to be displayed during an otherwise steady mode of traffic control signal operation. This change also allows practitioners the flexibility to use flashing indications along with steady indications where appropriate in a signal sequence to improve the efficiency or safety of the intersection. Additionally, the FHWA proposes reordering the paragraphs in this STANDARD statement so that existing last paragraph will become the first

paragraph. This revision is proposed to improve clarity.

The FHWA also proposes adding to the GUIDANCE statement that the location of signalized midblock crosswalks should be at least 30 m (100 ft) away from adjacent stop or yield controlled driveways or streets. The purpose of this proposed change is to reduce potential conflicts and improve safety, and to codify previous official interpretations of the MUTCD on this subject. The FHWA proposes that this guidance become effective immediately for new signalized midblock crosswalks. The FHWA proposes a phase-in compliance period of 10 years for existing signalized midblock crosswalks in good condition to minimize any impact on State or local highway agencies.

155. In Section 4D.04 Meaning of Vehicular Signal Indications, the FHWA proposes removing the phrase “unless otherwise determined by law” from the beginning of the STANDARD statement to conform to the Uniform Vehicle Code.

The FHWA proposes adding to item A.3 that the pedestrian does not automatically have the right of way when starting to cross on a green signal to conform to the Uniform Vehicle Code.

The FHWA proposes adding to item C.2 that a turn on a RED ARROW signal indication after stopping is allowed when a sign is in place permitting the turn on red arrow to conform to the Uniform Vehicle Code. Additionally, the FHWA proposes removing the existing OPTION statement at the end of the section dealing with right-turn on a red arrow to eliminate redundancy with the change in the STANDARD statement.

156. In Section 4D.05 Application of Steady Signal Indications, the FHWA proposes adding protected/permissive mode left-turn operation with separate left-turn signal faces as an exception to when a steady CIRCULAR RED signal indication is required to be displayed with the appropriate GREEN ARROW signal indication. This proposed change clarifies the proper display with the “Dallas” type left turn phasing.

The FHWA proposes adding a new item B.4 to the STANDARD statement to prohibit signal displays that result in what is referred to as the “yellow trap” unless certain ameliorating measures are taken. The “yellow trap” is a potentially adverse safety situation inherent in some signal phasing sequences involving lagging left turns in one direction. A left turning driver, in the intersection waiting for gaps in oncoming traffic in order to turn left on

a permissive green signal indication, sees the signals for adjacent through traffic change from green to yellow and mistakenly assumes that oncoming through traffic also has yellow signals at the same time and will be soon coming to a stop. The proposed new text reflects current best practices and addresses the safety concerns. The FHWA proposes that this standard become effective immediately for new or replacement of damaged existing traffic control signal installations. The FHWA proposes a phase-in compliance period of 5 years for existing traffic control signals in good condition to minimize any impact on State or local highway agencies.

The FHWA proposes revising item D of the STANDARD statement to correspond with changes to Section 4D.04 that a turn on a RED ARROW signal indication after stopping is allowed when a sign is in place permitting the turn on red arrow, to conform to the Uniform Vehicle Code.

Additionally, the FHWA proposes adding to item F.2 of the STANDARD statement to require the use of a "U Turn Yield to Right Turn" sign when U-turns on a green arrow signal conflict with right turns on a green arrow signal. This proposed change is necessary to establish right-of-way of one movement over a conflicting movement, and to provide for safe operations.

157. In Section 4D.06 Application of Steady Signal Indications for Left Turns, the FHWA proposes replacing the existing item A in the STANDARD statement with new text that provides for the use of separate or shared left turn signal faces and the use of "Dallas" type displays and sequences for "permissive only" mode of operation. This revision is proposed in order to make this type of solution available to practitioners to eliminate the "yellow trap" situation for "permissive only" mode left turns as well as for "protected-permissive" mode.

Additionally, the FHWA proposes revising the text of item B.2 of the STANDARD statement for clarity and to correct an error from the previous edition. The proposed change reflects the fact that a visibility-limited CIRCULAR RED signal indication is considered not readily visible to drivers in the through lane(s).

Additionally, the FHWA proposes to revise the text of item C of the STANDARD statement to remove the requirement that the left-turn signal face simultaneously display a CIRCULAR RED signal indication with the left-turn GREEN ARROW signal indication during the protected left-turn movement in Protected/Permissive Mode, if a separate left-turn signal face is

provided. This proposed change corrects an error from the previous edition.

158. In Section 4D.07 Application of Steady Signal Indications for Right Turns, in item B.2 of the STANDARD statement, the FHWA proposes correcting an error in the previous edition on the proper use of the RIGHT TURN SIGNAL sign and revising the statement for clarity. The proposed change reflects the fact that a visibility-limited CIRCULAR RED signal indication is considered not readily visible to drivers in the through lane(s).

159. In Section 4D.09 Unexpected Conflicts During Green or Yellow Intervals, the FHWA proposes revising item A of the STANDARD statement to add an exception for the situation regarding U-turns as described in item F.2 of Section 4D.05 to the prohibition of displaying a steady GREEN ARROW or YELLOW ARROW signal indication to vehicular movements that conflict with other vehicles moving on a green or yellow signal indication. This proposed change corresponds to the change proposed in Section 4D.05.

160. In Section 4D.12 Flashing Operation of Traffic Control Signals, the FHWA proposes revising the GUIDANCE statement to eliminate the word maximum in describing the duration of six seconds for a steady red clearance interval in the change from red-red flashing mode to steady (stop and go) mode. This change is proposed because six seconds has been found by practitioners to be a reasonable and practical duration to provide for safe operation in the transition of modes. Since this specific duration of six seconds is a recommended condition, this proposed change allows agencies to use longer or shorter durations if justified by unique conditions. The FHWA proposes that this guidance become effective immediately for new or replacement of damaged existing traffic control signal installations. The FHWA proposes a phase-in compliance period of 5 years for existing traffic control signals in good condition to minimize any impact on State or local highway agencies.

161. In Section 4D.13 Preemption and Priority Control of Traffic Control Signals, the FHWA proposes changing the first paragraph of the SUPPORT statement to an OPTION statement to be consistent with similar conditions in other parts of the MUTCD.

The FHWA proposes revising the remaining portions of the SUPPORT statement to clarify that boats and trains are not "vehicles" under accepted definitions. The FHWA proposes adding light rail transit to the list of modes that

typically get preemption control, to reflect current typical practice. Additionally, in the last paragraph of the SUPPORT statement, the FHWA proposes switching the first two items in the order of priority from "boat, train" to "train, boat" because trains typically cannot be stopped as easily as boats.

162. In Section 4D.15 Size, Number, and Location of Signal Faces by Approach, the FHWA proposes revising item D in the second STANDARD statement to change from 45 m (150 ft) to 55 m (180 ft) the maximum distance beyond the stop line that a signal face installed to satisfy the requirements of Items B and C in this STANDARD and at least one and preferably both of the signal faces required by item A in this STANDARD be located unless a supplemental near side signal face is provided.

Additionally, the FHWA proposes adding a new item D.2 to the second STANDARD statement to require the use of engineering judgment of the conditions, including worst-case visibility conditions, to determine if the provision of a supplemental near-side signal face would be beneficial, if the nearest signal face is located between 45 and 55 m (150 and 180 ft) from the stop line. The FHWA also proposes changing Figure 4D-2 to reflect the text.

The proposed changes to the second STANDARD statement and to Figure 4D-2 better accommodate signal design at large intersections.

163. In Section 4D.16 Number and Arrangement of Signal Sections in Vehicular Traffic Control Signal Faces, the FHWA proposes revising the seventh paragraph of the STANDARD statement to change the phrase "variable indication" to "dual-arrow" to clarify that single sections that display green and yellow arrows are permissible. Single section heads capable of displaying red, yellow, and green indications in the one section are not allowed due to color blindness and other issues. This proposed change is carried throughout the MUTCD.

164. In Section 4D.18 Design, Illumination, and Color of Signal Sections, the FHWA proposes removing the last GUIDANCE statement concerning the color of signal housings as there is no consensus that yellow signal housings are universally best in all of the various environments. In actual practice, far fewer than 50 percent of the signal heads in the United States are highway yellow. California, New York, and many other very large jurisdictions require signal heads to be other colors, such as green, black, gray, brown, etc. Some states require the front

surfaces of the housings to be black while painting the back surfaces of the housing yellow.

165. In Section 4D.21 Traffic Signal Signs, Auxiliary, the FHWA proposes revising the first paragraph of the STANDARD statement to specify that the required minimum clearance of the total assembly of traffic signal signs is the minimum vertical and horizontal clearances of sign assemblies.

Additionally, the FHWA proposes revising the GUIDANCE statement to clarify that traffic signal signs should be located adjacent to the signal face to which they apply.

166. In Section 4E.02 the FHWA proposes changing the title of the section from "Meaning of Pedestrian Signal Indications" to "Meaning of Pedestrian Signal Head Indications" to make it clear that what is being referred to are the "walk-don't walk" pedestrian signal heads, and not the red-yellow-green signal heads that may serve as indications for pedestrians at some locations. This proposed change is made throughout Chapter 4E.

Additionally, the FHWA proposes revising item A of the STANDARD statement to indicate that a pedestrian does not automatically have the right of way when starting to cross on a WALK signal. This proposed change conforms to the Uniform Vehicle Code.

167. In Section 4E.03 Application of Pedestrian Signal Heads, the FHWA proposes removing item D of the STANDARD statement because it implies that pedestrian signal heads are required at all locations where split phase timing is used without regard to the presence or absence of pedestrian activity. That is not the intent of this section.

168. In Section 4E.04, the FHWA proposes changing the title of the section from "Size, Design, and Illumination of Pedestrian Signal Indications" to "Size, Design, and Illumination of Pedestrian Signal Head Indications" for consistency with the proposed change in Section 4E.02. The FHWA also proposes specifying in the first paragraph of the STANDARD statement that symbolized messages for pedestrian signal heads are required to be solid and disallowing use of "outline style" symbols. The FHWA also proposes changing Figure 4E-1 to reflect the text and to eliminate the illustration of the "outlined symbol." These changes are proposed because of the difficulty that elderly people and people with diminished visual acuity have in seeing the outline style symbols. The outline style symbols are also often occluded when used with egg crate baffles. Solid symbols provide the

necessary luminous intensity and can be economically manufactured using light emitting diodes (LEDs) or other technologies. The FHWA proposes that this standard become effective immediately for new or replacement of damaged existing pedestrian signal faces. The FHWA proposes a phase-in compliance period of 10 years for existing pedestrian signal faces in good condition to minimize any impact on State or local highway agencies.

The FHWA also proposes adding a seventh paragraph to the STANDARD statement to specify the flash rate for the flashing upraised hand pedestrian signal head indication. The FHWA proposes this change to be consistent with flash rates specified in other sections of Part 4.

Additionally, the FHWA proposes adding an OPTION statement and a STANDARD statement at the end of the section to allow and describe the use of an animated eyes symbol on pedestrian signal heads. The FHWA proposes adding the animated eyes traffic control device because research has documented benefits to alerting pedestrians to look both ways for approaching vehicles.

169. In Section 4E.06 Accessible Pedestrian Signals, the FHWA proposes adding to the second paragraph of the fourth GUIDANCE statement how sound pressure levels of the accessible walk signal tone should be measured, to reflect typical industry practices.

170. The FHWA proposes adding a new section following Section 4E.06 Accessible Pedestrian Signals. The proposed new section is numbered and titled "Section 4E.07 Countdown Pedestrian Signals" and contains OPTION, STANDARD, and GUIDANCE statements on the design, use, and operation of countdown pedestrian signals. The remaining sections in Chapter 4E would be renumbered accordingly. Countdown pedestrian signals have been shown by research and experimentation to be beneficial to pedestrians by providing additional information to help pedestrians judge the time remaining to cross the street. Uniformity in the design and operation of countdown pedestrian signals is needed to minimize pedestrian confusion. The FHWA proposes that this section become effective immediately for new or replacement of damaged existing countdown pedestrian signal installations. The FHWA proposes a phase-in compliance period of 10 years for existing countdown pedestrian signals in good condition to minimize any impact on State or local highway agencies.

171. In existing Section 4E.07 (new Section 4E.08) Pedestrian Detectors, the FHWA proposes removing from the last STANDARD statement the statement that instructional signs are not required if special purpose pushbuttons are used. The current design of special purpose pushbuttons does not require a sign to make users aware of their intended purpose. Additionally, the FHWA proposes adding to the third GUIDANCE statement comparable text that the special purpose pushbuttons do not need an instructional sign.

The FHWA proposes adding an OPTION statement at the end of the section to allow the use of special pedestrian detectors to provide additional crossing time for pedestrians with special needs. This proposed change reflects the availability of new technology and can improve safety for pedestrians with special needs.

172. In existing Section 4E.08 (new Section 4E.09) Accessible Pedestrian Signal Detectors, the FHWA proposes changing the SUPPORT statement to a STANDARD statement for consistency, since other definitions in the MUTCD are STANDARDS. Additionally, the FHWA proposes relocating the existing first STANDARD statement to become part of the new first STANDARD statement at the beginning of the section.

The FHWA proposes retitling Figure 4E-2 from "Recommended Pushbutton Locations for Accessible Pedestrian Signals" to "Typical Locations for Accessible Pedestrian Signals" to be consistent with terminology used throughout the MUTCD for figures. The FHWA also proposes clarifying the arrows symbolizing push buttons in Figure 4E-2.

173. In existing Section 4E.09 (new Section 4E.10) Pedestrian Intervals and Signal Phases, the FHWA proposes removing from the first OPTION statement the desire to favor the length of an opposing signal phase as a condition for using walk intervals as short as 4 seconds. This change is proposed to encourage enhanced consideration of pedestrian timing needs.

In the second GUIDANCE statement the FHWA proposes increasing the pedestrian clearance time so that it is sufficient to allow the pedestrian to clear the full width of the traveled portion of the roadway. The current pedestrian clearance time is sufficient to allow the pedestrian to clear just to the center of the farthest traveled lane. With the increases in the number of coordinated signal systems, and with platoons of vehicles potentially arriving at the intersection at the start of the

green indication, it is a significant safety concern for pedestrians to be given only enough clearance time that they are in the middle of a travel lane when the platoon arrives at the start of green. The proposed change will result in only a very small increase in the pedestrian clearance time but will significantly enhance pedestrian safety. The FHWA proposes that this guidance become effective immediately for new or replacement of damaged existing signal installations. The FHWA proposes a phase-in compliance period of 5 years for existing traffic control signals in good condition to minimize any impact on State or local highway agencies.

Additionally, the FHWA proposes adding to the first paragraph of the last OPTION statement the option of containing the pedestrian clearance time within the vehicular green and yellow change intervals. This proposed change reflects common practice of many jurisdictions.

174. In Section 4F.01 Applications of Emergency-Vehicle Traffic Control Signals, the FHWA proposes adding to the OPTION statement the choice of installing an Emergency Beacon instead of an emergency vehicle traffic control signal. This proposed change corresponds to the proposed new Section 4F.04 that adds Emergency Beacons as an alternative to Emergency Vehicle Traffic Control Signals.

Additionally, the FHWA proposes revising the GUIDANCE statement to recommend following the provisions of Chapter 4D not only if a numerical signal warrant is met, but also if a decision is made to install a signal after an engineering study, for consistency with Chapter 4C.

175. In Section 4F.02 Design of Emergency-Vehicle Traffic Control Signals, the FHWA proposes revising the GUIDANCE statement to indicate that two signal faces are required for each major street approach, and that at least one of those two signal faces should be located over the roadway. This proposed change is for consistency with Chapter 4D.

176. The FHWA proposes adding a new section following Section 4F.03 Operation of Emergency-Vehicle Traffic Control Signals. This proposed new section is numbered and titled "Section 4F.04 Emergency Beacon" and contains STANDARDS, SUPPORT, GUIDANCE, and OPTIONS concerning the design, use, and application of Emergency Beacons. The FHWA proposes adding the Emergency Beacon to the MUTCD to provide for uniformity in the design and operation of this type of device. Research and experimentation has indicated that, under certain

circumstances, the Emergency Beacon is more effective than an Emergency Vehicle Traffic Control Signal in terms of capturing the approaching driver's attention and achieving compliance with the requirement to come to a stop when emergency vehicles are egressing. The Emergency Beacon is typically less costly to install and thus imposes less of a burden on jurisdictions in providing safe operations at locations where emergency vehicles cross or enter a major road. The FHWA proposes that this section become effective immediately for new or replacement of damaged existing emergency beacon installations. The FHWA proposes a phase-in compliance period of 10 years for existing emergency beacons in good condition to minimize any impact on State or local highway agencies.

177. In Section 4G.02 Design of Traffic Control Signals for One-Lane, Two-Way Facilities, the FHWA proposes changing the GUIDANCE statement, concerning the applicability of provisions of Chapter 4D to traffic control signals for one-lane two-way facilities and exceptions to these provisions, to a STANDARD statement. This change is proposed to enhance safety and operation for road users, who do not readily distinguish signals for one-lane, two-way facilities from any other type of highway traffic signals.

178. In Section 4I.02 Design and Location of Movable Bridge Signals and Gates, the FHWA proposes removing from item A of the STANDARD statement the explanation that then three-section signal faces with red, yellow and green signal lenses are generally used if movable bridge operation is quite frequent. The FHWA also proposes adding comparable text in a proposed SUPPORT statement, which follows the third paragraph of the STANDARD statement. The FHWA proposes this change because the statement is too vague for a STANDARD.

Additionally, the FHWA proposes removing the phrase "on long bridges or causeways" from the eighth paragraph of the 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.

179. In Section 4J.03 Design of Lane-Use Control Signals, the FHWA proposes adding 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 proposes changing the definition of low speeds from 70 km/h (45 mph) or less to 60

km/h (40 mph) or less to be consistent with similar criteria regarding signal lens sizes in Chapter 4D. In these circumstances, the use of smaller sizes provides a cost savings and improves aesthetics without compromising effectiveness.

180. In Section 4K.04 Speed Limit Sign Beacon, the FHWA proposes adding to the STANDARD statement a requirement that a Speed Limit Beacon be used only to supplement a Speed Limit sign. This change is proposed to reinforce proper use of the different types of beacons.

181. In Section 4L.01 Application of In-Roadway Lights, the FHWA proposes revising the SUPPORT statement to include marked crosswalks in advance of roundabouts, highway-rail grade crossings, and highway-light rail grade crossings as additional situations for possible use of in-roadway lights. The state-of-the-art in designing modern roundabouts calls for pedestrian crosswalks to be located about one vehicle length in advance of the "yield line" where approaching vehicles enter the roundabout. A crosswalk located in this position operates essentially as a mid-block uncontrolled crosswalk because the yield sign controlling vehicle entry into the roundabout does not also control the vehicles at the crosswalk. The proposed reference to grade crossings is added due to the proposed new Section 4L.03.

182. The FHWA proposes adding a new section following Section 4L.02 In-Roadway Warning Lights at Crosswalks. The proposed new section is numbered and titled "Section 4L.03 In-Roadway Lights at Highway-Rail Grade Crossings and Highway-Light Rail Grade Crossings" and contains 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. Research and experimentation has indicated that red in-roadway lights at the stop line of an approach to a grade crossing controlled by active grade crossing warning systems can provide effective additional emphasis of the need for road users to stop and remain stopped for the passage of a train or light rail vehicle. Also, the use of yellow in-roadway warning lights in advance of the grade crossing provides further warning of the crossing to approaching road users, supplementing advance warning signs and pavement markings. The FHWA proposes that this section become effective immediately for new or replacement of existing in-roadway lights at highway-rail and highway-light

rail transit grade crossings. The FHWA proposes a phase-in compliance period of 10 years for existing installations of in-roadway lights at highway-rail and highway-light rail transit grade crossings in good condition to minimize any impact on State or local highway agencies.

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

183. In Section 5A.03 Design, the FHWA proposes revising Figure 5A-1 Minimum Sign Sizes on Low-Volume Roads to reduce the minimum size of the W20-1, W20-7a, W20-7b, W21-1a, and W21-6 signs from 900 × 900 mm (36 × 36 in) to 600 × 600 mm (24 × 24 in) to be consistent with minimum sizes of other signs of comparable design.

184. In Section 5B.03 Speed Limit Signs (R2 Series), the FHWA proposes revising the illustration of the metric speed limit sign to correspond to a similar proposed revision in Chapter 2B. The proposed design of the metric speed limit sign includes the metric speed value within a green circle with the legend “km/h” below it.

185. In Section 5B.04 Traffic Movement and Prohibition Signs (R3, R4, R5, R6, R9, R10, R11, R12, R13, and R14), the FHWA proposes adding an illustration of the PASS WITH CARE, (R4-2), sign to accompany the DO NOT PASS (R4-1) sign, because this sign is commonly used.

186. In Section 5C.05, the FHWA proposes retitling the section from “Narrow Bridge Sign (W5-2a)” to “NARROW BRIDGE Sign (W5-2)” because in Chapter 2C of the MUTCD the FHWA proposes removing the symbol version of this sign and requiring the use of only the word version of the sign.

187. In Section 5C.10 Advisory Speed Plaque (W13-1), the FHWA proposes revising the illustration of the metric advisory speed plaque to correspond to a similar proposed revision in Chapter 2C. The proposed design of the metric advisory speed plaque includes the metric speed value within a black circle with the legend “km/h” below it.

188. In Section 5F.04, STOP and YIELD Signs, FHWA proposes removing the words “State or local” from the OPTION statement, to reflect that jurisdictions responsible for grade crossings may be any level of government or may be quasi-governmental or non-governmental.

189. In Section 5G.03 Channelization Devices, the FHWA proposes replacing the phrase “temporary traffic control zone” with “work space” in the

OPTION statement to correspond with the appropriate terminology in Part 6.

191. In Section 5G.05 Other Traffic Control Devices, the FHWA proposes adding a SUPPORT statement referring to Figure 5G-1 for some of the signs that might be applicable in a temporary traffic control zone on a low-volume road. The FHWA also proposes revising Figure 5G-1 Temporary Traffic Control Signs on Low-Volume Roads, to change the W20-7a Flagger sign to conform with the correctly designed sign in Section 6F.29 and to change the metric version of the W13-1 Advisory Speed Plaque to conform to the use of the black circle for metric speed values as proposed in Chapter 2C.

*Discussion of Proposed Amendments to Part 6—Temporary Traffic Control*

192. In Section 6A.01 General, the FHWA proposes adding to a number of places in this section, and in a number of sections in Part 6, references to ensure that temporary traffic controls involving or impacting pedestrian walkways and paths account for the needs of pedestrians with disabilities. These proposed additions follow the accessibility requirements of the Americans with Disabilities Act of 1990 (ADA) (Public Law 101-366, 104 Stat. 327, July 26, 1990. 42 USC 12101-12213 (as amended)). In this regard FHWA proposes a SUPPORT statement identifying the Act following the first STANDARD statement.

Additionally, the FHWA proposes adding to this section and in a number of sections in Part 6, references to ensuring that the needs of bicyclists through temporary traffic control zones are met, as many temporary traffic control plans affect a substantial amount of bicycle activity.

Additionally, the FHWA proposes adding to a number of places in this section and a number of sections in Part 6 statements that temporary traffic control principles are applicable to managing traffic incidents along the roadway, as incidents are temporary road or lane closures and are one of the major causes of congestion. In this regard the FHWA proposes adding a new chapter titled “Chapter 6I Control of Traffic Through Incident Areas.”

193. In Section 6B.01 Fundamental Principles of Temporary Traffic Control, the FHWA proposes adding to a number of places in this section references about accounting for the needs of pedestrians with disabilities, bicyclists, and traffic incident management responders.

Additionally, the FHWA proposes adding to the first and second GUIDANCE statements that the needs of pedestrians with disabilities should be

considered when planning, designing and establishing a temporary traffic control zone. This is in accordance with ADA, Title II, paragraph 35.130.

Additionally, the FHWA proposes adding to the second GUIDANCE statement that the needs of operators of commercial vehicles should be assessed and appropriate accommodations made when developing a public relations plan for a temporary traffic control zone.

194. In Section 6C.01 Temporary Traffic Control Plans, the FHWA proposes adding to the first GUIDANCE statement that planning for all road users, including pedestrians (especially those with disabilities) and bicyclists, should be part of the planning and design of the temporary traffic control plan. The FHWA also proposes adding to the first GUIDANCE statement that provisions for effective continuity of accessible circulation paths for pedestrians should be incorporated into the temporary traffic control process.

These proposed changes will enhance the quality of traffic control plans in terms of addressing the needs of all road users.

195. In Section 6C.02 Temporary Traffic Control Zones, the FHWA proposes adding to the SUPPORT statement that the incident area begins at the first warning sign or vehicle with a rotating/strobe light and extends to the last temporary traffic control device or to a point where road users are allowed to return to the original lane alignment. This proposed change is needed to clarify the limits of an incident area.

196. In Section 6C.06 Activity Area, the FHWA proposes adding a new table numbered and titled “Table 6C-2 Stopping Sight Distance as a Function of Speed.” This table is identical to Table 6E-1. The current Table 6C-2 is renumbered as Table 6C-3, Taper Length Criteria for temporary Traffic Control Zones. The FHWA also proposes adding a reference to new Table 6C-2 to the second OPTION statement, as these distances may be used to determine the length of a buffer space.

197. In Section 6C.07 Termination Area, the FHWA proposes adding to the OPTION statement that a longitudinal buffer space may be used between the work space and the beginning of the downstream taper, to provide flexibility to jurisdictions.

198. In Section 6D.01 Pedestrian Considerations, the FHWA proposes adding a new GUIDANCE statement at the beginning of the section to indicate that pedestrians of all ages and abilities should be provided a detectable and usable travel path.



Additionally, the FHWA proposes modifying the first SUPPORT statement to include information on other publications that can provide useful data for assisting the planning for, and the design of pedestrian facilities.

Additionally, the FHWA proposes adding to the first STANDARD statement that in addition to visual signage, equivalent information in alternate formats for pedestrians who have visual disabilities shall be provided so that they are not trapped on a closed facility.

Additionally, in the existing first, second, third, fourth, fifth, and sixth GUIDANCE statements the FHWA proposes adding information about the general needs of pedestrians with visual disabilities; the desirability for providing a channelized pedestrian route through or around the activity area as opposed to closing the walkway; the possible need for audible warnings and directions; the need for fencing or barriers with a continuous edging at the bottom for assisting a cane user; the need to minimize abrupt changes in grade or terrain; that temporary traffic control devices and any ballast or mounting equipment should not intrude into the minimum 1500 mm (60 in) width of clear accessible passageway; and that lining a walkway with tape, rope, or plastic chain strung between devices is not detectable to pedestrians with visual limitations.

The FHWA proposes the changes to this section to enhance the consideration of pedestrian needs in temporary traffic control zones. The FHWA proposes a phase-in compliance period of 5 years for these changes in order to minimize any impact on State or local highway agencies as they design and advertise new projects, and as they undertake maintenance activities.

199. In Section 6D.02 Worker Considerations, the FHWA proposes adding to the SUPPORT statement information on the need to separate workers on foot from moving construction vehicles.

Additionally, the FHWA proposes adding to the GUIDANCE statement that workers exposed to the risks of moving roadway traffic or construction equipment should wear high visibility apparel meeting the requirements of the American National Standard for High Visibility Safety Apparel<sup>4</sup> and labeled

<sup>4</sup> American National Standard for High Visibility Safety Apparel," ANSI/ISEA 107-1999, 1999 edition, is available from ISEA—The Safety Equipment Association (ISEA) by telephone (703) 525-1695, facsimile (703) 528-2148, mail ISEA, 1901 North Moore Street, Suite 808, Arlington, VA 22209, or at its web site <http://www.safetycentral.org/isea>.

as meeting ANSI 107-1999 Standard Performance for Class 1, 2, or 3 risk exposure. The FHWA proposes a phase-in compliance period of 5 years for this change in order to minimize any impact on State or local highway agencies.

Additionally, in the same GUIDANCE statement, the FHWA proposes adding "Activity Area" and "Worker Safety Planning" to the list of key elements of worker safety and temporary traffic control management that should be considered to improve worker safety. The FHWA proposes that the worker safety plan should be in accordance with the Occupational Safety and Health Act "General Duty Clause" Section 5(a)(1) "Public Law 91-596, 84 Stat. 1590, December 29, 1970, as amended, and with the requirement to assess worker risk exposures for each job site and job classification as per 1926.20(b)(2) of the Occupational Safety and Health Administration (OSHA) Regulations as contained in 29 CFR.

These proposed additions are expected to improve worker safety by reducing the conflicts between vehicles and workers, by making workers more visible to road users, and by recommending a thorough risk exposure analysis as part of the worker safety planning process.

200. In Section 6E.01 Qualifications for Flaggers, the FHWA proposes rewriting the GUIDANCE statement in its entirety to describe in terms more appropriate to a temporary traffic control zone environment the recommended skills and abilities for a flagger. This proposed change is needed to reflect the state of the practice in flagger selection and training.

201. In Section 6E.02 High-Visibility Clothing, the FHWA proposes adding to the first STANDARD statement the requirement that flaggers wear safety apparel meeting the requirements of the American National Standard for High Visibility Apparel and labeled as meeting ANSI 107-1999 Standard Performance for Class 3 risk exposure, to improve worker visibility to approaching road users. The FHWA proposes a phase-in compliance period of 5 years for these changes in order to minimize any impact on State or local highway agencies.

202. In Section 6E.03 Hand-Signaling Devices, the FHWA proposes adding to the OPTION statement other design configurations for adding white lights to the STOP/SLOW paddle to improve conspicuity. These additional design configurations of white lights will provide additional flexibility in improving visibility of the paddle.

Additionally, the FHWA proposes to add to the second STANDARD

statement requirements for the performance of flashing lights that are used on the STOP/SLOW paddle. These flashing rate values are identical to the flashing rate used in other parts of the MUTCD. This is proposed for consistency.

203. In Section 6E.05 Flagger Stations, the FHWA proposes adding a GUIDANCE statement following the first STANDARD statement to indicate that flagger stations should be located so that an errant vehicle has space to stop without entering the work space, to enhance worker safety.

Additionally, the FHWA proposes changing the title of Table 6E-1 from "Distance of Flagger Station in Advance of the Work Space" to "Stopping Sight Distance as a Function of Speed" and changing the distance values to be in agreement with AASHTO's "A Policy on Geometric Design of Highways and Streets" book.

Additionally, the FHWA proposes changing the GUIDANCE statement to a STANDARD statement to indicate that flagger stations shall be preceded by an advance warning sign or signs, and that flagger stations shall be illuminated at night. The FHWA believes that anytime a flagger is active at night, illumination of the flagger station is important to make the flagger more visible to approaching road users.

204. In Section 6F.02 General Characteristics of Signs, the FHWA proposes adding to the first OPTION statement that warning and guide signs used for temporary traffic control of incident management situations may have a black legend and border on a fluorescent coral background. This change is proposed based on research and experimentation conducted in Virginia.

205. In Section 6F.03 Sign Placement, in the first STANDARD statement, the FHWA proposes adding "bicycle movements" to the list of reasons why in urban areas the distance between the bottom of the sign and the top of the near edge of the traveled way shall be at least 2.1 m (7 ft), to enhance safety for bicyclists.

Additionally, the FHWA proposes adding language requiring signs to be mounted and placed in accordance with Section 4.4 of the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)."<sup>5</sup>

<sup>5</sup> "American with Disabilities Act Accessibility Guidelines for Buildings and Facilities," as amended through January 1998, is published by the U.S. Architectural and Transportation Barriers Compliance Board, 1331 F Street, NW, Suite 1000, Washington, D.C. 20004-1111. It may be obtained from the Access Board, or viewed electronically at <http://www.access-board.gov>.

Additionally, the FHWA proposes adding to the second GUIDANCE statement that signs mounted lower than 2.1 m (7 ft) should not project more than 100 mm (4 in) into pedestrian facilities, in accordance with the "Americans With Disabilities Act Accessibility Guidelines For Buildings And Facilities (ADAAG)".

Additionally, the FHWA proposes adding to the OPTION statement at the end of the section that sign supports that are approved for use with longer-term signs may be used for shorter-term signs.

206. In Section 6F.06 Regulatory Sign Design, the FHWA proposes changing the first sentence of the SUPPORT statement to become a new STANDARD statement at the beginning of the section, stating that temporary traffic control regulatory signs shall conform to the standards for regulatory signs presented in Part 2 and in the FHWA's "Standard Highway Signs" book. This sentence currently contains a "shall" but is inadvertently in the SUPPORT statement. The remainder of the SUPPORT statement will remain a SUPPORT statement.

Additionally, the FHWA proposes identifying the three existing page images of regulatory signs that follow page 6F-7 as Figures 6F-3, 6F-4, and 6F-5 and titling them as "Regulatory Signs in Temporary Traffic Control Zones," "Additional Regulatory Signs in Temporary Traffic Control Zones," and "Regulatory Signs for Road Closure and Weight Limits in Temporary Traffic Control Zones." Additionally, on the figure proposed to be identified as Figure 6F-4, Regulatory Signs in Temporary Traffic Control Zones, the FHWA proposes to increase the size of the PEDESTRIAN CROSSWALK sign from 600 x 300 mm (24 x 12 in) to 900 x 450 mm (36 x 18 in), increase the size of the SIDEWALK CLOSED sign from 600 x 300 mm (24 x 12 in) to 750 x 450 mm (30 x 18 in), increase the size of the SIDEWALK CLOSED USE OTHER SIDE and SIDEWALK CLOSED CROSS HERE signs from 600 x 300 mm (24 x 12 in) to 1200 x 600 (48 x 24 in), and increase the size of the SIDEWALK CLOSED AHEAD CROSS HERE sign from 600 x 300 mm (24 x 12 in) to 1200 x 900 mm (48 x 36 in), to make it easier for a pedestrian to read these signs from across a wide street.

207. In Section 6F.12 PEDESTRIAN CROSSWALK Sign (R9-8), the FHWA proposes adding a STANDARD statement following the OPTION statement that if a temporary crosswalk is established, it shall be accessible to pedestrians with disabilities. This proposed change reflects the need to

provide accessibility for disabled pedestrians.

208. In Section 6F.13, SIDEWALK CLOSED Signs (R9-9, R9-10, R9-11, R9-11a), the FHWA proposes adding to the first GUIDANCE statement that Bicycle/Pedestrian Detour (M4-9a) or Pedestrian Detour (M4-9b) signs should be used where pedestrian flow is rerouted, to provide adequate route guidance information to pedestrians.

Additionally, the FHWA proposes adding to the SUPPORT statement that printed signs are not useful to pedestrians with visual disabilities. Nearby accessible pedestrian signals can provide temporary audible information about closures and alternate routes. Tactile map modules available on some accessible pedestrian signal housings can also provide information about closures and alternate routes. These proposed changes are to enhance the provision of information to pedestrians with visual disabilities.

209. In Section 6F.14 Special Regulatory Signs, the FHWA proposes adding a SUPPORT statement referencing Section 2B.15 for information regarding the use of the FINES HIGHER sign, since this sign can be useful in enhancing speed enforcement in temporary traffic control zones.

210. In Section 6F.15 Warning Sign Function, Design, and Application, the FHWA proposes adding to the first OPTION statement that warning signs used for temporary traffic control incident management situations may have a black legend and border on a fluorescent coral background, as an alternative to black on orange. This is consistent with proposed changes in Section 6F.02 and the proposed new Chapter 6I.

Additionally, the FHWA proposes adding to the GUIDANCE statement that where road users include pedestrians with hearing or visual disabilities, the provision of supplemental audible or tactile warning information should be considered to alert pedestrians.

211. In Section 6F.17 ROAD (STREET) WORK Sign (W20-1), the FHWA proposes adding an OPTION statement indicating that, where traffic can enter a temporary traffic control zone from a crossroad or a major (high volume) driveway, an advance warning sign may be used on the crossroad or major driveway to alert road users. This proposed change allows jurisdictions additional flexibility to provide warning signs when needed.

212. In Section 6F.24 the FHWA proposes changing the title of the section from "Lane Reduction Sign (W4-2)" to "Lane Ends Sign (W4-2)" to

reflect the sign's name change and to be consistent with Part 2.

213. In Section 6F.28 EXIT OPEN, EXIT CLOSED Signs (E5-2, E5-2a), the FHWA proposes adding a GUIDANCE statement indicating that when an exit ramp is closed, a black on orange EXIT CLOSED panel should be placed diagonally across the interchange/ intersection guide signs, to enhance the information provided to road users.

214. In Section 6F.41, the FHWA proposes changing the title of the section from "SHOULDER DROP-OFF Sign (W8-9a)" to "Shoulder and UNEVEN LANES Signs (W8-4, W8-9, W8-9a, and W8-11)" to reflect the additional signs added to this section.

Additionally, the FHWA proposes adding an OPTION statement to allow the use of the SOFT SHOULDER sign to warn of a soft shoulder condition and the LOW SHOULDER sign to warn of a shoulder condition where there is an elevation difference of less than 75 mm (3 in) between the shoulder and the travel lane. This is proposed to differentiate from shoulder drop-off conditions, which exceed 75 mm (3 in).

Additionally, the FHWA proposes moving the text from Section 6F.42 UNEVEN LANES Sign (W8-11), in its entirety to this section. This information will become a GUIDANCE statement regarding the use of the UNEVEN LANES Sign. With the proposed deletion of Section 6F.42 the remaining sections will be renumbered accordingly.

215. The FHWA proposes adding a new section following existing Section 6F.43 (new Section 6F.42) NO CENTER STRIPE Sign (W8-12). This proposed new section will be numbered and titled "Section 6F.43 Double Reverse Curve Signs (W24 Series)" and will provide information regarding the use of the new Double Reverse Curve signs. The FHWA is proposing these new signs to provide a better depiction of actual roadway conditions when the tangent distance between two reverse curves is insufficient for a second Reverse Curve sign to be placed between the curves.

216. In Section 6F.47 Guide Signs, the FHWA proposes adding to the OPTION statement that guide signs used for temporary traffic control incident management situations may have a black legend and border on a fluorescent coral background, as an alternative to black on orange, to correspond with the proposed change in Section 6F.02.

217. In Section 6F.50 the FHWA proposes changing the title of the section from "Detour Signs and Markers (M4-8, M4-8a, M4-8b, M4-9, and M4-10)" to "Detour Signs and Markers (M4-8, M4-8a, M4-8b, M4-9, M4-9a, M4-

9b, M4–9c, and M4–10)” to include signs specifically for detouring pedestrians and bicyclists.

Additionally, the FHWA proposes adding to the first OPTION statement that signs used for temporary traffic control of incident management situations may have a black legend and border on a fluorescent coral background, as an alternative to black on orange, to correspond to proposed changes in Section 6F.02.

Additionally, the FHWA proposes adding a STANDARD statement following the first GUIDANCE statement that the Pedestrian/Bicycle Detour (M4–9a) sign shall be used where a pedestrian/bicycle detour route has been established because of the closing of a pedestrian/bicycle facility to through traffic. If used, the Pedestrian/Bicycle Detour sign shall have an arrow pointing in the appropriate direction.

Additionally, the FHWA proposes adding to the second OPTION statement that an arrow may be on the sign face or on a supplemental plaque. The Pedestrian/Bicycle Detour (M4–9a) sign or Bicycle Detour (M4–9c) sign may be used where a pedestrian or bicycle detour route (not both) has been established because of the closing of that particular facility to through traffic.

218. In Section 6F.52 Portable Changeable Message Signs, the FHWA proposes adding to the first STANDARD statement that each character module shall use at least a five wide and seven high pixel matrix, based on research regarding visibility and legibility of changeable message signs.

Additionally, the FHWA proposes adding to the first GUIDANCE statement that for a trailer or large truck mounted sign, the letter height should be a minimum of 450 mm (18 in). For a service patrol truck mounted sign, the letter height should be a minimum of 250 mm (10 in). The message panel should have adjustable display rates (minimum of 3 seconds per phase) so that the entire message can be read at least twice at the posted speed, the off-peak 85th percentile prior to work starting, or the anticipated operating speed. Since the FHWA is proposing to retain the current guidance that road users should be able to read the entire message twice, there may be a need in some temporary traffic control zones to use more than one portable Changeable Message sign. The FHWA proposes these changes in response to research addressing the needs of older road users.

Additionally, the FHWA proposes moving the GUIDANCE information regarding the factors that should be taken into account when designing

changeable messages from the end of the section to the end of the first GUIDANCE statement, for better clarity.

Additionally, the FHWA proposes changing and relocating from the first GUIDANCE statement to the following OPTION statement that smaller letter sizes may be used on a sign mounted on a trailer or large truck provided that the message is legible from a minimum distance of 200 m (650 ft), or a sign mounted on a service patrol truck provided that the message is legible from a minimum distance of 100 m (330 ft). This proposed change will provide flexibility to use smaller letter sizes as long as the legibility distance can be maintained.

Additionally, the FHWA proposes adding to the second STANDARD statement to clarify that the mounting of Portable Changeable Message signs on a trailer, a large truck, or a service patrol truck shall be such that the bottom of the message sign panel shall be a minimum of 2.1 m (7 ft) above the roadway in urban areas and 1.5 m (5 ft) in rural areas when it is in the operating mode, to correspond with mounting heights for post-mounted signs.

219. In Section 6F.53 Arrow Panels, the FHWA proposes adding to the first GUIDANCE statement that an arrow panel in the arrow mode should be used to advise approaching road users of a lane closure along major multilane roadways in situations involving heavy traffic volumes, high speeds, and/or limited sight distances, or at other locations and under other conditions where road users are less likely to expect such lane closures. This change is proposed to enhance the information provided to road users.

220. In Section 6F.55 Channelizing Devices, following the first SUPPORT statement, the FHWA proposes adding a STANDARD statement, GUIDANCE statement, and another STANDARD statement defining the use of channelizing devices to channelize pedestrians and that they have to be detectable to users of long canes.

Additionally, the FHWA proposes adding a note to Figure 6F–14 (Sheet 1 of 2) that where drums, cones, or tubular markers are used to channelize pedestrians, they shall be located such that there are no gaps between the bases of the devices, in order to create a continuous bottom, and the height of each individual drum, cone, or tubular marker shall be no less than 915 mm (36 in) to be detectable to users of long canes.

Additionally, the FHWA proposes adding a note to Figure 6F–14 (Sheet 2 of 2) that where barricades are used to channelize pedestrians, there shall be

continuous detectable bottom and top rails with no gaps between individual barricades to be detectable to users of long canes. The bottom of the bottom rail shall be no higher than 150 mm (6 in) above the ground surface. The top of the top rail shall be no lower than 915 mm (36 in) above the ground surface.

These proposed changes are needed to assure detectability to long cane users of devices used to channelize pedestrians in temporary traffic control zones. The FHWA proposes a phase-in compliance period of 5 years for these changes in order to minimize any impact on State or local highway agencies.

221. In Section 6F.56 Cones, the FHWA proposes adding to the STANDARD statement that retroreflectorization of cones that are more than 900 mm (36 in) in height shall be provided by horizontal, circumferential, alternating orange and white retroreflective stripes that are 100–150 mm (4 to 6 in) wide. Each cone shall have a minimum of two orange and two white stripes with the top stripe being orange. Any non-retroreflective spaces between the orange and white striped shall not exceed 75 mm (3 in) in width. These proposed changes will enhance the visibility of cones and improve safety in temporary traffic control zones. The FHWA proposes a phase-in compliance period of 5 years for these changes in order to minimize any impact on State or local highway agencies.

Additionally, in the first GUIDANCE statement the FHWA proposes adding that cones should not be used for pedestrian channelization or as pedestrian barriers in temporary traffic control zones on or along sidewalks unless they are continuous between individual devices and detectable to users of long canes. Non-continuous, non-detectable series of cones have been found to be safety problems for pedestrians with visual disabilities.

222. In Section 6F.57 Tubular Markers, the FHWA proposes adding to the GUIDANCE statement that tubular markers should not be used for pedestrian channelization or as pedestrian barriers in temporary traffic control zones on or along sidewalks unless they are continuous between individual devices and detectable to users of long canes. . Non-continuous, non-detectable series of tubular marker have been found to be safety problems for pedestrians with visual disabilities.

223. In Section 6F.58 Vertical Panels, the FHWA proposes adding to the first STANDARD statement that vertical panels shall be mounted with the top a minimum of 900 mm (36 in) above the roadway and a minimum of 1050 mm

(42 in) above the pedestrian travel way, so as not to interfere with pedestrians.

219. In Section 6F.59 Drums, the FHWA proposes adding to the GUIDANCE statement that drums should not be used for pedestrian channelization or as pedestrian barriers in temporary traffic control zones on or along sidewalks unless they are continuous between individual devices and detectable to users of long canes. Non-continuous, non-detectable series of drums have been found to be safety problems for pedestrians with visual disabilities.

220. In Section 6F.60 Type I, II, or III Barricades, the FHWA proposes adding a STANDARD statement following the first GUIDANCE statement that barricade supports shall not project into circulation routes more than 100 mm (4 in) from the support between 675 mm (27 in) and 2000 mm (80 in) from the surface, as described in Section 4.4.1 of THE "AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG)", and supports shall not narrow the pedestrian facility to less than 1200 mm (48 in) in width, with a 1500 × 1500 mm (60 × 60 in) passing space at least every 60 m (200 ft), as described in Section 4.3.4 of ADAAG.

Additionally, the FHWA proposes adding to the third existing STANDARD statement that the ballast used with barricades shall not extend into the accessible passage width of 1500 mm (60 in).

These proposed changes will provide for accessible pedestrian passes in temporary traffic control zones. The FHWA proposes a phase-in compliance period of 5 years for these changes in order to minimize any impact on State or local highway agencies.

226. In Section 6F.62 Temporary Traffic Barriers as Channelizing Devices, the FHWA proposes adding SUPPORT and STANDARD statements related to the use of temporary traffic barriers as traffic control devices. These statements are being relocated from Section 6G.04, as they more properly belong in Section 6F.62.

227. The FHWA proposes adding two new sections following Section 6F.62 Temporary Traffic Barriers as Channelizing Devices. The remaining sections will be renumbered accordingly.

Proposed Section 6F.63 Longitudinal Channelizing Barricades, consists of GUIDANCE, OPTION, and SUPPORT statements relating to the use of longitudinal channelizing barricades that are lightweight, deformable devices

that can be used singly as Type I, II, or III barricades.

Proposed Section 6F.64 Other Channelizing Devices, consists of an OPTION statement and a GUIDANCE statement that there may be channelizing devices other than those already described in Part 6 that may be used in special situations based on an engineering study. If used, these other channelizing devices should conform to the general size, color stripe pattern, retroreflectivity, and placement characteristics established for the devices described in Chapter 6F. This use of other channelizing devices was included in the 1988 MUTCD but was inadvertently omitted in the Millennium Edition of the MUTCD.

228. In existing Section 6F.63 (new Section 6F.65) Temporary Raised Islands, the FHWA proposes adding a STANDARD statement following the GUIDANCE statement that at pedestrian crossing locations temporary raised islands shall be cut through or reduced in size to provide at least a 1500 mm (60 in) wide pathway for pedestrians, to meet the ADA requirements and to ensure that all pedestrians, including disabled pedestrians, have a clear and useable facility. The FHWA proposes a phase-in compliance period of 5 years for these changes in order to minimize any impact on State or local highway agencies.

229. In existing Section 6F.64 (new Section 6F.66) Opposing Traffic Lane Divider, the FHWA proposes adding to the STANDARD statement that opposing traffic lane dividers shall not be placed across pedestrian crossings, to ensure that pedestrians have a clear and useable facility.

230. In existing Section 6F.65 (new Section 6F.67) Pavement Markings, the FHWA proposes adding to the STANDARD statement that delineation and channelizing devices for use by pedestrians shall be accessible and detectable to pedestrians who have disabilities and shall be continuous throughout the temporary traffic control zone, to ensure that pedestrians have a useable facility.

Additionally, the FHWA proposes adding a SUPPORT statement at the end of the section that pavement markings alone are generally not sufficient for use by pedestrians who have visual disabilities. Tactile warnings on the roadway surface or audible devices are usually more helpful to these pedestrians.

231. In existing Section 6F.66 (new Section 6F.68) Temporary Pavement Markings, the FHWA proposes modifying the OPTION statement and the second GUIDANCE statement to

indicate the acceptable use of DO NOT PASS and PASS WITH CARE signs instead of pavement markings for temporary situations, rather than the NO PASSING ZONE sign, because these signs provide a more effective regulatory message.

232. In existing Section 6F.69 (new Section 6F.71) Lighting Devices, the FHWA proposes adding to the GUIDANCE statement that the maximum spacing for warning lights should be identical to the channelizing device space requirements, for consistency.

Additionally, the FHWA proposes changing the SUPPORT statement to an OPTION statement to more accurately reflect the uses of lighting devices.

233. In existing Section 6F.70 (new Section 6F.72) Floodlights, the FHWA proposes adding a SUPPORT statement at the end of the section that research indicates that 50 lux (5 foot candles) is a desirable nighttime illumination level where workers are active.

234. In existing Section 6F.72 (new Section 6F.74) Warning Lights, the FHWA proposes adding Type D 360-degree warning lights to the first and second STANDARD statements, the third OPTION statement, and the second GUIDANCE statement, to provide more flexibility in the use of lighting devices.

235. In existing Section 6F.74 (new Section 6F.76) Temporary Traffic Control Signals, the FHWA proposes adding to the first GUIDANCE statement that, where pedestrian traffic is detoured to a temporary traffic control signal, engineering judgment should be used to determine if pedestrian signals or accessible pedestrian signals are needed, to enhance consideration of pedestrian needs in temporary traffic control zones.

Additionally, the FHWA proposes adding a new STANDARD statement that indicates that the supports for temporary traffic control signals shall not encroach into the minimum required pedestrian pathway width of 1500 mm (60 in), to meet the ADA requirements and assure a clear pathway for all pedestrians, including disabled pedestrians.

Additionally, the FHWA proposes adding to the second SUPPORT statement a new item, "the nature of adjacent land uses" to the list of factors related to the design and application of temporary traffic control signals. The remaining items will be re-lettered.

236. In existing Section 6F.75 (new Section 6F.77) Temporary Traffic Barriers, the FHWA proposes modifying the first SUPPORT statement by deleting the last two sentences related to the

functions of temporary traffic barriers and adding a portion of text from Section 6G.11, to more clearly describe the four primary functions of temporary traffic barriers.

237. In existing Section 6F.76 (new Section 6F.78) Crash Cushions, the FHWA proposes adding a STANDARD statement that damaged crash cushions shall be promptly repaired or replaced, to maintain their crashworthiness.

238. In existing Section 6F.78 (new Section 6F.80) Rumble Strips, the FHWA proposes adding to the SUPPORT statement a definition for longitudinal rumble strips, and clarifying throughout the section which statements refer specifically to longitudinal rumble strips and which statements refer specifically to transverse rumble strips, to clarify which ones go on travel lanes and which ones go on the shoulder.

Additionally, the FHWA proposes adding a STANDARD statement following the SUPPORT statement that, if it is desirable to use a color other than the color of the pavement for a longitudinal rumble strip, the color of the rumble strip shall be the same as the longitudinal line the rumble strip supplements. If the color of a transverse rumble strip used within a travel lane is not the color of the pavement, the color of the rumble strip shall be white. These proposed changes are needed to conform to general principles for colors of pavement markings.

Additionally, the FHWA proposes adding to the GUIDANCE statement that transverse rumble strips should not be placed on roadways used by bicyclists unless a minimum clear path of 1.2 m (4 ft) is provided at the edge or the roadway; that rumble strips should not be placed through pedestrian crossings or on bicycle routes; and that longitudinal rumble strips should not be placed on the shoulder of a roadway that is used by bicyclists unless a minimum clear path of 1.2 m (4 ft) is also provided at each edge of the roadway. These proposed changes will minimize interference caused by rumble strips to bicyclists using the roadway or shoulder.

239. In Section 6G.01 Introduction, the FHWA proposes adding to the SUPPORT statement that temporary traffic control zones are subject to all accessibility requirements for use by all types of pedestrians. This is in accordance with the requirements of the Americans with Disability Act of 1990 (ADA).

Additionally, the FHWA proposes adding a GUIDANCE statement following the second SUPPORT statement that bicyclists and pedestrians

should not be exposed to unprotected excavations, open utility access, overhanging equipment, or other hazards.

240. In Section 6G.04 Modifications to Fulfill Special Needs, the FHWA proposes adding throughout the GUIDANCE statement additional information related to the need to take into account pedestrian and bicycle usage.

Additionally, the FHWA proposes moving the SUPPORT and STANDARD statements at the end of the section to Section 6F.62, because this text regarding temporary traffic barriers is more appropriately located there.

241. In Section 6G.05 Work Outside of Shoulder, the FHWA proposes adding to the first GUIDANCE statement that pedestrians should be separated from the worksite by appropriate barriers that maintain the accessibility and detectability for pedestrians with disabilities.

242. In Section 6G.06 Work on the Shoulder with No Encroachment, the FHWA proposes adding to the first STANDARD statement that, where pedestrian routes are closed, alternate pedestrian routes shall be provided.

Additionally, the FHWA proposes adding to the GUIDANCE statement that, where feasible, signs should be placed such that they do not narrow any existing pedestrian passage to less than 1500 mm (60 in).

243. In Section 6G.07 Work on the Shoulder with Minor Encroachment, the FHWA proposes adding to the GUIDANCE statement that, where feasible, pedestrian routes should be protected or alternate accessible and detectable routes should be provided.

244. In Section 6G.09 Work within the Traveled Way of Two-Lane Highways, the FHWA proposes adding to the GUIDANCE statement that pedestrian detours should be avoided, since pedestrians rarely observe them and the cost of providing accessibility and detectability might outweigh the cost of maintaining a continuous route.

Additionally, the FHWA proposes adding to the GUIDANCE statement that, whenever possible, work should be done in a manner that it does not create a need to detour pedestrians from existing routes or crossings.

245. In Section 6G.10 Work Within the Traveled Way of Urban Streets, the FHWA proposes adding to the first STANDARD statement that, if the temporary traffic control zone affects an accessible and detectable pedestrian facility, the accessibility and detectability along the alternate pedestrian route shall be maintained.

Additionally, the FHWA proposes adding to the GUIDANCE statement that work sites within the intersection should be protected against inadvertent pedestrian incursion by providing detectable barriers.

246. In Section 6G.11 Work Within the Traveled Way of Multilane, Nonaccess Controlled Highways, the FHWA proposes adding to the first SUPPORT statement that Chapter 6D contains information regarding the steps to follow when pedestrian facilities are affected by the worksite.

Additionally, the FHWA proposes moving the information in the second SUPPORT statement related to the four primary functions of temporary traffic barriers to existing Section 6F.75 (new Section 6F.77) as they more properly belong in that section.

247. In Section 6G.12 Work Within the Traveled Way at an Intersection, the FHWA proposes adding to the first STANDARD statement and the second GUIDANCE statement regarding contact with the highway agency having jurisdiction at intersections where pedestrian visibility problems are anticipated, to reinforce proper contact procedures.

Additionally, the FHWA proposes adding a STANDARD statement after the second GUIDANCE statement that pedestrian crossings shall be protected with a pedestrian barrier detectable to pedestrians with visual disabilities.

Additionally, the FHWA proposes modifying the third OPTION statement to indicate that flaggers or uniformed law enforcement officers can be used to direct road users when work is within an intersection.

248. In Section 6G.19 Control of Traffic Through Incident Areas, the FHWA proposes moving all of the information in this section to a new chapter, numbered and titled "Chapter 6I Control of Traffic Through Traffic Incident Management Areas." In its place, the FHWA proposes a new Section 6G.19 titled "Temporary Traffic Control During Nighttime Hours." This proposed new section will contain SUPPORT and GUIDANCE statements regarding the temporary traffic control measures appropriate during nighttime hours.

249. In Section 6H.01 Typical Applications, the FHWA proposes changing the Typical Applications to reflect the proposed changes to all parts of the MUTCD with particular reference to Part 6 changes.

Additionally, the FHWA proposes changing the titles of Figure 6H-11 from "Lane Closure on Low-Volume Two-Lane Road" to "Lane Closure on Two-Lane Road with Low Traffic Volumes,"

Figure 6H-15 from "Work in Center of Low-Volume Road" to "Work in Center of Road with Low Traffic Volumes," and Figure 6H-16 from "Surveying Along Centerline of Low-Volume Road" to "Surveying Along Centerline of Road with Low Traffic Volumes." These proposed changes will avoid confusion with material in Part 5 Traffic Control Devices for Low-Volume Roads. Low-volume roads as covered in Part 5 are specifically defined in Section 5A.01 as, among other criteria, being outside a built-up area and having a traffic volume of less than 400 AADT. The Typical Applications in Part 6 that refer to low volume roads are not intended to be limited only to roads meeting the limited definition of Part 5.

Additionally, the FHWA proposes the following changes to the notes to the figures of typical applications:

a. Notes for Figure 6H-1: The FHWA proposes replacing existing item 5 in the STANDARD statement with a new item 5 in the OPTION statement, stating that vehicle hazard warning signals may be used to supplement rotating lights or strobe lights, and a new item 6 in the STANDARD statement, which states that vehicle hazard warning signals shall not be used instead of the vehicle's rotating lights or strobe lights. This change is proposed for clarity.

b. Notes for Figure 6H-3: The FHWA proposes replacing existing item 5 in the STANDARD statement with a new item 5 in the OPTION statement, which states that vehicle hazard warning signals may be used to supplement rotating lights or strobe lights, and a new item 6 in the STANDARD statement, which states that vehicle hazard warning signals shall not be used instead of the vehicle's rotating lights or strobe lights. This change is proposed for clarity. Additionally, the FHWA proposes to add a new item 7 to the STANDARD statement at the end of the Notes that when paved shoulders having a width of 2.4 m (8 ft) or more are closed, at least one advance warning sign shall be used. In addition, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct motor vehicle traffic to remain within the traveled way. This change is proposed to enhance safety for road users.

c. Notes for Figure 6H-4: The FHWA proposes replacing existing item 5 in the STANDARD statement with a new item 5 in the OPTION statement, stating that vehicle hazard warning signals may be used to supplement rotating lights or strobe lights, and a new item 6 in the STANDARD statement, which states that vehicle hazard warning signals

shall not be used instead of the vehicle's rotating lights or strobe lights. This change is proposed for clarity.

d. Notes for Figure 6H-6: The FHWA proposes replacing existing item 10 in the STANDARD statement with a new item 10 in the OPTION statement, stating that vehicle hazard warning signals may be used to supplement rotating lights or strobe lights, and a new item 11 in the STANDARD statement, which states that vehicle hazard warning signals shall not be used instead of the vehicle's rotating lights or strobe lights. This change is proposed for clarity.

e. Notes for Figure 6H-11: The FHWA proposes removing item 2 of the STANDARD statement because this Typical Application specifically does not involve the use of flaggers. Typical Application 10 covers the temporary traffic control zone applicable to this STANDARD, using flaggers.

f. Notes for Figure 6H-12: The FHWA proposes adding to item 2 of the STANDARD statement that durations of red clearance intervals shall be adequate to clear the one-lane section of conflicting vehicles. Additionally, the FHWA proposes adding a new item 5 to the STANDARD statement that adequate means, such as interconnection, shall be provided to prevent conflicting signal indications at opposite ends of the lane closure. The remaining items would be renumbered. These changes are proposed for consistency with applicable requirements for temporary traffic control signals in Part 4.

g. Notes for Figure 6H-13: The FHWA proposes modifying item 2 of the STANDARD statement to indicate that a flagger or law enforcement officer shall be used during a temporary road closure. Additionally, the FHWA proposes removing item 3 of the OPTION statement, since it is not applicable. The FHWA also proposes adding a new item 3 as a GUIDANCE statement, which states that the law enforcement officer, if used for this application, should follow the procedures of Section 6E.04 and 6E.05. This proposal is to encourage law enforcement officers to use proper flagging devices and procedures for a temporary road closure, if it is practical.

h. Notes for Figure 6H-15: The FHWA proposes adding a new item 2 to the GUIDANCE statement that workers in the roadway should wear high-visibility clothing as described in Section 6D.02. Additionally, the FHWA proposes replacing existing item 6 in the STANDARD statement with a new item 7 in the OPTION statement, which states that vehicle hazard warning signals may be used to supplement

rotating lights or strobe lights, and a new item 8 in the STANDARD statement, which states that vehicle hazard warning signals shall not be used instead of the vehicle's rotating lights or strobe lights. This change is proposed for clarity.

i. Notes for Figure 6H-17: The FHWA proposes adding a new item 3 to the STANDARD statement that if an arrow panel is used, it shall be used in the caution mode. The remaining items would be renumbered. Additionally, the FHWA proposes removing existing item 5 of the GUIDANCE statement and moving it to the OPTION statement as part of existing item 9 that the use of a truck mounted attenuator is optional on either a shadow vehicle or a work vehicle. These changes are proposed for clarity.

j. Notes for Figure 6H-21: The FHWA proposes replacing existing item 7 in the STANDARD statement with a new item 7 in the OPTION statement, which states that vehicle hazard warning signals may be used to supplement rotating lights or strobe lights, and a new item 8 in the STANDARD statement, which states that vehicle hazard warning signals shall not be used instead of the vehicle's rotating lights or strobe lights. This change is proposed for clarity.

k. Notes for Figure 6H-22: The FHWA proposes removing item 5, regarding a right-turn island using channelizing devices, from the OPTION statement, since it is inappropriate for the depicted application.

l. Notes for Figure 6H-26: The FHWA proposes replacing existing item 7 in the STANDARD statement with a new item 7 in the OPTION statement, which states that vehicle hazard warning signals may be used to supplement rotating lights or strobe lights, and a new item 8 in the STANDARD statement, which states that vehicle hazard warning signals shall not be used instead of the vehicle's rotating lights or strobe lights. This change is proposed for clarity.

m. Notes for Figure 6H-27: The FHWA proposes replacing existing item 9 in the STANDARD statement with a new item 9 in the OPTION statement, which states that vehicle hazard warning signals may be used to supplement rotating lights or strobe lights, and a new item 10 in the STANDARD statement, which states that vehicle hazard warning signals shall not be used instead of the vehicle's rotating lights or strobe lights. This change is proposed for clarity.

n. Notes for Figure 6H-28: The FHWA proposes adding a new item 3 to the GUIDANCE statement that audible

warnings should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities. The remaining items would be renumbered. Additionally, the FHWA proposes to add the use of Type D 360-degree Steady-Burn warning lights to existing item 6 (new item 7) of the OPTION statement. These changes are proposed for consistency with other sections in Part 6.

o. Notes for Figure 6H-29: The FHWA proposes to add a new item 3 to the GUIDANCE statement that audible warnings should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities, for consistency. The remaining items would be renumbered.

p. Notes for Figure 6H-32: The FHWA proposes adding a new item 2 to the STANDARD statement that when paved shoulders having a width of 2.4 m (8 ft) or more are closed, at least one advance warning sign shall be used. In addition, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct motor vehicle traffic to remain within the traveled way. The remaining items would be renumbered. The FHWA also proposes removing the word "optional" from the shoulder taper illustrated on Figure 6H-32, to correspond to the proposed addition of new item 2 in the STANDARD statement. These changes are proposed to improve advance warning and channelization for road users approaching the half road closure on multilane high-speed highways.

q. Notes for Figure 6H-33: The FHWA proposes to add a new item 3 to the STANDARD statement that when paved shoulders having a width of 2.4 m (8 ft) or more are closed, at least one advance warning sign shall be used. In addition, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct motor vehicle traffic to remain within the traveled way. These changes are proposed to improve advance warning and channelization for road users approaching a lane closure on a divided highway. Additionally, the FHWA proposes removing existing item 3 of the GUIDANCE statement, since it is not applicable to the application depicted.

r. Notes for Figure 6H-40: The FHWA proposes adding to item 3 that YIELD or STOP lines should be installed, if needed, across the ramp to indicate the point at which road users should YIELD

or STOP. Additionally, the FHWA proposes adding a dimension of 7.5 m (25 ft) spacing between channelizing devices shown on Figure 6H-40. This additional guidance, beyond the general guidance in Section 6F.55 about channelizing device spacing, is proposed to help improve channelization specifically in the median crossover by providing a recommended device spacing to minimize the tendency of vehicles to drive between devices.

s. Figure 6H-41: The FHWA proposes adding a dimension of 7.5 m (25 ft) spacing between channelizing devices shown on Figure 6H-41. This additional guidance, beyond the general guidance in Section 6F.55 about channelizing device spacing, is proposed to help improve channelization specifically in the median crossover by providing a recommended device spacing to minimize the tendency of vehicles to drive between devices.

t. Notes for Figure 6H-42: The FHWA proposes removing items 6 and 7 of the OPTION statement since they are not applicable to the specific application depicted on Figure 6H-42. The remaining item would be renumbered.

u. Notes for Figure 6H-44: the FHWA proposes removing item 5 in the GUIDANCE statement since it is too vague and there is no accepted practice to determine how traffic is stabilized. The remaining items would be renumbered.

250. The FHWA proposes adding a new chapter, numbered and titled "Chapter 6I Control of Traffic Through Traffic Incident Management Areas." This proposed new chapter will contain existing Section 6G.19 Control of Traffic Through Incident Areas in its entirety with several modifications and additional information on the use of temporary traffic control devices for traffic incident management zones. The proposed new chapter will contain a general section as well as sections on major, intermediate, and minor traffic incidents, and on use of emergency-vehicle lighting (flashing or rotating beacons or strobes.) The FHWA proposes this new chapter in recognition of the importance of safely and efficiently controlling traffic through traffic incident management areas, and the unique characteristics of incidents and the traffic controls that should be utilized.

#### *Discussion of Proposed Amendments to Part 7—Traffic Controls for School Areas*

251. In Section 7B.01 Size of School Signs, the FHWA proposes revising Table 7B-1 to increase the standard and

special sizes of the End School Zone (S5-2) sign and the Speed Limit (School Use) (English) (R2-1) sign from 600 × 750 mm (24 × 30 in) and 900 × 1200 mm (36 × 48 in) respectively to 900 × 1125 mm (36 × 45 in) and 1200 × 1500 mm (48 × 60 in) respectively. The FHWA also proposes revising Table 7B-1 to add the School Speed Limit Ahead (S4-5, S4-5a) and the School Speed Limit XX When Flashing (English and Metric) (S5-1) signs. The FHWA also proposes revising Table 7B-1 to revise the standard size of the When Children are Present (S4-2) plaque from 900 × 500 mm (36 × 20 in) to 900 × 375 mm (36 × 15 in), to revise the minimum, standard, and special sizes of the XXX FT (W16-2) plaque from 600 × 450 mm (24 × 18 in), 750 × 600 mm (30 × 24 in), and 750 × 600 mm (30 × 24 in) respectively to 600 × 300 mm (24 × 12 in), 750 × 375 mm (30 × 15 in), and 900 × 450 mm (36 × 18 in) respectively, to revise the minimum, standard, and special sizes of the XXX Feet (W16-2a) plaque from 600 × 300 mm (24 × 12 in), 750 × 450 mm (30 × 18 in), and 750 × 450 mm (30 × 18 in) respectively to 600 × 450 mm (24 × 18 in), 750 × 525 mm (30 × 21 in), and 900 × 600 mm (36 × 24 in) respectively. The FHWA also proposes to revise Table 7B-1 to revise the standard and special sizes of the Ahead (W16-9p) plaque from 900 × 500 mm (36 × 20 in) and 1200 × 750 mm (48 × 30 in) respectively to 900 × 375 mm (36 × 15 in) and 1200 × 500 mm (48 × 20 in) respectively, and to revise the standard and special sizes of the Diagonal Arrow (W16-7) plaque from 750 × 450 mm (30 × 18 in) and 750 × 450 mm (30 × 18 in) respectively to 900 × 375 mm (36 × 15 in) and 1200 × 500 mm (48 × 20 in) respectively. These proposed changes in the table are to reflect proposed changes throughout Part 7 and to make the sizes of supplemental plaques correspond more closely with the sizes of the signs they supplement.

252. In Section 7B.07 Sign Color for School Warning Signs, the FHWA proposes changing item D in the OPTION statement to clarify that only the SCHOOL portion on the School Speed Limit (S5-1) sign may have a fluorescent yellow-green background. The SCHOOL portion of the sign is the warning message.

253. In Section 7B.08 School Advance Warning Sign (S1-1), the FHWA proposes giving the page of sign images a number and title, "Figure 7B-1 School Area Signs" for easier reference.

Additionally, the FHWA proposes adding a new figure to be numbered and titled, "Figure 7B-2 Example of Signing for School Crosswalk Warning

Assembly” to illustrate the placement of these assemblies as described in Section 7B.09.

Additionally, the FHWA proposes renumbering and retitling Figure 7B-1 to “Figure 7B-3 Example of Signing for School Area Traffic Control with School Speed Limits.”

254. In Section 7B.11 School Speed Limit Assembly (S4-1, S4-2, S4-3, S4-4, S5-1), the FHWA proposes adding to the OPTION statement that changeable message signs should subscribe to the principles established in Section 2A.07 and other sections of the MUTCD, for consistency with Section 6F.52. The FHWA also proposes adding at the end of the OPTION statement to provide information on the use of the FINES HIGHER (R2-6) sign to advise road users when increased fines are imposed for traffic violations in school zones. This sign can be used to enhance road user compliance with school speed limits.

255. In Section 7C.03 Crosswalk Markings, the FHWA proposes adding a new SUPPORT statement at the beginning of the section to provide information on the use of crosswalk markings. While this SUPPORT statement is identical to that in Section 3B.17, the FHWA believes that it is important to have this information in both parts of the MUTCD.

Additionally, the FHWA proposes adding at the end of the first GUIDANCE statement additional guidance that crosswalks should not be used indiscriminately and that an engineering study should be performed before placing crosswalks at locations away from traffic control signals or STOP signs, for consistency with Section 3B.17.

256. In Section 7C.04 the FHWA proposes revising the title from “Stop Line Markings” to “Stop and Yield Lines” because the FHWA proposes to include both stop and yield lines in this section. The FHWA also proposes revising the entire section to appropriately mirror the STANDARD, GUIDANCE, OPTION, and SUPPORT statements contained in Part 3. The FHWA believes that it is important to have this information in both parts of the MUTCD.

257. In Section 7E.04 Uniform of Adult Guards and Student Patrols, the FHWA proposes adding a STANDARD statement that adult guards shall wear high-visibility retroreflective clothing labeled as ANSI 107-1999 standard performance for Class 2, and that student patrols shall wear high-visibility retroreflective material or clothing labeled as ANSI 107-1999 standard performance for Class 1. This clothing

would make the guards and patrols (and the students they are managing) far more visible to approaching road users. The FHWA proposes a phase-in compliance period of 5 years for these changes in order to minimize any impact on State or local agencies.

258. In Section 7E.05 Operating Procedures for Adult Guards, the FHWA proposes adding an OPTION statement at the end of the section to allow the STOP paddle to be modified by adding white flashing lights, to enhance conspicuity of the paddle.

Additionally, the FHWA proposes adding a STANDARD statement following the new OPTION statement to define the acceptable flashing rate of the optional flashing lights on STOP paddles. This proposed change is consistent with the flashing rate in other parts of the MUTCD.

#### *Discussion of Proposed Amendments to Part 8—Traffic Controls for Highway-Rail Grade Crossings*

259. In Section 8A.01 Introduction, in the STANDARD statement the FHWA proposes revising the definitions for “Advance Preemption and Advance Preemption Time” (change to “Advance Preemption” and “Advance Preemption Time”), “Clear Storage Distance,” “Dynamic Envelope Delineation” (change to “Dynamic Envelope”), “Minimum Track Clearance Distance,” and “Queue Clearance Time” to reflect accepted practice and terminologies. The FHWA also proposes adding definitions for the following, since they are referred to later in the MUTCD: “Dynamic Exit Lane Gate Operating Mode,” “Exit Lane Gate Clearance Time,” “Exit Lane Gate Operating Mode,” “Flashing-Light Signals,” “Timed Exit Gate Operating Mode,” “Wayside Equipment,” and “Vehicle Intrusion Detection Devices” to reflect accepted practice and terminologies.

260. In Section 8A.02 Use of Standard Devices, Systems, and Practices, the FHWA proposes adding a GUIDANCE statement following the STANDARD statement. This proposed GUIDANCE statement will be identical to the second GUIDANCE statement in Section 10A.02 and reinforces that Part 1 principles of design, placement, operation, maintenance, and uniformity of traffic control devices should be considered for both highway-rail and highway-light rail transit grade crossings.

261. In Section 8A.04 Highway-Rail Grade Crossing Elimination, the FHWA proposes adding a GUIDANCE statement at the beginning of the section. This proposed GUIDANCE statement will be identical to the first GUIDANCE statement in Section 10A.04

and reinforces that both highway-rail and highway-light rail transit grade crossings are a potential source of congestion, and agencies should conduct engineering studies to determine the cost and benefits of eliminating such crossings.

Additionally, the FHWA proposes adding an OPTION statement at the end of the section. This proposed OPTION statement will be identical to the last OPTION statement in Section 10A.04 and reinforces that TRACKS OUT OF SERVICE (R8-9) signs may be temporarily installed at locations where both rail or light rail transit is eliminated at a highway-rail or highway-light rail transit grade crossing until the tracks are removed or paved over.

262. In Section 8A.05 Temporary Traffic Control Zones, the FHWA proposes adding a SUPPORT statement at the beginning of the section. This proposed SUPPORT statement will be identical to the SUPPORT statement in Section 10A.05 and reinforces that temporary traffic control planning provides for continuity of operations when the normal function of a roadway at both a highway-rail and a highway-light rail transit grade crossing is suspended because of temporary traffic control operations.

263. In Section 8B.02, the FHWA proposes changing the title from “Highway-Rail Grade Crossing (Crossbuck) Signs (R15-1, R15-2)” to “Highway-Rail Grade Crossing (Crossbuck) Signs (R15-1, R15-2, R15-9)” to reflect the proposed addition to the OPTION statement for the optional use of a new sign, the Crossbuck Shield (R15-9) sign, that is a wing-shaped sign that may be mounted below the Crossbuck (R15-1) sign or Number of Tracks (R15-2) sign. Experimentation with Crossbuck Shield signs has shown benefits in calling attention to the presence of passive grade crossings, particularly at night. The FHWA is aware that in one of the evaluations of the Crossbuck Shield (R15-9) sign, words (or symbols) to indicate the State law about yielding or stopping at the grade crossing were included on the center panel of the shield. The FHWA is not including such words or symbols as an option as it believes that the Crossbuck Shield (R15-9) sign should be uniform in design and that, if a stop or yield is required either by State law or by regulation at any given crossing, the use of a standard YIELD or STOP sign is more appropriate and will be more universally recognized and complied with by road users than small lettering on the Crossbuck Shield would be. The FHWA proposes that this option



to use a Crossbuck Shield (R15-9) sign become effective immediately for new or replacement of damaged existing sign installations. The FHWA proposes a phase-in compliance period of 10 years for existing signs in good condition to minimize any impact on State or local highway agencies.

Additionally, the FHWA proposes revising the second STANDARD statement to clarify the placement of retroreflective white material on the front and back of the supports for highway-rail grade crossing Crossbuck signs, to within 0.3 m (1 ft) of the ground level, except on the side of those supports where a Crossbuck Shield sign or flashing lights have been installed. This proposed change reflects a reasonable distance from the ground level and reflects that such strips are not needed to face approaching traffic when a Crossbuck Shield or flashing lights are on that side of the support.

264. In Section 8B.03 Highway-Rail Grade Crossing Advance Warning Signs (W10 series), the FHWA proposes revising the first STANDARD statement, item A, to better define where Highway-Rail Grade Crossing Advance Warning (W10-1) signs are not required on an approach to a crossing from a T-intersection with a parallel highway.

Additionally, the FHWA proposes revising the second STANDARD statement to clarify the proper use of the W10-2, W10-3, and W10-4 advance warning signs if the distance from the parallel highway to the railroad tracks is less than 30m (100 feet).

265. The FHWA proposes adding two new sections following Section 8B.08 TRACKS OUT OF SERVICE Sign (R8-9). The first proposed new section will be numbered and titled "Section 8B.09 STOP HERE WHEN FLASHING Sign (R8-10)" and will contain an OPTION statement describing the use of the STOP HERE WHEN FLASHING (R8-10) sign as it relates to highway-rail grade crossings.

The second proposed new section will be numbered and titled "Section 8B.10 STOP HERE ON RED Sign (R10-6)" and will contain SUPPORT, OPTION, and GUIDANCE statements describing the use of the STOP HERE ON RED (R10-6) sign at highway-rail grade crossings. The remaining sections would be renumbered accordingly.

266. In existing Section 8B.12 NO SIGNAL Sign (W10-10), the FHWA proposes renumbering and retitling the section as "Section 8B.14 NO SIGNAL Sign (W10-10) or NO GATES OR LIGHTS sign (W10-13)" and adding to the OPTION statement that the NO GATES OR LIGHTS (W10-13) sign may

used as an alternate to the NO SIGNAL (W10-10) sign.

267. In existing Section 8B.13 (new Section 8B.15) LOOK Sign (R15-8), the FHWA proposes modifying the OPTION statement by removing the phrase, "that do not have active warning devices" to clarify that the LOOK (R15-8) sign may be mounted at any highway-rail grade crossing.

268. The FHWA proposes adding a new section following existing Section 8B.15 (new Section 8B.17) Storage Space Signs (W10-11, W10-11a, W10-11b). This proposed new section will be numbered and titled "Section 8B.18 Skewed Crossing Sign (W10-12)" and will describe the use of the Skewed Crossing (W10-12) sign at highway-rail grade crossings when railroad tracks are not perpendicular to the highway.

269. In existing Section 8B.18 Dynamic Envelope Delineation, the FHWA proposes renumbering and retitling this section as "Section 8B.21 Dynamic Envelope Markings" to clarify that the text refers to pavement markings.

Additionally, the FHWA proposes adding a second paragraph to the OPTION statement to clarify that dynamic envelope markings may be installed at any highway-rail grade crossing unless a Four-Quadrant Gate system is used.

270. In Section 8C.01 Illumination of Highway-Rail Grade Crossings, the FHWA proposes changing the OPTION statement to a GUIDANCE statement to indicate that illumination should be installed at and adjacent to a highway-rail grade crossing when an engineering study determines such illumination is needed to improve grade crossing safety.

271. In Section 8D.01 Introduction, the FHWA proposes revising the first OPTION statement to clarify that flashing-light signals that are post-mounted or overhead-mounted may be used separately or in combination with each other and that flashing-light signals may be used without automatic gate assemblies as determined by an engineering study.

Additionally, the FHWA proposes adding to the second OPTION statement information that In-Roadway Stop Line Lights and In-Roadway Warning Lights may be installed at highway-rail grade crossings that are controlled by active grade crossing warning systems, as discussed in Chapter 4L.

272. In Section 8D.02 Flashing-Light Signals, Post-Mounted, the FHWA proposes modifying the GUIDANCE statement to clarify the sizes of lenses for use in highway-rail grade crossing flashing-light signals and to provide

guidance for choosing the size of background behind the lenses.

273. In Section 8D.05 Four-Quadrant Gate Systems, the FHWA proposes revising and adding to the GUIDANCE statement information to describe the various operating modes of exit lane gates and how they should be used.

Additionally, the FHWA proposes changing the title of Figure 8D-2 from "Typical Location Plan for Flashing-Light Signals and Four-Quadrant Gates" to "Example of Location Plan for Flashing-Light Signals and Four-Quadrant Gates."

274. In Section 8D.07 Traffic Control Signals at or Near Highway-Rail Grade Crossings, following the second paragraph of the second STANDARD statement, the FHWA proposes adding additional GUIDANCE, STANDARD, GUIDANCE, and OPTION statements to better describe the use of pre-signals to improve safety at highway-rail grade crossings at locations in proximity to intersections controlled by traffic control signals.

Additionally, the FHWA is proposing adding to the last OPTION statement that at locations where a highway-rail grade crossing is located more than 15m (50 ft) (or more than 23 m (75 ft) for a highway regularly used by multi-unit vehicles) from an intersection controlled by a traffic control signal, a pre-signal may be used if an engineering study determines a need.

The FHWA proposes that these changes become effective immediately for new installations. The FHWA proposes a phase-in compliance period of 10 years for existing installations in good condition to minimize any impact on State or local highway agencies.

#### *Discussion of Proposed Amendments to Part 9—Traffic Controls for Bicycle Facilities*

275. In Section 9A.03 Definitions Relating to Bicycles, the FHWA proposes adding to the first STANDARD statement a definition for "Bicycle Facilities," since the term is frequently used in Part 9. The remaining items would be renumbered accordingly.

276. In Section 9B.01 Application and Placement of Signs, the FHWA proposes removing the first SUPPORT statement as it only references Figure 9B-1. The FHWA proposes referencing Figure 9B-1 in the first STANDARD statement, since the sign installation standards shown in Figure 9B-1 are discussed in this STANDARD.

277. In Section 9B.02 Design of Bicycle Signs, the FHWA proposes replacing the term "shared-use path" with the term "bicycle facilities" in the first STANDARD statement and in the

first SUPPORT statement because the information in these statements relates only to bicycle facilities. Shared-use paths are for the use of pedestrians (with or without disabilities), skaters, joggers, and other non-motorized users in addition to bicyclists.

Additionally, the FHWA proposes changing the title of Table 9B-1 from "Sign Sizes for Shared-Use Paths" to "Minimum Sign Sizes for Bicycle Facilities" and separating the column headed "Minimum Sign Size" into two sub columns headed "Path" and "Roadway," to better distinguish between the applications of signs on paths and roadways and to be consistent with sign sizes used on roadways as described in Part 2. The FHWA also proposes revising Table 9B-1 by adding additional signs to reflect proposed changes elsewhere in Part 9.

278. In Section 9B.03 STOP and YIELD Signs (R1-1, R1-2), the FHWA proposes modifying the first GUIDANCE statement so that it applies to the installation of both STOP and YIELD signs, and not exclusively to STOP signs. This change is proposed because YIELD signs as well as STOP signs may be appropriate for assignment of the right-of-way at a shared-use path/roadway intersection.

279. In Section 9B.04, the FHWA proposes changing the title from "Bicycle Lane Signs (R3-16, R3-17)" to "Bicycle Lane Signs (R3-17, R3-17a, R3-17b)."

Additionally, the FHWA proposes removing existing text in this section in its entirety and replacing it with new text regarding the use of Bicycle Lane signs. This proposed modification will replace the existing Bicycle LANE AHEAD (R3-16), Bicycle LANE ENDS (R3-16a), and RIGHT LANE Bicycle ONLY (R3-17) signs with a redesigned BIKE LANE (R3-17) sign to be used in conjunction with new supplemental AHEAD (R3-17a) and ENDS (R3-17b) plaques. These proposed sign combinations will more clearly provide the information contained on the old R3-16, R3-16a, R3-17, and R3-17a signs, and will reduce road user confusion.

280. The FHWA proposes adding a new section following Section 9B.05 BEGIN RIGHT TURN LANE YIELD TO BIKES Sign (R4-4). The proposed new section will be numbered and titled "Section 9B.06 Bicycle WRONG WAY and RIDE WITH TRAFFIC Signs (R5-1b, R9-3c)" and will standardize the design and placement of Bicycle WRONG WAY Signs. Wrong way travel by bicyclists is a major cause of conflicts and collisions, and should be discouraged at appropriate locations. The remaining

sections would be renumbered accordingly.

281. In existing Section 9B.08 (new Section 9B.09), the FHWA proposes changing the title from "No Parking Bicycle Lane Signs (R7-9, R7-9a)" to "No Parking BIKE LANE Signs (R7-9, R7-9a)" and in the first STANDARD statement changing the name of the sign accordingly.

282. The FHWA proposes adding a new section following existing Section 9B.10 (new Section 9B.11) Shared-Used Path Restriction Sign (R9-7). The proposed new section will be numbered and titled "Section 9B.12 Bicycle Signal Actuation Sign (R10-15)" and will provide a new sign giving information to bicyclists on how to best situate themselves within the proposed new Bicycle Detector pavement marking symbol so that they can actuate the traffic signal. The remaining sections would be renumbered accordingly.

283. In existing Section 9B.14 (new Section 9B.16) Bicycle Surface Condition Warning Sign (W8-10), the FHWA proposes revising the first OPTION statement to clarify that BUMP, DIP, Pavement Ends, and any other word message signs are not supplemental plaques used with the W8-10 sign, but are instead standard signs to be used independently.

284. In Section 9C.01 Functions of Markings, the FHWA proposes modifying the SUPPORT statement to remove the first sentence, since it only refers to roadways with a designated bicycle lane and is not broad enough to describe markings used for all types of bicycle facilities.

285. In Section 9C.02 General Principles, the FHWA proposes to add a new STANDARD statement after the GUIDANCE statement. This proposed new STANDARD statement is being moved from Section 9C.03 to Section 9C.02 because this text is applicable to all bicycle facilities, not just shared-use paths and is more appropriate in this section than Section 9C.03.

286. In Section 9C.03 Marking Patterns and Colors on Shared-Use Paths, the FHWA proposes moving the STANDARD statement to Section 9C.02, since this text is applicable to all bicycle facilities, not just shared-use paths and is more appropriate in this section than Section 9C.03.

Additionally, the FHWA proposes removing the first SUPPORT statement since it discourages the use of centerlines. Centerlines may be useful and valuable for user guidance in many applications, and, therefore, should not be discouraged.

Additionally, the FHWA proposes adding to the GUIDANCE statement

additional information on the marking of obstructions in a path.

Additionally, the FHWA proposes moving to the OPTION statement the second item of the OPTION statement currently in Section 9C.05, because letter, symbol, and arrow sizes to be used on shared-use paths represent markings rather than markers.

Additionally, the FHWA proposes moving the contents of existing Section 9C.06 in its entirety to Section 9C.03, because this information is more applicable in Section 9C.03 as it clarifies the design and placement of marking patterns and object markers on shared-use paths.

287. In Section 9C.04 Markings For Bicycle Lanes, the FHWA proposes revising the first sentence of the STANDARD statement to remove the specific distance of "not closer than 20 m (65 ft) from the crossroad" from the requirement for placing bicycle lane symbols, to provide jurisdictions with additional flexibility. The specific distance may not be feasible in urban locations, and is not necessary for marking durability.

Additionally, the FHWA proposes adding a new item to the STANDARD statement to prohibit the placement of bicycle lanes to the right of a right turn only lane. A bicyclist continuing straight through an intersection from the right of a right turn lane would be inconsistent with normal traffic behavior and would violate the expectation of right-turning drivers. The FHWA also proposes adding a new item to the STANDARD statement to prohibit the placement of bicycle lanes in the circular roadway of a roundabout, because such markings have been found to cause a false sense of security for bicyclists traveling through the roundabout with conflicting and turning traffic. This proposed change is consistent with state of the practice for roundabout design and is consistent with proposed changes to Section 3B.24.

Additionally, the FHWA proposes adding a new paragraph to the SUPPORT statement describing that a bicyclist continuing straight through an intersection from the right of a right turn lane would be inconsistent with normal traffic behavior and would violate the expectation of right-turning drivers.

Additionally, at the end of this section, the FHWA proposes adding a new GUIDANCE statement to establish guidance for bicycle lane markings at locations where a right through lane becomes an exclusive right turn lane, and at locations where there is a shared through and right turn lane next to a right turn only lane. This guidance is important to ensure that bicycle lanes

are not poorly designed at such intersections.

Additionally, the FHWA proposes adding a GUIDANCE statement and a SUPPORT statement to provide guidance on not using posts or raised pavement markers to separate bicycle lanes from adjacent travel lanes, since they can hinder maintenance of the bicycle lane and prevent proper vehicle merging.

288. The FHWA proposes removing Section 9C.05 Word Messages and Symbols Applied to the Pavement, and Section 9C.06 Object Markers on Share-Used Paths, in their entirety. The FHWA proposes incorporating the information from these sections into Section 9C.03 Marking Patterns and Colors on Shared-Use Paths, as this more properly locates the information. The remainder of the sections would be renumbered accordingly.

289. The FHWA proposes adding a new Section 9C.05 Bicycle Detector Symbol, containing an OPTION statement that defines a standard symbol for the marking of detector locations for traffic signals actuated by bicyclists. This symbol marking is shown in a proposed new figure numbered and titled "Figure 9C-7 Example of Bicycle Detector Pavement Marking." This symbol marking, along with the Bicycle Signal Actuation (R10-15) sign, will assist bicyclists at signalized intersections by clearly showing the best location to achieve detection by loops or other vehicle detector equipment.

290. In Section 9D.02 Signal Operations for Bicycles, the FHWA proposes revising the STANDARD statement to require that signal timing and actuation be reviewed and adjusted to consider the needs of bicyclists, instead of simply requiring the consideration of bicyclists' needs when timing signals. This greater emphasis is to ensure that the different operating characteristics of bicyclists are accounted for.

#### *Discussion of Proposed Amendments to Part 10—Traffic Controls for Highway-Light Rail Transit Grade Crossings*

291. In Section 10A.01 Introduction, the FHWA proposes adding a SUPPORT statement at the end of the section to reference Section 8A.01 for the definitions applicable to Part 10.

292. In Section 10A.03 Uniform Provisions, the FHWA proposes adding to the STANDARD statement that no sign or signal shall be located in the center of an undivided highway except in an island with non-mountable curbs.

Additionally, the FHWA proposes adding a GUIDANCE statement at the

end of the section to reinforce that where the distance between tracks exceeds 30 m (100 ft), additional signs or other appropriate traffic control devices should be used.

293. In Section 10A.04 Highway-Light Rail Transit Grade Crossing Elimination, the FHWA proposes removing from the second GUIDANCE statement and adding to the STANDARD statement that if the existing traffic control devices at a multiple-track highway-light rail transit grade crossing become improperly placed or inaccurate because of the removal of some of the tracks, the existing devices shall be relocated and/or modified.

Additionally, the FHWA proposes adding to the second GUIDANCE statement that, when a roadway is removed from a highway-light rail transit grade crossing, appropriate signs should be placed at the end of roadway and other appropriate locations, to alert road users that the road no longer crosses the light rail transit tracks.

294. In Section 10A.05 Temporary Traffic Control Zones, the FHWA proposes combining the two separate STANDARD statements into one STANDARD statement at the beginning of the section for clarity.

295. In Section 10C.01, the FHWA proposes changing the title from "Introduction" to "Purpose" to more accurately reflect the contents of the section.

Additionally, the FHWA proposes correcting the text in the STANDARD statement to properly indicate that the design and location of signs shall conform to all of Part 2.

296. The FHWA proposes adding a new section following Section 10C.01 Introduction. The proposed new section will be numbered and titled "Section 10C.02 Highway-Light Rail Grade Crossing (Crossbuck) Signs (R15-1, R15-2, R15-9)" and will provide information regarding the use of Crossbuck signs at highway-light rail grade crossings. While this section would be identical to Section 8B.02 (as it is proposed to be revised as described above), the use of Crossbuck signs and the proposed optional Crossbuck Shield signs is applicable to both highway-light rail transit and highway-rail grade crossings, so the FHWA believes that it is important to have this information in both parts of the MUTCD. The remaining sections would be renumbered accordingly.

297. In existing Section 10C.03 STOP or YIELD Signs (R1-1, R1-2, W3-1a, W3-2a), the FHWA proposes renumbering and retitling the section as "Section 10C.04 STOP (R1-1) or YIELD (R1-2) Signs at Highway-Light Rail

Transit Grade Crossings" to clarify the content of the section.

Additionally, the FHWA proposes revising the last sentence of the STANDARD statement to clarify that Stop Ahead (W3-1a) and Yield Ahead (W3-2a) Advance Warning signs shall also be installed if the criteria for their installation given in Section 2C.26 is met.

Additionally, in the GUIDANCE statement the FHWA proposes adding to the list of characteristics to clarify when STOP or YIELD signs may be used the at highway-light rail transit grade crossings. The FHWA proposes adding the following characteristics to the list: that the determination of what constitutes low traffic volumes and low speed limits of crossing roadways should be made by local agencies, that light rail transit speeds do not exceed 40 km/h (25 mph), that the line of sight for an approaching light rail transit operator is adequate from a significant distance such that the operator can sound an audible signal and bring the vehicle to a stop before arriving at the crossing, and that the light rail transit tracks are located such that vehicles are not likely to stop on the tracks while waiting to enter a cross street or highway.

298. In Section 10C.04 (new Section 10C.05) DO NOT STOP ON TRACKS Sign (R8-8), the FHWA proposes adding to the OPTION statement to clarify that DO NOT STOP ON TRACKS (R8-8) signs may be placed on both sides of the track, to enhance visibility of the signs for road users.

299. Following existing Section 10C.04 (new Section 10C.05) DO NOT STOP ON TRACKS Sign (R8-8), the FHWA proposes adding a new section. This proposed new section will be numbered and titled "Section 10C.06 TRACKS OUT OF SERVICE Sign (R8-9)" and will describe the use of the TRACKS OUT OF SERVICE (R8-9) sign at highway-light rail transit grade crossings. While this section would be identical to Section 8B.08, the use of the TRACKS OUT OF SERVICE (R8-9) sign is applicable to both highway-light rail transit and highway-rail grade crossings so the FHWA believes that it is important to have this information in both parts of the MUTCD. The remaining sections would be renumbered accordingly.

300. Following existing Section 10C.05 (new Section 10C.07) STOP HERE ON RED Sign (R10-6), the FHWA proposes adding a new section. This proposed new section will be numbered and titled "Section 10C.08 STOP HERE WHEN FLASHING Sign (R8-10)" and will describe the use of the STOP HERE WHEN FLASHING (R8-10) sign at

highway-light rail transit grade crossings. While this section would be identical to proposed new Section 8B.09, the use of the STOP HERE WHEN FLASHING (R8-10) sign is applicable to both highway-light rail transit and highway-rail grade crossings so the FHWA believes that it is important to have this information in both parts of the MUTCD. The remaining sections would be renumbered accordingly.

301. In existing Section 10C.06 (new Section 10C.09) Light Rail Transit-Activated Blank-Out Turn Prohibition Signs (R3-1a, R3-2a), the FHWA proposes adding a STANDARD statement at the end of the section. This proposed STANDARD statement will be identical to STANDARD statement in Section 8B.05 and reinforces that at both highway-rail and highway-light rail transit grade crossings turn prohibition signs that are associated with preemption shall be visible only when the grade crossing restriction is in effect in order not to cause confusion to road users.

302. Following existing Section 10C.06 (new Section 10C.09) Light Rail Transit-Actuated Blank-Out Turn Prohibition Signs (R3-1a, R3-2a), the FHWA proposes adding a new section. This proposed new section will be numbered and titled "Section 10C.10 EXEMPT Highway-Light Rail Transit Grade Crossing Signs (R15-3, W10-1a)" and will describe the use of the supplemental EXEMPT Highway-Light Rail Transit Grade Crossing (R15-3, W10-1a) signs at highway-light rail transit grade crossings. While this section would be identical to Section 8B.04, the use of these supplemental signs is applicable to both highway-light rail transit and highway-rail grade crossings, so the FHWA believes that it is important to have this information in both parts of the MUTCD. The remaining sections would be renumbered accordingly.

303. In existing Section 10C.09 (new Section 10C.13) Light Rail Transit Only Lane Signs (R15-4 Series), the FHWA proposes titling the figure illustrating regulatory sign panels as "Figure 10C-3 Regulatory Signs" and adding to and revising the signs illustrated in the figure, to be consistent with Section 2B.48 Preferential Lane Signs, and to reflect changes elsewhere in Part 10.

304. In existing Section 10C.11 (new Section 10C.15) Highway-Light Rail Advance Warning Signs (W10 Series), the FHWA proposes revising the entire section by replacing it with the STANDARD, OPTION, and GUIDANCE statements contained in Section 8B.03, including the proposed revisions as described above in Part 8. While these

sections would be identical, the use of advance warning signs is applicable to both highway-light rail transit and highway-rail grade crossings, and the FHWA believes that it is important to have consistency in the use of these signs so this information is included in both parts of the MUTCD.

The FHWA also proposes titling the figure illustrating predominantly warning sign panels as "Figure 10C-4 Warning Signs and Light Rail Station Sign" and adding to and revising the signs illustrated in the figure, to reflect changes elsewhere in Part 10.

305. Following existing Section 10C.11 (new Section 10C.15) Highway-Light Rail Advance Warning Signs (W10-Series), the FHWA proposes adding a new section. This proposed new section will be numbered and titled "Section 10C.16 Low Ground Clearance Highway-Light Rail Transit Grade Crossing Sign (W10-5)" and will describe the use of the Low Ground Clearance (W10-5) sign at highway-light rail transit grade crossings. While this section would be identical to Section 8B.16, the use of Low Ground Clearance (W10-5) signs is applicable to both highway-light rail transit and highway-rail grade crossings so the FHWA believes that it is important to have this information in both parts of the MUTCD. The remaining sections would be renumbered accordingly.

306. Following existing Section 10C.12 (new Section 10C.17) Light Rail Transit Approaching-Activated Blank-Out Warning Sign (W10-7), the FHWA proposes adding two new sections. The first proposed new section will be numbered and titled "Section 10C.18, Storage Space Signs (W10-11, W10-11a, W10-11b)" and will describe the use of Storage Space (W10-11) signs at highway-light rail transit grade crossings. The second proposed new section will be numbered and titled "Section 10C.19 Skewed Crossing Sign (W10-12)" and will describe the use of Skewed Crossing (W10-12) signs at highway-light rail transit grade crossings. While these sections would be identical to proposed Sections 8B.17 and 8B.18, respectively, these signs are applicable to both highway-light rail transit and highway-rail grade crossings so the FHWA believes that it is important to have this information in both parts of the MUTCD. The remaining sections would be renumbered accordingly.

307. Following existing Section 10C.13 (new Section 10C.20) Light Rail Station Sign (I-12), the FHWA proposes adding a new section. This proposed new section will be numbered and titled "Section 10C.21 Emergency Notification

Sign (I-13 or I-13a)" and will describe the use of Emergency Notification (I-13 or I-13a) signs at highway-light rail transit grade crossings. While this section would be identical to Section 8B.14, the use of these signs is applicable to both highway-light rail transit and highway-rail grade crossings so the FHWA believes that it is important to have this information in both parts of the MUTCD. The remaining sections would be renumbered accordingly.

308. Following existing Section 10C.14 (new Section 10C.22) Illumination at Highway-Light Rail Transit Crossings, the FHWA proposes adding two new sections. The first proposed new section will be numbered and titled "Section 10C.23 Pavement Markings" and will describe the use of pavement markings at highway-light rail transit grade crossings. The second proposed new section will be numbered and titled "Section 10C.24 Stop Lines" and will describe the use of stop lines at highway-light rail transit grade crossings. While these sections would be identical to Sections 8B.19 and 8B.20, respectively, it is important that the use of pavement markings and stop lines at highway-light rail transit and highway-rail grade crossings is consistent so the FHWA believes that it is important to have this information in both parts of the MUTCD. The remaining sections would be renumbered accordingly.

309. In existing Section 10C.15, the FHWA proposes renumbering and retitling the section from "Dynamic Envelope Delineation Markings" to "Section 10C.25 Dynamic Envelope Markings" to clarify that the text refers to pavement markings.

Additionally, the FHWA proposes modifying the STANDARD statement to clarify that, if used, the pavement marking used to delineate the dynamic envelope shall be a normal solid white line, contrasting pavement color, and/or contrasting pavement texture. This STANDARD would be identical to that in Section 8B.21.

310. At the end of Chapter 10C, the FHWA proposes adding two new figures. The first proposed new figure will be numbered and titled "Figure 10C-10 Example of Placement of Warning Signs and Pavement Markings at Highway-Light Rail Transit Grade Crossings" and will illustrate the placement of warning signs and pavement markings at highway-light rail transit grade crossings. The second proposed new figure will be numbered and titled "Figure 10C-11 Examples of Highway-Light Rail Transit Grade Crossing Pavement Markings" and will

illustrate the use of R X R and associated pavement markings at highway-light rail transit grade crossings. While these figures would be identical to Figures 8B-7 and 8B-8, respectively, it is important that the warning signs and pavement markings at highway-light rail transit and highway-rail grade crossings be consistent so the FHWA believes that it is important to have this information in both parts of the MUTCD.

311. In Section 10D.01 Introduction, the FHWA proposes removing the STANDARD statement since the information is already properly contained in Section 10A.01.

Additionally, the FHWA proposes adding to the OPTION statement that In-Roadway Stop Line Lights and In-Roadway Warning Lights may be installed at highway-light rail transit grade crossings that are controlled by active grade crossing warning systems, as discussed in Chapter 4L.

312. In existing Section 10D.02 Four-Quadrant Gate Systems, the FHWA proposes moving this entire section to follow Section 10D.03 and renumbering it Section 10D.04. This reordering is proposed so that content contained in these sections would appear in the same order as it appears in Part 8.

Additionally, the FHWA proposes revising the STANDARD statement to clarify that the exit lane gate arms shall be designed to fail-safe in the up position except as noted in the OPTION statement, for consistency with Section 8D.05.

Additionally, the FHWA proposes adding to the GUIDANCE statement to make it identical to the GUIDANCE statement in Section 8D.05, to provide information that describes the various operating modes of exit lane gates and how they should be used at both highway-rail and highway-light rail transit grade crossings.

313. In Section 10D.03 Automatic Gates, the FHWA proposes changing the last SUPPORT statement to an OPTION statement to be consistent with the same language contained in Section 8D.04 on how the effectiveness of gates may be enhanced by the use of channelizing devices or raised median islands to discourage driving around lowered automatic gates.

314. In existing Section 10D.04 Flashing Light Signals, the FHWA proposes moving this entire section to follow Section 10D.01 and renumbering it Section 10D.02. This reordering is proposed so that content contained in these sections would appear in the same order as it appears in Part 8.

315. In Section 10D.08 Pedestrian and Bicycle Signals and Crossings, the

FHWA proposes changing the first OPTION statement to a GUIDANCE statement to emphasize that if an engineering study shows that flashing-light signals alone would not provide sufficient notice of an approaching light rail transit vehicle, the LOOK (R15-8) sign and/or pedestrian gates should be considered.

#### *Discussion of Proposed Amendments to Appendix A1—Congressional Legislation*

316. In Appendix A1 Congressional Legislation, the FHWA proposes to add to the listing of pertinent sections of Public Law 104-59—Nov. 28, 1995 (National Highway System Designation Act of 1995) Section 306. Motorist Call Boxes. This section discusses the uses of motorist call boxes along the National Highway System.

#### **Rulemaking Analysis and Notices**

All comments received before the close of business on the comment closing date indicated above will be considered and will be available for examination in the docket at the above address. Comments received after the comment closing date will be filed in the docket and will be considered to the extent practicable, but the FHWA may issue a final rule at any time after the close of the comment period. In addition to late comments, the FHWA will also continue to file in the docket relevant information that becomes available after the comment closing date, and interested persons should continue to examine the docket for new material.

#### **Executive Order 12866 (Regulatory Planning and Review) and DOT Regulatory Policies and Procedures**

The FHWA has determined preliminarily that this notice of proposed amendments will not be a significant regulatory action within the meaning of Executive Order 12866 or significant within the meaning of Department of Transportation regulatory policies and procedures. It is anticipated that the economic impact of this rulemaking will be minimal. The proposed standards and other changes in this notice are intended to improve traffic operations and safety, and to provide additional guidance, optional applications, and support clarification for traffic control devices. The FHWA expects that these proposed standards, guidance, optional applications, and support material will create roadway uniformity, and enhance the safety and mobility of the public at little additional expense to public agencies or the

motoring public. Therefore, a full regulatory evaluation is not required.

#### **Regulatory Flexibility Act**

In compliance with the Regulatory Flexibility Act (5 U.S.C. 601-612), the FHWA has evaluated the effects of this notice of proposed amendments on small entities. This notice of proposed amendments revising standards, guidance, optional applications, and support material wording will improve the design and installation of traffic control devices. The proposed changes are intended to improve traffic operations and safety, expand guidance, and clarify the application of traffic control devices. The FHWA hereby certifies that these revisions would not have a significant economic impact on a substantial number of small entities.

#### **Unfunded Mandates Reform Act of 1995**

This notice of proposed amendments would not impose unfunded mandates as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4, 109 Stat. 48, March 22, 1995). This proposed action will not result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100 million or more in any one year (2 U.S.C. 1531 *et seq.*).

#### **Executive Order 13132 (Federalism)**

This notice of proposed amendments has been analyzed in accordance with the principles and criteria contained in Executive Order 13132 dated August 4, 1999, and the FHWA has determined that this proposed action does not have a substantial direct effect or sufficient federalism implications on States and local governments that would limit the policymaking discretion of the States and local governments. Nothing in this document directly preempts any State law or regulation. The MUTCD is incorporated by reference in 23 CFR part 655, subpart F, which requires that changes to the national standards issued by the FHWA shall be adopted by the States or other Federal agencies within two years of issuance. The proposed amendment is in keeping with the Secretary of Transportation's authority under 23 U.S.C. 109(d), 315, and 402(a) to promulgate uniform guidelines to promote the safe and efficient use of highways.

#### **Executive Order 13175 (Tribal Consultation)**

The FHWA has analyzed this proposed action under Executive Order 13175, dated November 6, 2000, and believes that it would not have substantial direct effects on one or more

Indian tribes; will not impose substantial direct compliance costs on Indian tribal governments; and will not preempt tribal law. While the proposed changes in this notice of proposed amendments revise standards, guidance, optional applications, and support material, they will create roadway uniformity, and enhance the safety and mobility of the public at little additional expense to public agencies. Therefore, a tribal summary impact statement is not required.

**Executive Order 12372  
(Intergovernmental Review)**

Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.

**Paperwork Reduction Act**

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, *et seq.*), Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct, sponsor, or require through regulations. The FHWA has determined that this proposed action does not contain a collection of information requirement for purposes of the PRA.

**Executive Order 12988 (Civil Justice Reform)**

This proposed action meets applicable standards in Sections 3(a) and 3(b)(2) of Executive Order 12988, Civil Justice Reform, to minimize litigation, to eliminate ambiguity, and to reduce burden.

**Executive Order 13045 (Protection of Children)**

The FHWA has analyzed this proposed action under Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. This is not an economically significant proposed action and does not concern an environmental risk to health or safety that may disproportionately affect children.

**Executive Order 12630 (Taking of Private Property)**

This proposed action would not effect a taking of private property or otherwise have taking implications under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights.

**Executive Order 13211 (Energy Effects)**

The FHWA has analyzed this proposed action under Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use. It has been determined that it is not a significant energy action under that order because

it is not a significant regulatory action under Executive Order 12866 and is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Therefore, a Statement of Energy Effects under Executive Order 13211 is not required.

**National Environmental Policy Act**

The agency has analyzed this proposed action for the purpose of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and has determined that it would not have any effect on the quality of the environment.

**Regulation Identification Number**

A regulation identification number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this proposed action with the Unified Agenda.

**List of Subjects in 23 CFR Part 655**

Design standards, Grant programs—Transportation, Highways and roads, Incorporation by reference, Signs, Traffic regulations.

Issued on: May 10, 2002.

**Mary E. Peters,**

*Administrator, Federal Highway Administration.*

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